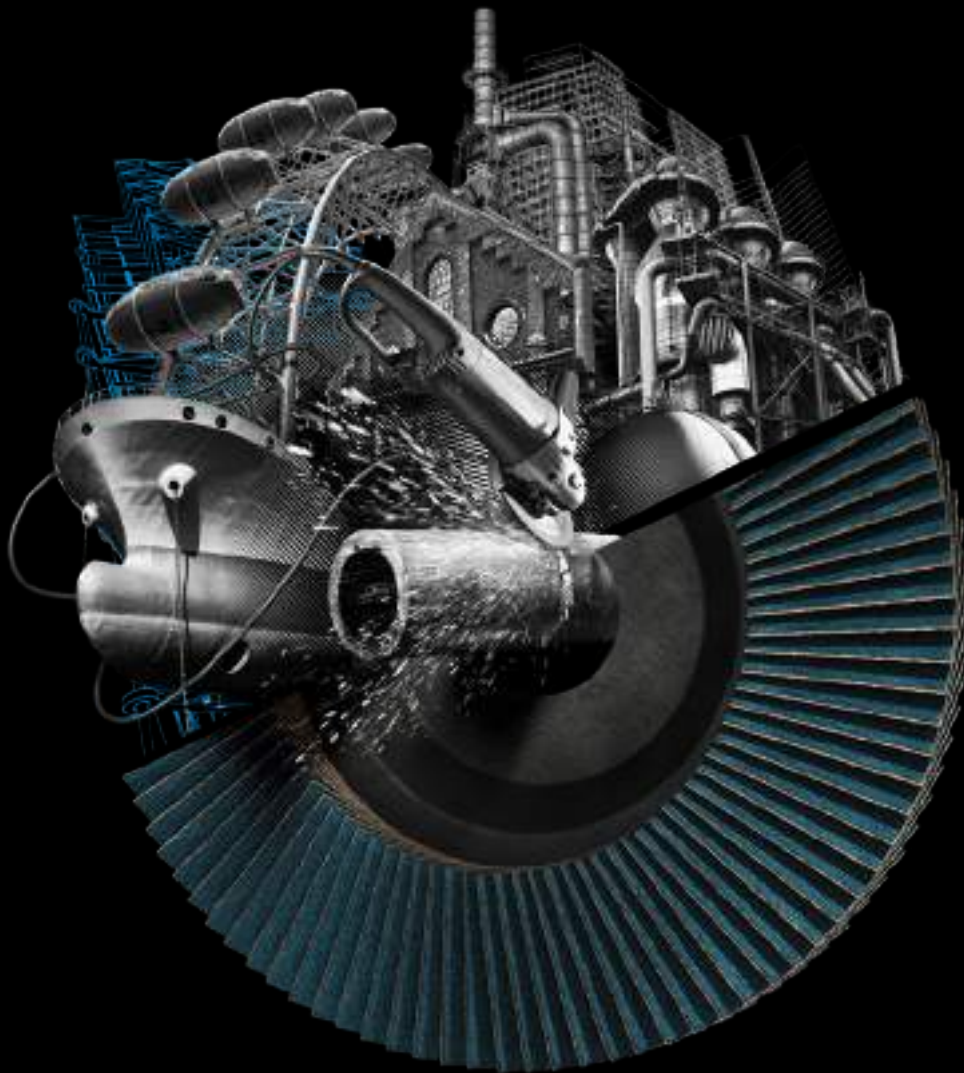


EN



Industrial supply Tools catalogue

English | Catalogue no. 21

Premium grinding tools since 1919
www.tyrolit.com

TYROLIT

Four steps to the right product

1. Select the application

e.g. cutting, grinding, etc.

2. Select the machine

e.g. angle grinder, straight grinder, etc.



3. Which material is being machined?

Each performance level is further subdivided into different materials, such as stainless steel, steel, etc.

4. Performance level

We offer 3 different performance levels: PREMIUM***, STANDARD** and BASIC*



Other search options

Index pages P.552ff



The TYROLIT Group

TYROLIT is one of the world's leading manufacturers of grinding and dressing tools as well as a system provider for the construction industry.

Since 1919, our innovative tools have made an important contribution to the technological development in many industries. TYROLIT offers tailored grinding solutions for various applications, as well as a comprehensive assortment of standard tools for customers all over the world.

Headquartered in Schwaz (Austria), the family-owned business combines the strengths of being a part of the dynamic Swarovski Group with a century's worth of individual corporate and technological experience.



TYROLIT headquarters in Schwaz (Austria)

Facts & Figures



80,000+
products



29
production sites



4,600+
employees worldwide



37
sales locations



500+
worldwide patents

Sales companies in Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Czechia, Denmark, Estonia, Finland, France, Germany, Hungary, India, Indonesia, Italy, the Netherlands, Norway, Poland, Portugal, Russia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, the UAE, the UK and the USA. Distributors in 65 other countries.

Business units

METAL INDUSTRIES



Automotive industry

Our leading grinding solutions are used for the production of automotive parts with highest precision.



Steel & Foundry

With many years of experience in the machining of high alloyed steel we are the market-leader in the steel industry.



Precision industries

The extensive field of precision industries includes tools and system solutions for various highly specialised applications.



Industrial trade

Our comprehensive assortment for cutting, grinding and surface treatment for professional end users is available worldwide.

CONSTRUCTION



Construction industry

The assortment of high efficiency diamond tools is tailored for the specific needs of customers in the construction industry.



Trade & Rental

Our wide range of professional system solutions for construction-related applications is available worldwide.



Construction professionals

We impress users with extensive know-how in the creation of perfectly optimised machines and tools and a fast repair service.



Project services

Our project services team develops individual system solutions for customer-specific special construction applications.

QUARTZ INDUSTRIES



Stone industry

With a wide assortment of diamond tools for the stone industry, we are a leading supplier in all processing steps from mining to final decorative elements.



Ceramic industry

Our customised diamond tools are used for applications in the ceramic industry – from cutting and squaring to profiling and polishing of ceramic tiles.



Glass industry

We offer diamond tools for drilling and edge processing of glass that is used to create components for the architectural and automotive industry.

100 years of advanced thinking

A passion for technology, many years of experience and a strong innovative spirit have been incorporated into the manufacture of outstanding grinding solutions.



Pioneer in the field of cut-off grinding — We created the first fibre-reinforced cut-off discs in Europe and invented the super-thin technology, which is today's global market standard for high quality cut-off discs.



Technology leader in precision grinding — We are one of the world's leading providers of high-precision grinding tools in the automotive, turbine and tooling industry as well as in various other precision industries.



Market leader in the steel industry — We are the most sought-after producer of the world's biggest cut-off wheels with diameters of up to 2,000 mm for cutting hot semi-finished steel products.



Leading solutions for construction professionals — Our innovative system solutions and the patented diamond technology (TGD®) set new standards in performance and comfort for applications in the construction industry.



Diamond tools for grinding of automotive glass — We were the first company to produce diamond tools for grinding automotive glass at 40 m/min and successfully established an industry-changing concept for edge grinding in the market.



Creator of innovative wire sawing technology — We strongly pursued the development of the wire sawing technology for applications in the stone and construction industry which is still the industry reference today.

International production and sales locations

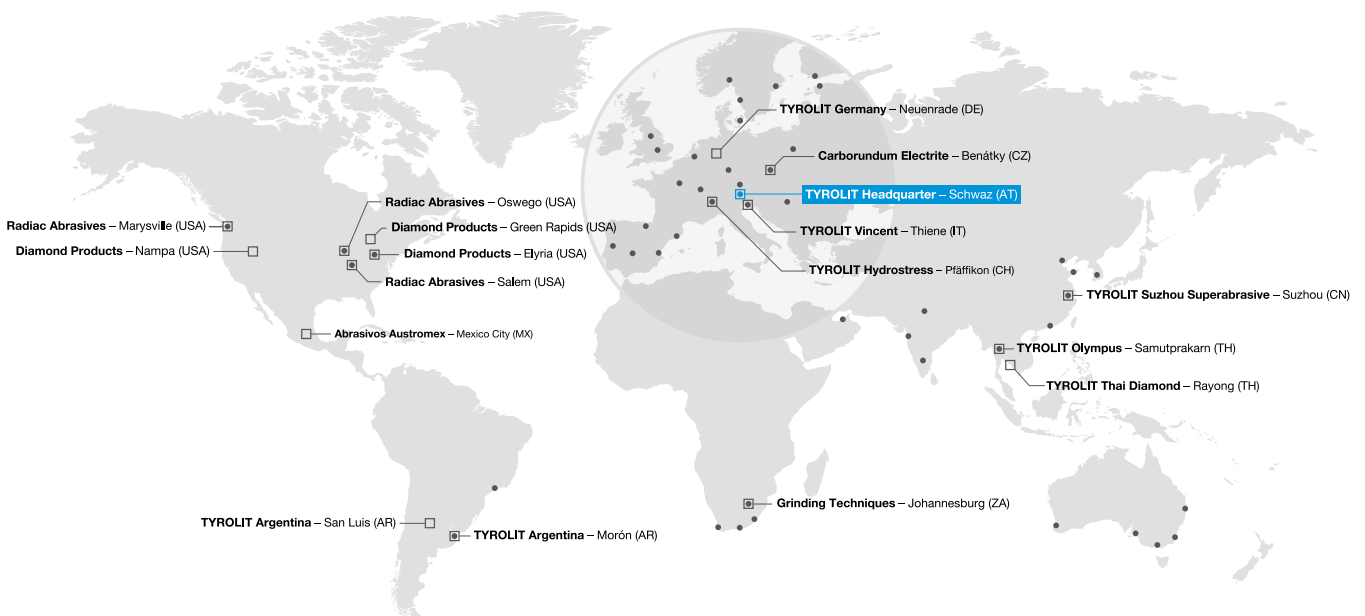
TYROLIT is represented in 29 countries through its own production and sales companies and cooperates in a further 65 countries with local partners.



Production location in Suzhou (China)



The European logistics centre in Benátky (Czechia)



□ TYROLIT production sites
sites are only named once

● TYROLIT sales locations
locations are only named once | includes service locations

The specialised trade for grinding tools at TYROLIT

TYROLIT offers professional users in different industries an extensive product range, whether for grinding, cutting or surface treatment.

TYROLIT is a global player in the specialised trade in grinding tools and is represented in more than 65 countries. Our products are used in a wide range of sectors – in metal-processing companies, in shipyards, in workshops and on building sites.

With an extensive network of dealers, a regional sales team and experienced application engineers on site, TYROLIT can quickly provide advice and assistance to customers worldwide if they have questions.



Product innovations at TYROLIT

From idea to industry standard



1982

TYROJet revolutionises diamond wheels

Laser welded segments have now enabled the use of diamond wheels for dry cutting and at high speeds.



2011

Natural Jute Disc for less environmental load

With the launch of the TYROLIT natural fibre disc of natural jute fibre, we can considerably reduce environmental load by using a biodegradable core.



2019

Cerabond X – the most powerful grinding disc

The CERABOND system combines high-quality ceramic abrasive grain with a unique bonding structure and makes Cerabond X the most powerful grinding disc on the market.



1957

SECUR sets new safety standard

Tyrolit is the first company in Europe to produce fibreglass-reinforced cut-off and rough grinding wheels.



1992

Higher productivity thanks to super-thin cut-off wheels

TYROLIT introduces the first super-thin cut-off wheels, from which customers are still benefiting today, with huge increases in productivity and performance.



2014

More comfort with the Comfort Start rough grinding wheel

The bevelled edge makes working more comfortable and considerably speeds up readiness for use.



2019

With X-Lock at the forefront of technology

TYROLIT is one of the first abrasives manufacturers to integrate the innovative X-Lock clamping system for a wide range of cutting, grinding and flap discs.

Quality lines

To make your search for the ideal tool easier, we have divided our range into three performance levels. This enables us to offer the perfect solution for every application!

Our PREMIUM quality line is for professionals using abrasives regularly. It offers the longest lifetime and the highest comfort in the industry.

Our STANDARD quality line is for craftsmen looking for the perfect all-rounder. It offers excellent lifetime and comfort while delivering exceptional work results.

Our BASIC quality line is for craftsmen looking for excellent value. It offers good lifetime and comfort while delivering great work results.



★★★
PREMIUM



★★
STANDARD



★
BASIC

- Maximum cutting ability and stock removal rate
- Above-average lifetime
- The best work results
- Maximum economic efficiency
- Extensive product range – the perfect product for every application
- Use of innovative technologies and the best raw materials
- Maximum comfort for the user thanks to low vibration and noise levels

- Excellent cutting ability and stock removal rate
- Excellent service life
- Exceptional work results
- High level of economic efficiency
- Large product range – for the most important applications
























- Good cutting ability and stock removal rate
- Good service life
- Good work results

Symbols



























Safety

 Wear gloves	 Wear protective clothing	 Do not use damaged wheels	 Free from Fe, S, Cl, F
 Wear eye protection	 Observe the instructions	 Not permitted for side grinding	
 Wear ear protection	 Only permitted for wet grinding	 Off-hand and hand-guided grinding not permitted	
 Wear a mask	 Not permitted for wet grinding	 Free from Fe, S, Cl	

Material

 Steel	 Carbide metal	 Tiles	 All in One
 Abrasive materials	 Plastic	 Concrete	 Stainless steel
 Asphalt	 Stone	 Marble	 Paint / lacquer
 Gel coat	 Composites	 Titanium	 Wood
 Cast iron	 High-speed steel	 Nonferrous metals	 Engineering bricks
 Hard stone	 Rails	 Universal	

Machines

 Dry core drill	 Joint cutter	 Straight grinder	 Hand held grinding
 Wet core drill	 Dual action sander	 Stationary cutting machine	 Tool grinding
 Belt grinder	 Portable belt grinder	 Table saw	 Saw sharpening
 Floorstand grinder	 Pneumatic angle grinder	 Burnishing machine	 Dressing and sharpening
 Angle grinder with cup wheel	 Petrol cutting saw	 External-cylindrical grinding	 Electrical hand saw
 Angle grinder with brush	 Mini belt grinder	 Internal-cylindrical grinding	 Pedestal / pendular grinding
 Angle grinder	 Hand-guided grinding	 Surface grinding	





Cutting

Cutting information
Angle grinders
Straight grinders

Petrol cutting saws
Stationary cutting machines

Grinding

Grinding information
Angle grinders

Straight grinders

Brushes

Brushes information
Angle grinder
Straight grinder

Floorstanding grinder
Hand-guided grinding

Coated abrasives

Grinding information
Angle grinder
Straight grinder
Belt grinder

Hand sanding and super finishing
Dual action sander
Burnishing machine
Floorstanding grinder

Precision grinding

Precision grinding information
External cylindrical grinding
Surface grinding
Rectification plane
Internal cylindrical grinding

Hand-guided grinding
Bench grinders
Saw sharpening
Tool grinding

Diamond tools

Information diamond tools
Angle grinder
Petrol saws
Table sawing

Floor sawing
Core drilling

Notes

Safety
Quick product search
General

Symbols

Safety
Material

Machines





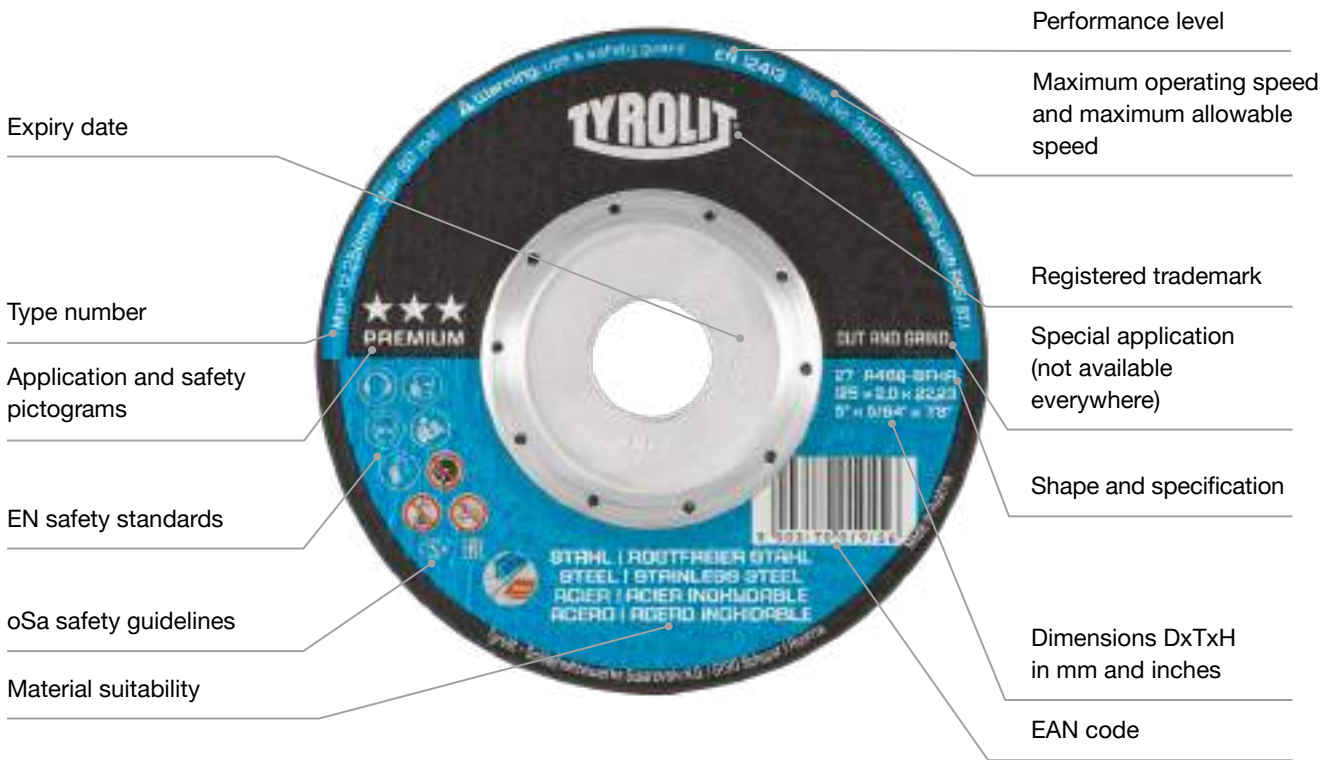
Catalogue 21

Cutting

Grinding information	14
Explanation of labels	14
Specification	15
Machine pictograms	15
Angle grinders	17
1.1 Cut-off wheels	18
Accessories	39
Straight grinders	41
1.2 Cut-off wheels	42
Accessories	45
Petrol cutting saws	47
1.3 Cut-off wheels	48
Stationary cutting machines	55
1.4 Stationary cut-off wheels	56
Non-reinforced stationary cut-off wheels	62

Specific information Resin-bonded cut-off wheels

Cut-off wheels product label



Colour codes

Label	Steel	2in1/3in1	INOX	Nonferrous metals	Cast iron	Stone
Colour code	BLUE	BLUE	RED	ORANGE	PURPLE	GREEN
Material	Steel	2in1 = Steel and stainless steel, 3in1 = Steel, stainless steel and cast iron	Stainless steel	Aluminium, copper, zinc, brass, bronze, stone	Cast materials	Stone

Cut-off wheels specification

A 46 N-B F X A

	A	External reinforcement: with external reinforcement
	X	TYROLIT internal designation
	F	Fibre-reinforced: fibre glass (safety, lateral load, operating speed)
	B	Bond: V = vitrified bonded, B = resin bonded, E = elastic bonded, G = galvanic bonded
	N	Designation of hardness: N = soft, T = hard
46		Grit size indication in mesh (sieve size per inch)
		grit size in mesh
		14-36 COARSE
		46-60 MEDIUM
		80-220 FINE
		800-1 200 VERY FINE
A		Abrasive: A = regular aluminium oxide, C = silicon carbide, ZA = zirconia alumina, CA = ceramic

Machines



Angle grinder



Straight grinder



Petrol cutting saw



Stationary cutting machines



1.1 Angle grinder **Cut-off wheels**





Cut-off wheels for angle grinders

Working with an angle grinder is one of the most important processes in the handicraft and industrial sectors for machining all types of metals. TYROLIT offers the ideal cut-off wheels for convenient and quick use with small and large angle grinders.

The benefits of our cut-off wheels in terms of innovation and economy can be clearly seen when it comes to cutting thin metal sheets and profiles. Our PREMIUM products in particular offer you the ultimate performance and lifetime, very clean cutting areas and low thermal load. This means


there is only a limited amount of rework required, saving you time and money.


However, the highest priority here at TYROLIT is the health of our customers. TYROLIT cut-off wheels therefore meet the highest safety standards and contribute significantly to improv-

ing your working conditions. Reduced vibration and noise considerably improve your level of comfort while working.

On the following pages you will find the perfect tool for your requirements thanks to the uniform colour code for all materials.

Shapes


41 Cut-off wheels
 (straight design)


42 Cut-off wheel
 (depressed-centre design)


27EC und 27CC
 CUT AND GRIND
 (depressed-centre design)

Application recommendation



Rating System

Performance level	Design	Grain	Steel	Stainless steel	NF metals	Cast iron	Stone	Page	Aggressiveness	Lifetime	Performance* (0-100)
★★★ PREMIUM	LOGLIFE & X-LOCK LOGLIFE	A	●					20, 21			100
	2in1 & X-LOCK 2in1	A	●	●				23, 24			78
	ACCU	A	●	●				28			72
	CERABOND	CA	●	●				26			100
	DEEP CUT PROTECTION	A	●	●				27, 28			89
	INOX & X-LOCK INOX	A		●				31, 32, 33			95
	ALU	A			●			35, 36			100
	SIC/ALU	A			●		●	36			94
	FOCUR EXTRA	A					●	38			50
	FOCUR SA	A					●	38			100
★★ STANDARD	STEEL	A	●					22			69
	2in1	A	●	●				29			61
	STONE	C					●	37			70
	INOX	A		●				33, 34			67
★ BASIC	2in1	A	●	●				30			53
	STONE	C					●	37			55
	INOX	A		●				34			53

*The performance indicates the overall performance of the product in comparison to products with the same material suitability.

★★★
PREMIUM

LONGLIFE cut-off wheels

for steel

+ Maximum lifetime thanks to
LONGLIFE technology

+ Extremely short working times
thanks to excellent cutting ability
and a low thermal load on the
workpiece (heat build-up)



+ No reworking, such as clean-
ing or deburring, required

Application:

- + For machining different steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

We recommend:

- + 1.0 to 1.9 mm for fastest cutting and minimum burr formation
- + 2.0 to 3.0 mm for longest lifetime and maximum stability




★★★
PREMIUM

LONGLIFE cut-off wheels for steel



	Shape	Type no.	Dimension	Specification	PU	
		41	34332576	115x1.0x22.23	A60S-BFP	25
			34332755	115x1.6x22.23	A46S-BFP	25
			637066	115x2.0x22.23	A30S-BFXA	25
			34332754	125x1.0x22.23	A60S-BFP	25



	Shape		Type no. new	Dimension	Specification	PU
		41	34332756	125x1.6x22.23	A46S-BFP	25
			637067	125x2.0x22.23	A30S-BFXA	25
			34332757	150x1.2x22.23	A46S-BFP	25
			34332758	150x1.6x22.23	A46S-BFP	25
			637068	150x2.0x22.23	A30S-BFXA	25
			34332759	178x1.6x22.23	A46S-BFP	25
			785339	178x2.0x22.23	A30S-BFXA	25
			637069	178x2.5x22.23	A30S-BFXA	25
			34332760	230x1.9x22.23	A46S-BFP	25
			34332771	230x2.0x22.23	A30S-BFP	25
			637070	230x2.5x22.23	A30S-BFXA	25
	42	637071	115x2.5x22.23	A30S-BFXA	25	
		637072	125x2.5x22.23	A30S-BFXA	25	
		637073	178x3.0x22.23	A30S-BFXA	25	
		637074	230x3.0x22.23	A30S-BFXA	25	



X-LOCK LONGLIFE cut-off wheels for steel





Application

- + For machining different steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

Advantage

- + TYROLIT integrates X-LOCK, the new clamping system from BOSCH, for a wide assortment of cut-off wheels, roughing wheels and flap discs
- + The product offers easy handling and the highest safety
- + Maximum lifetime thanks to LONGLIFE technology

	Shape		Type no.	Dimension	Specification	PU
		41	34411637	115x1.0x22.23/XL	A60S-BFP	25
			34411638	115x1.6x22.23/XL	A46S-BFP	25
			34411639	125x1.0x22.23/XL	A60S-BFP	25
			34411640	125x1.6x22.23/XL	A46S-BFP	25



Cut-off wheels for steel



Application




- + For machining different steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

We recommend

- + 1.0 to 1.9 mm for fastest cutting and minimum burr formation
- + 2.0 to 3.0 mm for long lifetime and maximum stability

Advantage

- + Convenient cutting with excellent lifetime
- + Short working times thanks to very good cutting ability and a low thermal load on the workpiece (heat build-up)
- + No reworking, such as cleaning or deburring, required

	Shape	Type no.	Dimension	Specification	PU		
		41	34332840	115x1.0x22.23	A60S-BFS	25	
		34332852	115x1.6x22.23	A46S-BFS	25		
		367565	115x2.5x22.23	A30S-BF	25		
		34332851	125x2.0x22.23	A60S-BFS	25		
		34332853	125x1.6x22.23	A46S-BFS	25		
		367569	125x2.5x22.23	A30S-BF	25		
		34332854	150x1.6x22.23	A46S-BFS	25		
		367574	150x2.5x22.23	A30S-BF	25		
		34332892	178x1.6x22.23	A46S-BFS	25		
		367578	178x3.0x22.23	A30S-BF	25		
		34332856	230x1.9x22.23	A46S-BFS	25		
		34332857	230x2.0x22.23	A30S-BFS	25		
		367583	230x3.0x22.23	A30S-BF	25		
			42	367781	115x2.5x22.23	A30S-BF	25
			367785	115x3.0x22.23	A30S-BF	25	
367786	125x2.5x22.23		A30S-BF	25			
367789	125x3.0x22.23		A30S-BF	25			
367800	178x3.0x22.23		A30S-BF	25			
367803	230x3.0x22.23		A30S-BF	25			



X-LOCK cut-off wheels

for steel and stainless steel

+ The product offers easy handling and the highest safety

+ TYROLIT integrates X-LOCK, the new clamping system from BOSCH, for a wide assortment of cut-off wheels, roughing wheels and flap discs



+ No loose parts



Application:

- + For machining different steel and stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material



X-LOCK cut-off wheels for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU
	 41	34411628	115x1.0x22.23/XL	A60Q-BFP	25
		34411629	115x1.6x22.23/XL	A46Q-BFP	25
		34411630	125x1.0x22.23/XL	A60Q-BFP	25
		34411632	125x1.6x22.23/XL	A46Q-BFP	25



2in1 cut-off wheels

for steel and stainless steel

+ The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results even on stainless steel



+ High level of comfort thanks to easy-cutting specification

+ Extremely short working times thanks to excellent cutting ability and a low thermal load on the workpiece (heat build-up)

Application:

- + For machining different steel and stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

We recommend:

- + 1.0 to 1.9 mm for fastest cutting and minimum burr formation
- + 2.0 to 3.5 mm for maximum lifetime and stability






2in1 cut-off wheels for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU
		34424279	115x1.0x22.23	A60Q-BFP	10
		34424280	125x1.0x22.23	A60Q-BFP	10



	Shape	Type no.	Dimension	Specification	PU			
		41	34332791	115x1.0x22.23	A60Q-BFP	25		
			34472855	115x1.2x22.23	A46Q-BFP	25		
			34332793	115x1.6x22.23	A46Q-BFP	25		
			872338	115x2.5x22.23	A30Q-BFXA	25		
			34332792	125x1.0x22.23	A60Q-BFP	25		
			34472851	125x1.2x22.23	A46Q-BFP	25		
			34332794	125x1.6x22.23	A46Q-BFP	25		
			872339	125x2.5x22.23	A30Q-BFXA	25		
			34332795	150x1.2x22.23	A46Q-BFP	25		
			34332796	150x1.6x22.23	A46Q-BFP	25		
			872340	150x2.5x22.23	A30Q-BFXA	25		
			34332797	178x1.6x22.23	A46Q-BFP	25		
			872341	178x2.5x22.23	A30Q-BFXA	25		
			872342	178x3.0x22.23	A30Q-BFXA	25		
			34332798	230x1.9x22.23	A46Q-BFP	25		
			34332799	230x2.0x22.23	A30Q-BFP	25		
			872343	230x2.5x22.23	A30Q-BFXA	25		
			872344	230x3.0x22.23	A30Q-BFXA	25		
				42	872346	115x2.5x22.23	A30Q-BFXA	25
				872347	125x2.5x22.23	A30Q-BFXA	25	
	872348	125x3.0x22.23		A30Q-BFXA	25			
	872350	178x3.0x22.23		A30Q-BFXA	25			
	121878	230x2.5x22.23		A30Q-BFXA	25			
	872351	230x3.0x22.23		A30Q-BFXA	25			
	872352	230x3.5x22.23		A30Q-BFXA	25			



CERABOND cut-off wheels

for steel and stainless steel

+ Highest cutting ability thanks to the used ceramic grain

+ Consistent abrasiveness through the combination of the new bonding system and the ceramic grain



+ Longest lifetime and therefore less wheel changes for the user

Application:

- + For machining different steel and stainless steel grades
- + For cutting very hard, challenging workpieces and solid materials

We recommend:

- + 1.0 to 1.9 mm for fastest cutting and minimum burr formation
- + 2.0 to 3.0 mm for long lifetime and maximum stability






CERABOND cut-off wheels for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU
		34241344	115x1.0x22.23	CA60Q-BFKA	15
		34256272	115x1.3x22.23	CA60Q-BFKA	15
		34256157	115x1.6x22.23	CA46Q-BFKA	15
		34241345	125x1.0x22.23	CA60Q-BFKA	15



	Shape	Type no.	Dimension	Specification	PU	
		41	34256273	125x1.3x22.23	CA60Q-BFKA	15
			34256266	125x1.6x22.23	CA46Q-BFKA	15
			34256281	125x2.0x22.23	CA30Q-BFKA	15
			34256274	150x1.3x22.23	CA60Q-BFKA	15
			34256268	150x1.6x22.23	CA46Q-BFKA	15
			34256275	178x1.6x22.23	CA46Q-BFKA	15
			34256276	230x2.0x22.23	CA30Q-BFKA	15
	42	34256270	125x1.6x22.23	CA46Q-BFKA	15	
		34256271	150x1.6x22.23	CA46Q-BFKA	15	

★★★
PREMIUM

DEEP CUT PROTECTION cut-off wheels

for steel and stainless steel

+ The metal bushing with DEEP CUT PROTECTION prevents bore breakout

+ DEEP CUT PROTECTION is a further step towards operator safety

+ Maximum insertion depths into the workpiece and contact with sharp workpiece edges possible without damaging the wheel

+ High level of comfort thanks to easy-cutting specification





Application:

- + For machining different steel and stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material



★★★
PREMIUM**DEEP CUT PROTECTION cut-off wheels**
for steel and stainless steel



	Shape		Type no.	Dimension	Specification	PU
		42	34472853	115x1.2x22.23	A46Q-BFP	25
			34472852	125x1.2x22.23	A46Q-BFP	25
			34472854	150x1.2x22.23	A46Q-BFP	25

★★★
PREMIUM**ACCU cut-off wheels**
for steel and stainless steel**Application**

- + These products have been optimised for battery-powered angle grinders and are ideal for cutting thin-walled metal sheets, profiles and pipes made of steel and stainless steel

Advantage

- + Work on smaller tasks in hard-to-reach areas without the need for a power source, while still benefiting from the usual TYROLIT quality
- + Tool can be used for a wide variety of applications on steel and stainless steel
- + Also makes light work of small cross-sections, rods and reinforced steel

	Shape		Type no.	Dimension	Specification	PU
		41	34022958	115x1.0x22.23	A60Q-BFKA	25
			34022959	125x1.0x22.23	A60Q-BFKA	25



2in1 cut-off wheels for steel and stainless steel



Application

- + For machining different steel and stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

Advantage

- + The product offers very good lifetime and stability
- + Quick and convenient to use

	Shape	Type no.	Dimension	Specification	PU	
		41	34332859	115x1.0x22.23	A60Q-BFS	25
			34332860	125x1.0x22.23	A60Q-BFS	25
			34332861	115x1.6x22.23	A46Q-BFS	25
			34332862	125x1.6x22.23	A46Q-BFS	25
			34332863	150x1.6x22.23	A46Q-BFS	25
			34332893	178x1.6x22.23	A46Q-BFS	25
			34332865	230x1.9x22.23	A46Q-BFS	25
			34332866	230x2.0x22.23	A30Q-BFS	25



CUT AND GRIND for steel and stainless steel



Application

- + For machining different steel and stainless steel grades

Advantage

- + Thanks to CUT AND GRIND, applications such as grinding, deburring and shaping as well as cutting and plunging are possible with only one tool
- + Thinner width of 2.0 mm with DEEP CUT PROTECTION offers additional safety for the operator and prevents bore breakout in the event of contact with sharp-edged workpieces

	Shape	Type no.	Dimension	Specification	PU	
		27EC	34042756*	115x2.0x22.23	A46Q-BFXA	25
			34042757*	125x2.0x22.23	A46Q-BFXA	25
			743946	150x3.0x22.23	A30Q-BFXA	25
			743947	178x3.5x22.23	A30Q-BFXA	25

*With DEEP CUT PROTECTION



CUT AND GRIND for steel and stainless steel



Application

- + For machining different steel and stainless steel grades

Advantage

- + Thanks to CUT AND GRIND, applications such as grinding, deburring and shaping as well as cutting and plunging are possible with only one tool
- + The product offers good performance with the highest safety standards

	Shape	Type no.	Dimension	Specification	PU	
		27CC	743942	115x2.5x22.23	A30Q-BF	25
			757089	125x2.8x22.23	A30Q-BF	25
			743944	178x3.5x22.23	A30Q-BF	25



2in1 cut-off wheels for steel and stainless steel



Application

- + For machining different steel and stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

Advantage



- + The chemical purity makes it possible to work on steel and stainless steel
- + Convenient and low-burr cutting with good wheel life
- + Short working times thanks to good cutting ability

We recommend

- + 1.0 to 1.9 mm for fastest cutting and minimum burr formation
- + 2.0 to 3.0 mm for long lifetime and maximum stability

	Shape	Type no.	Dimension	Specification	PU	
		41	34332870	115x1.0x22.23	A60Q-BFB	25
			34332872	115x1.6x22.23	A46Q-BFB	25
			222997	115x2.5x22.23	A30Q-BF	25
			34332871	125x1.0x22.23	A60Q-BFB	25
			34332873	125x1.6x22.23	A46Q-BFB	25
			222998	125x2.5x22.23	A30Q-BF	25
			34354703	150x1.2x22.23	A60Q-BF	25
			34332874	150x1.6x22.23	A46Q-BFB	25
			34476855	150 x 2.0 x 22.23	A30Q-BF	25
			222999	150x2.5x22.23	A30Q-BF	25
			34332875	178x1.6x22.23	A46Q-BFB	25
			250165	178x2.5x22.23	A30Q-BF	25
			223000	178x3.0x22.23	A30Q-BF	25
			34332876	230x1.9x22.23	A46Q-BFB	25
			34332877	230x2.0x22.23	A30Q-BFB	25
			250169	230x2.5x22.23	A30Q-BF	25
			223002	230x3.0x22.23	A30Q-BF	25



	Shape		Type no.	Dimension	Specification	PU
		42	223021	115x2.5x22.23	A30Q-BF	25
			223022	125x2.5x22.23	A30Q-BF	25
			291948	125x3.0x22.23	A30Q-BF	25
			223023	178x3.0x22.23	A30Q-BF	25
			222044	230x3.0x22.23	A30Q-BF	25

★★★
PREMIUM

Cut-off wheels

for stainless steel

+ The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results on stainless steel

+ Extremely short working times thanks to excellent cutting ability and a low thermal load on the workpiece (heat build-up)



+ Specially for rust-resistant and acid-resistant steels

Application:

- + For machining different stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

We recommend:

- + 0.75 to 1.9 mm for fastest cutting and minimum burr formation
- + 2.0 to 3.0 mm for maximum lifetime and stability





Cut-off wheels for stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		41	34424276	115x1.0x22.23	A60R-BFP	10
			34424278	125x1.0x22.23	A60R-BFP	10
			34332800	115x0.75x22.23	A60R-BFP	25
			34332802	115x1.0x22.23	A60R-BFP	25
			34332804	115x1.6x22.23	A46R-BFP	25
			41489	115x2.0x22.23	A30R-BFXA	25
			41491	115x2.5x22.23	A30R-BFXA	25
			34332801	125x0.75x22.23	A60R-BFP	25
			34332803	125x1.0x22.23	A60R-BFP	25
			34332805	125x1.6x22.23	A46R-BFP	25
			41492	125x2.0x22.23	A30R-BFXA	25
			41493	125x2.5x22.23	A30R-BFXA	25
			41494	125x3.0x22.23	A30R-BFXA	25
			34332807	150x1.6x22.23	A46R-BFP	25
			41495	150x2.0x22.23	A30R-BFXA	25
			34332808	178x1.6x22.23	A46R-BFP	25
			41499	178x2.0x22.23	A30R-BFXA	25
			35946	178x2.5x22.23	A30R-BFXA	25
			34332809	230x1.9x22.23	A46R-BFP	25
			34332810	230x2.0x22.23	A30R-BFP	25
	35950	230x2.5x22.23	A30R-BFXA	25		
	41501	230x3.0x22.23	A30R-BFXA	25		
		42	282149	115x0.75x22.23	A60R-BFXA	25
			35937	115x2.0x22.23	A30R-BFXA	25
			41504	115x2.5x22.23	A30R-BFXA	25
			282150	125x0.75x22.23	A60R-BFXA	25
			35944	125x2.0x22.23	A30R-BFXA	25
			41505	125x2.5x22.23	A30R-BFXA	25
			41506	125x3.0x22.23	A30R-BFXA	25
			291587	150x1.6x22.23	A46R-BFXA	25
			41507	150x2.0x22.23	A30R-BFXA	25
			41508	150x3.0x22.23	A30R-BFXA	25
			291588	178x1.6x22.23	A46R-BFXA	25
			41509	178x2.5x22.23	A30R-BFXA	25
			41511	230x2.5x22.23	A30R-BFXA	25



X-LOCK cut-off wheels for stainless steel





Application

- + For machining different stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

Advantage

- + TYROLIT integrates X-LOCK, the new clamping system from BOSCH, for a wide assortment of cut-off wheels, roughing wheels and flap discs
- + The product offers easy handling and the highest safety
- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results even on stainless steel

	Shape		Type no.	Dimension	Specification	PU
		41	34411623	115x1.0x22.23/XL	A60R-BFP	25
			34411624	115x1.6x22.23/XL	A46R-BFP	25
			34411625	125x1.0x22.23/XL	A60R-BFP	25
			34411626	125x1.6x22.23/XL	A46R-BFP	25



Cut-off wheels for stainless steel



Application



- + For machining different stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

We recommend

- + 1.0 to 1.9 mm for fastest cutting and minimum burr formation
- + 2.0 to 3.0 mm for long lifetime and maximum stability

Advantage

- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for very good results on stainless steel
- + Convenient cutting with excellent lifetime
- + Short working times thanks to very good cutting ability and a low thermal load on the workpiece (heat build-up)

	Shape		Type no.	Dimension	Specification	PU
		41	34332830	115x1.0x22.23	A60R-BFS	25
			34332833	115x1.6x22.23	A46R-BFS	25
			34332832	125x1.0x22.23	A60R-BFS	25
			34332834	125x1.6x22.23	A30R-BFS	25
			408496	125x2.0x22.23	A46R-BFINOX	25
			34332835	150x1.6x22.23	A46R-BFS	25
			367776	150x2.0x22.23	A30R-BFINOX	25
			367575	150x2.5x22.23	A30R-BFINOX	25
			34332891	178x1.6x22.23	A46R-BFS	25








★★
STANDARD

Cut-off wheels for stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		41	367777	178x2.0x22.23	A30R-BFINOX	25
			367577	178x2.5x22.23	A30R-BFINOX	25
			34332838	230x1.9x22.23	A46R-BFS	25
			34332839	230x2.0x22.23	A30R-BFS	25
			367582	230x2.5x22.23	A30R-BFINOX	25
		42	367783	115x2.0x22.23	A30R-BFINOX	25
			367788	125x2.0x22.23	A30R-BFINOX	25
			367791	178x2.5x22.23	A30R-BFINOX	25
			367802	230x2.5x22.23	A30R-BFINOX	25

★
BASIC

Cut-off wheels for stainless steel





Application

- + For machining different stainless steel grades
- + For cutting metal sheets, profiles, pipes, rods and solid material

Advantage

- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for good results on stainless steel
- + Convenient and low-burr cutting with good wheel life
- + The thickness of just 1.0 mm enables speed and precision when working

	Shape	Type no.	Dimension	Specification	PU	
		41	34332868	115x1.0x22.23	A60R-BFB	25
			34332869	125x1.0x22.23	A60R-BFB	25



Cut-off wheels

for nonferrous metals

+ New specifications prevent clogging and dulling of the wheel



+ Specification and manufacturing method enable the shortest cutting times

Application:

+ For machining different types of nonferrous metals such as aluminium, aluminium bronze, aluminium base alloys, copper, bronze, brass, nickel silver and titanium

We recommend:

+ 1.0 to 1.9 mm for fastest cutting and minimum burr formation
 + 2.0 to 3.0 mm for maximum lifetime and stability



Cut-off wheels for nonferrous metals



	Shape	Type no.	Dimension	Specification	PU
	41	34332821	115x1.0x22.23	A60N-BFP	25
		34332823	115x1.6x22.23	A46N-BFP	25
		39624	115x2.5x22.23	A30N-BFXA	25
		34332822	125x1.0x22.23	A60N-BFP	25
		34332824	125x1.6x22.23	A46N-BFP	25





Cut-off wheels for nonferrous metals



	Shape	Type no.	Dimension	Specification	PU	
		39321	125x2.5x22.23	A30N-BFXA	25	
		525355	178x2.0x22.23	A30N-BFXA	25	
		32141	178x2.5x22.23	A30N-BFXA	25	
		34332825	230x2.0x22.23	A30N-BFP	25	
		32142	230x2.5x22.23	A30N-BFXA	25	
		42	82646	115x2.5x22.23	A30N-BFXA	25
			366888	125x2.5x22.23	A30N-BFXA	25
			5485	178x3.0x22.23	A30N-BFXA	25
			30741	230x3.0x22.23	A30N-BFXA	25



Cut-off wheels for nonferrous metals and stone



Application

- + For machining tiles, ceramics, clinker and nonferrous metals
- + Small cutting tasks on natural stone and concrete

Advantage

- + Perfect surface finish without any edge chipping
- + Reduced cutting waste and cutting dust generation thanks to small wheel thickness

	Shape	Type no.	Dimension	Specification	PU	
		41	34332827	115x1.0x22.23	C46S-BFP	25
			34332828	125x1.0x22.23	C46S-BFP	25



Cut-off wheels for stone






Application

- + For machining different stone materials

Advantage

- + Clean cutting edges and very good cutting quality
- + Fast and convenient work with minimal exertion
- + Silicon carbide ensures very good lifetime and stability when cutting stone and concrete

	Shape	Type no.	Dimension	Specification	PU	
		41	367566	115x2.5x22.23	C30S-BF	25
			367572	125x2.5x22.23	C30S-BF	25
			367580	178x3.0x22.23	C30S-BF	25
			367585	230x3.0x22.23	C30S-BF	25
		42	367782	115x2.5x22.23	C30S-BF	25
			367787	125x2.5x22.23	C30S-BF	25
			367801	178x3.0x22.23	C30S-BF	25
			367804	230x3.0x22.23	C30S-BF	25



Cut-off wheels for stone






Application

- + For machining different stone materials

Advantage

- + Good cutting ability reduces the operator's work
- + Quick and convenient to use
- + Good lifetime and stability

	Shape	Type no.	Dimension	Specification	PU	
		41	223012	115x2.5x22.23	C30S-BF	25
			223015	125x2.5x22.23	C30S-BF	25
			222042	178x3.0x22.23	C30S-BF	25
			223019	230x3.0x22.23	C30S-BF	25
		42	223025	115x2.5x22.23	C30S-BF	25
			223027	125x2.5x22.23	C30S-BF	25
			223029	178x3.0x22.23	C30S-BF	25
			223031	230x3.0x22.23	C30S-BF	25



FOCUR SA Cut-off wheels for cast iron





Application

- + For machining cast iron

Advantage

- + DIN 13236 safety norm
- + Highest aggressiveness with unbelievable lifetime thanks to an innovative production technology and the use of diamond grains
- + Up to 25 times higher lifetime compared to vitrified bonded tools

	Shape	Type no.	Dimension	Specification	PU
		UC3 102813	230x3.0x22.23	DC CI	1



FOCUR EXTRA Cut-off wheels for cast iron





Application

- + For machining cast materials

Advantage

- + Maximum abrasiveness coupled with the best wheel life thanks to innovative manufacturing technology
- + New bond system combined with high-quality zirconium aluminium oxide for maximum stock removal

	Shape	Type no.	Dimension	Specification	PU
		42 929887	178x3.5x22.23	ZA30R-BFXA	25
		635268	230x3.0x22.23	ZA30P-BFXA*	25
		855818	230x3.5x22.23	ZA30P-BFXA*	25
		929889	230x3.5x22.23	ZA30R-BFXA	25

* Fe, S, Cl free.

Wheel flange - accessory for cut-off wheels

Application


- + Developed to improve the stability of thin cut-off wheels with diameters of 178 mm and 230 mm

We recommend

- + For cut-off wheels up to 2.0 mm in a straight design and a diameter of 178 mm or 230 mm

Advantage

- + Significantly increases lateral stability
- + Made of tempered tool steel for angle grinders with an M14 drive screw
- + Enables even more precise cutting guidance and improves first-cut performance

	Shape	Type no.	Dimension	PU
	100SFL	614644	76 mm	1



1.2 Cut-off wheels for straight grinders





Cut-off wheels for straight grinders

Straight grinders are always in high demand when precise results are required on difficult-to-access areas. Their versatile application options make straight grinders a popular tool.

In order to fulfil the high standards it sets for itself, TYROLIT has developed wheels for particularly quick low-burr cutting with maximum lifetimes. These high-performance tools are perfect for cutting metal sheets, profiles, pipes and rods even




in difficult-to access locations. For TYROLIT, the most stringent safety standards for our cut-off wheels - as with all of our products - are of the highest priority. Reduced vibration and noise considerably improve your level of comfort while working.

On the following pages you will find the perfect tool for your requirements thanks to the uniform colour code for all materials.

Shapes

41 Cut-off wheels
(straight design)

Application recommendation

Performance level	Specification			Page
		Steel	Stainless steel	
 PREMIUM	A100-BFM	●		44
	A60R-BFXA		●	44, 45
	A46R-BFXA		●	44, 45



Cut-off wheels for steel





Application

- + For machining different steel grades
- + For cutting thin-walled metal sheets, profiles, pipes, rods and solid material

Advantage

- + Particularly thin and fine-grained wheels allow short cutting times and fatigue-free working
- + Ideal for machining hard-to-reach areas
- + Particularly impressive because of their long lifetime and simple, accurate handling
- + Grit size 100 enables particularly low-burr cutting

	Shape	Type no.	Dimension	Specification	PU	
		41	699330	63x1.0x10	A100-BFM	100
			704198	63x2.0x10	A100-BFM	100
			325212	75x1.0x10	A100-BFM	100



Cut-off wheels for stainless steel





Application

- + For machining different stainless steel grades
- + For cutting thin-walled metal sheets, profiles, pipes, rods and solid material



Advantage

- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results on stainless steel
- + Particularly thin and fine-grained wheels allow short cutting times and fatigue-free working
- + Ideal for machining hard-to-reach areas
- + Particularly impressive because of their long lifetime and simple, accurate handling

	Shape	Type no.	Dimension	Specification	PU	
		41	323976	50x1.0x6	A60R-BFKA	100
			323978	50x1.0x10	A60R-BFXA	100
			323970	50x2.0x6	A46R-BFXA	100
			299269	63x1.0x10	A60R-BFXA	100
			324404	63x1.6x10	A46R-BFXA	100
			324402	63x2.0x6	A46R-BFXA	100





	Shape	Type no.	Dimension	Specification	PU
		324303	63x2.0x10	A46R-BFXA	100
		325228	75x1.0x8	A60R-BFXA	100
		299270	75x1.0x10	A60R-BFXA	100
		325222	75x1.6x10	A46R-BFXA	100
		325224	75x2.0x8	A46R-BFXA	100
		325219	75x2.0x10	A46R-BFXA	100

Clamping spike for cut-off wheels with a small diameter



Application


- + Developed for the straight grinder for clamping cut-off wheels with small diameters

We recommend

- + Note the maximum permissible speed during use

Advantage

- + Easy handling and the highest possible levels of safety for the operator
- + Made of tempered tool steel for straight grinders and flexible shafts

	Type no.	Dimension	Specification	PU
	803404	S6/H10/M10	SS171	1
	846442	S6/H6/M6	SS174	1



1.3 Cut-off wheels for petrol cutting saws





Cut-off wheels for petrol cutting saws

Cutting materials on building sites with no electricity or limited infrastructure is a common challenge. Whether the material is reinforced steel, pipes or rails, a petrol-powered cut-off grinder provides a quick and efficient solution. Petrol cutting saws are particularly popular machines for cutting large cross-sections and are frequently used tools.

TYROLIT offers the perfect tools for these varied cutting tasks. Whether for use on steel, stainless steel, stone or rails, thanks to the clear colour coding and application tips, you will always be able to find the

right product for your application and the material to be cut. TYROLIT guarantees optimum cutting results and maximum levels of safety in all situations.

Shapes



41H Cut-off wheels
(straight design)

Application recommendation



Performance level	Specification	Steel	Rails	Stone	Page
 PREMIUM	A30O-BF02A2	●			50
	A30P5BF71A2	●			50
	A30Q-BF02A2	●			50
	M85A30P4BF91A2	●			50
	A24Q-BF100		●		51
	ZZA24R-BF 100		●		52
 STANDARD	A30S-BF	●			50
	A30S-BF100	●			50
	A30S-BF RAIL		●		53
	A30S-BF RAIL100		●		53
	C30S-BF			●	54
	C30S-BF100			●	54
 BASIC	A30S-BF	●			51
	A30S-BF100	●			51
	C30S-BF			●	54
	C30S-BF100			●	54



Cut-off wheels for steel





Application

- + For machining different steel grades
- + For cutting workpieces with large diameters
- + Developed for use on manual cut-off machines with electric or petrol engines

Advantage

- + Optimised for maximum cutting ability and lifetime
- + Suitable for pure off-hand and guided off-hand applications

	Shape		Type no.	Dimension	Specification	PU
		41H	255451	300x3.5x20	A300-BF02A2	10
			75020	300x3.5x20	A30P5BF71A2	10
			307876	300x3.5x20	A30Q-BF02A2	10
			141512	300x3.5x22.23	A30Q-BF02A2	10
			514745	300x3.5x22.23	M85A30P4BF91A2	10
			363478	300x3.5x25.4	A300-BF02A2	10



Cut-off wheels for steel





Application

- + For machining different kinds of steel
- + For cutting workpieces with large cross-sections
- + Developed for use on manual cut-off machines with electric or petrol engines

Advantage

- + Suitable for pure off-hand and guided off-hand applications
- + Very good lifetime and stability
- + Also suitable for powerful (over 5 kW) stationary machines

	Shape		Type no.	Dimension	Specification	PU
		41H	384753	300x3.5x20	A30S-BF	10
			384754	300x3.5x22.23	A30S-BF	10
			384755	300x3.5x25.4	A30S-BF	10
			384756	350x4.0x20	A30S-BF100	10
			384757	350x4.0x22.23	A30S-BF100	10
			384758	350x4.0x25.4	A30S-BF100	10
			386002	400x4.5x20	A30S-BF100	10

★
BASIC

Cut-off wheels for steel





Application

- + For machining steel
- + For cutting profiles, solid material and large cross-sections
- + Developed for use on manual cut-off machines with electric or petrol engines

Advantage

- + The product offers shortened cutting times with minimal exertion
- + Good lifetime and stability
- + Also suitable for powerful (over 5 kW) stationary machines

	Shape	Type no.	Dimension	Specification	PU	
		41H	223035	300x3.5x20	A30S-BF	10
			223037	300x3.5x22.23	A30S-BF	10
			223039	300x3.5x25.4	A30S-BF	10
			223040	300x3.5x32	A30S-BF	10
			223042	350x4.0x20	A30S-BF100	10
			223043	350x4.0x22.23	A30S-BF100	10
			222045	350x4.0x25.4	A30S-BF100	10

★★★
PREMIUM

Cut-off wheels for steel





Application

- + For cutting rails
- + Developed for use on manual cut-off machines with electric or petrol engines

Advantage

- + The product offers the shortest cutting times with minimal exertion: even with humidity, cold and temperature fluctuations
- + Cleanest surfaces without any discolouration reduce rework and working times
- + Maximum lifetime and stability
- + Also suitable for powerful (over 5 kW) stationary machines

	Shape	Type no.	Dimension	Specification	PU	
		41H	676423	300x3.5x22.23	A24Q-BF100	10
			671093	350x3.8x22.23	A24Q-BF100	10
			671108	350x3.8x25.4	A24Q-BF100	10
			671090	400x4.3x22.23	A24Q-BF100	10
			676428	400x4.3x25.4	A24Q-BF100	10



Cut-off wheels

for rails for guided off-hand cutting

+ Maximum abrasiveness and lifetime



+ The zirconium aluminium oxide grain gives the wheel especially good cutting ability and improves performance for the operator

Application:

+ For guided off-hand cutting on rails



We recommend:

+ Rail cut-off wheels must be fixed to the rail using a suitable clamping device for guided off-hand cutting



Cut-off wheels for rails for guided off-hand cutting



	Shape	Type no.	Dimension	Specification	PU	
		41				
			34202534	350x3.8x20	ZZA24R-BF 100	10
			34202550	350x3.8x25.4	ZZA24R-BF 100	10
		34202561	400x4.3x25.4	ZZA24R-BF 100	10	



Cut-off wheels
For rails



Application

- + For cutting rails
- + Developed for use on manual cut-off machines with electric or petrol engines

Advantage

- + The product offers shortened cutting times with minimal exertion: even with humidity, cold and temperature fluctuations
- + Clean surfaces without any discolouration reduce rework and working times
- + Very good lifetime and stability
- + Also suitable for powerful (over 5 kW) stationary machines

	Shape		Type no.	Dimension	Specification	PU
		41H	75937	300x3.5x20	A30S-BFRAIL	10
			75938	300x3.5x22.23	A30S-BFRAIL	10
			75934	350x4.0x20	A30S-BFRAIL100	10
			75935	350x4.0x22.23	A30S-BFRAIL100	10
			75936	350x4.0x25.4	A30S-BFRAIL100	10
			355251	400x4.3x25.4	A30S-BFRAIL100	10



Cut-off wheels

For stone





Application

- + For machining stone
- + For cutting solid material and large cross-sections
- + Developed for use on manual cut-off machines with electric or petrol engines

Advantage

- + High cutting ability reduces the operator's work while still delivering the best results
- + Suitable for pure off-hand and guided off-hand applications
- + Very good lifetime and stability
- + Also suitable for powerful (over 5 kW) stationary machines

	Shape		Type no.	Dimension	Specification	PU
		41H	384759	300x3.5x20	C30S-BF	10
			384764	350x4.0x25.4	C30S-BF100	10



Cut-off wheels

For stone





Application

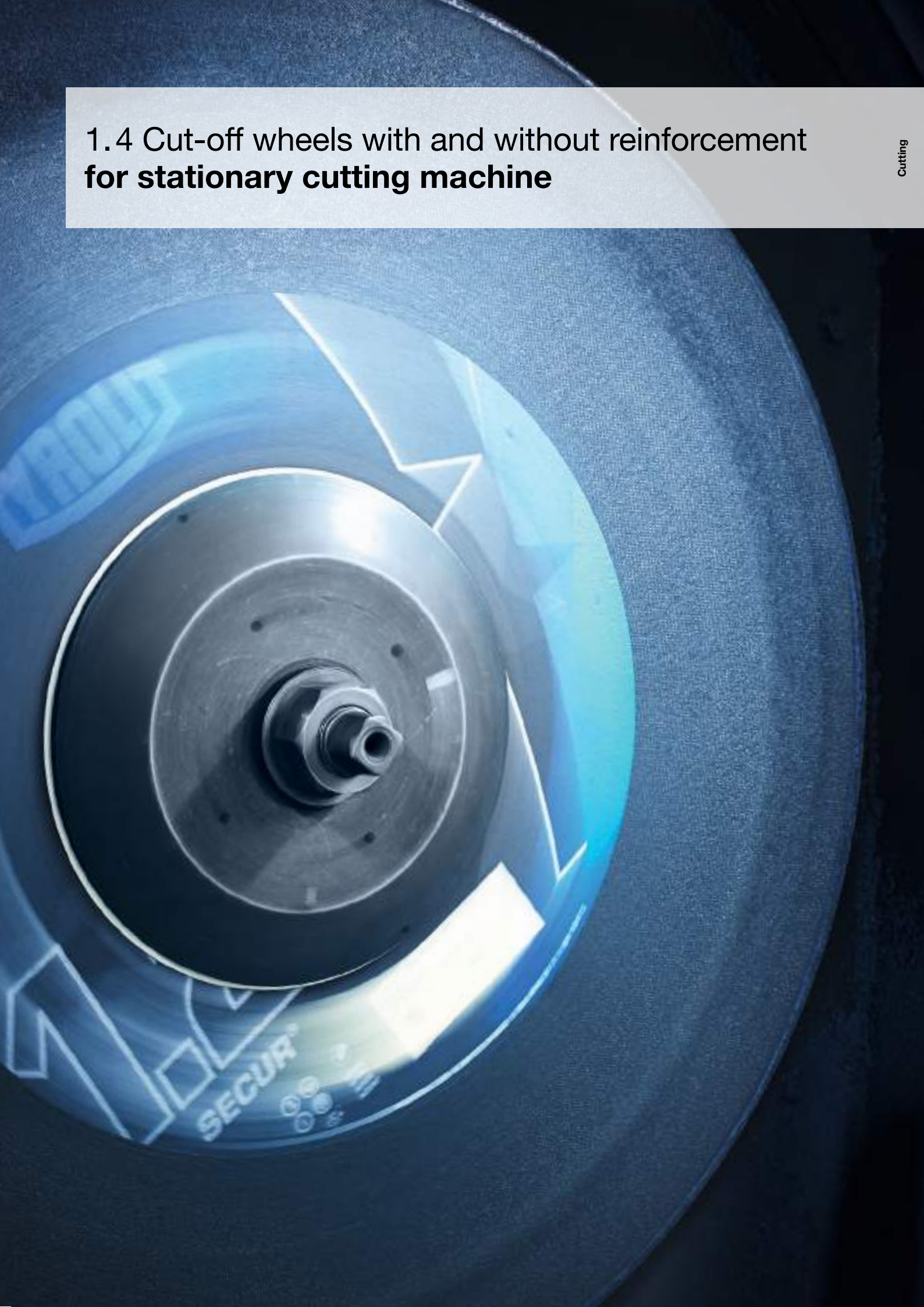
- + For machining stone
- + For cutting solid material and large cross-sections
- + Developed for use on manual cut-off machines with electric or petrol engines

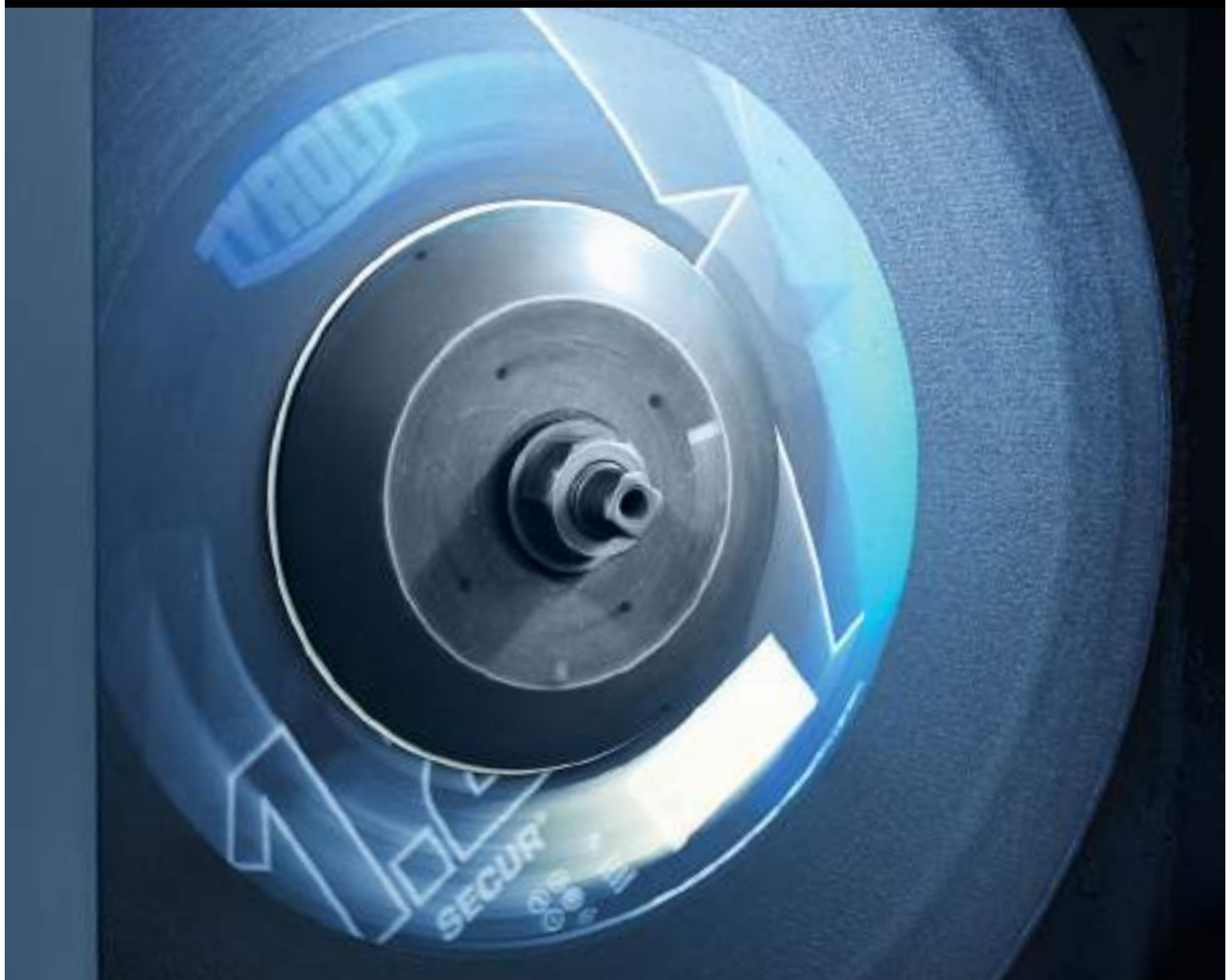
Advantage

- + Good cutting ability reduces the operator's work
- + Suitable for pure off-hand and guided off-hand applications
- + Good lifetime and stability

	Shape		Type no.	Dimension	Specification	PU
		41H	223129	300x3.5x20	C30S-BF	10
			223132	300x3.5x25.4	C30S-BF	10
			223134	350x4.0x20	C30S-BF100	10
			223136	350x4.0x25.4	C30S-BF100	10

1.4 Cut-off wheels with and without reinforcement for stationary cutting machine





Cut-off wheels for stationary cutting machines

Stationary cutting machines are most commonly used in workshops. They ensure precision cutting of all materials, regardless of diameter.


TYROLIT offers two types of cut-off wheel for this application. Firstly, cut-off wheels with reinforcement that can be used to cut profiles, pipes and solid material. Secondly, non-reinforced cut-off wheels for laboratory cutting, for cutting and saw sharpen-

ing, and for cutting high speed steel.


Whether for use on steel, stainless steel, stone or rails, thanks to the clear colour coding and application tips, you will always be able to find the right product for your application

and the material to be cut. TYROLIT guarantees optimum cutting results and maximum levels of safety in all situations.


Shape




41H Cut-off wheels
(straight design)



42 Cut-off wheel
(depressed-centre design)






1A1R Cut-off wheels
with continuous rim



41N non-reinforced
cut-off wheel

Application recommendation



Performance level	Specification	Steel	Stainless steel	NF metals	Stone	Cast iron	Page
 PREMIUM	... BF71 ...	●					58
	... BF02 ...	●					58
	... BF97 ...		●				60
	... BF68 ...		●				60
	... BFXM ...		●				60
	... BF98 ...		●				60
	... BF59 ...			●			61
	... BF33 ...				●		61
	DC CI					●	61
 STANDARD	A46S-BF	●					59
 BASIC	A46S-BF	●					59



Cut-off wheels for steel



Application


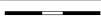
- + For machining different steel grades
- + For cutting workpieces with large cross-sections, solid material and profiles
- + Perfect for use for traverse and chop cuts on stationary cutting machines

Advantage

- + Especially rough side surfaces thanks to a special pressing process, as a result low lateral friction and no discolouration on the workpiece
- + The product offers maximum lifetime and cutting ability

We recommend

- + Note maximum permissible peripheral speed (80 m/s and 100 m/s)

	Shape	Type no.	Dimension	Specification	PU	
		41	779426	300x2.5x25.4	A36N4BF71A2	10
		643371	300x3.5x25.4	A30N-BF02M	10	
		140022	300x3.5x30	A30Q-BF02M	10	
		151301	300x3.5x32	A30Q-BF02M	10	
		615549	350x2.5x25.4	A46N4BF71M	10	
		779428	350x2.5x25.4	A36N4BF71A2	10	
		408229	350x3.5x25.4	A30N-BF02M	10	
		309469	350x3.5x25.4	A24P-BF02M	10	
		633286	350x4.0x25.4	A30N-BF02M	10	
		780938	400x3.5x25.4	A36N5BF71M	10	
		639076	400x4.0x25.4	A30N-BF02M	10	
		396678	400x4.0x40	A30N-BF02M	10	
		196324	400x4.0x32	A30Q-BF02M	10	
		136777	400x4.0x40	A30Q-BF02M	10	
		272894	400x4.0x40	A24P-BF02M	10	
		630537	400x4.0x51	A30P5BF71M100	10	
		514338	500x5.5x40	A24O4BF71M100	10	
		722981	500x5.0x25.4	A24Q4BF71M	10	
		647259	500x5.0x40	M101A24O4BF71M	10	
		647260	600x6.0x60	M101A24O4BF71M2	10	



Cut-off wheels for steel



Application



- + For machining different steel grades
- + For cutting workpieces with large cross-sections, solid material and profiles
- + Perfect for use for chop cuts on stationary cutting machines

Advantage

- + Especially rough side surfaces thanks to a special pressing process, as a result low lateral friction and no discolouration on the workpiece
- + The product offers very good cutting ability and lifetime

We recommend

- + Note maximum permissible peripheral speed (80 m/s and 100 m/s)

	Shape		Type no.	Dimension	Specification	PU
		41	390531	300x2.5x25.4	A46S-BF	10
			390532	350x2.8x25.4	A46S-BF	10



Cut-off wheels for steel





Application

- + For machining different steel grades
- + For cutting workpieces with large cross-sections, solid material and profiles

Advantage

- + Especially rough side surfaces thanks to a special pressing process, as a result low lateral friction and no discolouration on the workpiece
- + The product offers good cutting ability and lifetime

	Shape		Type no.	Dimension	Specification	PU
		41	223032	300x2.5x25.4	A46S-BF	10
			223033	350x2.8x25.4	A46S-BF	10



Cut-off wheels for stainless steel



Application

- + For machining different stainless steel grades
- + For cutting workpieces with large cross-sections, solid material and profiles
- + Perfect for use for traverse and chop cuts on stationary cutting machines

Advantage

- + Especially rough side surfaces thanks to a special pressing process, as a result low lateral friction and no discolouration on the workpiece
- + The product offers maximum cutting ability and lifetime
- + The chemical purity of the product prevents corrosion for the best results on stainless steel

We recommend

- + Note maximum permissible peripheral speed (80 m/s and 100 m/s)

	Shape	Type no.	Dimension	Specification	PU	
		41	559743	300x2.5x25.4	A46N4BF68M	10
			66490	300x3.0x25.4	A24O-BFXM	10
			519232	350x2.5x25.4	A46N4BF68M	10
			66491	350x3.5x25.4	A24O-BFXM	10
			538503	400x2.5x25.4	A46N4BF68M	10
			551616	400x3.0x25.4	A46N4BF68M	10
			66493	400x4.0x40	A24O-BFXM	10
			460744*	500x5.0x40	A24P4-BF97M	10
			793077*	500x5.5x25.4	A241P4-BF98M	10
				42	647389*	500x6.0x60
		647377*		600x7.0x60	A24O4-BF97M2	10



Cut-off wheels for nonferrous metals



Application

- + For cutting different grades of nonferrous metals such as aluminium, aluminium bronze, aluminium base alloys, copper, bronze, brass, nickel silver and titanium
- + For workpieces with large cross-sections, solid material and profiles
- + Perfect for use for traverse and chop cuts on stationary cutting machines



Advantage

- + New specifications prevent clogging of the grinding wheel
- + Especially rough side surfaces thanks to a special pressing process, as a result low lateral friction and very low heat build-up on the workpiece
- + The product offers maximum cutting ability and lifetime

We recommend

- + Note maximum permissible peripheral speed (80 m/s and 100 m/s)



	Shape		Type no.	Dimension	Specification	PU
		41	58157	300x3.5x25.4	A30P4BF59M	10
			309471	350x3.5x25.4	A30O4BF59M	10
			800035	400x4.0x40	A30O4BF59M	10
			422374	500x5.5x40	A24N5BF59M2	10

★★★ **Cut-off wheels**
for stone



Application



- + For machining stone and common building materials
- + Perfect for use for traverse and chop cuts on stationary cutting machines

Advantage

- + The product reduces the operator's work while still delivering the best results on large cross-sections
- + Maximum cutting ability and lifetime

We recommend

- + Note maximum permissible peripheral speed (80 m/s and 100 m/s)

	Shape		Type no.	Dimension	Specification	PU
		41	1649	350x4.0x25.4	C20O4BF33M	10
			28692	400x4.0x30	C20O4BF33M	10

FOCUR SA Cut-off wheels
for cast iron





Application

- + For machining cast iron

Advantage

- + DIN 13236 safety norm
- + Highest aggressiveness with unbelievable lifetime thanks to an innovative production technology and the use of diamond grains
- + Up to 25 times higher lifetime compared to vitrified bonded tools

	Shape		Type no.	Dimension	Specification	PU
		UC3	102814	300x3.0x40	DC CI	1
			102831	350x3.5x40	DC CI	1
			102850	400x4.0x60	DC CI	1
			102859	600x5.0x60	DC CI	1



Laboratory cut-off wheels for steel and stainless steel



Application

- + For machining different steel and stainless steel grades
- + For wet cutting laboratory samples using traverse and chop cuts

We recommend

- + The workpiece must be fixed during machining and the wheel must not be exposed to lateral load
- + Soft for 60.5-72.3 HRC
- + Medium for 22.0-60.5 HRC
- + Hard for 22.0 HRC
- + Note maximum operating speed of 50 m/s

Advantage

- + Cuts samples in a laboratory without structural alterations, workpiece deformation or cracks
- + Maximum performance with greatly reduced tool wear
- + Clean cutting quality

	Shape	Type no.	Dimension	Specification	Classification	PU	
		41N	167215	230x1.5x32	A80-BM50	Medium	10
		167207	250x1.5x32	A80-BH50	Hard	10	
		167205	250x1.5x32	A80-BM50	Medium	10	
		165940	250x1.5x32	A80-BS50	Soft	10	
		596848	250x1.8x32	89A60L5B17/50	Very easy cutting	10	
		167226	300x2.0x32	A80-BM50	Medium	10	
		597041	300x2.0x32	89A60L5B17/50	Very easy cutting	10	
		167334	350x2.5x32	A80-BM50	Medium	10	
		167333	350x2.5x32	A80-BS50	Soft	10	
		597383	350x2.5x32	89A60J5B17/50	Very easy cutting	10	
		167339	400x3.0x32	A80-BM50	Medium	10	



Laboratory cut-off wheels for steel and HSS



Application


- + For steel and HSS applications
- + For dry cutting on stationary machines and automatic saw sharpening machines

Advantage

- + Maximum performance with greatly reduced tool wear

We recommend

- + The workpiece must be fixed during machining and the wheel must not be exposed to lateral load
- + Note maximum operating speed of 63 m/s

Shape	Type no.	Dimension	Specification	PU	
	41N	529392	100x1.0x20	A80N4B2	10
		202159	100x1.0x20	A80N4B68	10
		46633	100x1.0x20	A80O4B43	10
		1197	120x2.0x51	A60O5B43	10
		25590	125x1.0x20	A60O5B43	10
		282079	125x1.0x20	A60N5B68	10
		282110	150x1.0x20	A60N5B68	10
		1211	150x1.0x20	A60O5B43	10
		591103	150x1.0x20	A60O5B68	10
		282111	150x1.0x20	A80N5B68	10
		13695	150x1.0x20	A80O5B43	10
		594360	150x1.0x20	A80O5B68	10
		75306	150x1.0x30	97A54P5B71	10
		39110	150x1.0x32	A80O5B43	10
		8833	150x1.5x20	A60O5B43	10
		282085	150x1.5x20	A60N5B68	10
		591104	150x1.5x20	A60O5B68	10
		79957	150x1.5x20	A80O5B43	10
		662430	150x1.5x32	A80N5B68	10
		42808	150x1.6x20	A60P4B43	10
		227165	150x1.6x32	A60O5B43	10
		58158	150x1.6x32	A60P4B43	10
		15685	150x2.0x20	A60O5B43	10
		594362	150x2.0x20	A60O5B68	10
		675283	180x1.0x32	A60O5B43	10
		493199	180x1.6x32	A60O5B68	10
		282113	200x1.5x20	A60N5B68	10
		1254	200x1.5x20	A60O5B43	10





Laboratory cut-off wheels for steel and HSS



	Shape	Type no.	Dimension	Specification	PU	
		41N	282114	200x1.5x32	A60N5B68	10
		6718	200x1.5x32	A60O4B43	10	
		42809	200x1.6x25.4	A60P4B43	10	
		230691	200x1.6x32	A60M4B43	10	
		205822	200x1.6x32	A60P4B43	10	
		6710*	200x2.0x20	A60N4B2	10	
		96205*	200x2.0x32	A60N4B2	10	
		62874	200x2.0x32	A60N4B43	10	
		12970*	200x3.0x32	A60N4B2	10	
		863284	200x3.0x32	A60P4B68	10	
		599666	230x1.5x22.2	89A60N4B68	10	
		373520	250x1.5x25.4	A60O5B71	10	
		834839	250x1.6x32	89A80L4B43	10	
		549002	300x2.0x31.75	89A80L4B43	10	
		60572	300x2.0x32	A80O5B71	10	
		220394	400x2.8x25.4	89A60L4B59	10	

Cutting rotating tools for HSS



Application

- + CBN high-performance cut-off wheel for HSS applications
- + For wet cutting on stationary machines

We recommend

- + Maximum operating speed of 50 m/s with manual or automatic feed

Advantage

- + Perfect cutting performance thanks to innovative bond system and appropriate grain quality

	Shape	Type no.	Dimension	U-X	Specification	PU	
		1A1R	788700	125x1.0x20	1-5	B126 C75 B	1
		164485	125x1.0x20	1-5	B151 C100 B	1	
		494701	150x1.0x20	1-5	B151 C100 B	1	

*For saw sharpening only.

Cutting rotating tools for tungsten carbide



Application

- + Diamond high-performance cut-off wheel for tungsten carbide applications
- + For wet cutting on stationary machines

Advantage

- + Perfect cutting performance thanks to innovative bond system and appropriate grain quality

We recommend

- + Maximum operating speed of 50 m/s with manual or automatic feed

	Shape	Type no.	Dimension	U-X	Specification	PU	
		1A1R	157800	75x0.8x20	0.8-5	D126 C75 B	1
			119395	100x0.8x20	0.8-5	D126 C100 B	1
			100660	100x1.0x20	1-5	D126 C100 B	1
			101000	125x1.0x20	1-5	D126 C100 B	1
			148132	150x1.0x20	1-5	D126 C100 B	1
			278979	150x1.0x20	1-5	D151 C100 B	1
			667995	200x1.0x22	1-5	D126 C100 B	1
			603284	200x1.2x30	1.2-7	D151 C100 B	1





Catalogue 21 Grinding

Grinding information	68
Explanation of labels	68
Specification	69
Machine pictograms	69
Angle grinders	71
2.1 Rough grinding wheels	72
2.2 RONDELLER®	91
2.3 Cup wheels	95
Straight grinders	101
2.4 Grinding wheels	102
Accessories	106
2.5 Mounted points	107
Resin mounted points	111
Ceramic mounted points	113
Elastic mounted points	117
2.6 Tungsten carbide burrs	119

Specific information Resin-bonded grinding wheels

Grinding wheels product label



Colour codes

Label	Steel	2in1 / 3in1	INOX	Nonferrous metals	Cast iron	Stone
Colour code	BLUE	BLUE	RED	ORANGE	PURPLE	GREEN
Material	Steel	2in1 = Steel and stainless steel, 3in1 = Steel, stainless steel and cast iron	Stainless steel	Aluminium, copper, zinc, brass, bronze, stone	Cast materials	Stone

Specification

A 24 Q-BFX

	X	TYROLIT internal designation	
	F	Fibre-reinforced: fibre glass (safety, lateral load, operating speed)	
	B	Bond: V = vitrified bonded, B = resin bonded, E = elastic bonded, G = galvanic bonded	
	Q	Designation of hardness: N = soft, T = hard	
24		Grit size indication in mesh (sieve size per inch)	grit size in mesh
		14-36	coarse
		46-60	medium
		80-220	fine
		800-1 200	very fine
A	Abrasive: A = regular aluminium oxide, C = silicon carbide, ZA = zirconia alumina, CA = ceramic		

Machines



Angle grinder



Pneumatic angle grinder



Angle grinder with cup wheel



Straight grinder



2.1 Rough grinding wheels for angle grinders





Rough grinding wheels for angle grinders

Working with an angle grinder is one of the most important processes in the handicraft and industrial sectors for machining all types of metals. TYROLIT offers the perfect rough grinding wheels for convenient and quick use with small and large angle grinders.

The TYROLIT range of rough grinding wheels meets the most stringent demands for cost-effective working, high stock removal rates, simple handling and above-average lifetimes. Our high-performance rough grinding wheels deliver the best results in both standard and special applications.

Continuous developments, such as the introduction of the “Comfort

Start” edge, with which every user can achieve optimum results right from the start, make our rough grinding wheels one of the most advanced tools in the sector.

Working safety and comfort, provided for example by the vibration-damped VIBSTAR rough grinding wheel and the noise reducing SILENTIO, are also of great importance to us.

All TYROLIT rough grinding wheels are manufactured and tested in accordance with EN12413. Uniform colour coding helps you to find the appropriate product for your application.

Shapes



27 rough grinding wheel



27V rough grinding wheel (VIBSTAR vibration-damped)



27SI rough grinding wheel (SILENTIO noise-reduced)

Application recommendation



Rating System

Shapeance Level	Design	Grain	Steel	Stainless steel	NF metals	Cast iron	Stone	Pages	Aggressiveness	Lifetime	Performance* (0-100)
★★★ PREMIUM	LONGLIFE Z-MAX	ZA	●					74, 75			80
	CERABOND X	CA	●	●				76			100
	2in1	A	●	●				77			55
	X-LOCK 2in1	A	●	●				78			55
	FASTCUT	A	●	●				79			55
	ATOMIC GRIND	ZA	●	●		●		81			50
	INOX	A			●			81			65
	VIBSTAR	A			●			82			65
	SILENTIO	A			●			83			65
	ALU N	A				●		84, 85			75
	ALU L	A				●		85			75
	T-GRIND	ZA	●				●	85			50
	FOCUR EXTRA	ZA					●	86			
	FOCUR EXTRA VIBSTAR	ZA					●	87			
★★ STANDARD	STEEL	A	●					75			35
	INOX	A		●				84			40
	STONE	C					●	88, 89			
★ BASIC	2in1	A	●	●				79, 80			25
	FASTCUT	A	●	●				80			25
	PIPELINER	A	●	●				80			25
	STONE	C					●	89			
	TOUCH	WA			●	●		89			20

*The performance indicates the overall performance of the product in comparison to products with the same material suitability.



LONGLIFE Z-MAX rough grinding wheels

for steel

+ High-performance rough grinding wheel with LONGLIFE technology for maximum lifetime

+ Combination of zirconia alumina and innovative bond system offers unprecedented abrasiveness



+ Comfort Start ensures a comfortable start when grinding and increases the level of working comfort

Application:

+ For surface and edge grinding and for welding in demanding applications on different steel grades

We recommend:

- + 4 mm thickness for peripheral grinding
- + 7 mm thickness for rough grinding
- + 8 mm and 10 mm thickness for rough grinding with enhanced lifetime
- + Best results when used on powerful angle grinders



LONGLIFE Z-MAX rough grinding wheels

for steel





	Shape	Type no.	Dimension	Specification	PU
	27	34353701	115x4.0x22.23	ZA24S-BFX	10
		34353683*	115x7.0x22.23	ZA24S-BFX	10
		34353702	125x4.0x22.23	ZA24S-BFX	10
		34353684*	125x7.0x22.23	ZA24S-BFX	10
		34353704	150x4.0x22.23	ZA24S-BFX	10

* With Comfort Start edge





	Shape	Type no.	Dimension	Specification	PU
	 27	34353686*	150x7.0x22.23	ZA24S-BFX	10
		34353705	178x4.0x22.23	ZA24S-BFX	10
		34353687*	178x7.0x22.23	ZA24S-BFX	10
		34353688*	178x8.0x22.23	ZA24S-BFX	10
		34353706	230x4.0x22.23	ZA24S-BFX	10
		34353689*	230x7.0x22.23	ZA24S-BFX	10
		34353690	230x8.0x22.23	ZA24S-BFX	10



Rough grinding wheels for steel





Application

- + For surface and edge grinding on different steel grades

Advantage

- + Bond system tailored to steel with very good abrasiveness and lifetime
- + Comfort Start ensures a comfortable start when grinding and increases the level of working comfort

	Shape	Type no.	Dimension	Specification	PU
	 27	367377*	115x6.0x22.23	A24S-BF	10
		367771*	125x6.0x22.23	A24S-BF	10
		367772*	150x6.0x22.23	A24S-BF	10
		367773*	178x6.0x22.23	A24S-BF	10
		367775*	230x6.0x22.23	A24S-BF	10

* With Comfort Start edge



CERABOND X rough grinding wheels

for steel and stainless steel

+ Fastest grinding thanks to the structure of the ceramic grain used

+ Consistent abrasiveness thanks to the combination of the new bond system and ceramic grain



+ Maximum lifetime and therefore fewer wheel changes for the operator

Application:

+ Ideal for grinding hard steel and stainless steel surfaces, for example edge grinding, surface grinding or removing welding seams

We recommend:

+ 4 mm thickness for peripheral grinding
 + 7 mm thickness for rough grinding



CERABOND X rough grinding wheel

For steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		27	34401827	115x4.0x22.23	CA24Q-BFP	5
			34401830	115x7.0x22.23	CA24Q-BFP	5
			34401841	125x4.0x22.23	CA24Q-BFP	5
			34387126	125x7.0x22.23	CA24Q-BFP	5
			34401843	150x4.0x22.23	CA24Q-BFP	5
			34401847	150x7.0x22.23	CA24Q-BFP	5
			34401849	178x4.0x22.23	CA24Q-BFP	5
			34401850	178x7.0x22.23	CA24Q-BFP	5
			34401852	230x4.0x22.23	CA24Q-BFP	5
			34387127	230x7.0x22.23	CA24Q-BFP	5



2in1 rough grinding wheels for steel and stainless steel



Application


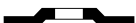
- + For demanding applications on different steel and stainless steel grades

We recommend

- + 4 mm thickness for peripheral grinding
- + 6 and 7 mm thickness for rough grinding
- + 8 mm thickness for rough grinding with enhanced lifetime

Advantage

- + Bond with coarse grain and a new layer composition enables quick and convenient use with minimal exertion
- + Comfort Start ensures a comfortable start when grinding and increases the level of working comfort
- + Maximum abrasiveness and lifetime

	Shape	Type no.	Dimension	Specification	PU	
		27	5270	75x6.0x9.5	A30Q-BFX	10
		23875	100x4.0x16	A30Q-BFX	10	
		5287	115x4.0x22.23	A30Q-BFX	10	
		34046120*	115x7.0x22.23	A24Q-BFX	10	
		5308	125x4.0x22.23	A30Q-BFX	10	
		34046131*	125x7.0x22.23	A24Q-BFX	10	
		734378	150x4.0x22.23	A30Q-BFX	10	
		34046132*	150x7.0x22.23	A24Q-BFX	10	
		5349	178x4.0x22.23	A30Q-BFX	10	
		34046133*	178x7.0x22.23	A24Q-BFX	10	
		34046135*	178x8.0x22.23	A24Q-BFX	10	
		5406	230x4.0x22.23	A30Q-BFX	10	
		34046134*	230x7.0x22.23	A24Q-BFX	10	
		34046136*	230x8.0x22.23	A24Q-BFX	10	

* With Comfort Start edge



X-LOCK rough grinding wheels

for steel and stainless steel

+ New X-LOCK clamping system for fast wheel changes

+ Secure mounting thanks to click noise during clamping



+ Maximum abrasiveness and lifetime

+ Comfort Start ensures a comfortable start when grinding and increases the level of working comfort



Application:

+ For demanding applications on different steel and stainless steel grades with new Bosch angle grinders



X-LOCK rough grinding wheels for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		27	34428030	115x7.0x22.23/XL	A30Q-BFP	10
			34428041	125x7.0x22.23/XL	A30Q-BFP	10



FASTCUT rough grinding wheels for steel and stainless steel



Application

- + For demanding applications on different steel and stainless steel grades

We recommend

- + 7 mm thickness for rough grinding
- + 8 mm and 10 mm thickness for rough grinding with enhanced lifetime

Advantage

- + FASTCUT technology for maximum cutting ability and stock removal
- + Comfort Start ensures a comfortable start when grinding and increases the level of working comfort
- + Universal use

	Shape	Type no.	Dimension	Specification	PU
		27			
		5293*	115x7.0x22.23	A30P-BFX	10
		5313*	125x7.0x22.23	A30P-BFX	10
		5330*	150x7.0x22.23	A30P-BFX	10
		1421*	178x7.0x22.23	A30P-BFX	10
		5382*	178x8.0x22.23	A30P-BFX	10
		5412*	230x7.0x22.23	A30P-BFX	10
5428*	230x8.0x22.23	A30P-BFX	10		



2in1 rough grinding wheels for steel and stainless steel



Application

- + For surface and edge grinding on different steel and stainless steel grades, especially in pipeline construction and peripheral grinding.

We recommend

- + 4 mm thickness for peripheral grinding
- + 6 mm thickness for rough grinding
- + 8 mm thickness for rough grinding with enhanced lifetime

Advantage

- + Fast and convenient work with minimal exertion
- + Universal use
- + Comfort Start ensures a comfortable start when grinding and increases the level of working comfort

	Shape	Type no.	Dimension	Specification	PU
		27			
		34257184	115x4.0x22.23	A30Q-BF	10
		222858*	115x6.0x22.23	A30Q-BF	10
		34257187	125x4.0x22.23	A30Q-BF	10
		222860*	125x6.0x22.23	A30Q-BF	10
		34176633	150x4.0x22.23	A30Q-BF	10
		222861*	150x6.0x22.23	A30Q-BF	10

* With Comfort Start edge



2in1 rough grinding wheels
for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU
		34257201	178x4.3x22.23	A30Q-BF	10
		222863*	178x6.0x22.23	A30Q-BF	10
		222868*	178x8.0x22.23	A30Q-BF	10
		34257206	230x4.3x22.23	A30Q-BF	10
		222865*	230x6.0x22.23	A30Q-BF	10
		222870*	230x8.0x22.23	A30Q-BF	10



FASTCUT rough grinding wheels
for steel and stainless steel



Application

- + For surface and edge grinding on different steel and stainless steel grades

Advantage

- + FASTCUT technology for high stock removal in a short time
- + Universal use
- + Long lifetime

	Shape	Type no.	Dimension	Specification	PU
		34468716*	115x6.0x22.23	A30P-BFB	10
		34468717*	125x6.0x22.23	A30P-BFB	10
		34468718*	150x6.0x22.23	A30P-BFB	10
		34468719*	178x6.0x22.23	A30P-BFB	10
		34468771*	230x6.0x22.23	A30P-BFB	10



PIPELINER rough grinding wheels
for steel and stainless steel



Application

- + For use on different steel and stainless steel grades
- + Developed for welding applications in pipeline construction

Advantage

- + Rough grinding wheels consist of only a single layer of coarse grain, and therefore ensure even wear on the workpiece
- + Good stock removal and lifetime

	Shape	Type no.	Dimension	Specification	PU
		734693	178x7.0x22.23	A30Q-BF PIPE	10
		34307835	230x7.0x22.23	A30Q-BF PIPE	10

* With Comfort Start edge



3in1 rough grinding wheels for steel, stainless steel and cast iron



Application

- + For demanding applications on steel, stainless steel and cast iron
- + Chemically pure and therefore especially suited to use in nuclear power stations

Advantage

- + This tool does not contain iron, sulphur, chlorine or fluorine, and leaves workpiece surfaces in a neutral condition
- + Maximum abrasiveness enables high stock removal rates in the shortest time
- + Above-average lifetime

	Shape	Type no.	Dimension	Specification	PU	
		27	466744*	115x7.0x22.23	ZA30Q-BFR	10
		466749*	125x7.0x22.23	ZA30Q-BFR	10	
		466754*	178x7.0x22.23	ZA30Q-BFR	10	
		466762*	230x7.0x22.23	ZA30Q-BFR	10	



Rough grinding wheels for stainless steel



Application

- + For a host of grinding applications on different stainless steel grades

We recommend

- + 4 mm thickness for peripheral grinding
- + 7 mm thickness for rough grinding

Advantage

- + Special bond system for stainless steel with good abrasiveness and long lifetime
- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results on stainless steel
- + Comfort Start ensures a comfortable start when grinding and increases the level of working comfort

	Shape	Type no.	Dimension	Specification	PU	
		27	117064	115x4.0x22.23	A30R-BFX	10
		117065*	115x7.0x22.23	A30R-BFX	10	
		117068	125x4.0x22.23	A30R-BFX	10	
		117070*	125x7.0x22.23	A30R-BFX	10	
		117071	178x4.0x22.23	A30R-BFX	10	
		117072*	178x7.0x22.23	A30R-BFX	10	
		117073	230x4.0x22.23	A30R-BFX	10	
		117074*	230x7.0x22.23	A30R-BFX	10	

* With Comfort Start edge



VIBSTAR rough grinding wheels

for stainless steel

+ VIBSTAR vibration damping developed and patented by TYROLIT reduces vibrations by up to 50%



+ VIBSTAR technology helps to prevent occupational illnesses such as muscular and skeletal damage, neurological illnesses and circulatory problems

+ Vibration damping ensures a longer machine lifetime

Application:

+ For demanding applications on different stainless steel grades



VIBSTAR rough grinding wheels for stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		27V	474524*	178x7.0x22.23	A30R-BFX	10
			474526*	230x7.0x22.23	A30R-BFX	10

* With Comfort Start edge



SILENTIO rough grinding wheels

for stainless steel

+ SILENTIO technology reduces noise generation by 10 decibels, thereby cutting the perceived noise by 50%



+ Maximum stock removal and long lifetime

+ Noise reduction prevents lasting physical harm and increases comfort while working

Application:

+ For surface and edge grinding on different stainless steel grades



SILENTIO rough grinding wheels for stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		27SI	515988*	178x7.0x22.23	A30R-BFX	10
			515989*	230x8.0x22.23	A30R-BFX	10

* With Comfort Start edge



Rough grinding wheels for stainless steel



Application

- + For a host of grinding applications on different stainless steel grades

We recommend

- + 6 mm thickness for rough grinding
- + 8 mm thickness for rough grinding with enhanced lifetime

Advantage

- + Bond system specially tailored to stainless steel with very good abrasiveness and lifetime
- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for very good results on stainless steel
- + Comfort Start ensures a comfortable start when grinding and increases the level of working comfort

	Shape		Type no.	Dimension	Specification	PU
		27	367545*	115x6.0x22.23	A30R-BFINOX	10
			367548*	125x6.0x22.23	A30R-BFINOX	10
			367550*	150x6.0x22.23	A30R-BFINOX	10
			367551*	178x6.0x22.23	A30R-BFINOX	10
			367554*	230x6.0x22.23	A30R-BFINOX	10
			367556*	230x8.0x22.23	A30R-BFINOX	10



Rough grinding wheels for nonferrous metals



Application

- + For demanding applications on nonferrous metals such as aluminium, aluminium bronze, aluminium base alloys, copper, bronze, brass, nickel silver and titanium

We recommend

- + Hard N grade for edge grinding
- + Softer cutting L grade for surface grinding
- + 4 mm thickness for peripheral grinding
- + 7 mm thickness for rough grinding

Advantage

- + No clogging of the wheel thanks to specially developed bond for sustained abrasiveness and minimal heat generation
- + Even at low pressure, the wheel achieves extremely high abrasiveness

	Shape		Type no.	Dimension	Specification	PU
		27	5289	115x4.0x22.23	A36N-BFX	10
			5295*	115x7.0x22.23	A36N-BFX	10
			636789	125x4.0x22.23	A36N-BFX	10
			5316*	125x7.0x22.23	A36N-BFX	10

* With Comfort Start edge





	Shape	Type no.	Dimension	Specification	PU
	27	5365*	178x7,0x22,23	A36N-BFX	10
		46586	230x4,0x22,23	A36N-BFX	10
		5416*	230x7,0x22,23	A36N-BFX	10
		576049*	115x7,0x22,23	A36L-BFX	10
		647549*	125x7,0x22,23	A36L-BFX	10
		576050*	178x7,0x22,23	A36L-BFX	10
		647550*	230x7,0x22,23	A36L-BFX	10



T-GRIND rough grinding wheels
for steel and cast iron



Application

- + For demanding applications on steel and cast iron
- + For use on pneumatic and high-frequency grinders

Advantage

- + Specially developed to meet the demanding requirements of turbine and vane-type pneumatic grinders
- + Maximum lifetime and cutting ability
- + Comfort Start ensures a comfortable start when grinding and increases the level of working comfort

	Shape	Type no.	Dimension	Specification	PU
	27	701518*	125x7.0x22.23	ZZA24T-BFK	10
		701439*	178x7.0x22.23	ZZA24T-BFK	10
		701515*	230x7.0x22.23	ZZA24T-BFK	10

* With Comfort Start edge



PREMIUM

FOCUR EXTRA rough grinding wheels for cast iron



Application



- + For demanding applications on cast iron and all cast materials, for both surface grinding as well as deburring and smoothing work

Advantage

- + High-quality zirconia alumina for maximum stock removal
- + Bond specially tailored to cast iron enables maximum lifetime

We recommend

- + ZA24N-BFX: for surface grinding
- + ZA24P-BFX: the universal type
- + ZZA24R-BFX: the deburring specialist
- + ZZA24S-BFX: for long lifetimes
- + 4 mm thickness for peripheral grinding
- + 7 mm thickness for rough grinding

	Shape		Type no.	Dimension	Specification	PU	
		27	233756*	125x7.0x22.23	ZA24N-BFX	10	
			233757	178x4.0x22.23	ZA24N-BFX	10	
			233759*	178x7.0x22.23	ZA24N-BFX	10	
			233762*	230x7.0x22.23	ZA24N-BFX	10	
				233765*	125x7.0x22.23	ZA24P-BFX	10
				233768*	178x7.0x22.23	ZA24P-BFX	10
				233771*	230x7.0x22.23	ZA24P-BFX	10
				233773*	125x7.0x22.23	ZZA24R-BFX	10
				233774	178x4.0x22.23	ZZA24R-BFX	10
				233776*	178x7.0x22.23	ZZA24R-BFX	10
				233777	230x4.0x22.23	ZZA24R-BFX	10
				233778*	230x7.0x22.23	ZZA24R-BFX	10
				929017	178x4.0x22.23	ZZA24S-BFX	10
				929020*	230x7.0x22.23	ZZA24S-BFX	10

* With Comfort Start edge



FOCUR EXTRA VIBSTAR rough grinding wheels

for cast iron

+ VIBSTAR vibration damping developed and patented by TYROLIT enables especially gentle grinding

+ Multi-layer composition and the permanently attached plastic flange reduce vibrations by up to 50%



+ VIBSTAR technology helps to prevent occupational illnesses such as muscular and skeletal damage, neurological illnesses and circulatory problems

Application:

+ For demanding applications on cast iron and all cast materials, for surface grinding as well as for deburring and smoothing work

We recommend:

- + ZA24N-BFX: for surface grinding
- + ZA24P-BFX: the universal type
- + ZZA24R-BFX: the deburring specialist
- + ZZA24S-BFX: for long lifetimes



FOCUR EXTRA VIBSTAR rough grinding wheels for cast iron



	Shape	Type no.	Dimension	Specification	PU	
		27V	474527*	178x7.0x22.23	ZA24N-BFX	10
		474532*	230x7.0x22.23	ZA24N-BFX	10	
		474533*	230x7.0x22.23	ZA24P-BFX	10	
		474534*	230x7.0x22.23	ZZA24R-BFX	10	
		474531*	178x7.0x22.23	ZZA24S-BFX	10	
		474535*	230x7.0x22.23	ZZA24S-BFX	10	

* With Comfort Start edge

★★ **FOCUR rough grinding wheels**
for cast iron


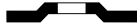


Application

- + For demanding applications on cast iron and all cast materials, for both surface grinding as well as deburring and smoothing work

Advantage

- + Very good balance between cutting ability and lifetime
- + Even with low pressure, the wheel is abrasive and easy to handle

	Shape		Type no.	Dimension	Specification	PU
		27	154544*	178x7.0x22.23	ZA300-BF	10
			154545*	230x7.0x22.23	ZA300-BF	10

★ **Rough grinding wheels**
for cast iron


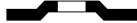


Application

- + Suitable for use on all cast materials, especially for smoothing cast materials

Advantage

- + Good balance between cutting ability and lifetime
- + Even with low pressure, the wheel is abrasive and easy to handle

	Shape		Type no.	Dimension	Specification	PU
		27	567352*	178x8.0x22.23	AC30N-BF	10
			567353*	230x8.0x22.23	AC30N-BF	10

★★ **Rough grinding wheels**
for stone



Application


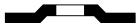
- + For surface and edge grinding on all stone hardnesses, natural and artificial stone as well as concrete

Advantage

- + Fast and convenient work with minimal exertion
- + Silicon carbide makes it especially suitable for stone and short-chipping materials
- + Very good lifetime and abrasiveness

* With Comfort Start edge



	Shape		Type no.	Dimension	Specification	PU
		27	367549*	125x6,0x22,23	C30S-BF	10
			367552*	178x6,0x22,23	C30S-BF	10
			367557*	230x6,0x22,23	C30S-BF	10

★ BASIC **Rough grinding wheels for stone**





Application

- + For edge and surface grinding on all stone hardnesses, natural and artificial stone as well as concrete

Advantage

- + Fast and convenient work with minimal exertion
- + Silicon carbide makes it especially suitable for stone and short-chipping materials

	Shape		Type no.	Dimension	Specification	PU
		27	222873*	115x6.0x22.23	C30S-BF	10
			222889*	125x6.0x22.23	C30S-BF	10
			222043*	178x6.0x22.23	C30S-BF	10
			222898*	230x6.0x22.23	C30S-BF	10

★ BASIC **TOUCH grinding wheels for stainless steel and nonferrous metals**


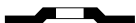


Application

- + For grinding, deburring and forming work as well as for cutting stainless steel and nonferrous metals

Advantage

- + The waffle-type structure enables cool grinding with good chip transport, and thus prevents material discoloration
- + Low vibration thanks to low weight and special structure – this guarantees quiet operation and reduced noise

	Shape		Type no.	Dimension	Specification	PU
		27	236318	115x22.23	WA46R-BF	25
			236319	125x22.23	WA46R-BF	25
			236320	178x22.23	WA46R-BF	25

* With Comfort Start edge





**2.2 RONDELLER®
for angle grinders**



Grinding

RONDELLER® for angle grinders

Working with an angle grinder is one of the most important processes in the handicraft and industrial sectors for machining all types of metals. TYROLIT has developed a special tool for use on an angle grinder that combines the product advantages of different grinding tools. It is not necessary to use any special accessories with the RONDELLER®, so simple handling is guaranteed.

Its unique geometry and stud pattern enable outstanding stock removal, cool, material-protecting grinding and ergonomic working. Vibration-free

working and perfect adaptation to the workpiece is guaranteed when grinding, deburring and shaping curved surfaces.

Shapes



29 RON
RONDELLER®

Application recommendation

Performance Level	Specification	Steel	Stainless steel	Stone	Plastic	NF metals	Pages
 PREMIUM	A...Q-BF	●	●				93
	C...S-BF			●	●		94
	A...N-BF					●	94





2in1 RONDELLER®

for steel and stainless steel

+ Easy assembly without the use of special accessories such as back up pads and clamping nuts

+ Outstanding chip transport as well as cool grinding that is gentle on the material thanks to the unique geometry and stud pattern



+ Vibration-free and ergonomic use as well as optimum adaptation to the workpiece

Application:

- + For demanding work on different steel and stainless steel grades
- + Ideal for grinding, deburring and forming work on curved surfaces

We recommend:

- + Grit size 24/36 for high stock removal
- + Grit size 60 for a finer surface result



2in1 RONDELLER® for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		29RON	57004	115x22,23	A24Q-BF	25
		908225	115x22,23	A36Q-BF	25	
		908226	115x22,23	A60Q-BF	25	
		57005	125x22,23	A24Q-BF	25	
		908227	125x22,23	A36Q-BF	25	
		908229	125x22,23	A60Q-BF	25	
		170599	150x22,23	A36Q-BF	25	
		57006	178x22,23	A24Q-BF	25	
		908230	178x22,23	A36Q-BF	25	
		908231	178x22,23	A60Q-BF	25	

★★★
PREMIUM

RONDELLER®
for stone



Application

- + For demanding work on universal stone materials as well as PVC
- + Ideal for grinding, deburring and forming work on curved surfaces

We recommend

- + Grit size 36/60 for high stock removal
- + Grit size 100/180 for fine work

Advantage

- + Easy assembly without the use of special accessories such as back up pads and clamping nuts
- + Outstanding chip transport as well as cool grinding that is gentle on the material thanks to the unique geometry and stud pattern
- + Vibration-free and ergonomic use as well as optimum adaptation to the workpiece

	Shape	Type no.	Dimension	Specification	PU	
		29RON	908233	115x22.23	C36S-BF	25
		908220	178x22.23	C36S-BF	25	
		908221	178x22.23	C60S-BF	25	
		908223	178x22.23	C100S-BF	25	
		908224	178x22.23	C180S-BF	25	

★★★
PREMIUM

RONDELLER®
for nonferrous metals



Application

- + For demanding applications on nonferrous metals such as aluminium, copper, brass and bronze
- + Ideal for grinding, deburring and forming work on curved surfaces

Advantage

- + Easy assembly without the use of special accessories such as back up pads and clamping nuts
- + Outstanding chip transport as well as cool grinding that is gentle on the material thanks to the unique geometry and stud pattern
- + Vibration-free and ergonomic use as well as optimum adaptation to the workpiece
- + No clogging of the wheel thanks to specially developed bond for sustained abrasiveness and longer lifetime

	Shape	Type no.	Dimension	Specification	PU	
		29RON	34300411	115x22.23	A36N-BF	25
		34300412	125x22.23	A36N-BF	25	
		34300416	178x22,23	A36N-BF	25	

2.3 Cup wheels for angle grinders





Cup wheels for angle grinders

Working with an angle grinder is one of the most important processes in the handicraft and industrial sectors for machining all types of metals. The use of cup wheels is recommended when grinding large and heavy components in particular, as they are exceptionally robust and durable.

It is particularly important to ensure that cup wheels are only used on angle grinders for 178 mm diameters. Smaller machines rotate too quickly, while larger ones rotate too slowly. In addition, a special protection cover is required to ensure sufficient levels of working safety.

With cup wheels from TYROLIT you can achieve high stock removal rates and long lifetime. The composition of the cup wheels makes them suitable for large-area machining of welding seams or for grinding imperfections on concrete surfaces. TYROLIT cup wheels can not only be used for metal

machining, but also on marble, slate and granite. Uniform colour coding helps you to find the appropriate product for your application.

Shapes



11BT Cup wheel



11ZB Cup wheel



11ZT Cup wheel



6ZB Cup wheel

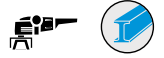
Application recommendation



Performance Level	Specification	Steel	Stainless steel	Stone	Pages
 PREMIUM	A...P4B84	●			98
	A...O4B84	●			98
	A...M4B2		●		99
	1C...L4B2			●	99
	1C...K4B2			●	99
	1C...J4B2			●	99
	1C...J4B0			●	99
 STANDARD	A...P-B	●			98
	C...J-B			●	100



Resin cup wheels for steel



Application

- + For demanding applications on different steel grades
- + For edge grinding, cleaning surfaces, bevelling and grinding welding seams

Advantage

- + Maximum stock removal for grinding jobs on large areas
- + Robust and extremely durable

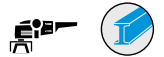
We recommend

- + Grit size 16 and 36 for rough grinding
- + Use special protection for cup wheels
- + Note operating speed of max. 50 m/s

	Shape	Type no.	Dimension	Specification	PU	Max. speed	
		11BT	310183	110/90x55x22.23	A16P4B84	2	8 680
			311096	110/90x55x22.23	A36O4B84	2	8 680
			351386	130/90x55x22.23	A16P4B84	2	7 340
			310997	130/90x55x22.23	A36O4B84	2	7 340
		11ZB	321395	110/90x55xM14	A16P4B84	2	8 680
			310184	110/90x55xM14	A36O4B84	2	8 680
			377664	130/90x55xM14	A36O4B84	2	7 340
		11ZT	241413	102/76x51x5/8"	A16P4B84	2	9 360
23525			152/120x51x5/8"	A16P4B84	2	6 280	



Resin cup wheels for steel



Application

- + For demanding applications on different steel grades
- + For edge grinding, cleaning surfaces, bevelling and grinding welding seams

Advantage

- + Very good stock removal for grinding jobs on large areas
- + Robust and durable

We recommend

- + Grit size 16 and 36 for rough grinding
- + Use special protection for cup wheels
- + Note operating speed of max. 50 m/s

	Shape	Type no.	Dimension	Specification	PU	Max. speed	
		11BT	895678	110/90x55x22.23	A16P-B	2	8 680
			895669	110/90x55x22.23	A36P-B	2	8 680



Resin cup wheels for stainless steel



Application

- + For demanding applications on different stainless steel grades
- + For edge grinding, cleaning surfaces, bevelling and grinding welding seams

We recommend

- + Grit size 20 for rough grinding
- + Use special protection for cup wheels
- + Note operating speed of max. 50 m/s

Advantage

- + Maximum stock removal for grinding jobs on large areas
- + Robust and extremely durable
- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results on stainless steel

	Shape	Type no.	Dimension	Specification	PU	Max. speed
		11ZT 23509	127/94x51x9/16"	A20M4B2	2	7 510
		275634	152/120x51x9/16"	A20M4B2	2	6 280



Resin cup wheels for stone



Application

- + For demanding applications on stone
- + For grinding imperfections on visible concrete surfaces, bevelling and pre-grinding artificial stone and patio flags as well as surface grinding on marble, slate and granite

We recommend

- + Grit size 16 – 46 for rough grinding
- + Grit size 60 – 220 for fine grinding
- + Use special protection for cup wheels
- + Note operating speed of max. 50 m/s

Advantage

- + Maximum stock removal for grinding jobs on large areas
- + Robust and extremely durable
- + Silicon carbide for the best results on stone and short-chipping materials

	Shape	Type no.	Dimension	Specification	PU	Max. speed
		11BT 310980	110/90x55x22.23	1C16L4B2	2	8 680
		318070	110/90x55x22.23	1C24L4B2	2	8 680
		342583	110/90x55x22.23	1C46K4B2	2	8 680
		314463	110/90x55x22.23	1C60J4B2	2	8 680
		317307	110/90x55x22.23	1C120J4B0	2	8 680
			6ZB 89383	100x45xM14	1C24L4B2	2
83585	100x45xM14		1C60J4B2	2	9 540	
56895	100x45xM14		1C120J4B2	2	9 540	
553403	100x45xM14		1C220J4B0	2	9 540	





★★★
PREMIUM

Resin cup wheels for stone



	Shape	Type no.	Dimension	Specification	PU	Max. speed
		11ZB				
		310992	110/90x55xM14	1C16L4B2	2	8 680
		310993	110/90x55xM14	1C24L4B2	2	8 680
		321211	110/90x55xM14	1C60J4B2	2	8 680
		320074	110/90x55xM14	1C120J4B0	2	8 680
		326214	110/90x55xM14	1C220J4B0	2	8 680
		310994	130/90x55xM14	1C16L4B2	2	7 340
		310995	130/90x55xM14	1C24L4B2	2	7 340
		320075	130/90x55xM14	1C60J4B2	2	7 340
		424846	130/90x55xM14	1C120J4B0	2	7 340
336499	130/90x55xM14	1C220J4B0	2	7 340		

★★
STANDARD

Resin cup wheels for stone



Application

- + For demanding applications on stone
- + For grinding imperfections on visible concrete surfaces, bevelling and pre-grinding artificial stone and patio flags as well as surface grinding on marble, slate and granite

Advantage

- + Very good stock removal for grinding jobs on large areas
- + Robust and durable
- + Silicon carbide for outstanding results on stone and short-chipping materials

We recommend

- + Grit size 16/36 for rough grinding
- + Grit size 60 for fine grinding
- + Use special protection for cup wheels
- + Note operating speed of max. 50 m/s

	Shape	Type no.	Dimension	Specification	PU	Max. speed	
		11BT					
		895679	110/90x55x22.23	C16J-B	2	8 680	
		895670	110/90x55x22.23	C36J-B	2	8 680	
	895671	110/90x55x22.23	C60J-B	2	8 680		
		11ZB					
		895676	110/90x55xM14	C16J-B	2	8 680	
895677	110/90x55xM14	C60J-B	2	8 680			

2.4 Grinding wheels for straight grinders





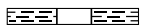
Grinding wheels for straight grinders

Straight grinders are always in high demand when precise results are required on difficult-to-access areas. Their versatile application options make them a popular tool. In order to fulfil the high standards TYROLIT sets for itself, great importance was attached to the low-vibration grinding properties of the products during their design.

The range easily meets the general demands of economic efficiency, high stock removal rates, simple handling and above-average lifetimes. All TYROLIT rough grinding wheels

are manufactured and tested in accordance with EN12413. Uniform colour coding helps you to find the appropriate product for your application.

Shapes




1F80

Rough grinding wheel

Application recommendation



Performance level	Specification	Steel	Stainless steel	NF metals	Cast iron	Pages
 PREMIUM	A30S-BFX80	•				104
	A30R-BFX80		•			104
	A36N-BFX80			•		105
	ZA24P-BFX80				•	105



1F80 grinding wheels for steel



Application

- + For demanding work on different steel grades in difficult-to-reach places
- + For adding flutes and notches, for deburring gears, for maintaining turbine blades, for rough grinding curved surfaces in cavities and for welding

Advantage

- + Bond system tailored to steel with maximum abrasiveness and long lifetime

We recommend

- + Use a protection cover for diameters above 80 mm

	Shape	Type no.	Dimension	Specification	PU	
		1F80	439061	50x6.0x6	A30S-BFX80	100
		441231	50x10.0x6	A30S-BFX80	100	
		441207	50x10.0x10	A30S-BFX80	100	
		441219	60x10.0x10	A30S-BFX80	100	
		441233	70x10.0x10	A30S-BFX80	100	
		441223	75x6.0x10	A30S-BFX80	100	



1F80 grinding wheels for stainless steel



Application

- + For demanding work on different stainless steel grades in difficult-to-reach places
- + For adding flutes and notches, for deburring gears, for maintaining turbine blades and for rough grinding curved surfaces in cavities

Advantage

- + Special bond system for stainless steel with maximum abrasiveness and long lifetime
- + The chemical purity of the product prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results on stainless steel

We recommend

- + Use a protection cover for diameters above 80 mm

	Shape	Type no.	Dimension	Specification	PU	
		1F80	439059	50x6.0x6	A30R-BFX80	100
		441206	50x10.0x10	A30R-BFX80	100	
		441245	50x19.0x10	A30R-BFX80	100	
		441224	75x15.0x10	A30R-BFX80	100	
		441203	100x25.0x25	A30R-BFX80	25	
		441204	125x25.0x25	A30R-BFX80	20	
		441241	150x25.0x25	A30R-BFX80	20	



**1F80 grinding wheels
for nonferrous metals**



Application


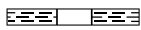
- + For demanding applications on nonferrous metals such as aluminium, aluminium bronze, aluminium base alloys, copper, bronze, brass, nickel silver and titanium in difficult-to-reach places
- + Ideal for adding flutes and notches, for deburring gears, for maintaining turbine blades and for rough grinding curved surfaces in cavities

Advantage

- + No clogging of the wheel thanks to specially developed bond for sustained abrasiveness and longer lifetime
- + Even at very low pressure, the wheel achieves extremely high abrasiveness

We recommend

- + Use a protection cover for diameters above 80 mm

	Shape	Type no.	Dimension	Specification	PU
		1F80 441248	75x6,0x10	A36N-BFX80	100
		441250	100x20,0x20	A36N-BFX80	25



**1F80 grinding wheels
for cast iron**



Application


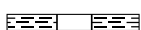
- + For demanding work on cast iron in difficult-to-reach places
- + Ideal for adding flutes and notches, for deburring gears, for maintaining turbine blades, for rough grinding curved surfaces in cavities and for welding

Advantage

- + Bond system tailored to cast iron with maximum abrasiveness and lifetime

We recommend

- + Use a protection cover for diameters above 80 mm

	Shape	Type no.	Dimension	Specification	PU
		1F80 441353	150x25.0x25	ZA24P-BFX80	20

Accessories for 1F80 rough grinding wheels



Application


- + For use on straight grinders

We recommend

- + Note maximum permissible speed

Advantage

- + Suitable for clamping all rough grinding wheels available in the TYROLIT assortment for straight grinders

		Type no.	Dimension	Specification	PU
	100SS	803404	S6/H10/M10	SS171	1
		846442	S6/H6/M6	SS174	1



2.5 Mounted points for straight grinders



Mounted points for straight grinders

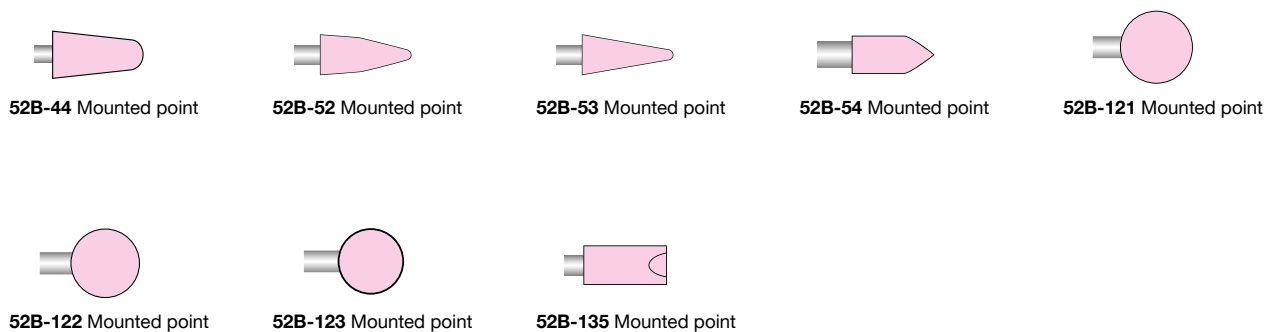
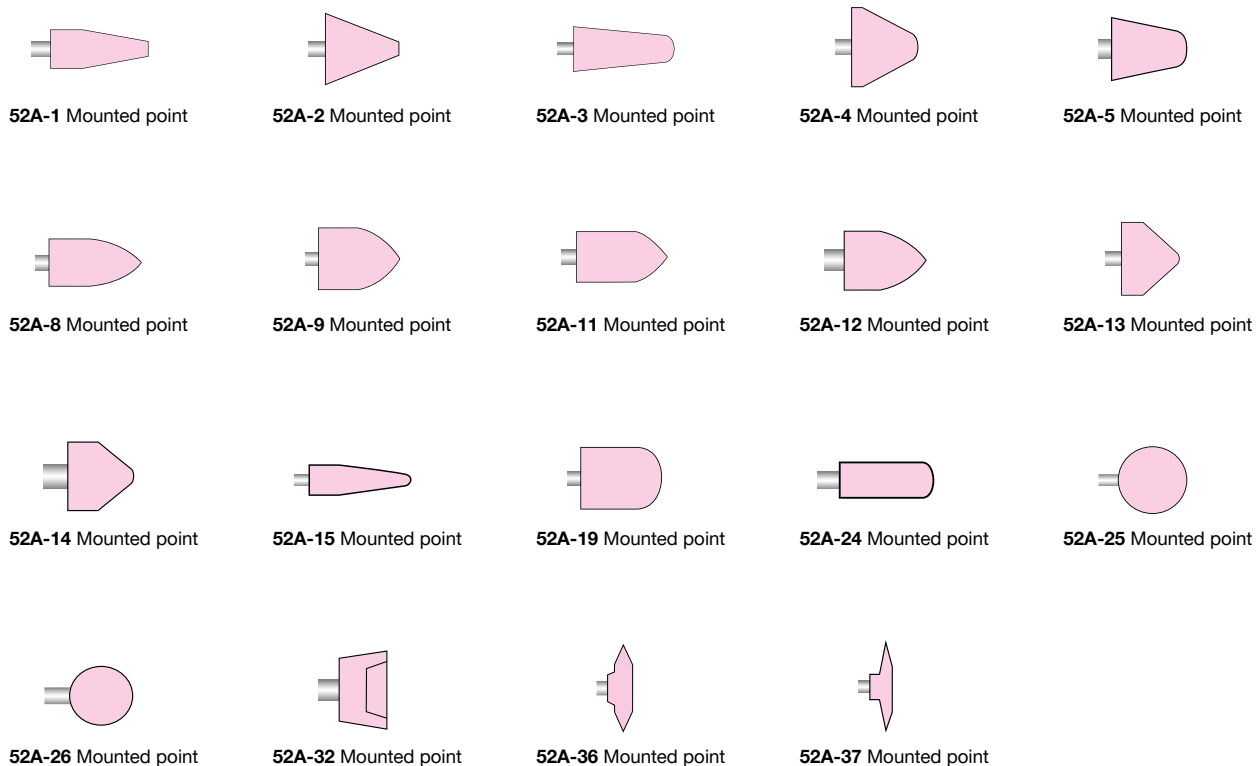
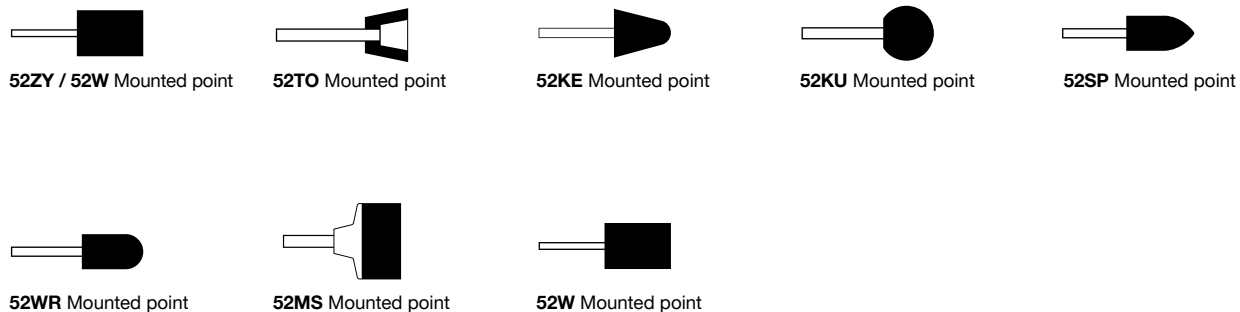
Straight grinders are always in high demand when precise results are required on difficult-to-access areas. Their versatile application options make straight grinders a popular tool. In order that there is always a solution at hand for the numerous applications, TYROLIT offers a wide range of mounted point shapes.

Our resin-bonded points offer you vibration-reducing solutions for the highest quality requirements. The wide range of applications also requires ceramic points that strike a perfect balance in terms of chip performance, surface finish and lifetime.







Ceramic points are often used in foundries and in mould making.

For fine machining, our range also includes elastic and polishing points tailored to your needs.

Shapes

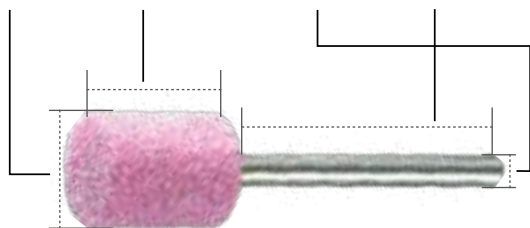


Application recommendation

Performance level	Specification							Pages
		Steel	Stainless steel	NF metals	Cast iron	HSS	PVC	
★★★ PREMIUM	Resin points							
	... B0		•					111
	... B84				•			112
	Ceramic points							
	88A ...	•						113, 114, 115
	89A ...					•		117
	Elastic mounted points							
... BE15	•	•	•			•	117	

Mounted point dimensions

16 x 20 – 6 x 40





Resin-bonded mounted points for stainless steel



Application



- + For work such as deburring, bevelling and edge breaking on different stainless steel grades

We recommend

- + Grit size 36 for rough grinding
- + Note operating speed of max. 50 m/s

Advantage

- + Resin-mounted points have a vibration reducing effect due to their composition and therefore boast low impact sensitivity
- + Specially suited to stainless steel materials due to their chemically pure bond
- + Particularly suitable for difficult-to-reach places

	Shape	Type no.	Dimension	Specification	PU
	 52ZY	682101	8x16-6x40	A36Q4B0	25
		682103	10x20-6x40	A36Q4B0	25
		34053928	10x32-6x40	A36Q4B0	25
		682104	13x25-6x40	A36Q4B0	25
		682105	16x32-6x40	A36Q4B0	25
		682106	20x32-6x40	A36Q4B0	25
		682107	20x40-6x40	A36Q4B0	25
		34053929	25x13-6x40	A36Q4B0	25
		682110	25x32-6x40	A36Q4B0	25
		34053930	32x16-6x40	A36Q4B0	25
		104962	32x40-6x40	A36Q4B0	25
		104968	40x10-6x40	A36Q4B0	25
		682111	40x20-6x40	A36Q4B0	25
		34053942	50x13-6x40	A36Q4B0	25
		682112	50x25-6x40	A36Q4B0	25



Resin-bonded mounted points for cast iron



Application

- + For work such as deburring, bevelling and edge breaking on cast iron

We recommend

- + Grit size 20–46 for rough grinding
- + Note different grades according to specification:
 - + P: high aggressiveness
 - + Q: universal use
 - + S: long lifetime
- + Note operating speed of max. 50 m/s

Advantage

- + Resin-mounted points have a vibration reducing effect due to their composition and therefore boast low impact sensitivity
- + Particularly suitable for difficult-to-reach places

	Shape	Type no.	Dimension	Specification	PU				
		52ZY	108261	10x25-6x40	A36Q4B84	25			
			2111	13x25-6x40	A36Q4B84	25			
			108262	15x25-6x40	A36Q4B84	25			
			104604	16x32-6x40	A36Q4B84	25			
			105367	20x25-6x40	A36Q4B84	25			
			2211	25x32-6x40	A36Q4B84	25			
			2249	32x40-6x40	A36Q4B84	25			
			2258	40x20-6x40	A36Q4B84	25			
			123696	40x25-6x40	A36Q4B84	25			
			2284	50x25-6x40	A36Q4B84	25			
					52W	21094	10x32-6x40	A46S4B84	25
						21125	13x40-6x40	A46S4B84	25
						21137	16x25-6x40	A46S4B84	25
						310504	16x50-6x40	A46S4B84	25
						21160	20x25-6x40	A46S4B84	25
21166	20x40-6x40	A46S4B84				25			
21192	25x25-6x40	A46S4B84				25			
21202	25x40-6x40	A46S4B84				25			
169543	32x20-6x40	A46P4B84				25			
123644	32x32-6x40	A46P4B84				25			
21232	32x64-8x40	A20Q4B84				25			
21233	40x6-6x40	A46S4B84				25			
21239	40x13-6x40	A46S4B84				25			
		52A-1	803833	20x63-6x40	A46P4B84	25			
		52A-11	126460	22x50-6x40	A46P4B84	25			
		52A-3	129260	25x70-6x40	A46P4B84	25			



Ceramic points for steel



Application

- + For demanding work such as deburring, bevelling and edge breaking on different steel grades

We recommend

- + Grit size 24–46 for rough grinding
- + Grit size 60–90 for fine grinding
- + Note different grades according to specification:
 - + O: high aggressiveness
 - + P: universal use
- + Note operating speed of max. 50 m/s

Advantage

- + Strikes a perfect balance in terms of chip performance and the intended surface finish
- + Particularly suitable for difficult-to-reach places
- + Ideal for unalloyed steels thanks to vitrified bond with pink aluminium oxide

	Shape	Type no.	Dimension	Specification	PU
	 52ZY	2010	3x6-3x30	88A90O5V38	25
		169096	3x9-3x30	88A90O5V38	25
		2017	4x8-3x30	88A90O5V38	25
		100758	4x8-6x40	88A60P5V38	25
		2026	5x10-3x30	88A60P5V38	25
		2027	5x10-3x30	88A90O5V38	25
		2031	5x10-6x40	88A60P5V38	25
		11362	6x10-3x30	88A60P5V38	25
		2039	6x10-6x40	88A60P5V38	25
		2046	6x13-3x30	88A60P5V38	25
		2048	6x13-6x40	88A60P5V38	25
		227450	6x20-3x30	88A60P5V38	25
		116725	6x20-6x40	88A60P5V38	25
		2055	8x10-3x30	88A60P5V38	25
		2058	8x10-6x40	88A60P5V38	25
		2062	8x16-6x40	88A60P5V38	25
		120033	10x10-3x30	88A60P5V38	25
		6879	10x10-6x40	88A60P5V38	25
		88905	10x13-3x30	88A60P5V38	25
		2072	10x13-6x40	88A60P5V38	25
		2081	10x20-6x40	88A60P5V38	25
		14364	10x25-6x40	88A60P5V38	25
		2090	10x32-6x40	88A60P5V38	25
		6896	13x16-6x40	88A60P5V38	25
		6898	13x20-6x40	88A60P5V38	25
		6899	13x25-6x40	88A60P5V38	25
		112542	13x40-6x40	88A60P5V38	25



























PREMIUM

Ceramic points for steel



Form	Typennummer	Abmessung	Spezifikation	VP	
	52ZY	6920	16x20-6x40	88A60P5V38	25
		2125	16x25-6x40	88A60P5V38	25
		2133	16x32-6x40	88A36P5V38	25
		2134	16x32-6x40	88A60P5V38	25
		6928	16x50-6x40	88A60P5V38	25
		2145	20x10-6x40	88A60P5V38	25
		2148	20x20-6x40	88A60P5V38	25
		2163	20x25-6x40	88A36P5V38	25
		6932	20x25-6x40	88A46P5V38	25
		2165	20x25-6x40	88A60P5V38	25
		105009	20x32-6x40	88A60P5V38	25
		12836	20x40-6x40	88A36P5V38	25
		2189	20x40-6x40	88A60P5V38	25
		122868	25x10-6x40	88A60P5V38	25
		130009	25x25-6x40	88A36P5V38	25
		2201	25x25-6x40	88A46P5V38	25
		2202	25x25-6x40	88A60P5V38	25
		2209	25x32-6x40	88A46P5V38	25
		548169	25x40-6x40	88A36P5V38	25
		2238	32x8-6x40	88A60P5V38	25
		131231	32x10-6x40	88A60P5V38	25
		6959	32x16-6x40	88A46P5V38	25
		6961	32x20-6x40	88A46P5V38	25
		116973	32x32-6x40	88A36P5V38	25
		103394	32x32-6x40	88A46P5V38	25
		2248	32x40-6x40	88A46P5V38	25
		101508	40x6-6x40	88A60P5V38	25
	2256	40x10-6x40	88A60P5V38	25	
	15383	40x20-6x40	88A60P5V38	25	
	150085	40x25-6x40	88A46P5V38	25	
	828192	40x40-6x40	88A36P5V38	25	
	6974	50x25-6x40	88A46P5V38	25	
	52B-44	169	6x10-3x30	88A60P5V38	25
	52B-53	39128	8x16-3x30	88A90O5V38	25
	52KE	6400	13x13-6x40. R=2	88A60P5V38	25
		6401	16x16-6x40. R=2.5	88A60P5V38	25
		6402	20x20-6x40. R=3	88A60P5V38	25
	52A-5	11481	20x29-6x40	88A36P5V38	25
		20023	20x29-6x40	88A60P5V38	25

	Form	Typennummer	Abmessung	Spezifikation	VP	
		52KE	330772	20x32-6x40. R=3	88A60P5V38	25
			892	25x25-6x40. R=4	88A60P5V38	25
		52A-3	11480	25x70-6x40	88A36P5V38	25
			6207	25x70-6x40	88A46P5V38	25
			104894	25x70-6x40	88A60P5V38	25
		52A-4	113	32x32-6x40	88A46P5V38	25
			20020	32x32-6x40	88A60P5V38	25
		52A-32	131	25x16-6x40	88A60P5V38	25
		52TO	1175	32x25-6x40	88A60P5V38	25
		52A-15	97785	6x27-6x40	88A60P5V38	25
			89504	6x27-6x40	88A90O5V38	25
		52B-52	174	10x20-3x30	88A60P5V38	25
75647	10x20-6x40		88A60P5V38	25		
	52SP	6660	13x20-6x40. R=22	88A60P5V38	25	
		52A-14	45422	18x22-6x40	88A60P5V38	25
		52A-12	121	18x32-6x40	88A46P5V38	25
			20037	18x32-6x40	88A60P5V38	25
		52SP	6661	20x32-6x40. R=36	88A60P5V38	25
		52A-8	146601	20x51-6x40	88A36P5V38	25
		52A-1	106372	20x63-6x40	88A36P5V38	25
			108	20x63-6x40	88A46P5V38	25
			109	20x63-6x40	88A60P5V38	25
		52A-11	148517	22x50-6x40	88A36P5V38	25
			118	22x50-6x40	88A46P5V38	25
			20031	22x50-6x40	88A60P5V38	25
		52A-13	45421	32x32-6x40	88A60P5V38	25
		52A-9	127775	32x51-6x40	88A36P5V38	25
		52KU	6404	5-3x30	88A90O5V38	25
			6405	8-6x30	88A60P5V38	25
		52B-122	191	10-3x30	88A60P5V38	25
		52B-121	62694	13-6x40	88A60P5V38	25
			190	13-3x30	88A60P5V38	25
		52A-26	130	16-6x40	88A60P5V38	25
		52KU	917	20-6x40	88A60P5V38	25
		52A-25	20047	25-6x40	88A60P5V38	25
		52KU	921	32-6x40	88A46P5V38	25
		52A-24	128	6x20-6x40	88A60P5V38	25
		52A-19	135853	32x51-6x40	88A36P5V38	25
		52A-37	139	32x6-6x40	88A60P5V38	25
		52A-36	138	40x10-6x40	88A60P5V38	25



Ceramic points set for steel




Application

- + For demanding work such as deburring, bevelling and edge breaking on different steel grades

Advantage

- + Set contains all the common mounted points for working on steel, including a roughing stone
- + Longest possible lifetime for deburring, bevelling and edge breaking
- + Points strike a perfect balance in terms of chip performance and the intended surface finish

SET	Type no.	Shape	Typen-Nr.	Dimension	PU
	74499	52ZY-W228	6961	32x20-6x40	1
		52ZY-W220	2201	25x25-6x40	
		52A-4	113	32x32-6x40	
		52A-5	20023	20x29-6x40	
		52ZY-W205	2165	20x25-6x40	
		52ZY-W236	101508	40x6-6x40	
		52B-121	62694	13x6-6x40	
		52A-32	131	25x16-6x40	
		52ZY-W186	6898	13x20-6x40	
		52A-14	45422	18x22-6x40	
		52A-25	20047	25x6-6x40	
		52ZY-W176	2072	10x13-6x40	
		52A-37	139	32x6-6x40	
		52ZY-W217	122868	25x10-6x40	
		9011	54222	16x150-6x40	



Ceramic points for HSS



Application

- + For demanding work such as deburring, bevelling and edge breaking on high-alloyed steels and HSS




We recommend

- + Grit size 46 for rough grinding
- + Grit size 60–120 for fine grinding
- + Note operating speed of max. 35 m/s

Advantage

- + Enables workpieces to be machined down to the lowest tolerance ranges
- + Strikes a perfect balance in terms of chip performance and the intended surface finish
- + Vitrified bond with white aluminium oxide specially for high-alloyed steels and HSS



	Shape	Type no.	Dimension	Specification	PU
	 52ZY	2020	4x8-3x30	89A120M5V38	25
		2030	5x10-3x30	89A80M5V38	25
		13529	6x13-6x40	89A80M5V38	25
		113299	8x16-3x30	89A80M5V38	25
		6886	10x20-6x40	89A80M5V38	25
	 52KE	441033	30x40-6x40. R=5	89A60M5V38	25



ELASTIC mounted points for nonferrous metals, PVC, steel and stainless steel



Application





- + For demanding work on nonferrous metals, PVC, steel and stainless steel

We recommend

- + Mottling points (shape MS) for mottling surfaces
- + Note maximum operating speed of 20 m/s

Advantage

- + Coordinated light grey bond systems enable the ELASTIC mounted points to be put to universal use
- + Assortment also includes fewer elastic points for working at higher speeds and mottling points for mottling surfaces

	Shape	Type no.	Dimension	Specification	PU
	 52ZY	6884	10x20-6x40	C240-BE15	10
		2155	20x20-6x40	C150-BE15	10
		2224	30x30-6x40	C150-BE15	10
		2221	30x30-6x40	C46-BE15	10
	 52MS	923	30x30-6x40	C46-BE15	1
		925	40x30-6x40	C46-BE15	1
		929	50x30-6x40	C46-BE15	1



2.6 Tungsten carbide burrs for straight grinders


















Tungsten carbide burrs for straight grinders

Straight grinders are always in high demand when precise results are required on difficult-to-access areas. Their versatile application options make straight grinders a popular tool. In order that there is always a solution at hand for the full spectrum of applications, TYROLIT offers a wide range of PREMIUM*** quality tungsten carbide burr shapes.

TYROLIT burrs are made from tried-and-tested, high-quality cemented carbide types on the most modern CNC grinding machines. Our tungsten carbide burrs are then used on

a wide range of handheld, pneumatic and electronic machines, as well as on industrial robots. Thanks to their versatility, the cutters can be used on a variety of materials.

Application recommendation

Performance level	Specification						Tooth shape	Pages
		Steel	Stainless steel	NF metals	Cast iron	HSS		
	MY	•	•		•	•		126,127,128,129
	MX	•	•		•	•		126,127,128,129
	MXX	•	•		•	•		126,127,128,129
	MXC	•	•		•	•		127
	ALU			•				130
	SC	•						124
	IC		•					125

Segmentations:

- ALU:** For aluminium machining (standard with 8 cutting edges)
- ALU6:** For aluminium machining (especially coarse with 6 cutting edges)
- MXC:** For cast steel, welding seams, hardened and cured steels (chip breaker)
- MX:** For high-alloyed steels, rust, acid and heat-resistant cast metals and plastics (diamond)
- MXX:** For high-alloyed steels, rust, acid and heat-resistant cast metals and plastics (fine diamond)
- MY:** For cast steel, welding seams, high-strength hardened and unhardened steels (standard)
- SC:** For cast steel, welding seams, high-strength hardened and unhardened steels (standard)
- IC:** For stainless steel

Shapes



52FLH Flame



52TRE Drop



52KEL Rounded cone



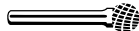
52WRC Ball cylinder



52KSK Conical countersink



52ZYA Cylinder



52KUD Ball



52ZYA-S Cylinder with face toothwork



52RBF Tree



52ZYA-R Cylinder with corner radius



52SKM Pointed cone



52SKM-N Pointed cone
Combined angled milling point and pointed cone



52SPG Bullet



52WKN Cone

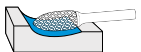


52RND Grooves

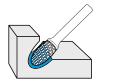


52KUD-N Cone/Ball

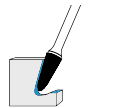
Areas of application



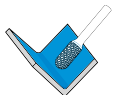
52FLH Flame



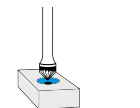
52TRE Drop



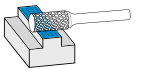
52KEL Rounded cone



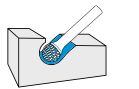
52WRC Ball cylinder



52KSK Conical countersink



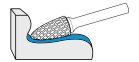
52ZYA Cylinder



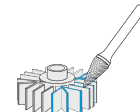
52KUD Ball



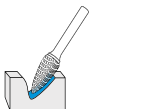
52ZYA-S Cylinder with face toothwork



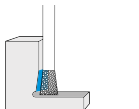
52RBF Tree



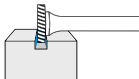
52SKM Pointed cone



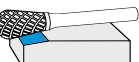
52SPG Bullet



52WKN Cone



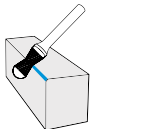
52RND Grooves



52KUD-N
Cone/ball



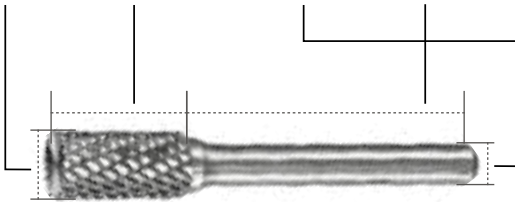
52ZYA-R Cylinder with corner radius



52SKM-N Pointed cone
Combined angled milling point and pointed cone

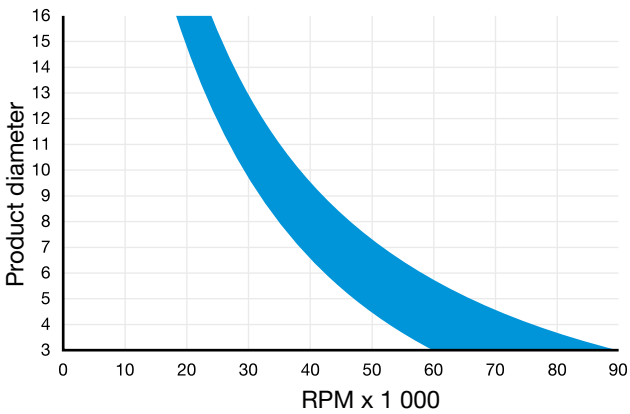
Tungsten carbide burr dimensions

16 x 20 - 6 x 70

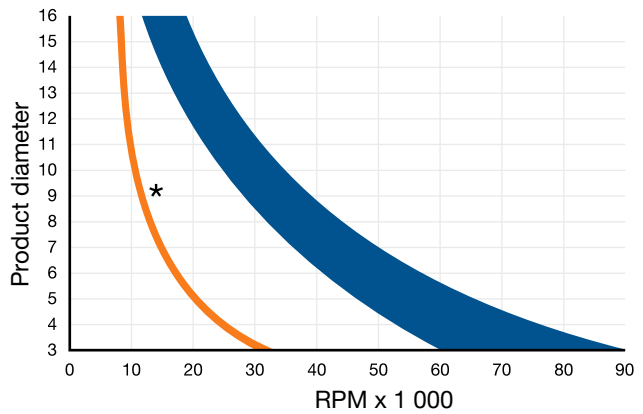


Recommended speeds

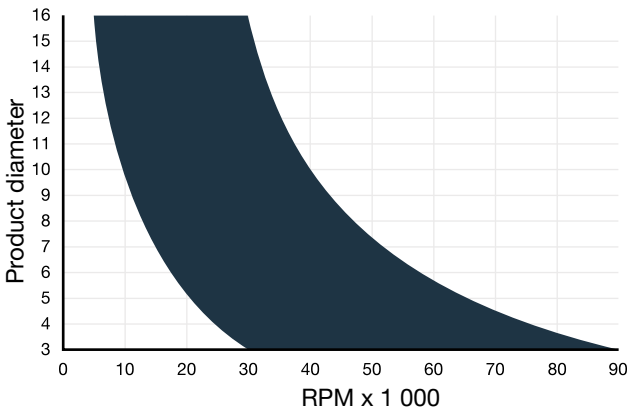
Unhardened steel



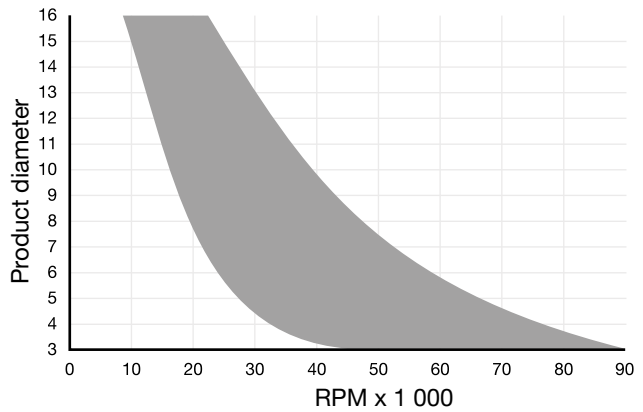
Ceramics, hardened steels, stainless steels, nickel-based alloy, titanium



Soft long-chipping materials, aluminium, fibre-glass-reinforced plastic, plastics, zinc-based alloy



Brass, cast iron, copper, bronze

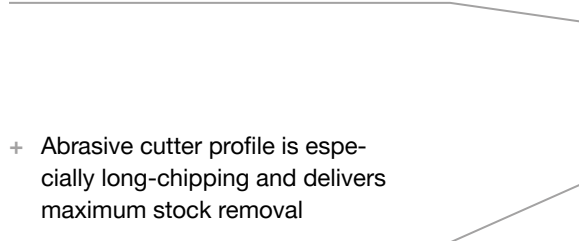




Tungsten carbide burrs

for steel

+ Maximum lifetime thanks to specially developed cutting edge geometry



+ Reduced generation of heat protects the cutter and workpiece

+ Abrasive cutter profile is especially long-chipping and delivers maximum stock removal

Application:

- + For demanding work on different steel grades
- + For universal grinding tasks with hand-operated pneumatic or electric machines and industrial robots in difficult-to-reach places

We recommend:

- + Choice of appropriate machine for perfect results
- + Note right RPM and working speed as well as suitable burr- and tooth shape



Tungsten carbide burrs for steel



	Shape	Type no.	Dimension	Specification	PU
		52ZYAS 34213557	6x18-6x50	SC	1
		34213558	8x19-6x64	SC	1
		34213559	10x19-6x64	SC	1
		34213560	13x25-6x70	SC	1
		52WRC 34213581	6x18-6x50	SC	1
		34213583	8x19-6x64	SC	1
		34213584	10x19-6x64	SC	1
		34213585	13x25-6x70	SC	1
		52RBF 34213588	6x18-6x50	SC	1
		34213589	8x19-6x64	SC	1
		34213590	10x19-6x64	SC	1
		34213601	13x25-6x70	SC	1



Tungsten carbide burrs

for stainless steel

- + Maximum lifetime thanks to specially developed cutting edge geometry
- + Abrasive cutter profile is especially long-chipping and delivers maximum stock removal



- + Reduced generation of heat protects the cutter and workpiece

Application:

- + For demanding work on different stainless steel grades
- + For universal grinding tasks with hand-operated pneumatic or electric machines and industrial robots in difficult-to-reach places

We recommend:

- + Choice of appropriate machine for perfect results
- + Note right RPM and working speed as well as suitable burr- and tooth shape



Tungsten carbide burrs for stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		52ZYA	34213606	6x18-6x50	IC	1
			34213607	8x19-6x64	IC	1
			34213608	10x19-6x64	IC	1
			34213609	13x25-6x70	IC	1
		52WRC	34213610	6x18-6x50	IC	1
			34213621	8x19-6x64	IC	1
			34213622	10x19-6x64	IC	1
			34213623	13x25-6x70	IC	1
		52RBF	34213624	6x18-6x50	IC	1
			34213625	8x19-6x64	IC	1
			34213626	10x19-6x64	IC	1
			34213627	13x25-6x70	IC	1



Tungsten carbide burrs for cast iron, steel and stainless steel



Application

- + For demanding work on cast iron, steel and stainless steel
- + For universal grinding tasks with hand-operated pneumatic or electric machines and industrial robots in difficult-to-reach places

We recommend











- + Choice of appropriate machine for perfect results
- + Note right RPM and working speed as well as suitable burr- and tooth shape

Advantage

- + Maximum lifetime thanks to specially developed cutting edge geometry
- + Abrasive cutter profile is especially long-chipping and delivers maximum stock removal on almost all materials
- + Reduced generation of heat protects the cutter and workpiece

	Shape	Type no.	Type no.	Dimension	Specification	PU
		52FLH	801351	6x14-6x50	MX	1
			765996	8x19-6x65	MX	1
			768898	12x32-6x77	MX	1
			766046	12x32-8x77	MX	1
		52KEL	766932	3x8-3x38	MX	1
			801354	6x13-3x45	MX	1
			766934	6x16-6x50	MX	1
			902732	8x22-6x69	MX	1
			766068	10x19-6x65	MX	1
			766936	10x27-6x75	MX	1
			768894	12x30-6x75	MX	1
			766072	12x30-8x75	MX	1
			801355	16x33-8x78	MXX	1
		52KSK	769680	10x5-6x55	MY	1
			769683	16x8-6x60	MY	1
		52KUD	766050	3x2.7-3x38	MX	1
			766051	6x5.4-3x38	MX	1
			768821	6x5.4-6x50	MX	1
			768824	8x7.2-6x52	MX	1
			768828	10x9-6x53	MX	1
			768832	12x10.8-6x55	MX	1
			768833	13x11.7-6x55	MXX	1
			768835	16x14.4-6x60	MX	1
			768838	16x14.4-8x60	MX	1
		52RBF	766155	3x13-3x38	MX	1
			766156	6x13-3x45	MX	1
			768841	6x16-6x50	MX	1



	Shape	Type no.	Dimension	Specification	PU	
		52RBF	902700	8x22-6x67	MX	1
			768843	10x19-6x65	MX	1
			768846	12x25-6x70	MX	1
			768847	12x25-6x70	MXX	1
			766160	12x25-8x70	MX	1
			766929	16x25-8x70	MX	1
		52SKM	801365	3x11-3x38	MX	1
			766091	3x13-3x38	MX	1
			766092	6x13-3x45	MX	1
			902737	6x13-3x45	MY	1
			768913	6x19-6x50	MX	1
			768916	10x16-6x65	MX	1
			766937	12x19-6x65	MX	1
			768919	12x22-6x70	MX	1
			768918	12x22-6x70	MY	1
		52SPG	766139	3x13-3x38	MX	1
			766140	6x13-3x45	MX	1
			768941	6x16-6x50	MX	1
			768944	10x19-6x65	MX	1
			766942	12x19-6x65	MX	1
			768948	12x25-6x70	MX	1
			768949	12x25-6x70	MXX	1
			766145	13x25-8x70	MX	1
			768951	16x25-6x70	MX	1
			766147	16x25-8x70	MX	1
		52TRE	766939	3x6-3x38	MX	1
			768924	8x13-6x58	MX	1
			768926	10x16-6x60	MX	1
			768929	12x22-6x67	MX	1
			766154	16x25-6x70	MX	1
		52WRC	766126	3x13-3x38	MX	1
			766127	6x13-3x45	MX	1
			768874	6x19-6x50	MX	1
			910766	6x19-6x50	MXC	1
			768878	8x19-6x65	MX	1
			768880	8x19-6x65	MXX	1
			768881	10x19-6x65	MX	1
			766930	12x25-6x70	MX	1
			766133	12x25-6x70	MXX	1
			766131	12x25-6x70	MY	1
			768887	12x25-8x70	MX	1
			768888	12x25-8x70	MXX	1

★★★
PREMIUM

Tungsten carbide burrs for cast iron, steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		52WRC	801349	13x19-6x65	MX	1
			768891	16x25-6x70	MX	1
			766134	16x25-8x70	MX	1
		52ZYA	766099	3x13-3x38	MX	1
			766100	6x13-3x45	MX	1
			768747	6x19-6x50	MX	1
			768750	8x19-6x65	MX	1
			766108	10x19-6x65	MX	1
			768752	10x19-6x65	MXX	1
			766945	12x25-6x70	MX	1
			768754	16x25-6x70	MX	1
			766111	16x25-8x70	MX	1
		52ZYA-S	766112	3x13-3x38	MX	1
			766113	6x13-3x45	MX	1
			768710	6x19-6x50	MX	1
			768712	8x19-6x65	MX	1
			766116	10x19-6x65	MX	1
			766949	12x19-6x65	MX	1
			766121	12x25-6x70	MX	1
			766117	12x25-6x70	MXX	1
			768718	12x25-8x70	MX	1
			768721	16x25-6x70	MX	1
		52RND	801529	10x1.6-3x34	MY	1
			801530	12x2.6-6x48	MY	1
			801531	25x5.2-8x50	MY	1
		52SKM-N	20487	12x25-6x70	MY	1
		52KUD-N	34022392	12x20-6x63	MX	1
			20555	6x16-6x50	MX	1
			20557	8x19-6x65	MX	1
			20565	10x19-6x65	MX	1
			20587	12x25-6x70	MX	1
			20590	16x25-6x70	MX	1



Tungsten carbide burr set for cast iron, steel and stainless steel



Application

- + Common cutters for demanding work on cast iron, steel and stainless steel
- + For universal grinding tasks with hand-operated pneumatic or electric machines and industrial robots in difficult-to-reach places

We recommend

- + Choice of appropriate machine for perfect results
- + Note right RPM and working speed as well as suitable burr- and tooth shape

Advantage

- + Highly efficient precision tools produced on modern CNC grinding machines
- + Abrasive cutter profile is especially long-chipping and delivers maximum stock removal on almost all materials
- + Includes the most common cutter profiles and dimensions in one set

Type no.	Shape	Dimension	Specification	PU
822725	52WRC	12x25		1
	52KEL	12x30	Cemented carbide milling point set: 5 parts with shaft S6 x 40	1
	52RBF	12x25		1
	52SPG	12x25		1
	52KUD	12x11.7		1
845416	52FLH	8x19		
	52KEL	10x19		1
	52SPG	6x16		1
	52SPG	10x19	Cemented carbide milling point set: 10 parts with shaft S6 x 40	1
	52TRE	8x13		1
	52WRC	6x19		1
	52WRC	8x19		1
	52WRC	10x19		1
	52ZYA	8x19		1
	52ZYA-S	10x19		1
822718	52KEL	12x30		1
	52WRC	12x25		1
	52SPG	12x25		1
	52SKM	12x22		1
	52KUD	12x11.7	Cemented carbide milling point set: 5 parts with shaft S6 x 40	1
	52ZYA-S	10x19		1
	52WRC	8x19		1
	52RBF	10x19		1
	52SPG	6x16		1
	52KUD	8x7.2	1	
34022430	52SKM-N	12x25		1
	52KUD-N	12x20	Cemented carbide milling point set: 5 parts with shaft S6 x 40	1
	52ZYA-R	12x25		1
	52ZYA-R	10x19		1
	52ZYA-R	6x16		1





Tungsten carbide burrs for nonferrous metals



Application

- + For demanding work on nonferrous metals such as aluminium, aluminium bronze, aluminium base alloys, copper, bronze, brass, nickel silver and titanium
- + Particularly suitable for grinding tasks with hand-operated pneumatic or electric machines and industrial robots in difficult-to-reach places

Advantage

- + Highly efficient precision tool produced on modern CNC grinding machines
- + The tool achieves the longest lifetimes and maximum abrasiveness on nonferrous metals

We recommend

- + Choice of appropriate machine for perfect results
- + Note right RPM and working speed as well as suitable burr- and tooth shape

	Shape	Type no.	Dimension	Specification	PU	
		52KEL	766935	10x27-6x75	ALU	1
			768896	12x30-6x75	ALU	1
		52RBF	768845	10x19-6x65	ALU	1
			768848	12x25-6x70	ALU	1
			801524	16x25-8x70	ALU	1
		52WRC	768884	10x19-6x65	ALU	1
			768885	12x25-6x70	ALU	1
			801528	16x25-8x70	ALU	1
		52ZYA	806824	10x19-6x65	ALU	1
			806826	12x25-6x70	ALU	1
		52ZYA-S	768715	10x19-6x65	ALU	1
			768717	12x25-6x70	ALU	1



Tungsten carbide burr set for nonferrous metals



Application


- + Common cutters for demanding applications on nonferrous metals such as aluminium, aluminium bronze, aluminium base alloys, copper, bronze, brass, nickel silver and titanium
- + Particularly suitable for grinding tasks with hand-operated pneumatic or electric machines and industrial robots in difficult-to-reach places

We recommend

- + Choice of appropriate machine for perfect results
- + Note right RPM and working speed as well as suitable burr- and tooth shape

Advantage

- + Highly efficient precision tool produced on modern CNC grinding machines
- + The tool achieves the longest lifetimes when used on practically any material
- + Includes the most common cutter profiles and dimensions in one set

Type no.	Shape	Dimension	Specification	PU	
	822728	52WRC	10x19	1	
		52WRC	12x25	Cemented carbide	1
		52RBF	10x19	milling point set:	1
		52RBF	12x25	5 parts with shaft	1
		52KEL	12x30	S6x40	1



Catalogue 21

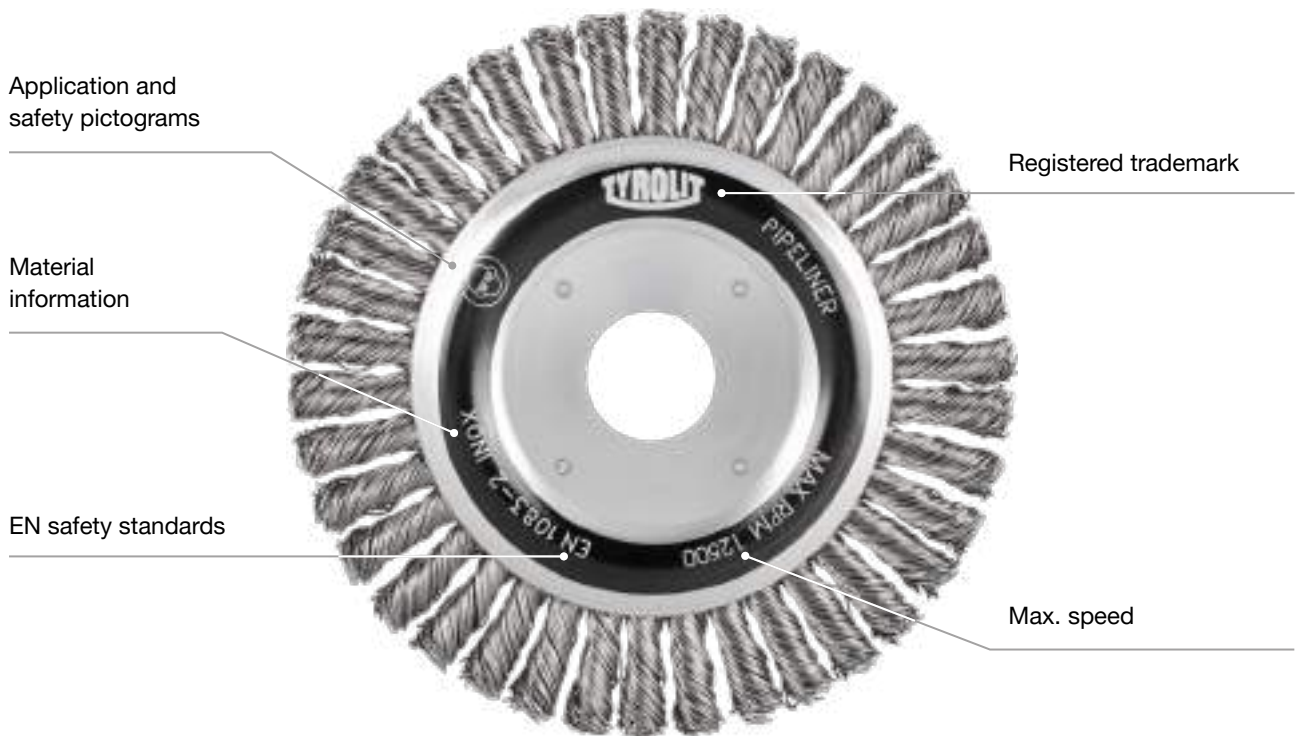
Brushes

Brushes information	134
Explanation of labels	134
Wire types	134
Machine pictograms	135
Specification	135
Application	135
<hr/>	
Angle grinder	137
3.1 Brushes	138
SHIELD brushes	141
Cup brushes	141
Tapered brushes	145
Round brushes	148
<hr/>	
Straight grinder	153
3.2 Brushes	154
Wire brushes	157
Shaft mounted cup brushes	160
Shaft mounted round brushes	162
<hr/>	
Floorstanding grinder	167
3.3 Round brushes	169
<hr/>	
Hand-guided grinding	173
3.4 Hand brushes	176




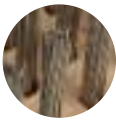
Specific information

Tool brushes

Brushes product label



Wire types

	Abbreviation	Description	Application		Abbreviation	Description	Application
	DW	Knotted wire	Suitable for soft materials such as nonferrous metals, sensitive surfaces and slight impurities		DK	Wire with grain	Suitable for deburring gears, valve parts, cutting edges of aluminium profiles and pipes
	DZ	Twisted wire	Suitable for heavy work, severe dirt and removing layers of paint or varnish		DG	Straight wire	For cleaning workpieces with hand tools

Pictograms Machines



Angle grinder



Straight grinder

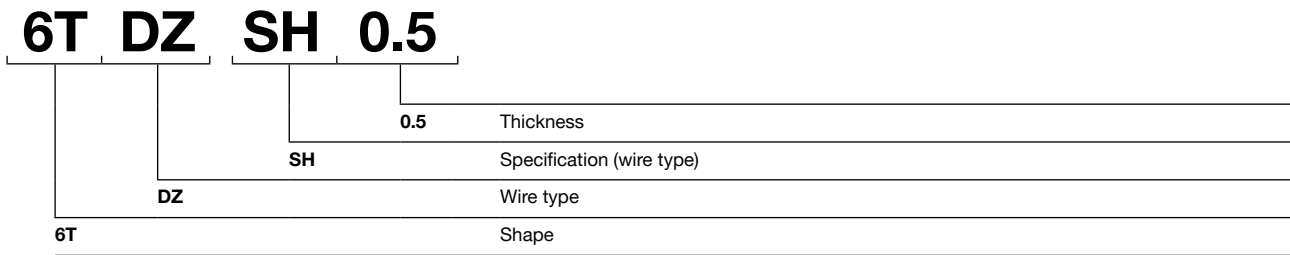


Floorstand grinder



Hand-guided grinding

Specification



S Steel wire



E Stainless steel wire



M Brass wire



PP Synthetic bristles

SH Hardened steel wire

EA Stainless, acid-resistant steel wire

SZ Hardened and tough steel wire

SM Brass steel wire

PA Plastic wire with abrasive grain

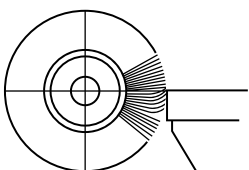
C Wire with silicon carbide grain

A Wire with aluminium oxide grain

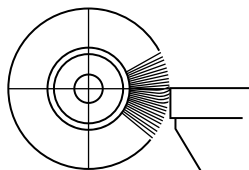
Pressure

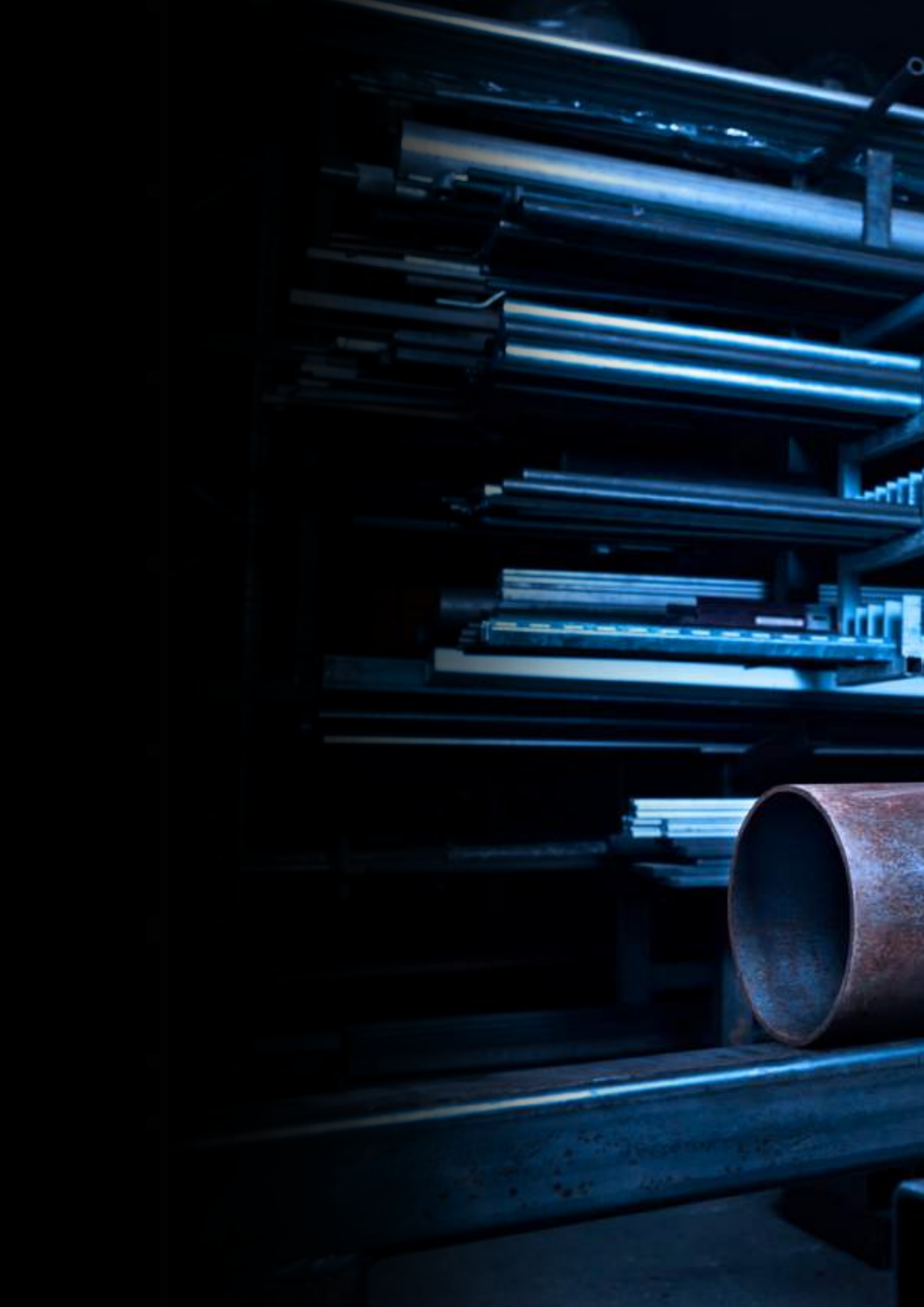
Brushes need only light pressure, as the wire tips do all the work. Heavy pressure does not improve the brushing result. Heavy pressure shortens the lifetime and requires more force.

Excessive pressure



Correct pressure







3.1 Brushes
Angle grinder



Brushes for angle grinders

Working with an angle grinder is one of the most important processes in the trade and industrial sectors for processing all types of metals. TYROLIT offers a comprehensive assortment of brushes for angle grinders.

Brushes are generally very versatile and can be used for a wide range of applications such as deburring, cleaning welding seams or the sur-

faces of virtually any material. The wide assortment of TYROLIT tool brushes has the right shape, wire type and specification for every job.

Shapes



11TDW/6TDW Cup brush
For removing rust, paint and dirt and for smooth finishing



11TDZ Cup brush
Ideal for preparing surfaces before painting, removing slag, rust, scale and concrete residues



6TDZ Cup brush
For heavy work and removal of rust, paint, dirt or scale



28KDW Tapered brush
For hard-to-reach areas, for removal of rust, paint, dirt and for smooth finishing



28KDZ Tapered brush
For hard-to-reach areas, for removal of slag, rust and scale



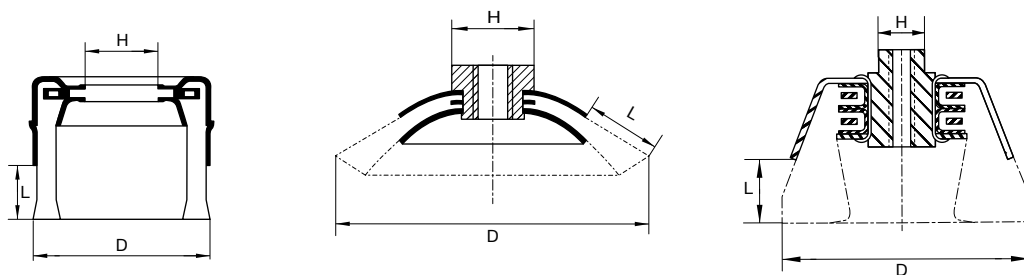
1RDZ Round brush
For welding and for removal of scale and paint

Application recommendations

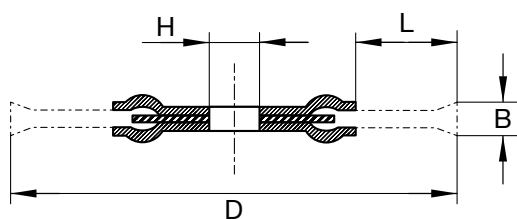


Performance level	Specification	Design	Steel	Stainless steel	NF-metals	Pages
★★★ PREMIUM	SM..		●			141, 146, 147
	S...		●			141, 142, 143, 146, 147
	SH...					142, 143, 147, 149
	SH...	PIPELINER	●			151, 152
	SZ...		●			
	E... INOX					144, 145, 148, 149, 150
	E... INOX	PIPELINER		●		152
	M...				●	145
★ BASIC	S...		●			143
	SM...		●			143
	SH...		●			147, 150

Dimensions cup and tapered brushes



Dimensions round brushes



Maximum speeds

The max. rpm is the speed at which the brushes can be safely used. This must not be exceeded. In most cases it is advantageous to use a lower speed in order to achieve better results.

Caution: Before each use, compare the speeds of the tool and of the machine.

Ø	60	65	75	80	90	100	115	125	150	178	200
Round brush, twisted						11 000	11 000	9 000	9 000	8 500	6 500
Cup brush, knotted	11 000		11 000	9 000				6 500	6 500		
Cup brush, twisted shape 11		11 000	11 000	11 000	11 000	6-8 500		6 500			
Cup brush, twisted shape 6				6-8 500		6-8 500		6 500			
Tapered brush, knotted						11 000					
Tapered brush, twisted						11 000	11 000				

Optimum peripheral speed

Application	Peripheral speed in m/s							
	5	15	20	25	30	35	40	45
Deburring								
Processing of welding seams								
Descaling								
Polishing								
Processing of plastic								
Cleaning								
Rust removal								



SHIELD cup brushes

for steel

- + Transparent protection for maximum safety with an unrestricted view of the workpiece being ground
- + The flexibility of the plastic flaps means that hard-to-reach places can also be ground with ease



- + Universal tool with maximum brush life
- + Brass-plated steel wire SM prevents corrosion

Application:

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel

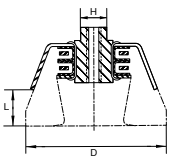
We recommend:

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

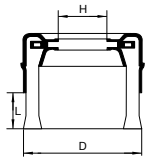


SHIELD cup brushes

for steel



Shape 11TDW

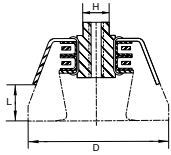


Shape 6TDW, 6TDZ

	Shape	Type no.	Dimension	Specification	PU	Max. RPM	
		11TDW	34023780	75x20xM14-2	SM0.3	1	13 000
			34023778	65x20xM14-2	S0.5	1	15 000
		6TDW	34023827	80x30xM14-2	SM0.3	1	8 500
			34023828	100x30xM14-2	SM0.3	1	8 500
		6TDZ	34023823	80x25xM14-2	S0.5	1	8 500
			34023824	100x25xM14-2	S0.5	1	8 500



Cup brushes for steel



Shape 11TDW, 11TDZ

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel
- + Cup brushes specially for grinding large surfaces
- +

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

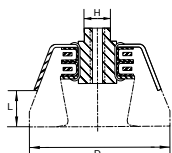
Advantage

- + Universal tool with maximum brush life
- + Hardened steel wire SH for additional brush life available
- + Highest quality

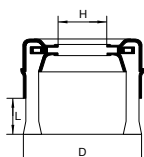
	Shape	Type no.	Dimension	Specification	PU	Max. RPM	
		11TDW	896157	60x16xM14	S0.3	1	11 000
		896158	60x16xM14	S0.5	1	11 000	
		896160	75x20xM14	S0.3	1	9 000	
		896161	75x20xM14	S0.5	1	9 000	
		896164	100x30xM14	S0.3	1	8 500	
		896165	100x30xM14	S0.5	1	8 500	
		896250	125x35xM14	S0.3	1	6 500	
		6TDZ	890860	65x20xM14	SH0.35	1	12 000
		890862	65x20xM14	SH0.5	1	12 000	
		890863	80x25xM14	SH0.35	1	8 500	
		890864	80x25xM14	SH0.5	1	8 500	
		890866	100x25xM14	SH0.35	1	8 500	
		896289	100x25xM14	SH0.5	1	8 500	
		896291	120x25xM14	SH0.35	1	6 500	
		896290	120x25xM14	SH0.5	1	6 500	



Cup brushes for steel



Shape 11TDW



Shape, 6TDZ

Application

- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer
- + Cup brushes for grinding large surfaces

We recommend

- + Knotted wire DW for removing rust and paint, as well as for finishing
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

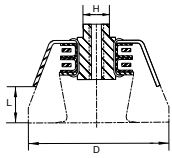
Advantage

- + Universal tool with good brush life
- + Hardened steel wire SH for additional brush life
- + Brass-plated steel wire SM prevents corrosion

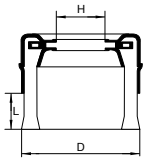
	Shape	Type no.	Dimension	Specification	PU	Max. RPM
		11TDW	34275595	60x16xM14	S0.5	1 12 500
		34275596	75x20xM14	S0.5	1 12 500	
		34275599	100x30xM14	S0.5	1 8 500	
		34275869	60x16xM14	SM0.3	1 12 500	
		34275870	75x20xM14	SM0.3	1 12 500	
		34275961	100x30xM14	SM0.3	1 8 500	
		6TDZ	34275965	65x20xM14	SH0.5	1 12 500
		34275966	80x25xM14	SH0.5	1 8 500	
		34275967	100x25xM14	SH0.5	1 8 500	



SHIELD cup brushes for stainless steel



Shape 11TDW, 11TDZ



Shape 6TDW, 6TDZ

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of stainless steel

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

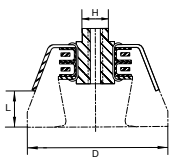
Advantage

- + Transparent protection for maximum safety with an unrestricted view of the workpiece being ground
- + The flexibility of the plastic flaps means that hard-to-reach places can also be ground with ease
- + Universal tool with maximum brush life
- + High-quality stainless steel wire prevents rusting of the workpiece

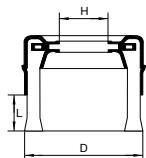
	Shape	Type no.	DxLxH	Specification	PU	Max. RPM	
		11TDW	34023812	75x20xM14-2	E0.3INOX	1	13 000
		11TDZ	34023813	65x20xM14-2	E0.5INOX	1	15 000
		6TDZ	34023825	80x25xM14-2	E0.5INOX	1	8 500



Cup brushes for stainless steel



Shape 11TDW



Shape 6TDZ

Application





- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of stainless steel
- + Cup brushes specially for grinding large surfaces

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

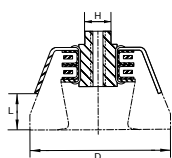
Advantage

- + High-quality stainless steel wire prevents rusting of the workpiece
- + Universal tool with maximum brush life

	Shape	Type no.	DxLxH	Specification	PU	Max. RPM
		11TDW	896167	60x16xM14	E0.3INOX	1 11 000
			896170	75x20xM14	E0.3INOX	1 9 000
			896174	100x30xM14	E0.3INOX	1 8 500
		6TDZ	890851	65x20xM14	E0.35INOX	1 12 000
			890852	65x20xM14	E0.5INOX	1 12 000
			890854	80x25xM14	E0.5INOX	1 8 500



Cup brushes for nonferrous metals



Shape 11TDW

Application



- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of nonferrous metals
- + Cup brushes specially for grinding large surfaces

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities

Advantage

- + Brass wire achieves the best results on workpieces made of nonferrous metals
- + Universal tool with maximum brush life

	Shape	Type no.	DxLxH	Specification	PU	Max. RPM
		11TDW	34042515	80x25xM14	M0.3	1 8 500



SHIELD tapered brushes

for steel

- + Especially suitable for hard-to-reach places due to their shape and the flexibility of the plastic flaps

- + Brass-plated steel wire SM prevents corrosion



- + Transparent protection for maximum safety with an unrestricted view of the work-piece being ground

Application:

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel

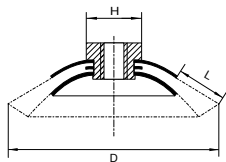
We recommend:

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities






SHIELD tapered brushes

for steel

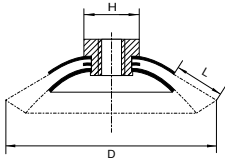


Shape 28KDW, 28KDZ

	Shape	Type no.	DxLxH	Specification	PU	Max. RPM	
		28KDW	34023819	100x20xM14-2	SM0.3	1	13 000
		28KDZ	34023817	100x20xM14-2	S0.5	1	15 000



Tapered brushes for steel



Shape 28KDW, 28KDZR

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

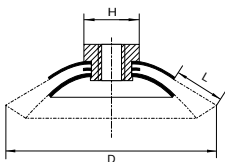
Advantage

- + Suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + Hardened steel wire SH for additional brush life

	Shape	Type no.	DxLxH	Specification	PU	Max. RPM	
		28KDW	829306	100x20xM14	S0.3	1	12 500
		28KDZR	896294	100x20xM14	SH0.35	1	12 500
			894595	100x20xM14	SH0.5	1	12 500
			34042520	115x27.5xM14	SH0.35	1	12 500
			894598	115x27.5xM14	SH0.5	1	12 500



Tapered brushes For steel



Shape 28KDW, 28KDZR

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

Advantage

- + Suitable for hard-to-reach places due to their shape
- + Universal tool with good brush life
- + Hardened steel wire SH for additional brush life
- + Brass-plated steel wire SM prevents corrosion

	Shape	Type no.	DxLxH	Specification	PU	Max. RPM	
		28KDZR	34276004	100x20xM14	SH0.5	1	12 500
			34276005	115x27.5xM14	SH0.5	1	12 500
		28KDW	34276006	100x20xM14	SM0.3	1	12 500
			34276007	115x27.5xM14	SM0.3	1	12 500



SHIELD tapered brushes

for stainless steel

- + Especially suitable for hard-to-reach places due to their shape and the flexibility of the plastic flaps

- + Transparent protection for maximum safety with an unrestricted view of the surface being ground



- + High-quality stainless steel wire prevents rusting of the workpiece

Application:

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of stainless steel

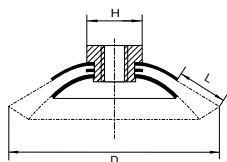
We recommend:

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer






SHIELD tapered brushes

for stainless steel

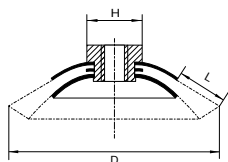


Shape 28KDW, 28KDZ

	Shape	Type no.	DxLxH	Specification	PU	Max. RPM	
		28KDW	34023822	100x20xM14-2	E0.3INOX	1	13 000
		28KDZ	34023818	100x20xM14-2	E0.5INOX	1	15 000



Tapered brushes For stainless steel



Shape 28KDW, 28KDZR

Application



- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of stainless steel

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

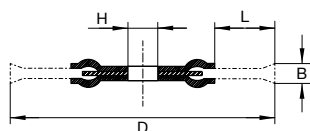
Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + High-quality stainless steel wire prevents rusting of the workpiece

Shape	Type no.	DxLxH	Specification	PU	Max. RPM
	28KDW 896260	100x20xM14	E0.3INOX	1	12 500
	28KDZR 894602	100x20xM14	E0.5INOX	1	12 500
	938642	115x27.5xM14	E0.35INOX	1	12 500
	938646	115x27.5xM14	E0.5INOX	1	12 500



Round brushes for steel



Shape 1RDZ

Application

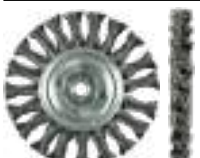
- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel
- + Especially suitable for grinding welding seams

We recommend

- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

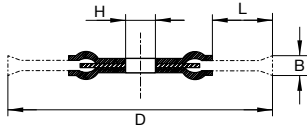
Advantage

- + Universal tool with maximum brush life
- + Hardened steel wire SH for additional brush life

Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	1RDZ 310303	115x11x23x22.2	SH0.35	1	11 000
	894085	115x11x23x22.2	SH0.5	1	11 000
	960324	115x11x23xM14	S0.35	1	11 000
	938680	115x11x23xM14	SH0.5	1	11 000
	903406	125x12x25x22.2	SH0.35	1	12 000
	947205	125x12x25x22.2	SH0.5	1	12 000
	34042522	125x12x25xM14	SH0.35	1	12 000
	603818	125x12x25xM14	SH0.5	1	12 000
	829026	178x13x38x22.2	SH0.5	1	9 000



Round brushes for steel



Shape 1RDZ

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel
- + Especially suitable for grinding welding seams

Advantage

- + Universal tool with good brush life
- + Hardened steel wire SH for additional brush life

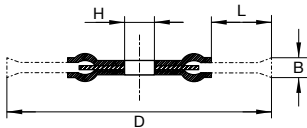
We recommend

- + Twisted wire DZ for preparing surfaces and for removing rust, scale and concrete residue

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	1RDZ	34275969	100x11x22x16	SH0.5	1	12 500
		34276001	115x11x23x22.2	SH0.5	1	12 500
		34276002	125x12x25x22.2	SH0.5	1	12 500
		34276003	178x15x44xM14	SH0.5	1	9 000



Round brushes for stainless steel



Shape 1RDZ

Application

- + For removing rust, paint and lacquer, for deburring and for surface preparation and finishing of stainless steel

Advantage

- + Universal tool with maximum brush life
- + High-quality stainless steel wire prevents rusting of the workpiece
- + Highest quality

We recommend

- + Twisted wire DZ for preparing surfaces and for removing rust, scale and concrete residue

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	1RDZ	310305	115x11x23x22.2	E0.35INOX	1	11 000
		890608	115x11x23x22.2	E0.5INOX	1	11 000
		16422	115x11x23xM14	E0.35INOX	1	11 000
		890626	115x11x23xM14	E0.5INOX	1	11 000
		890635	125x12x25x22.2	E0.35INOX	1	12 000
		34042526	125x12x25x22.2	E0.5INOX	1	12 000
		34042528	125x12x25xM14	E0.35INOX	1	12 000
		16425	178x15x44xM14	E0.35INOX	1	9 000

★★★
PREMIUM

PIPELINER round brush

for steel

+ Ideal for cleaning individual welding seams in pipeline construction



+ Hardened steel wire SH for additional brush life

+ Very reliable and durable tool

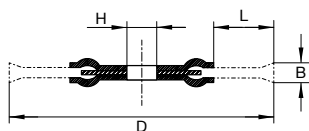
Application:

- + Brushes specially developed for pipeline construction
- + For quick cleaning of steel pipe connections



★★★
PREMIUM

PIPELINER round brush

for steel

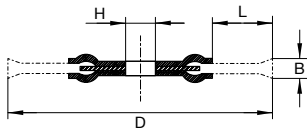


Shape 1RDZ

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	 1RDZ	34313968	115x6.0x26x22.2	SH0.5	1	15 000
		34202827	125x6.0x21x22.2	SH0.5	1	12 500
		34371697	150x6.0x25x22.2	SH0.5	1	12 500
		34313969	178x6.0x29x22.2	SH0.5	1	9 000



PIPELINER PLUS round brushes for steel





Shape 1RDZ

Application

- + Brushes specially developed for pipeline construction
- + For quick cleaning of steel pipe connections

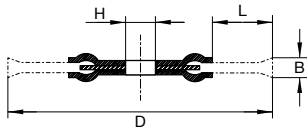
Advantage

- + Ideal for cleaning individual welding seams in pipeline construction
- + Very reliable and durable tool
- + Hardened steel wire SH for additional brush life
- + Increased lifetime due to higher amount of knots

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	 1RDZ	34447913	178x6.0x29x22.2	SH 0.5	1	9 000



PIPELINER round brushes for stainless steel




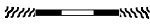
Shape 1RDZ

Application

- + Brushes specially developed for pipeline construction
- + For quick cleaning of stainless steel pipe connections

Advantage

- + Ideal for cleaning individual welding seams in pipeline construction
- + Very reliable and durable tool
- + High-quality stainless steel wire prevents rusting of the workpiece

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	 1RDZ	34370855	115x6x26x22.2	E0.5INOX	1	15 000
		34202829	125x6x21x22.2	E0.5INOX	1	12 500
		34371698	150x6x25x22.2	E0.5INOX	1	12 500
		34370856	178x6x29x22.2	E0.5INOX	1	9 000
		34202829	125x6.0x21x22.2	E0.5INOX	1	12 500
		34371698	150x6.0x25x22.2	E0.5INOX	1	12 500



3.2 Brushes **Straight grinder**



Brushes Straight grinder

Straight grinders are needed when precise results are required in hard-to-reach areas such as the inside of pipes. Their versatility makes them a popular tool.

That's why TYROLIT offers a comprehensive assortment of cup, round and wire brushes which can also be used on other machines, such as drilling machines.

The range of applications is very wide. Shaft mounted brushes are used for surface treatment such as cleaning rust, deburring, texturing and removing layers such as paint or rubber.

Application recommendations



Performance level	Specification	Steel	Stainless steel	NF-metals	All in One	Pages
★★★ PREMIUM	S...	●				157, 160, 162
	SM...	●				158, 160
	SH...	●				162
	SZ...	●				157, 158
	E... INOX		●			158, 159, 161, 163, 164
	EA... INOX		●			164
	M...			●		159, 161, 165
	C...				●	159, 162, 165
★ BASIC	S...	●				163
	SM...	●				163
	SZ...	●				158
	SM...	●				163
	E...INOX		●			164

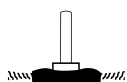
Shapes



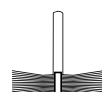
52TDW Cup brushes
Suitable for cleaning work, such as removing paint or rust or for deburring



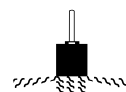
52RDW Round brushes
For removing rust, cleaning, smoothing, polishing, matting and roughening



52RDZ Round brushes
Designed for welding and removing scale and paint

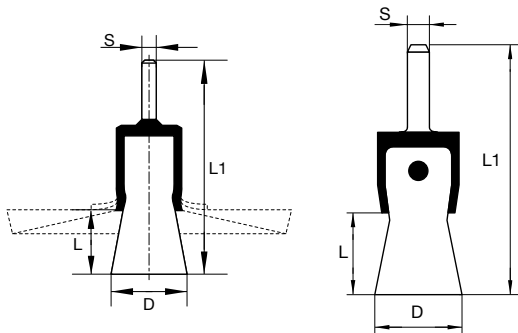


52RDK Round brushes
For matting and glazing, coated with grain

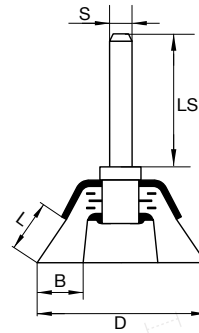


52PDZ Wire brushes
Suitable for roughening, deburring, descaling, matting and cleaning. These wire brushes are characterised by their high level of flexibility. The wire brush opens due to centrifugal force. They are also particularly suitable for cleaning the inside of pipes.

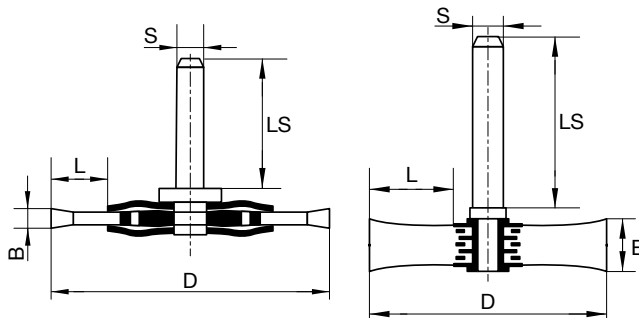
Dimensions wire brushes



Dimensions shaft mounted cup brushes



Dimensions shaft mounted round brushes

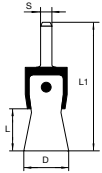
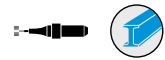


Optimum peripheral speed

Application	Peripheral speed in m/s							
	5	15	20	25	30	35	40	45
Deburring								
Processing of welding seams								
Descaling								
Polishing								
Processing of plastic								
Cleaning								
Rust removal								



Wire brushes for steel



Shape 52PDW

Application

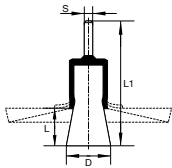
- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel
- + Specifically for cleaning the inside of tubes

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + Wire type DZ splays as a function of speed and thus can be used on different bore diameters
- + Hardened and tough steel wire SZ for additional brush life and robustness

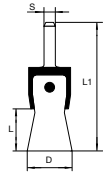


Shape 52PDZ

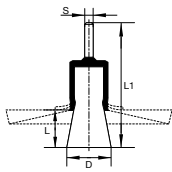
	Shape	Type no.	DxL-SxL1	Specification	PU	Max. RPM
		52PDW	903431	12x20-6x60	S0.2	25 20 000
		890719	12x20-6x60	S0.3	25 20 000	
		903432	12x20-6x60	S0.5	25 20 000	
		34043179	17x22-6x65	S0.2	25 18 000	
		890721	17x22-6x65	S0.3	25 18 000	
		903429	24x25-6x68	S0.2	25 18 000	
		903430	24x25-6x68	S0.3	25 18 000	
		890722	24x25-6x68	S0.5	25 18 000	
		58293	30x25-6x68	S0.2	25 15 000	
		19012	30x25-6x68	S0.3	25 15 000	
		52PDZ	903357	19x28-6x68	SZ0.35	25 20 000
		34043542	22x28-6x68	SZ0.25	25 20 000	
		34043543	22x28-6x68	SZ0.35	25 20 000	
		939968	28x28-6x68	SZ0.25	25 20 000	
		34043545	28x28-6x68	SZ0.35	25 20 000	
		936422	28x28-6x68	SZ0.5	25 20 000	



Wire brushes for steel



Shape 52PDW



Shape 52PDZ

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel
- + Specifically for cleaning the inside of tubes

We recommend

- + Knotted wire DW for removing burrs, rust, rubber and other impurities in hard-to-reach places
- + Twisted wire DZ for preparing surfaces and for removing rust, scale and concrete residue

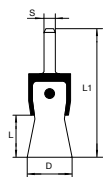
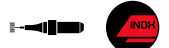
Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with good brush life
- + Wire type DZ plays as a function of speed and thus can be used on different bore diameters
- + Hardened and tough steel wire SZ for additional brush life and robustness
- + Brass-plated steel wire SM prevents corrosion

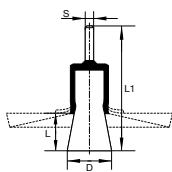
	Shape	Type no.	DxL-SxL1	Specification	PU	Max. RPM	
		52PDW	34276009	24x25-6x68	S0.3	1	4 500
			34276012	24x25-6x68	SM0.3	1	4 500
		52PDZ	34276015	28x28-6x68	SZ0.25	1	20 000



Wire brushes for stainless steel



Shape 52PDW



Shape 52PDZ

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of stainless steel
- + Specifically for cleaning the inside of tubes

We recommend


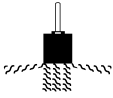
- + Knotted wire DW for soft materials, delicate surfaces and slight impurities
- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

Advantage

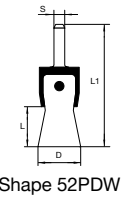
- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + Wire type DZ splays as a function of speed and thus can be used on different bore diameters
- + High-quality stainless steel wire prevents rusting of the workpiece

	Shape	Type no.	DxL-SxL1	Specification	PU	Max. RPM	
		52PDW	897357	12x20-6x60	E0.3INOX	25	20 000
			890707	17x22-6x65	E0.3INOX	25	18 000
			890709	24x25-6x68	E0.3INOX	25	18 000
			903340	30x25-6x68	E0.3INOX	25	15 000



	Shape	Type no.	DxL-SxL1	Specification	PU	Max. RPM
		52PDZ	890652	19x28-6x68	E0.25INOX	25 20 000
		890654	19x28-6x68	E0.35INOX	25 20 000	
		890653	22x28-6x68	E0.25INOX	25 20 000	
		890655	22x28-6x68	E0.35INOX	25 20 000	
		934433	28x28-6x68	E0.25INOX	25 20 000	

★★★ PREMIUM **Wire brushes for nonferrous metals**



Application



- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of nonferrous metal
- + Specifically for cleaning the inside of tubes

We recommend

- + Knotted wire DW for soft materials, delicate surfaces and slight impurities

Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + The brush plays as a function of speed and thus can be used on different bore diameters
- + Brass wire achieves the best results on workpieces made of nonferrous metal

	Shape	Type no.	DxL-SxL1	Specification	PU	Max. RPM
		52PDW	890658	12x20-6x60	M0.2	25 20 000
		903343	12x20-6x60	M0.3	25 20 000	
		890717	24x25-6x68	M0.3	25 18 000	

★★★ PREMIUM **Wire brushes for universal use**



Application



- + For use on almost all materials such as steel, stainless steel, aluminum, copper, brass or wood
- + Specifically for cleaning the inside of tubes

We recommend

- + Wire with grain DK for deburring gears, valve parts, cutting edges of profiles and tubes

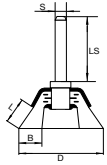
Advantage

- + Especially suitable for use in hard-to-reach places
- + Universal tool with maximum brush life
- + Wire brushes with silicon carbide are very hard and thus enable very high stock removal rates

	Shape	Type no.	Dimension	Specification	PU	Max. RPM
		52PDK	34043547	17x22-6x65	C180	25 18 000
		34043549	24x25-6x68	C180	25 18 000	
		34043552	30x25-6x68	C180	25 15 000	



Shaft mounted cup brushes for steel



Shape 52TDW

Application



- + For removing rust, cleaning welding seams and for surface preparation and finishing of steel

We recommend

- + Knotted wire DW for cleaning work such as removing paint, rust, scale and crusts or for deburring

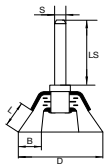
Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52TDW	890753	40x10x15-6x30	S0.2	25	10 500
		890756	40x10x15-6x30	S0.3	25	10 500	
		34043171	50x10x20-6x30	S0.2	25	10 500	
		903359	50x10x20-6x30	S0.3	25	10 500	
		890764	60x15x20-6x30	S0.2	25	4 500	
		890763	60x15x20-6x30	S0.3	25	4 500	
		890774	70x15x25-6x30	S0.3	25	4 500	



Shaft mounted cup brushes for steel



Shape 52TDW

Application



- + For removing rust, cleaning welding seams and for surface preparation and finishing of steel

We recommend

- + Knotted wire DW for cleaning work such as removing paint, rust, scale and crusts or for deburring

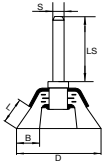
Advantage

- + Universal tool with good brush life
- + Especially suitable for hard-to-reach places due to their shape
- + Brass-plated steel wire SM prevents corrosion

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52TDW	34276010	70x15x25-6x30	S0.3	1	12 000
		34276013	70x15x25-6x30	SM0.3	1	12 000	



Shaft mounted cup brushes for stainless steel



Shape 52TDW

Application

- + For removing rust, cleaning welding seams and for surface preparation and finishing of stainless steel

We recommend

- + Knotted wire DW for cleaning work such as removing paint, rust, scale and crusts or for deburring

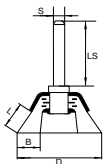
Advantage

- + Universal tool with maximum brush life
- + Especially suitable for hard-to-reach places due to their shape
- + High-quality stainless steel wire prevents rusting of the workpiece

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM
		52TDW	890757	40x10x15-6x30	E0.2INOX	25 10 500
		890758	40x10x15-6x30	E0.3INOX	25 10 500	
		34038259	50x10x20-6x30	E0.2INOX	25 10 500	
		903877	50x10x20-6x30	E0.3INOX	25 10 500	
		890762	60x15x20-6x30	E0.2INOX	25 4 500	
		890761	60x15x20-6x30	E0.3INOX	25 4 500	
		890771	70x15x25-6x30	E0.3INOX	25 4 500	



Shaft mounted cup brushes for nonferrous metals



Shape 52TDW

Application

- + For removing rust, cleaning welding seams and for surface preparation and finishing of nonferrous metals

We recommend

- + Knotted wire DW for cleaning work such as removing paint, rust, scale and crusts or for deburring

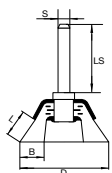
Advantage

- + Universal tool with maximum brush life
- + Especially suitable for hard-to-reach places due to their shape
- + Brass wire achieves the best results on workpieces made of nonferrous metals

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM
		52TDW	23470	50x10x20-6x30	M0.3	25 10 500
		23469	60x15x20-6x30	M0.3	25 4 500	



Shaft mounted cup brushes for universal use



Shape 52TDK

Application

- + For use on almost all materials such as steel, stainless steel, aluminium, copper, brass or wood

We recommend

- + Wire with grain DK for deburring gears, valve parts, cutting edges of profiles and tubes

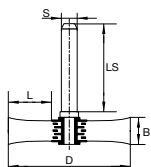
Advantage

- + Especially suitable for use in hard-to-reach places
- + Universal tool with maximum brush life
- + Shaft mounted cup brushes with silicon carbide are very hard and thus enable very high stock removal rates

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52TDK	34043177	50x10x20-6x30	C180	25	10 500
			34043178	60x15x20-6x30	C180	25	4 500
			34043546	70x15x25-6x30	C180	25	4 500



Shaft mounted round brushes for steel



Shape 52RDW

Application

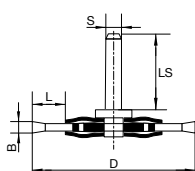
- + For removing rust, cleaning welding seams and for surface preparation and finishing

We recommend

- + Knotted wire DW for removing rust, cleaning, smoothing, polishing, matting and roughening
- + Twisted wire DZ for welding and for removing scale and lacquer

Advantage

- + Particularly suitable for hard-to-reach places
- + Universal tool with maximum brush life
- + Hardened steel wire SH for additional brush life

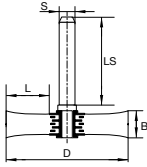


Shape 52RDZ

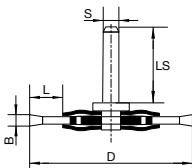
	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52RDW	890840	20x4x3-6x30	S0.2	25	20 000
			890841	30x6x6.5-6x30	S0.2	25	20 000
			890843	40x9x9-6x30	S0.3	25	18 000
			890844	50x15x12.5-6x30	S0.2	25	15 000
			890845	50x15x12.5-6x30	S0.3	25	15 000
			890846	60x10x17.5-6x30	S0.3	25	15 000
			890847	60x15x17.5-6x30	S0.2	25	15 000
			890848	70x15x19-6x30	S0.3	25	15 000
			890849	80x15x19-6x30	S0.3	25	12 000
		52RDZ	890810	70x6x15-6x30	SH0.3	25	20 000



Shaft mounted round brushes for steel



Shape 52RDW



Shape 52RDZ

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of steel

We recommend

- + Twisted wire DZ for treating welding seams and for removing scale and lacquer
- + Knotted wire DW for removing rust, cleaning, smoothing, polishing, matting and roughening

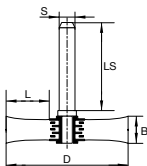
Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Hardened steel wire SH for additional brush life
- + Brass-plated steel wire SM prevents corrosion

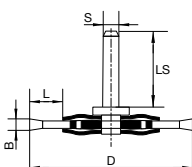
	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52RDW	34276008	70x15x19-6x30	S0.3	1	15 000
			34276011	70x15x19-6x30	SM0.3	1	15 000
		52RDZ	34276016	70x6.0x15-6x30	SH0.3	1	12 500



Shaft mounted round brushes for stainless steel



Shape 52RDW



Shape 52RDZ

Application

- + For removing rust, cleaning welding seams and for surface preparation and finishing of stainless steel

We recommend

- + Knotted wire DW for removing rust, cleaning, smoothing, polishing, matting and roughening
- + Twisted wire DZ for welding and for removing scale and lacquer

Advantage

- + Suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + Stainless, acid-resistant steel wire EA

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52RDW	890813	30x6x6.5-6x30	E0.2INOX	25	20 000
			890814	40x9x9-6x30	E0.2INOX	25	18 000
			890815	40x9x9-6x30	E0.3INOX	25	18 000
			890817	40x13.5x9-6x30	E0.3INOX	25	18 000
			890819	50x10x12.5-6x30	E0.3INOX	25	15 000
			890820	50x15x12.5-6x30	E0.2INOX	25	15 000
			890821	50x15x12.5-6x30	E0.3INOX	25	15 000



★★★
PREMIUM

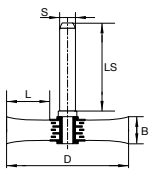
Shaft mounted round brushes for stainless steel



	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52RDW	890822	60x10x17.5-6x30	E0.2INOX	25	15 000
		890823	60x10x17.5-6x30	E0.3INOX	25	15 000	
		890827	60x15x17.5-6x30	E0.2INOX	25	15 000	
		890828	60x15x17.5-6x30	E0.3INOX	25	15 000	
		895521	70x15x19-6x30	E0.2INOX	25	15 000	
		890831	70x15x19-6x30	E0.3INOX	25	15 000	
		890832	80x10x19-6x30	E0.3INOX	25	12 000	
		890835	80x15x19-6x30	E0.3INOX	25	12 000	
		917186	50x15x12.5-6x30	EA0.3INOX	25	15 000	
		917189	70x15x19-6x30	EA0.3INOX	25	15 000	
		52RDZ	890811	70x6x15-6x30	E0.35INOX	25	20 000

★
BASIC

Shaft mounted round brushes for stainless steel



Shape 52RDW

Application

- + For removing rust, cleaning welding seams and for surface preparation and finishing of stainless steel

We recommend

- + Knotted wire DW for removing rust, cleaning, smoothing, polishing, matting and roughening

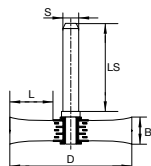
Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with good brush life

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52RDW	34276014	70x15x19-6x30	E0.3INOX	1	15 000



Shaft mounted round brushes for nonferrous metals



Shape 52RDW

Application

- + For removing rust, cleaning welding seams and for surface preparation and finishing of nonferrous metals

We recommend

- + Knotted wire DW for removing rust, cleaning, smoothing, polishing, matting and roughening

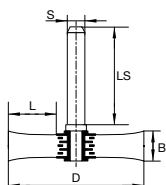
Advantage

- + Suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + Brass wire achieves the best results on workpieces made of nonferrous metals

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52RDW	23472	40x9x9-6x30	M0.3	25	18 000
			23473	50x10x12.5-6x30	M0.3	25	15 000
			23474	60x10x17.5-6x30	M0.3	25	15 000
			903339	70x15x19-6x30	M0.3	25	15 000



Shaft mounted round brushes for universal use



Shape 52RDK

Application

- + For use on almost all materials such as steel, stainless steel, aluminium, copper, brass or wood

We recommend

- + Wire with grain DK for deburring gears, valve parts, cutting edges of profiles and tubes

Advantage

- + Especially suitable for hard-to-reach places due to their shape
- + Universal tool with maximum brush life
- + Shaft mounted round brushes with silicon carbide are very hard and thus enable maximum stock removal rates

	Shape	Type no.	DxBxL-SxLS	Specification	PU	Max. RPM	
		52RDK	34043572	50x20x12.5-6x30	C180	25	15 000
			908264	70x20x19-6x30	C180	25	15 000



A close-up, low-angle shot of a floorstanding grinder. The central focus is a large, dark, circular brush wheel with a textured surface. To the left, a metal arm extends from the machine, holding a rectangular metal plate. The background is blurred, showing the structural frame of the machine. The lighting is dramatic, with strong highlights and deep shadows, creating a sense of industrial scale and precision.

3.3 Brushes Floorstanding grinder



Brushes for floorstanding grinders

A floorstanding grinder is a versatile machine used in many workshops to work on different materials. The wide assortment of TYROLIT tool brushes therefore has the right shape, wire type and specification for every application.

Knotted round brushes, with and without grain, are ideal for removing rust, cleaning, smoothing, polishing, matting and roughening. Twisted round brushes, on the other hand, are suitable for rough work such as welding and removing scale and paint.

Shapes



1RDW Round brushes
For removing rust, cleaning, smoothing, polishing, matting and roughening



1RDK Round brushes
For matting and glazing, coated with grain



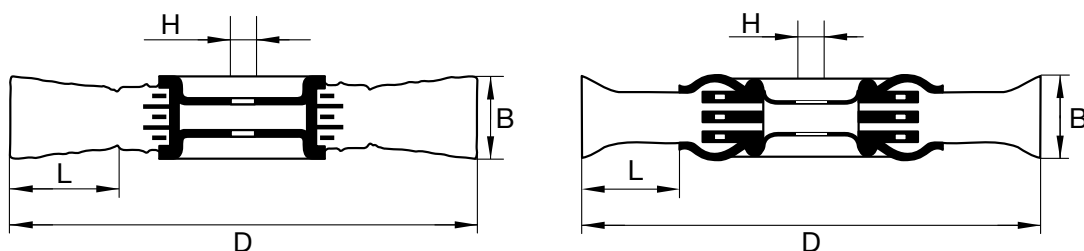
1RDZ Round brushes
For welding and for removal of scale and paint

Application recommendations



Performance level	Specification	Steel	Stainless steel	All in One	Pages
★★★ PREMIUM	S...	•			170
	E... INOX		•		171
	C...			•	171

Dimensions round brushes

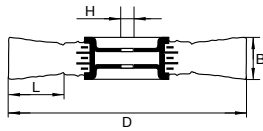
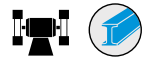


Optimum peripheral speed

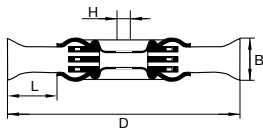
Application	Peripheral speed in m/s							
	5	15	20	25	30	35	40	45
Deburring								
Processing of welding seams								
Descaling								
Polishing								
Processing of plastic								
Cleaning								
Rust removal								



Round brushes for steel



Shape 1RDW



Shape 1RDZ

Application

- + For removing rust, paint and lacquer, for deburring and for surface preparation and finishing of steel

Advantage

- + Universal tool with maximum brush life

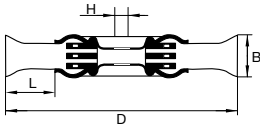
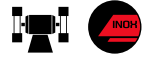
We recommend

- + Knotted wire DW for slight impurities and for finishing

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
		1RDW	896109	100x20x24x20	S0.3	1 6 000
		896111	125x24x36x20	S0.3	1 6 000	
		896238	125x24x36x20	S0.5	1 6 000	
		896115	150x18x27x32	S0.3	1 6 000	
		896239	150x18x27x32	S0.5	1 6 000	
		896241	180x22x42x32	S0.3	1 6 000	
		896243	180x22x42x32	S0.5	1 6 000	
		894770	200x26x40x32	S0.3	1 4 500	
		896244	200x26x40x32	S0.5	1 4 500	
		896121	200x36x40x32	S0.3	1 4 500	
		896245	200x36x40x32	S0.5	1 4 500	
		896246	250x38x50x32	S0.3	1 3 600	
		896247	250x38x50x32	S0.5	1 3 600	
		920436	250x42x50x100	S0.3	1 3 600	



Round brushes
for stainless steel



Shape 1RDW

Application

- + For removing rust, paint and lacquer, for cleaning welding seams and for surface preparation and finishing of stainless steel
- + Especially suitable for grinding welding seams

Advantage

- + Universal tool with maximum brush life
- + High-quality stainless steel wire prevents rusting of the workpiece

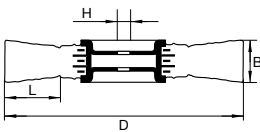
We recommend

- + Twisted wire DZ for heavy work, severe contamination and for removing paint and lacquer

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	1RDW	896110	100x20x24x20	E0.3INOX	1	6 000
		896113	125x24x36x20	E0.3INOX	1	6 000
		896116	150x18x27x32	E0.3INOX	1	6 000
		128345	180x22x42x32	E0.3INOX	1	6 000
		896119	200x26x40x32	E0.3INOX	1	4 500
		896122	200x36x40x32	E0.3INOX	1	4 500
		896124	200x45x40x32	E0.3INOX	1	4 500



Round brushes
for universal use



Shape 1RDK

Application

- + For use on almost all materials such as steel, stainless steel, aluminium, copper, brass or wood

Advantage

- + Universal tool with maximum brush life
- + Round brushes with silicon carbide are very hard and thus enable maximum stock removal rates

We recommend

- + Round brushes with silicon carbide for deburring work on various workpieces made of practically any material such as steel, aluminium, stainless steel, copper or brass

	Shape	Type no.	DxBxLxH	Specification	PU	Max. RPM
	1RDK	34043577	125x13x22x20	C320	1	10 000
		34043578	150x13x34x32	C320	1	8 000
		916720	150x15x29x40	C320	1	8 000
		227435	200x13x43x50.8	C320	1	6 000

Accessory wire brushes for floorstand grinder


Reduction bushes

Application

- + Reduction of the bore diameter

Advantage

- + Minimises tool diversity and saves on storage space

		Type no.	Application
	100RR	109381	(51 to 40)
		638253	(51 to 35)
		911408	(51 to 32)
		822769	(32 to 30)
		76253	(32 to 25,4)
		822767	(32 to 25)
		822766	(32 to 20)
		76628	(20 to 16)
		76618	(20 to 13)
		79292	(20 to 10)
261732	(32 to 12)		
		76648	(20 to 12)



3.4 Brushes **Hand-guided grinding**



Hand-operated tool brushes

Brushes are suitable for universal use and can be employed in a very wide range of applications: deburring, cleaning welding seams or the surfaces of virtually any material.

With a large selection of shapes, it is possible to clean and work on hard-to-reach areas. Our range even

includes a suitable hand brush for cleaning spark plugs. The TYROLIT range of brushes offers

the right wire type and specification for every application.

Application recommendations



Performance level	Specification	Steel	Stainless steel	Aluminium	All in One	Pages
★★★ PREMIUM	S...	●				176, 177, 178, 179, 180, 181, 183, 185
	E... INOX		●			176, 178, 179, 181, 182
	M...			●		177, 179, 180, 181, 182, 183
	PP...				●	182
	PA...				●	184
	C...				●	184

Shapes



90HDG Hand brush
Hand brush for universal use



90SDW Hand brush
For smooth finishing of profiled surfaces



90ZKDW Hand brush
Specially for cleaning spark plugs



90HKDG Hand brush
V-shaped, for cleaning hard-to-reach welding seams and fillet welds



90HFDW Hand brush
File brush for cleaning sensitive surfaces



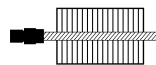
90FDG Hand brush
File brush for cleaning metal and wood files



90HBSDG Hand brush
Brushes for cleaning brake calipers



90HBDG Duster
For easy cleaning of all surfaces



18ROGDG Tube brush
Tube brush with drilling machine attachment

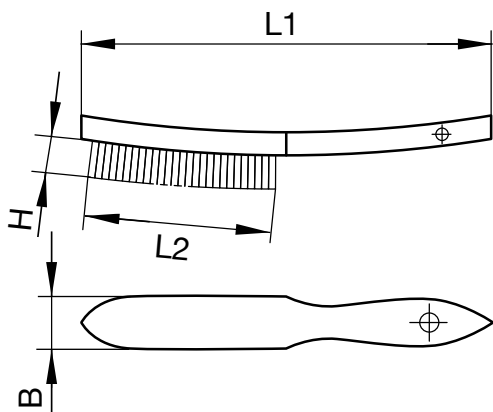


18ROODW/18ROODG
Cylindrical tube brush
For the manual cleaning of pipes and bores

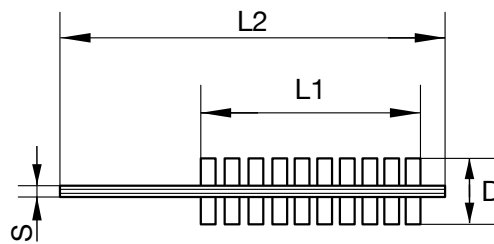


18RODK
Cylindrical tube brush
Tube brush with abrasive grain for cleaning bores

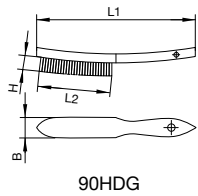
Dimensions hand brushes



Dimensions tube brushes



★★★ PREMIUM **Universal hand brushes for steel**




90HDG

Application

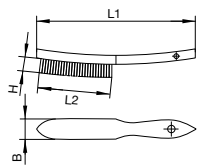
- + For grinding steel
- + Ideal for deburring, cleaning welding seams and cleaning surfaces

Advantage

- + Universal tool
- + Equipped with high-quality beech wood handle

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90HDG	895498	290x22x25x140	S0.3	12 2
		895576	290x28x25x140	S0.3	12 3
		895577	290x32x25x140	S0.3	12 4
		895578	290x38x25x140	S0.3	12 5
		199657	290x42x25x140	S0.35	12 6

★★★ PREMIUM **Universal hand brushes for stainless steel**




90HDG

Application

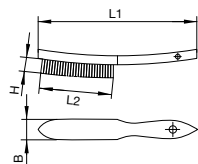
- + For grinding stainless steel
- + Ideal for deburring, cleaning welding seams and cleaning surfaces

Advantage

- + Universal tool with maximum brush life
- + Equipped with high-quality beech wood handle
- + High-quality stainless steel wire prevents rusting of the workpiece

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90HDG	895579	290x22x25x140	E0.3INOX	12 2
		895580	290x28x25x140	E0.3INOX	12 3
		896207	290x32x25x140	E0.3INOX	12 4
		896209	290x38x25x140	E0.3INOX	12 5

★★★ PREMIUM **Universal hand brushes for nonferrous metals**



Shape 90HDG

Application


- + For grinding nonferrous metals
- + Ideal for deburring, cleaning welding seams and cleaning surfaces

Advantage

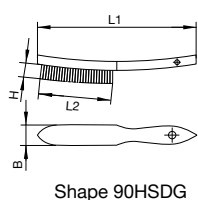
- + Equipped with high-quality beech wood handle
- + Brass wire achieves the best results on workpieces made of nonferrous metals





Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90HDW	896217	290x22x25x140	M0.3	12 2
		895581	290x28x25x140	M0.3	12 3
		896219	290x32x25x140	M0.3	12 4
		896220	290x38x25x140	M0.3	12 5

★★★ PREMIUM **Hand-operated wire brushes with scraper for steel**




Application

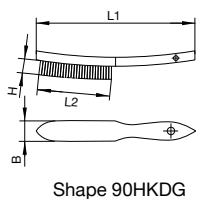
- + For grinding steel
- + Ideal for deburring, cleaning welding seams and cleaning surfaces

Advantage

- + Integrated scraper: use on construction sites, especially for removing cement spatter
- + Ideal for brushing and scraping off heavy impurities
- + Equipped with high-quality beech wood handle

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90HSDG	34203491	290X32X25X140	S0.35	12 4

★★★ PREMIUM **Fillet weld brushes for steel**




Application

- + For grinding steel
- + Especially suitable for cleaning fillet welds

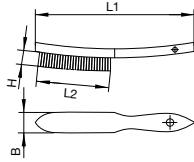
Advantage

- + Removes slag and scale from very hard-to-reach places thanks to the V-shaped filaments
- + Robust construction for heavy work
- + Equipped with high-quality beech wood handle

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90HKDG	199682	290x35x35x135	S0.35	12 3



Fillet weld brushes for stainless steel





Shape 90HKDG

Application

- + For grinding stainless steel
- + Especially suitable for cleaning fillet welds

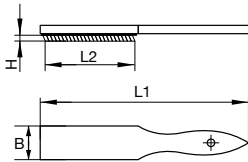
Advantage

- + Removes slag and scale from very hard-to-reach places thanks to the V-shaped filaments
- + Robust construction for heavy work
- + Equipped with high-quality beech wood handle
- + High-quality stainless steel wire prevents rusting of the workpiece

	Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
		90HKDG 199689	290x35x35x135	E0.35INOX	12	3



File brushes for steel





Shape 90FDG

Application

- + For cleaning metal and wood files

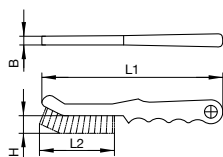
Advantage

- + The wire filaments are firmly adhered to the robust wooden body and are able to cope with challenging requirements
- + Gentle and thorough cleaning of files
- + Equipped with high-quality beech wood handle

	Shape	Type no.	L1xBxHxL2	Specification	PU
		90FDG 899851	300x30x25x135	S0.3	10



All-purpose wire brushes for steel



Shape 90SDW

Application

- + For removing rust, paint and lacquer, for deburring and for surface preparation and finishing of stainless steel

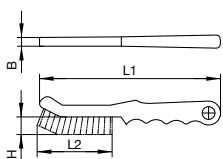
Advantage

- + With ergonomic plastic handle for comfortable handling
- + Universal tool with maximum brush life

	Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
		90SDW	896223	260x10x28x135	S0.3	12 1



All-purpose wire brushes for stainless steel



Shape 90SDW

Application

- + For removing rust, paint and lacquer, for deburring and for surface preparation and finishing of stainless steel

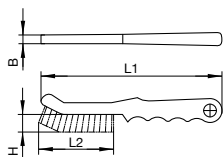
Advantage

- + With ergonomic plastic handle for comfortable handling
- + Universal tool with maximum brush life

	Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
		90SDW	896224	260x10x28x135	E0.3INOX	12 1



All-purpose wire brushes for nonferrous metals



Shape 90SDW

Application

- + For removing rust, paint and lacquer, for deburring and for surface preparation and finishing of nonferrous metals

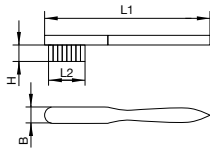
Advantage

- + With ergonomic plastic handle for comfortable handling
- + Brass wire achieves the best results on workpieces made of nonferrous metals

	Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
		90SDW	199678	260x10x28x135	M0.3	12 1



Spark brushes for steel



Shape 90ZKDW

Application

- + For removing rust, paint and lacquer, for deburring and for surface preparation and finishing of steel
- + For fine work on nonferrous metals
- + Ideal for grinding the contact points of spark plugs

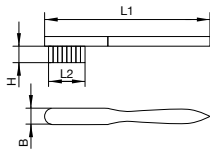
Advantage

- + With ergonomic plastic handle for comfortable handling
- + Equipped with high-quality beech wood handle
- + Thin wire for gentle brushing

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90ZKDW 903435	145x18x15x35	S0.15	12	3



Spark brushes for nonferrous metals



Shape 90ZKDW

Application

- + For fine work on nonferrous metals
- + Ideal for grinding the contact points of spark plugs

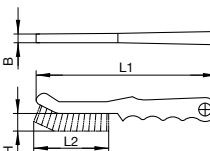
Advantage

- + Brass wire achieves the best results on workpieces made of nonferrous metals
- + Equipped with high-quality beech wood handle
- + Thin wire for gentle brushing

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90ZKDW 903434	145x18x15x35	M0.15	12	3



Brake caliper brushes for stainless steel



Shape 90HBSDG


Application

- + For grinding stainless steel
- + Especially suitable for removing brake dust

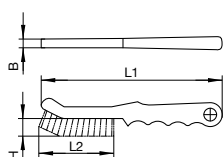
Advantage

- + Handy brush thanks to two-component handle
- + Despite its narrow filaments, it is an extremely powerful cleaning tool



Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90HBSDG 34203496	225x12x22x90	E0.35INOX	10	2

★★★ PREMIUM **Brake caliper brushes for steel**




Shape 90HBSDG

Application

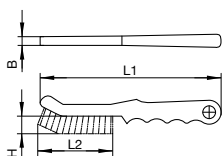
- + For grinding steel
- + Especially suitable for removing brake dust

Advantage

- + Handy brush thanks to two-component handle
- + Despite its narrow filaments, it is an extremely powerful cleaning tool

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
	90HBSDG 34203494	225x12x22x90	S0.35	10	2

★★★ PREMIUM **Brake caliper brushes for nonferrous metals**




Shape 90HBSDG

Application

- + For grinding nonferrous metals
- + Especially suitable for removing brake dust

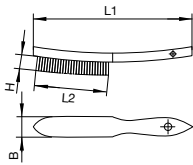
Advantage

- + Handy brush thanks to two-component handle
- + Despite its narrow filaments, it is an extremely powerful cleaning tool and withstands high loads

Shape	Type no.	Dimension	Specification	PU	Wire sequence
	90HBSDG 34203497	225x12x22x90	M0.25	10	2



**File brushes
for stainless steel**



Shape 90HFDW

Application

- + For grinding stainless steel
- + For very fine work, popular with watchmakers and goldsmiths

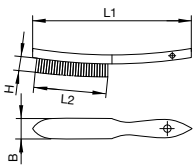
Advantage

- + Features a large number of wire filaments
- + Ideal for applying solvents and cleaning agents
- + Special use

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
90HFDW	34203500	225x20x20x110	E0.15INOX	12	4



**File brushes
for nonferrous metals**



Shape 90HFDW

Application

- + For grinding nonferrous metals
- + For very fine work, popular with watchmakers and goldsmiths

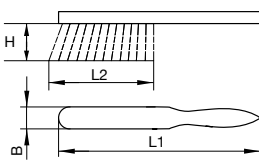
Advantage

- + Features a large number of wire filaments
- + Ideal for applying solvents and cleaning agents
- + Special use

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
90HFDW	34203498	225x20x20x110	M0.15	12	4



**Dusters
for universal use**



Shape 90HBDG

Application

- + For universal use in workshops
- + For removing coarse and slightly stubborn dirt

Advantage

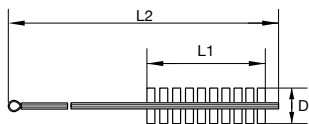
- + The smooth synthetic fibre filaments can be easily cleaned and so- do not contaminate other surfaces
- + The bristles do not absorb much water, and are therefore also ideal for wet environments
- + Easy cleaning

Shape	Type no.	L1xBxHxL2	Specification	PU	Wire sequence
90HBDG	34203514	320x35x70x175	PP0.4	12	4





Cylindrical tube brushes for steel



Shape 18ROODW

Application

- + For grinding steel
- + For hard-to-reach places
- + Especially suitable for cleaning the inside of bore holes and tubes

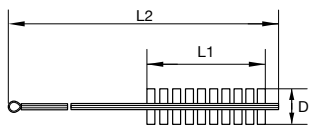
Advantage

- + Adapts perfectly to the workpiece surface due to its flexibility
- + Twisted-in galvanised wire and simple filament spiral for easy handling
- + Special use

Shape	Type no.	DxL1xL2	Specification	PU	
	18ROODW	34203516	4x100x300	S0.1	10
		34203518	6x100x300	S0.1	10
		34203520	8x100x300	S0.1	10
		34203522	10x100x300	S0.15	10
		34203524	15x100x300	S0.15	10
		34203527	20x100x300	S0.15	10



Cylindrical tube brushes for nonferrous metals



Shape 18ROODW

Application

- + For grinding nonferrous metals
- + For hard-to-reach places
- + Especially suitable for cleaning the inside of bore holes and tubes

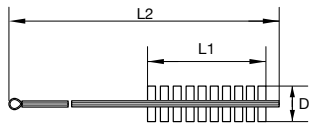
Advantage

- + Adapts perfectly to the workpiece surface due to its flexibility
- + Twisted-in galvanised wire and simple filament spiral for easy handling
- + Special use

Shape	Type no.	DxL1xL2	Specification	PU	
	18ROODW	34203529	4x100x300	M0.06	10
		34203530	6x100x300	M0.1	10
		34203541	8x100x300	M0.12	10
		34203542	10x100x300	M0.15	10
		34203543	15x100x300	M0.15	10
		34203544	20x100x300	M0.15	10



Cylindrical tube brushes for universal use




Shape 18ROODG

Application

- + For universal use
- + For hard-to-reach places
- + Especially suitable for cleaning the inside of bore holes and tubes

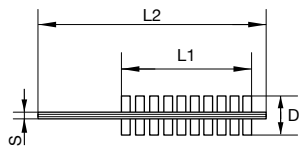
Advantage

- + Adapts perfectly to the workpiece surface due to its flexibility
- + Twisted-in galvanised wire and simple filament spiral for easy handling

Shape	Type no.	DxL1xL2	Specification	PU	
	18ROODG	34203556	4x100x300	PA0.2	10
		34203557	6x100x300	PA0.2	10
		34203571	8x100x300	PA0.2	10
		34203572	10x100x300	PA0.25	10
		34203573	15x100x300	PA0.3	10
		34203575	20x100x300	PA0.3	10



Tube brushes for universal use




Shape 18RODK

Application

- + For universal use
- + Especially suitable for deburring bores, tubes or O-ring grooves
- + Suitable both for hand-held use and use on drilling machines taking into consideration the maximum permissible speed

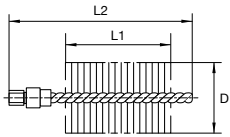
Advantage

- + Twisted-in galvanised wire and simple filament spiral for easy handling
- + Suitable for polishing or cleaning complex workpieces such as nozzles
- + The sides of the abrasive bristles are also effective in rounding edges at bore interfaces

Shape	Type no.	DxL1xL2	Specification	PU	
	18RODK	34203595	10x65-3.7x125	C120	10
		34203596	16x65-5.2x125	C120	10
		34203597	20x65-5.7x125	C120	10
		34203598	25x65-5.7x125	C120	10



Tube brushes with external thread for steel




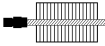
Shape 18ROGDG

Application

- + For grinding steel
- + Especially suitable for cleaning tubes, gratings, sleeves and cylinders, for deburring horizontal bore holes and for regulating flow velocities in tubing systems

Advantage

- + These brushes can be extended with an adapter or used on machines thanks to their external thread

Shape	Type no.	DxL2-L2 W1/2	Specification	PU	Max PRM
  18ROGDG	34203600	20x100-150 W1/2	S0.2	10	2 500
	34203601	25x100-150 W1/2	S0.25	10	2 500
	34203602	30x100-160 W1/2	S0.3	10	1 000
	34203603	40x100-160 W1/2	S0.35	10	1 000
	34203605	50x100-160 W1/2	S0.35	5	1 000
	34203606	63x100-160 W1/2	S0.4	5	1 000





Catalogue 21

Coated abrasives

Grinding information	188
Specification	188
Explanation of labels	189
Machine pictograms	189
Colour codes	189
Angle grinder	190
4.1 Flap discs	191
4.2 Fibre discs	213
4.3 Rough cleaning wheels	227
4.4 SCM - SURFACE CONDITIONING MATERIAL	230
4.5 Compact wheels	237
4.6 Polishing program	243
4.7 QUICK-CHANGE DISCS	251
Straight grinder	265
4.8 Spiral belts	265
4.9 Spindle-mounted fleece flap wheels and mounted flap wheels	271
4.10 Compact wheels	281
4.11 Rough cleaning wheels	289
Belt grinder	293
4.12 Belts for mini belt grinder	296
Belts for portable belt grinder	297
Belts for contact grinder	298
Hand sanding and super finishing	303
4.13 Rolls, paper/cloth/fleece	303
4.14 Sheets, paper/cloth/fleece	313
Dual action sander	321
4.15 TYROLIT FAST CHANGE	324
Burnishing machine	331
4.16 Rollers	334
Floorstanding grinder	337
4.17 Rollers	337
4.18 Compact wheels	343

Specific information

Specification

ZA-P43N

N	Backing made of natural fibres
V	Backing made of vulcanised fibres
A/B/C/D/E/F	Weight of paper
C J	Cloth – flexible
C JJ	Cloth – very flexible
C JX	Cloth – semi-flexible
PC-X	Polycotton – rigid
PC-Y	Polycotton – very rigid
PE-Y	Polyester – very rigid
FI	Film
01	Structural steel, carbon steel, aluminium, nonferrous metals etc.
02	Structural steel, carbon steel, aluminium, nonferrous metals etc.; with active additives
03	Stainless steel, steel and soft metals; with active additives; wet and dry
06	Structural steel, carbon steel, aluminium, nonferrous metals, wood etc.; with active additives
07	All metals; wet and dry
21	Paint, lacquers, composite materials, gel coat; for universal use; light with stearate layer
22	Paint, lacquers, composites, gel coat; for universal use; aggressive with stearate layer
31	Wood, lacquers, paint, for universal use
41	Structural steel, carbon steel, aluminium etc.; low to medium pressure, active additives
43	Steel, carbon steel, aluminium etc.; medium to high pressure; active additives
45	Steel, carbon steel, stainless steel etc.; low pressure; active additives
48	Stainless steel, high-alloy steel, hardened steel; medium to high pressure; active additives and Topsize
65	Stone, tiles, composites, gel coat, epoxies, glass etc.
68	Stone; wet and dry
93	Stainless steel, high-alloy steel, hardened steel; medium to high pressure; active additives and Topsize
101	Especially for hardened surfaces, clear coatings, lacquers, composite, gel coat, metals, etc.
P	PREMIUM***
S	STANDARD**
B	BASIC*
ZA	Zirconium
A	Aluminium oxide
CA	Sintered aluminium oxide
C	Silicium carbide
D	Diamond

Active additives: for cooler grinding

Topsize: for cooler grinding on stainless steel and high-alloy steel |

Stearate layer: reduces loading and smearing

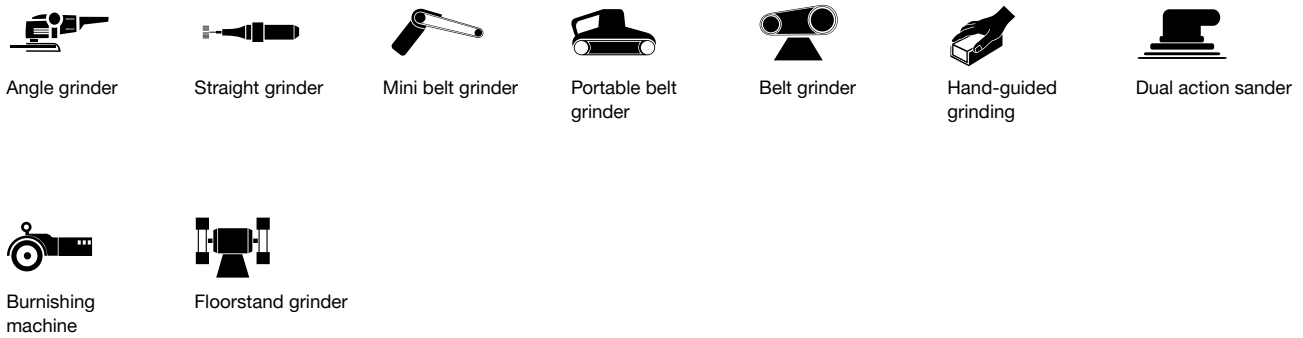
Coated abrasives

Flap discs product label




Coated abrasives

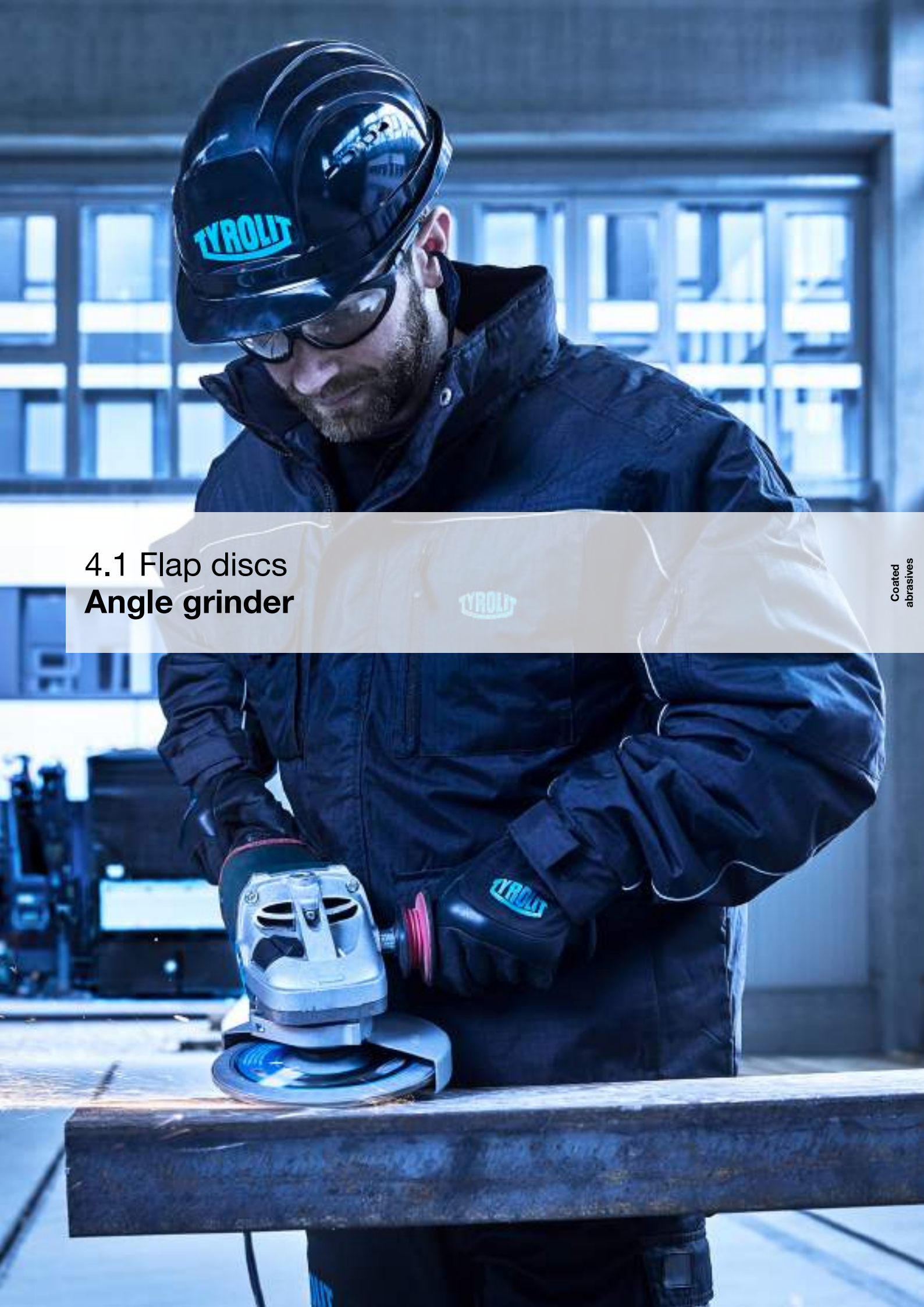
Machine



Colour codes

				
Label	Steel	2in1	INOX	Nonferrous metals
Colour code	BLUE	BLUE	RED	ORANGE
Material	Steel	Steel and stainless steel	Stainless steel	Aluminium, copper, zinc, brass, bronze, stone





4.1 Flap discs
Angle grinder



Flap discs for angle grinders

Working with an angle grinder is one of the most important processes in the trade and industrial sectors for processing all types of metals. TYROLIT offers a comprehensive assortment of flap discs for this purpose.

Whatever the application and whichever shape you prefer: we have the right product for you. Since TYROLIT always puts your health first, we offer flap discs with a

core made from natural fibres, which can even be trimmed. Innovative and precisely adapted to the application. On the following pages you will find the perfect tool for your requirements

thanks to the uniform colour code for all materials.

Application recommendations



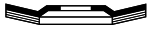
Rating System

Performance level	Design	Grain	Steel	Stainless steel	NF metals	Pages	Aggressiveness	Lifetime	Performance* (0-100)
★★★ PREMIUM	LOGLIFE	ZA	●			195			94
	STAHL	A	●			196			70
	LOGLFIE C-TRIM	ZA	●	●		198			94
	LOGLIFE	ZA	●	●		199			88
	FASTCUT	ZA	●	●		200, 201			88
	OVERLAP	ZA	●	●		201			65
	COMBI	A	●	●		202			
	X-LOCK 2in1	ZA	●	●		202, 203			75
	TWINFLAP	ZA/CA	●	●		203			94
	2in1	ZA	●	●		204, 205			75
	CERABOND	CA			●	210, 211			100
	CERAMIC	CA			●	212			100
	ALU	CA				●	213		
★★ STANDARD	2in1	ZA	●	●		206, 207			60
	TWIN FLAP	ZA	●	●		205			66
	SOFTJOB	ZA				207			44
★ BASIC	STEEL	A	●			197			30
	2in1	ZA	●	●		208, 209			55

*The performance indicates the overall performance of the product in comparison to products with the same material suitability.

Coated abrasives

Shapes



27A Flap disc

Depressed-centre design with fibreglass core. This shape creates the perfect angle of 15°–20°.



27PLCA Flap disc



28A Flap disc

Straight design with fibreglass core. This shape ensures optimum use of the abrasive cloth with a grinding angle of 0–15°.



28NF Flap disc

Core made from natural fibres for easy trimming - straight.



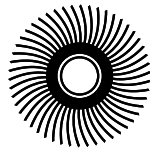
28S SOFTJOB Flap disc

The arrangement of the flaps differs from conventional flap discs, making it even more flexible in use.



28N Flap disc

Straight design with plastic core. This shape ensures optimum use of the abrasive cloth with a grinding angle of 0–15°. The core can also be reset in order to use up the abrasive cloth completely.



1LA Flap wheels



LONGLIFE flap discs

for steel

+ LONGLIFE technology for maximum lifetime

+ 100% use of the disc through simple trimming



+ Maximum stock removal thanks to high-tech zirconia fabric

+ Perfect adaptation to the workpiece surfaces guarantees clean grinding transitions

Application:

- + For demanding grinding applications on different steel grades
- + For surface grinding and for welding seam finishing

We recommend:

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work
- + Best results when used on powerful angle grinders



LONGLIFE flap discs for steel



	Shape	Type no.	Dimension	Specification	PU
		34063393	115x22.23	ZA40-B	10
		34063394	115x22.23	ZA60-B	10
		34063396	115x22.23	ZA80-B	10
		34063397	115x22.23	ZA120-B	10
		34063388	125x22.23	ZA40-B	10
		34063389	125x22.23	ZA60-B	10
		34063390	125x22.23	ZA80-B	10
		34063391	125x22.23	ZA120-B	10
		34063398	150x22.23	ZA40-B	10
		34063399	150x22.23	ZA60-B	10
		34063402	178x22.23	ZA40-B	10
		34063403	178x22.23	ZA60-B	10

Coated abrasives



**Flap discs
for steel**



Application

- + For demanding grinding applications on different steel grades

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work
- + Best results when used on powerful angle grinders

Advantage

- + Best surface results on steel for surface and edge grinding as well as for deburring work
- + Very long lifetime
- + Supporting disc made of rigid fibre glass reinforcement

	Shape	Type no.	Dimension	Specification	PU		
		27A	668630	115x22.23	A40-B	10	
			668631	115x22.23	A60-B	10	
			668632	115x22.23	A80-B	10	
			668633	115x22.23	A120-B	10	
			668634	125x22.23	A40-B	10	
			668635	125x22.23	A60-B	10	
			668637	125x22.23	A80-B	10	
			896379	125x22.23	A120-B	10	
			668638	178x22.23	A40-B	10	
			668640	178x22.23	A60-B	10	
			668641	178x22.23	A80-B	10	
			75193	178x22.23	A120-B	10	
			28A	668679	115x22.23	A40-B	10
					795077	115x22.23	A60-B
	699984			115x22.23	A80-B	10	
	642626			115x22.23	A120-B	10	
	668681			125x22.23	A40-B	10	
	728528			125x22.23	A60-B	10	
	817672			125x22.23	A80-B	10	
	817935			125x22.23	A120-B	10	
	668683			178x22.23	A40-B	10	
	886353			178x22.23	A60-B	10	

Coated abrasives



Flap discs for steel



Application

- + For grinding applications on different steel grades
- + For surface grinding and for welding seam finishing

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work

Advantage

- + Robust handling
- + Good price-performance ratio
- + Excellent results

	Shape	Type no.	Dimension	Specification	PU
		34207216	115x22.23	A40-B	10
		34207217	115x22.23	A60-B	10
		34207231	115x22.23	A80-B	10
		34207233	115x22.23	A120-B	10
		34207235	125x22.23	A40-B	10
		34207236	125x22.23	A60-B	10
		34207237	125x22.23	A80-B	10
		34207238	125x22.23	A120-B	10
		34206840	115x22.23	A40-B	10
		34206851	115x22.23	A60-B	10
		34206854	115x22.23	A80-B	10
		34206857	115x22.23	A120-B	10
		34206858	125x22.23	A40-B	10
		34206860	125x22.23	A60-B	10
		34206891	125x22.23	A80-B	10

Coated abrasives



LONGLIFE C-TRIM flap discs

for steel and stainless steel

+ LONGLIFE technology for maximum lifetime

+ Option of trimming means that the whole disc can be used and new cloth can always be used for grinding



+ Compacted fabric at the edge of the disc ensures high stability during edge grinding

Application:

+ For edge grinding and welding seam finishing on different steel and stainless steel grades

We recommend:



- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work
- + Best results when used on powerful angle grinders



LONGLIFE C-TRIM flap discs

for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU
	 28N	34239191	115x22.23	ZA40-B	10
		34239192	115x22.23	ZA60-B	10
		34239193	115x22.23	ZA80-B	10
		34239194	115x22.23	ZA120-B	10
		34239195	125x22.23	ZA40-B	10
		34239196	125x22.23	ZA60-B	10
		34239197	125x22.23	ZA80-B	10
		34239198	125x22.23	ZA120-B	10
		34382292	150x22.23	ZA40-B	10
		34382293	150x22.23	ZA60-B	10
		34239199	178x22.23	ZA40-B	10
		34239200	178x22.23	ZA60-B	10
		34239221	178x22.23	ZA80-B	10
		34239222	178x22.23	ZA120-B	10

Coated abrasives



LONGLIFE flap discs

for steel and stainless steel

+ LONGLIFE technology for maximum lifetime

+ Above-average stock removal



+ Increased number of closely spaced flaps enables the disc to withstand even the highest loads

Application:

- + For demanding grinding applications on different steel and stainless steel grades
- + For easy welding seam finishing and for surface grinding

We recommend:

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work
- + Best results when used on powerful angle grinders



LONGLIFE flap discs
for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU	
		28N	680369	115x22.23	ZA40-B	10
		680373	115x22.23	ZA60-B	10	
		680376	115x22.23	ZA80-B	10	
		680377	115x22.23	ZA120-B	10	
		680379	125x22.23	ZA40-B	10	
		680380	125x22.23	ZA60-B	10	
		680383	125x22.23	ZA80-B	10	
		680386	125x22.23	ZA120-B	10	
		680387	178x22.23	ZA40-B	10	
		680388	178x22.23	ZA60-B	10	
		680389	178x22.23	ZA80-B	10	
		680390	178x22.23	ZA120-B	10	

Coated abrasives



FASTCUT flap discs

for steel and stainless steel

+ Maximum stock removal thanks to FASTCUT technology

+ Product retains its high abrasiveness over its entire lifetime



+ Cool grinding thanks to Top Size coating prevents discolouration on the workpiece and thus difficult rework

Application:



+ For demanding grinding applications on different steel and stainless steel grades and in some cases on aluminium

We recommend:

+ Grit size 40/60 for high stock removal
 + Grit size 80 for fine work
 + Best results when used on powerful angle grinders

★★★ PREMIUM **FASTCUT flap discs**
for steel and stainless steel



	Shape	Type no.	Dimension	Specification	PU
	 27A	160229	115x22.23	ZA40-B	10
		160230	115x22.23	ZA60-B	10
		160235	115x22.23	ZA80-B	10
		160240	125x22.23	ZA40-B	10
		160242	125x22.23	ZA60-B	10
		160244	125x22.23	ZA80-B	10
		34166360	150x22.23	ZA40-B	10
		34166362	150x22.23	ZA60-B	10
		34166363	150x22.23	ZA80-B	10
		160245	178x22.23	ZA40-B	10
		160246	178x22.23	ZA60-B	10



Coated abrasives



	Shape	Type no.	Dimension	Specification	PU	
		28A	160249	115x22.23	ZA40-B	10
		160251	115x22.23	ZA60-B	10	
		160252	115x22.23	ZA80-B	10	
		160254	125x22.23	ZA40-B	10	
		160255	125x22.23	ZA60-B	10	
		160256	125x22.23	ZA80-B	10	
		28N	458028	115x22.23	ZA40-B	10
		458029	115x22.23	ZA60-B	10	
		458030	115x22.23	ZA80-B	10	
		458034	125x22.23	ZA40-B	10	
		458033	125x22.23	ZA60-B	10	
		458031	125x22.23	ZA80-B	10	



OVERLAP flap discs
for steel and stainless steel



Application

- + For demanding grinding applications on different steel and stainless steel grades
- + For grinding hard-to-reach places

Advantage

- + Ideal for finishing fillet welds, grooves and flutes thanks to the flaps which overlap by 10 mm
- + Very good stock removal and lifetime

We recommend

- + Grit size 40/60 for high stock removal

	Shape	Type no.	Dimension	Specification	PU	
		27A	34206408	115x22.23	ZA40-B	10
		34206409	115x22.23	ZA60-B	10	
		540688	125x22.23	ZA40-B	10	
		540689	125x22.23	ZA60-B	10	



COMBI flap discs
for steel and stainless steel



Application

- + For removing material and finishing surfaces on different steel and stainless steel grades

We recommend

- + Grit size 120 for fine work
- + Adjustable angle grinders for the best results

Advantage

- + The combination of abrasive cloth and fabric enables simultaneous removal of material and finishing of the surfaces for the best possible result
- + Long lifetime
- + Specially developed to achieve good results at high speeds on non-adjustable angle grinders (max. 80 m/s)

	Shape	Type no.	Dimension	Specification	Rec. speed	PU
		27PLCA 742167	115x22.23	120-M	4 000 U/min	5
		742168	125x22.23	120-M	3 600 U/min	5



X-LOCK flap discs
for steel and stainless steel



Application

- + For demanding applications on different steel and stainless steel grades with new Bosch angle grinders

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work

Advantage

- + New X-LOCK clamping system for fast disc changes and easy handling
- + Secure mounting thanks to click noise during clamping
- + Maximum abrasiveness and lifetime

	Shape	Type no.	Dimension	Specification	PU
		28N 34428486	115x22.23/XL	ZA40Q-B	10
		34428487	115x22.23/XL	ZA60Q-B	10
		34428488	115x22.23/XL	ZA80Q-B	10
		34428489	115x22.23/XL	ZA120Q-B	10
		34428490	125x22.23/XL	ZA40Q-B	10
		34428511	125x22.23/XL	ZA60Q-B	10
		34428512	125x22.23/XL	ZA80Q-B	10
		34428513	125x22.23/XL	ZA120Q-B	10



Coated abrasives



	Shape	Type no.	Dimension	Specification	PU
	27A	34428482	115x22.23/XL	ZA40Q-B	10
		34428483	115x22.23/XL	ZA60Q-B	10
		34428484	115x22.23/XL	ZA80Q-B	10
		34428485	115x22.23/XL	ZA120Q-B	10
		34428311	125x22.23/XL	ZA40Q-B	10
		34428312	125x22.23/XL	ZA60Q-B	10
		34428313	125x22.23/XL	ZA80Q-B	10
		34428314	125x22.23/XL	ZA120Q-B	10

PREMIUM
TWIN FLAP
 for steel and stainless steel



Application

- + For demanding grinding applications on different steel and stainless steel grades

We recommend

- + Grit size 40/60 for high stock removal
- + Best results when used on powerful angle grinders

Advantage

- + Double flap arrangement for maximum lifetime
- + Combination of ceramic grain and zirconium for highest aggressiveness

	Shape	Type no.	Dimension	Specification	PU
	27A	34429823	115x22.23	ZA/CA40Q-B	10
		34429825	115x22.23	ZA/CA60Q-B	10
		34429827	125x22.23	ZA/CA40Q-B	10
		34429828	125x22.23	ZA/CA60Q-B	10
	28N	34474190	115x22.23	ZA/CA40Q-B	10
		34474211	115x22.23	ZA/CA60Q-B	10
		34474212	125x22.23	ZA/CA40Q-B	10
		34474213	125x22.23	ZA/CA60Q-B	10

Coated abrasives



2in1 flap discs
for steel and stainless steel



Application

- + For demanding grinding applications on different steel and stainless steel grades
- + For welding seam finishing as well as edge and surface grinding

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work
- + Best results when used on powerful angle grinders

Advantage



- + Maximum stock removal rates
- + Very long lifetime
- + Chemical purity prevents corrosion, pitting corrosion and reduction in fatigue strength for the best results on stainless steel

	Shape	Type no.	Dimension	Specification	PU	
		27N	34043471	115x22.23	ZA40-B	10
		34043472	115x22.23	ZA60-B	10	
		34043473	115x22.23	ZA80-B	10	
		34043474	115x22.23	ZA120-B	10	
		34043475	125x22.23	ZA40-B	10	
		34043476	125x22.23	ZA60-B	10	
		34043477	125x22.23	ZA80-B	10	
		34043478	125x22.23	ZA120-B	10	
		34043479	150x22.23	ZA40-B	10	
		34043480	150x22.23	ZA60-B	10	
		34043481	150x22.23	ZA80-B	10	
		34043482	150x22.23	ZA120-B	10	
		27A	668642	115x22.23	ZA40-B	10
		668644	115x22.23	ZA60-B	10	
		668649	115x22.23	ZA80-B	10	
		643803	115x22.23	ZA120-B	10	
		668663	125x22.23	ZA40-B	10	
		668664	125x22.23	ZA60-B	10	
		668665	125x22.23	ZA80-B	10	
		643805	125x22.23	ZA120-B	10	
		519212	150x22.23	ZA40-B	10	
		519213	150x22.23	ZA60-B	10	
		668670	178x22.23	ZA40-B	10	
		668672	178x22.23	ZA60-B	10	
		668673	178x22.23	ZA80-B	10	
		643807	178x22.23	ZA120-B	10	



Coated abrasives



	Shape	Type no.	Dimension	Specification	PU
	 28A	668686	115x22.23	ZA40-B	10
		668687	115x22.23	ZA60-B	10
		668691	115x22.23	ZA80-B	10
		846344	115x22.23	ZA120-B	10
		668692	125x22.23	ZA40-B	10
		668693	125x22.23	ZA60-B	10
		668694	125x22.23	ZA80-B	10
		645145	125x22.23	ZA120-B	10
		668696	178x22.23	ZA40-B	10
		668697	178x22.23	ZA60-B	10



TWIN FLAP
for steel and stainless steel



Application



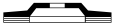
- + For demanding grinding applications on different steel and stainless steel grades

Advantage

- + Double flap arrangement for maximum lifetime
- + Zirconium for very high aggressiveness

We recommend

- + Grit size 40/60 for high stock removal
- + Best results when used on powerful angle grinders

	Shape	Type no.	Dimension	Specification	PU
	 27A	34441260	115x22.23	ZA/ZA40Q-B	10
		34441311	115x22.24	ZA/ZA60Q-B	10
		34441312	115x22.25	ZA/ZA80Q-B	10
	 28N	34474187	115x22.23	ZA/ZA40Q-B	10
		34474188	115x22.23	ZA/ZA60Q-B	10
		34474189	115x22.23	ZA/ZA80Q-B	10

Coated abrasives



2in1 flap discs
for steel and stainless steel



Application

- + For use on different steel and stainless steel grades

Advantage

- + Very good balance between lifetime and specific stock removal

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work

	Shape	Type no.	Dimension	Specification	PU
	27A	572473	115x22.23	ZA40-B	10
		454393	115x22.23	ZA60-B	10
		455312	115x22.23	ZA80-B	10
		50801	115x22.23	ZA120-B	10
		824385	125x22.23	ZA40-B	10
		455303	125x22.23	ZA60-B	10
		458587	125x22.23	ZA80-B	10
		243069	125x22.23	ZA120-B	10
		139648	150x22.23	ZA40-B	10
		139651	150x22.23	ZA60-B	10
		139653	150x22.23	ZA80-B	10
		580650	178x22.23	ZA40-B	10
		454396	178x22.23	ZA60-B	10
		455314	178x22.23	ZA80-B	10
		243071	178x22.23	ZA120-B	10
28A	537021	115x22.23	ZA40-B	10	
	537084	115x22.23	ZA60-B	10	
	537089	115x22.23	ZA80-B	10	
	537093	115x22.23	ZA120-B	10	
	537095	125x22.23	ZA40-B	10	
	537097	125x22.23	ZA60-B	10	
	537110	125x22.23	ZA80-B	10	
	537111	125x22.23	ZA120-B	10	
	537112	178x22.23	ZA40-B	10	
	537113	178x22.23	ZA60-B	10	
	537114	178x22.23	ZA80-B	10	
	537115	178x22.23	ZA120-B	10	



Coated abrasives



	Shape	Type no.	Dimension	Specification	PU	
		28N	847917	115x22.23	ZA40-B	10
		847924	115x22.23	ZA60-B	10	
		847927	115x22.23	ZA80-B	10	
		247165	115x22.23	ZA120-B	10	
		847921	125x22.23	ZA40-B	10	
		847925	125x22.23	ZA60-B	10	
		847928	125x22.23	ZA80-B	10	
		247366	125x22.23	ZA120-B	10	
		847923	178x22.23	ZA40-B	10	
		847926	178x22.23	ZA60-B	10	
		847929	178x22.23	ZA80-B	10	
		247175	178x22.23	ZA120-B	10	

★★ **STANDARD** **SOFTJOB flap discs**
for steel and stainless steel



Coated abrasives

Application

- + For surface improvement and preparing for welding work as well as cleaning welding seams on various steel and stainless steel grades
- + For grinding contours, profiled surfaces, handrails and pipes as well as for cleaning rust and paint residues

Advantage

- + Maximum flexibility thanks to specific design
- + Perfect for hard-to-reach places thanks to offset arrangement of the fabric

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work

	Shape	Type no.	Dimension	Specification	PU	
		28S	246987	115x22.23	ZA40-B	10
		246988	115x22.23	ZA60-B	10	
		246990	115x22.23	ZA80-B	10	
		246994	115x22.23	ZA120-B	10	
		246995	125x22.23	ZA40-B	10	
		246996	125x22.23	ZA60-B	10	
		246998	125x22.23	ZA80-B	10	
		247001	125x22.23	ZA120-B	10	



2in1 flap disc
for steel and stainless steel



Application

- + For grinding applications on different steel and stainless steel grades

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work

Advantage



- + Good stock removal with 30% more performance compared to the previous version
- + Good lifetime

	Shape	Type no.	Dimension	Specification	PU	
		27A	34318364	115x22.23	ZA40-B	10
		34318365	115x22.23	ZA60-B	10	
		34318366	115x22.23	ZA80-B	10	
		34318368	115x22.23	ZA120-B	10	
		34318369	125x22.23	ZA40-B	10	
		34318370	125x22.23	ZA60-B	10	
		34318391	125x22.23	ZA80-B	10	
		34318392	125x22.23	ZA120-B	10	
		34318393	150x22.23	ZA40-B	10	
		34318394	150x22.23	ZA60-B	10	
		34318395	150x22.23	ZA80-B	10	
		34318396	150x22.23	ZA120-B	10	
		34318398	178x22.23	ZA40-B	10	
		34318400	178x22.23	ZA60-B	10	
		34318533	178x22.23	ZA80-B	10	
		34318534	178x22.23	ZA120-B	10	
			28A	34318539	115x22.23	ZA40-B
34318551	115x22.23		ZA60-B	10		
34318552	115x22.23		ZA80-B	10		
34318553	115x22.23		ZA120-B	10		
34318554	125x22.23		ZA40-B	10		
34318555	125x22.23		ZA60-B	10		
34318557	125x22.23		ZA80-B	10		
34318558	125x22.23		ZA120-B	10		
34318559	150x22.23		ZA40-B	10		
34318560	150x22.23		ZA60-B	10		
34318561	150x22.23		ZA80-B	10		
34318562	150x22.23		ZA120-B	10		
34318563	178x22.23		ZA40-B	10		
34318564	178x22.23		ZA60-B	10		
34318566	178x22.23	ZA80-B	10			
34318567	178x22.23	ZA120-B	10			



Coated abrasives



	Shape	28N	Type no.	Dimension	Specification	PU
		28N	34318568	115x22.23	ZA40-B	10
			34318569	115x22.23	ZA60-B	10
			34318570	115x22.23	ZA80-B	10
			34318571	115x22.23	ZA120-B	10
			34318572	125x22.23	ZA40-B	10
			34318573	125x22.23	ZA60-B	10
			34318574	125x22.23	ZA80-B	10
			34318576	125x22.23	ZA120-B	10
			34318577	178x22.23	ZA40-B	10
			34318579	178x22.23	ZA60-B	10
			34318580	178x22.23	ZA80-B	10
			34318582	178x22.23	ZA120-B	10



CERABOND flap discs

for stainless steel

+ High stock removal on the workpiece thanks to ceramic grain and CERABOND bond system

+ Trimmable shape 28N means that the whole disc can be used



+ Unique bond system prevents premature grain break-out and permits maximum lifetime

+ Cool grinding thanks to Top Size coating prevents discolouration on the workpiece and thus difficult rework

Application:

+ For demanding grinding applications on different stainless steel grades

We recommend:

- + Grit size 40/60 for high stock removal
- + Grit size 80 for fine work
- + Best results when used on powerful angle grinders





CERABOND flap discs
for stainless steel



	Shape	Type no.	Dimension	Specification	PU
	27A	34043514	115x22.23	CA40-B	5
		34043515	115x22.23	CA60-B	5
		34165680	115x22.23	CA80-B	5
		34043516	125x22.23	CA40-B	5
		34043517	125x22.23	CA60-B	5
		34165681	125x22.23	CA80-B	5
		34166166	178x22.23	CA40-B	5
		34166167	178x22.23	CA60-B	5
		34166168	178x22.23	CA80-B	5
			28A	34166172	115x22.23
34166173	115x22.23			CA60-B	5
34166174	115x22.23			CA80-B	5
34166175	125x22.23			CA40-B	5
34166176	125x22.23			CA60-B	5
34166177	125x22.23			CA80-B	5
34166178	150x22.23			CA40-B	10
34166180	150x22.23			CA80-B	10
34166181	178x22.23			CA40-B	5
	28N			34315841	115x22.23
		34315842	115x22.23	CA60-B	5
		34315843	115x22.23	CA80-B	5
		34315845	125x22.23	CA40-B	5
		34315846	125x22.23	CA60-B	5
		34315847	125x22.23	CA80-B	5

Coated abrasives



CERAMIC flap discs for stainless steel



Application

- + For demanding grinding applications on different stainless steel grades

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80 for fine work

Advantage

- + Maximum stock removal on the workpiece thanks to ceramic grain
- + Cool grinding thanks to Top Size coating prevents discolouration on the workpiece and thus difficult rework
- + Even surface finish thanks to the self-sharpening characteristic of the abrasive grain over the entire lifetime of the disc

	Shape	Type no.	Dimension	Specification	PU	
		27A	645130	115x22.23	CA40-B	10
			645132	115x22.23	CA60-B	10
			34166620	115x22.23	CA80-B	10
			645135	125x22.23	CA40-B	10
			645137	125x22.23	CA60-B	10
			34166671	125x22.23	CA80-B	10
		28A	719797	115x22.23	CA40-B	10
			719798	115x22.23	CA60-B	10
			34166687	115x22.23	CA80-B	10
			719799	125x22.23	CA40-B	10
			719800	125x22.23	CA60-B	10
			34166688	125x22.23	CA80-B	10
		28N	719846	125x22.23	CA40-B	10
			719847	125x22.23	CA60-B	10
			34166865	125x22.23	CA80-B	10



Flap discs for nonferrous metals



Application

- + For demanding grinding applications on nonferrous metals, especially difficult-to-grind materials such as aluminium, aluminium bronze, aluminium base alloy, copper, bronze, brass and nickel silver

We recommend

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work

Advantage

- + Specification prevents the usual smearing and dulling of the flap disc
- + Self-cleaning and sharpening of the disc during material abrasion thanks to fed ceramic grain

	Shape	Type no.	Dimension	Specification	PU		
		27A	707005	115x22.23	CA40-B	10	
		707007	115x22.23	CA60-B	10		
		707008	115x22.23	CA80-B	10		
		707010	115x22.23	CA120-B	10		
		707011	125x22.23	CA40-B	10		
		707012	125x22.23	CA60-B	10		
		707013	125x22.23	CA80-B	10		
		707014	125x22.23	CA120-B	10		
		707015	178x22.23	CA40-B	10		
		707016	178x22.23	CA60-B	10		
			28A	707158	115x22.23	CA120-B	10
			707159	125x22.23	CA40-B	10	
			707160	125x22.23	CA60-B	10	
			707161	125x22.23	CA80-B	10	
			707163	125x22.23	CA120-B	10	



A-P01 C X flap wheels

for steel, nonferrous metal and wood

- + Consistent wear pattern of the flap wheel over its entire lifetime enables a consistently high-quality surface finish



Application:

- + For general grinding applications such as cleaning, finishing and polishing on steel, nonferrous metals and wood
- + For polishing uneven or curved surfaces



We recommend:

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for fine work

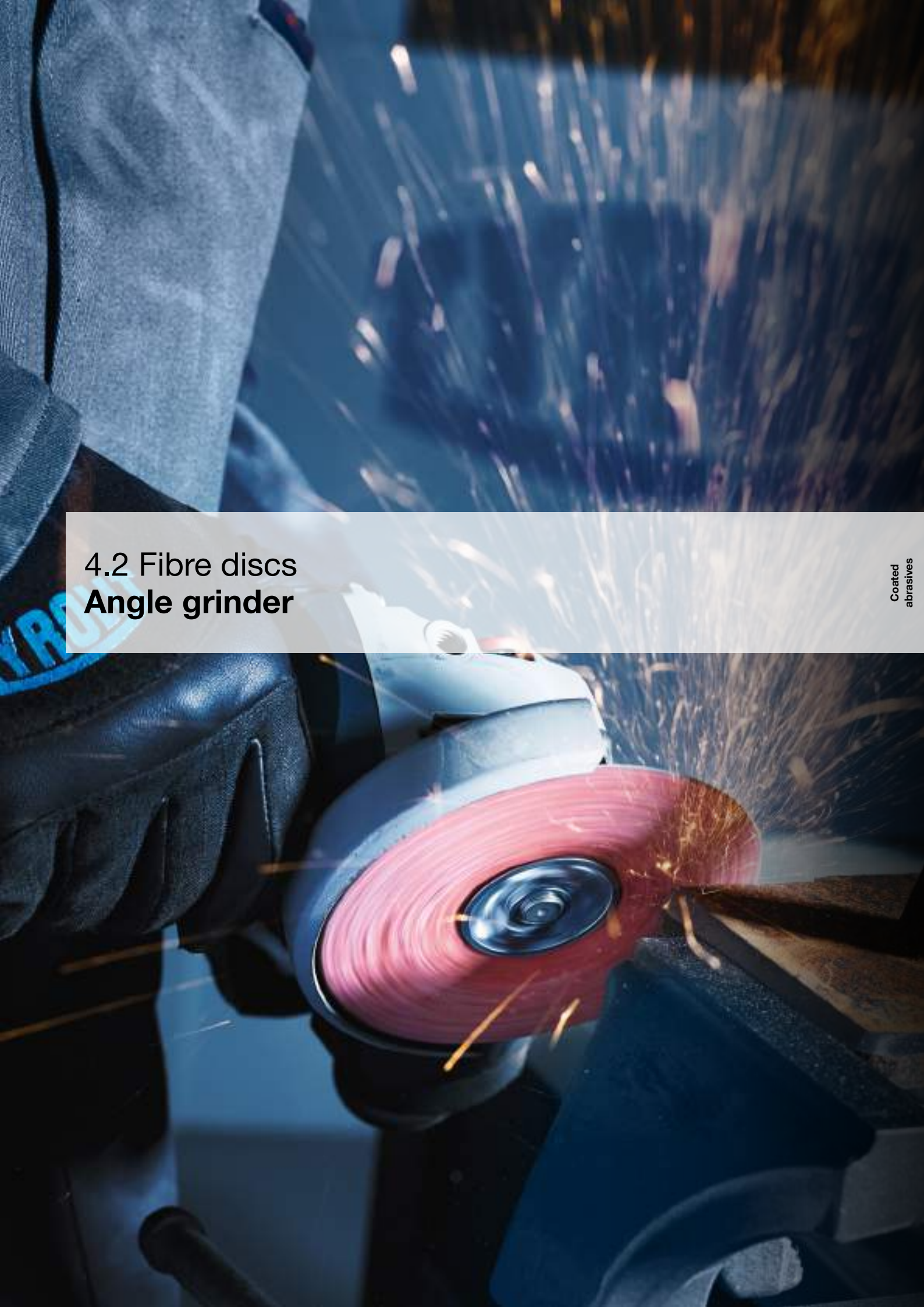


A-P01 C X flap wheels for steel, nonferrous metal and wood



	Shape	Type no.	Dimension	Mounting	Grain	Rec. speed	
		1LA	34053198	115x20	M14	40	13 300
		34057513	115x20	M14	60	13 300	
		34057514	115x20	M14	80	13 300	
		34057515	115x20	M14	120	13 300	
		34057521	125x20	M14	60	12 200	

Coated abrasives



4.2 Fibre discs
Angle grinder



Fibre discs Angle grinder

For quite a number of years, in the “coated abrasives” range, TYROLIT has offered fibre discs and back up pads for all common and not-so-common grinding jobs.

Fibre discs are used when it is necessary to carry out rough grinding or derust or deburr surfaces. TYROLIT believes in the importance of flexibility and ease of use, and offers a very wide assortment for every conceivable

application. Naturally the discs come with all accessories needed for assembly.

TYROLIT has also developed a more environment-friendly version. Our jute disc, made from eco-friendly jute

fibre, is used without any additional core and, being trimmable, offers maximum stock removal right to the very end. Try it for yourself!

Application recommendations



Performance level	Specification	Steel	Stainless steel	NF metals	Wood	Composites	Gel-Coat	Pages
 PREMIUM	CA-P93 N	●	●					218
	ZA-P48 N	●	●					219
	ZA-P43 V	●						220
	ZA-P48 V	●	●					221, 222
	CA-P93 V	●	●					223, 224
 BASIC	A-B02 V	●		●	●			225
	A-B01 V	●		●	●			226
 PREMIUM	TFC ZA-P45 V	●		●		●	●	228
	ZA-P45 P F	●		●		●	●	228

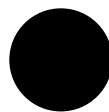
Shapes



N Disc Jute disc



V Disc 4S Vulcanised fibre disc



TYROLIT FAST CHANGE Disc



PAD UNI Back up pads



PAD INOX Back up pads



PAD BASIC Back up pads



PAD TFC back up pads for TYROLIT FAST CHANGE



CA-P93 N natural fibre discs

for steel and stainless steel

+ Ceramic aluminium oxide and an additional coolant layer ensures maximum stock removal rate



+ Core helps to transport the heat away and ensures cool grinding

+ Environmentally friendly, trimmable jute fibre core guarantees maximum lifetime

Application:

+ For coarse grinding work as well as for removing rust and burrs from hard steel and stainless steel surfaces



We recommend:

+ Grit size 36 for maximum stock removal



CA-P93 N natural fibre discs for steel and stainless steel



	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		N Disc	712259	115x22	36	13 300	10
			712268	125x22	36	12 250	10
			712269	180x22	36	8 600	10

Coated abrasives



ZA-P48 N natural fibre discs
for steel and stainless steel



Application



- + For coarse grinding work as well as for removing rust and burrs from regular and hard steel and stainless steel surfaces

We recommend

- + Grit size 36 for maximum stock removal
- + Grit size 60 for general grinding work

Advantage

- + Zirconia alumina and an additional coolant layer ensures very good stock removal
- + Environmentally friendly, trimmable jute fibre core guarantees maximum lifetime
- + Core helps to transport the heat away and ensures cool grinding

	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		N Disc	706128	115x22	36	13 300	10
		205056	115x22	60	13 300	10	
		706129	125x22	36	12 250	10	
		205058	125x22	60	12 250	10	
		706130	180x22	36	8 600	10	
		205060	180x22	60	8 600	10	

Accessory
for natural fibre discs




Application

- + Ideally suited to setting the correct distance between the wheel and angle grinder

Advantage

- + Enables flat surfaces to be ground with a small grinding angle
- + Compatible with all wheel diameters

	Type no.	Diameter	PU
	100SFL 21381	42x22,23 M14	1

Coated abrasives



ZA-P43 V vulcanised fibre discs for steel



Application



- + For coarse and fine grinding work as well as for removing rust and burrs from steel surfaces

We recommend

- + Grit size 24/36/40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding

Advantage

- + Zirconia alumina ensures high abrasion when working on steel and very good stock removal
- + Low level of vibration for comfortable working

	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	 V Disc	706068	115x22	24	13 300	25
		706069	115x22	36	13 300	25
		706071	115x22	40	13 300	25
		706072	115x22	60	13 300	25
		706073	115x22	80	13 300	25
		706074	115x22	120	13 300	25
		706075	125x22	24	12 300	25
		706076	125x22	36	12 300	25
		706077	125x22	40	12 300	25
		706078	125x22	60	12 300	25
		706079	125x22	80	12 300	25
		706082	125x22	120	12 300	25
		706084	180x22	24	8 600	25
		706088	180x22	36	8 600	25
		706090	180x22	60	8 600	25
		706091	180x22	80	8 600	25
		706092	180x22	120	8 600	25



ZA-P48 V vulcanised fibre discs

for steel and stainless steel

+ Zirconia alumina and an additional coolant layer ensure very good stock removal

+ Additional coolant layer for long lifetime



+ Very good surface finish thanks to optimised backing thickness

Coated abrasives

Application:

+ For coarse and fine grinding work as well as for removing rust and burrs from regular and hard steel and stainless steel surfaces

We recommend:

+ Grit size 24/36/40/60 for maximum stock removal
+ Grit size 80/120 for fine grinding



ZA-P48 V vulcanised fibre discs for steel and stainless steel



	Shape	Type no.	Diameter	Grain	Max. RPM	PU
		34162979	115x22	24	13 300	25
		34162980	115x22	36	13 300	25
		34162981	115x22	40	13 300	25
		34162982	115x22	60	13 300	25
		34162983	115x22	80	13 300	25
		34162985	115x22	120	13 300	25
		34162987	125x22	24	12 300	25





ZA-P48 V vulcanised fibre discs
for steel and stainless steel



	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	V Disc	34162988	125x22	36	12 300	25
		34162989	125x22	40	12 300	25
		34162990	125x22	60	12 300	25
		34163011	125x22	80	12 300	25
		34163012	125x22	120	12 300	25
		34163013	180x22	24	8 600	25
		34163014	180x22	36	8 600	25
		34163020	180x22	60	8 600	25
		34163021	180x22	80	8 600	25
		34163022	180x22	120	8 600	25
		34163024	115x22	24	13 300	50
		34163025	115x22	36	13 300	50
		34163026	115x22	40	13 300	50
		34163888	115x22	60	13 300	50
		34163889	115x22	80	13 300	50
		34163890	115x22	120	13 300	50
		34163902	125x22	24	12 300	50
		34163903	125x22	36	12 300	50
		34163905	125x22	40	12 300	50
		34163906	125x22	60	12 300	50
		34163908	125x22	80	12 300	50
		34163910	125x22	120	12 300	50
		34163911	180x22	24	8 600	50
		34163912	180x22	36	8 600	50
		34163914	180x22	60	8 600	50
		34163915	180x22	80	8 600	50
		34163917	180x22	120	8 600	50

Coated abrasives

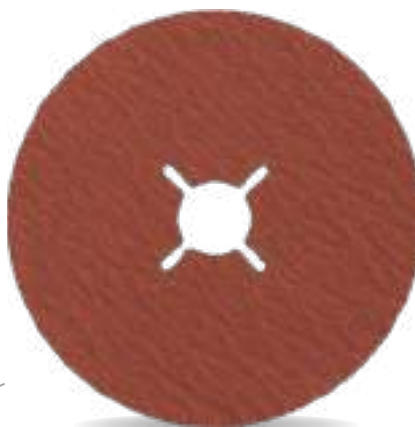


CA-P93 V vulcanised fibre discs

for steel and stainless steel

+ Ceramic aluminium oxide and an additional coolant layer ensures maximum stock removal rate

+ Additional coolant layer for long lifetime



+ Maximum abrasiveness thanks to strong backing

Coated abrasives

Application:

+ For coarse grinding work as well as for removing rust and burrs from hard steel and stainless steel surfaces

We recommend:

+ Grit size 24/36/40/60 for maximum stock removal
+ Grit size 80/120 for fine grinding



CA-P93 V vulcanised fibre discs for steel and stainless steel



	Shape	Type no.	Diameter	Grain	Max. RPM	PU
		V Disc				
		34163955	115x22	24	13 300	25
		706107	115x22	36	13 300	25
		34163957	115x22	40	13 300	25
		706108	115x22	60	13 300	25
		706109	115x22	80	13 300	25
		706110	115x22	120	13 300	25
		34163958	125x22	24	12 300	25





CA-P93 V vulcanised fibre discs
for steel and stainless steel



	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	V Disc	706111	125x22	36	12 300	25
		34163959	125x22	40	12 300	25
		706114	125x22	60	12 300	25
		706116	125x22	80	12 300	25
		706117	125x22	120	12 300	25
		34164002	180x22	24	8 600	25
		706119	180x22	36	8 600	25
		34164004	180x22	40	8 600	25
		706120	180x22	60	8 600	25
		706123	180x22	80	8 600	25
		706124	180x22	120	8 600	25
		34163992	115x22	24	13 300	50
		34163993	115x22	36	13 300	50
		34163994	115x22	40	13 300	50
		34163995	115x22	60	13 300	50
		34163997	115x22	80	13 300	50
		34163998	115x22	120	13 300	50
		34163999	125x22	24	12 300	50
		34164000	125x22	36	12 300	50
		34164011	125x22	40	12 300	50
		34164012	125x22	60	12 300	50
		34164013	125x22	80	12 300	50
		34164014	125x22	120	12 300	50
		34164015	180x22	24	8 600	50
		34164017	180x22	36	8 600	50
		34164018	180x22	40	8 600	50
		34164019	180x22	60	8 600	50
		34164020	180x22	80	8 600	50
		34164031	180x22	120	8 600	50

Coated abrasives



A-B02 V vulcanised fibre discs for steel, nonferrous metals and wood



Application

+ Suitable for universal use on steel, nonferrous metals and wood

We recommend

- + Grit size 16/24/36/40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding

Advantage

- + Aluminium oxide for long lifetime and high abrasiveness
- + Maximum economic efficiency

	Shape	Type no.	Diameter	Grain	Max. RPM	PU
		V Disc				
		150465	115x22	16	13 300	25
		706024	115x22	24	13 300	25
		706025	115x22	36	13 300	25
		706026	115x22	40	13 300	25
		706027	115x22	60	13 300	25
		706028	115x22	80	13 300	25
		150467	115x22	100	13 300	25
		706029	115x22	120	13 300	25
		150468	125x22	16	12 300	25
		706030	125x22	24	12 300	25
		706031	125x22	36	12 300	25
		706032	125x22	40	12 300	25
		706033	125x22	60	12 300	25
		706034	125x22	80	12 300	25
		150469	125x22	100	12 300	25
		706035	125x22	120	12 300	25
		150473	180x22	16	8 600	25
		706036	180x22	24	8 600	25
		706037	180x22	36	8 600	25
706038	180x22	40	8 600	25		
706039	180x22	60	8 600	25		
706047	180x22	80	8 600	25		
706048	180x22	120	8 600	25		

Coated abrasives



A-B01 V vulcanised fibre discs for steel, aluminium and wood



Application



- + Suitable for universal use on steel, nonferrous metals and wood

Advantage

- + Aluminium oxide for long lifetime and high abrasiveness

We recommend

- + Grit size 24 - 60 for maximum stock removal
- + Grit size 80/120 for fine grinding

	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	 V Disc	34286491	115x22	24	13 300	5
		34286492	115x22	36	13 300	5
		34286493	115x22	40	13 300	5
		34286703	115x22	50	13 300	5
		34286494	115x22	60	13 300	5
		34286495	115x22	80	13 300	5
		34286497	115x22	100	13 300	5
		34286498	115x22	120	13 300	5
		34286499	125x22	24	12 300	5
		34286500	125x22	36	12 300	5
		34286501	125x22	40	12 300	5
		34286705	125x22	50	12 300	5
		34286502	125x22	60	12 300	5
		34286503	125x22	80	12 300	5
		34286505	125x22	100	12 300	5
		34286506	125x22	120	12 300	5
		34286507	180x22	24	8 600	5
		34286508	180x22	36	8 600	5
		34286509	180x22	40	8 600	5
		34286706	180x22	50	8 600	5
34286510	180x22	60	8 600	5		
34286511	180x22	80	8 600	5		
34286512	180x22	100	8 600	5		
34286513	180x22	120	8 600	5		



**Accessory
for fibre discs**



Application

+ Back up pads offer the best support for working with fibre discs

Advantage

- + Various hardnesses for the required stock removal rate
- + Constant air circulation thanks to special design prevents heat build-up at the workpiece and tool

	Shape	Type no.	Diameter	Mounting	Grade	Max. RPM	PU
		PAD INOX 709989	115x22	M14	VERY HARD	13 300	5
		709991	125x22	M14	VERY HARD	12 300	5
		PAD UNI 709992	115x22	M14	HARD	13 300	5
		709993	125x22	M14	HARD	12 300	5
		709994	180X22	M14	HARD	8 600	5



**Accessory
for fibre discs**



Application

+ Pack up pads offer the best support for working with fibre discs

Advantage

- + Good support for a perfect surface finish

	Shape	Type no.	Diameter	Mounting	Grade	Max. RPM	PU
		PAD BASIC 709995	115x22	M14	HARD	13 300	5
		709997	125x22	M14	HARD	12 300	5
		709998	180X22	M14	HARD	8 600	5
		709999	115x22	5/8"	HARD	13 300	5
		710002	125x22	5/8"	HARD	12 300	5
		710005	180X22	5/8"	HARD	8 600	5

Coated abrasives



ZA-P45 V* / ZA-P45 P F
TYROLIT Fast Change (TFC)
 for steel, nonferrous metals, composites and gel coat



Application

- + For coarse and fine grinding of steel, nonferrous metals, composites and gel coat

We recommend

- + Grit size 40 for grinding smaller welding seams and spot weld seams
- + Grit size 60 for maximum stock removal
- + Grit size 80/120 for a perfect surface finish

Advantage

- + Combination of zirconia alumina and a unique, strong paper backing for maximum abrasiveness and lifetime
- + Active coolant in the bond for cool and clean grinding
- + TYROLIT Fast Change system for quick and easy wheel changes thanks to Velcro fastening

	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		Disc	706135*	115	40	12 300	50
		706136	115	60	12 300	50	
		706137	115	80	12 300	50	
		706138	115	120	12 300	50	
		706139*	125	40	10 500	50	
		706141	125	60	10 500	50	
		706142	125	80	10 500	50	
		706143	125	120	10 500	50	

*Fibre backing



Accessory
 for TYROLIT Fast Change (TFC)



Application

- + Back up pads for quick and easy mounting of the TFC discs on speed-controlled angle grinders

Advantage

- + Ideal support for finishing and preparing surfaces
- + High-quality product design enables use on different materials, including wood and paints

	Shape	Type no.	Diameter	Mounting	Grade	Max. RPM	PU	
		PAD TFC	710006	115	M14	HARD	13 300	5
		710007	125	M14	HARD	12 300	5	

Coated abrasives



4.3 Rough cleaning wheel
Angle grinder



Rough cleaning wheel for angle grinder

Working with an angle grinder is one of the most important processes in the trade and industrial sectors for processing all types of metals. Would you like to remove rust, paint and varnish with a minimum of effort? Or do you need to prepare surfaces for welding, soldering or anodising?

The highly porous nylon fibres are evenly treated with aggressive abrasives and are able to meet any challenge.

All of our rough cleaning discs resist

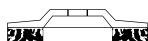
loading or smearing and offer long life with an even grinding pattern, but also low heat generation and quiet, stress-free working.

Application recommendations



Performance level	Design	All in One	Pages
★★★ PREMIUM	C COARSE, A EX. COARSE	●	231

Shapes



27GR Rough cleaning wheel
(sound insulated)

★★★
PREMIUM

Rough cleaning wheels for universal use



Coated abrasives

Application


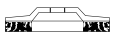


- + For removing rust, paint and lacquer and for preparing surfaces for welding, soldering or anodising

We recommend

- + C COARSE design for fine work on surfaces
- + A EX. COARSE design for increased abrasiveness and use on edges

Advantage

- + Flexible nylon fibres treated with aggressive abrasive grain for universal use and the best results
- + Design prevents clogging and loading of the wheel
- + Minimal generation of heat thanks to open structure

Shape	Type no.	Dimension	Design	Colour	PU	Max. RPM	Rec. speed
 	28 VL GR 898014	115x22.23	C COARSE	BLACK	5	11 000	8 600
	898017	125x22.23	C COARSE	BLACK	5	9 800	7 800
	898018	178x22.23	C COARSE	BLACK	5	7 000	6 600
	34206236	115x22.2	A EX. COARSE	BLUE	5	11 000	8 600
 	34206237	125x22.2	A EX. COARSE	BLUE	5	9 800	7 800
	34206238	178x22.2	A EX. COARSE	BLUE	5	7 000	6 600





4.4 SCM – SURFACE CONDITIONING MATERIAL
Angle grinder



SCM discs for angle grinders

Working with an angle grinder is one of the most important processes in the trade and industrial sectors for processing all types of metals. TYROLIT now offers the SCM product assortment for use with angle grinders as well.

SURFACE CONDITIONING MATERIAL discs combine excellent cutting ability with long tool life, so that you can achieve optimum surface quality. This saves you two or three work steps. From simple deburring work

without workpiece deformation to perfect surface finishing, SCM can be used universally.

With a wide range of grain sizes, from extra coarse to very fine, TYROLIT

products are suitable for many different applications. Our discs offer another special feature: thanks to the removable centre hole, our discs can be mounted on the three most popular back up pads. Try it for yourself!

Application recommendations



Performance level	Design	All in One	Pages
★★★ PREMIUM	EXTRA COARSE, COARSE, EXTRA MEDIUM, MEDIUM, VERY FINE	●	236, 237

SCM disc assembly

SCM discs are designed for use on an angle grinder and are available in the popular diameters 115–178 mm, from EXTRA COARSE to VERY FINE.

Cleverly designed: Thanks to the removable centre hole, each of these discs can be used on all three of the supporting discs in our range.



Coated abrasives

Colours

	EXTRA COARSE	COARSE	EXTRA MEDIUM	MEDIUM	VERY FINE
Front					
Back					

Shapes



DISC SCM Disc



SCM discs

for universal use

+ Versatile application options eliminate the need for 1-3 work steps

+ Universal application areas



+ Best lifetime and high stock removal

+ Removable centre hole enables mounting on a wide range of back up pads

Application:

+ For reducing surface roughness, removing paint residues, smoothing surfaces, cleaning and removing welding seams and for deburring edges


We recommend:

+ Use on adjustable angle grinders
 + "EXTRA COARSE/EXTRA MEDIUM" grain for cleaning, for removing rust and burrs and for minimal stock removal
 + "COARSE" grain for cleaning, for removing rust and coatings and for final finishing
 + "MEDIUM" grain for gentle cleaning, for removing burrs and for final finishing
 + "VERY FINE" grain as the final step



SCM discs for universal use



Shape	Type no.	Dimension	Design	Colour	Max. RPM	Rec. speed	PU	
	Disc	34299305	115x22	HD EXTRA COARSE	DARK BROWN / PURPLE	13 000	8-9 000	20
		34047715	115x22	COARSE	BROWN	13 000	8-9 000	20
		34299306	115x22	HD EXTRA MEDIUM	DARK BROWN / PURPLE	13 000	8-9 000	20
		34047720	115x22	MEDIUM	RED	13 000	8-9 000	20





Shape	Type no.	Dimension	Design	Colour	Max. RPM	Rec. speed	PU
 	Disc 34047722	115x22	VERY FINE	BLUE	13 000	8-9 000	20
	34299307	125x22	HD EXTRA COARSE	DARK BROWN / PURPLE	12 000	7-8 500	20
	34047727	125x22	COARSE	BROWN	12 000	7-8 500	20
	34299308	125x22	HD EXTRA MEDIUM	DARK BROWN / PURPLE	12 000	7-8 500	20
	34047732	125x22	MEDIUM	RED	12 000	7-8 500	20
	34047733	125x22	VERY FINE	BLUE	12 000	7-8 500	20
	34047734	178x22	HD EXTRA COARSE	DARK BROWN / PURPLE	8 500	5-6 000	20
	34047735	178x22	COARSE	BROWN	8 500	5-6 000	20
	34047736	178x22	HD EXTRA MEDIUM	DARK BROWN / PURPLE	8 500	5-6 000	20
	34047755	178x22	MEDIUM	RED	8 500	5-6 000	20
34047757	178x22	VERY FINE	BLUE	8 500	5-6 000	20	



SCM set for universal use




Application

- + For reducing surface roughness, removing paint residues, smoothing surfaces, cleaning and removing welding seams and for deburring tool edges

Advantage

- + The SCM set includes all five designs " from EXTRA COARSE to VERY FINE
- + Best lifetime and good stock removal
- + Universal application areas
- + Removable centre hole enables mounting on all back up pads available in the assortment

Shape	Type no.	Dimension	Mounting	Max. RPM	Rec. speed	PU
	Disc 34186370	115x22	M14	13 000	8-9 000	1
	34197811	125x22	M14	12 000	7-8 500	1



Back up pads for SCM discs





Application

- + For using SCM discs on angle grinders
- + SCM back up pads available with or without centre hole mounting

Advantage

- + Back up pads with centre hole mountings for self-centring fitting of the disc on the back up pad

	Shape	Type no.	Diameter	Mounting	Grade	Max. RPM	PU	
		PAD SCM	34050524	115x22	M14	MEDIUM	13 000	1
			34050525	125x22	M14	MEDIUM	12 000	1
			34050358	115	M14	MEDIUM	13 000	1
			34050359	125	M14	MEDIUM	12 000	1
			34050509	178	M14	MEDIUM	8 500	1



4.5 Compact wheels
Angle grinders



Compact wheels for angle grinders

Working with an angle grinder is one of the most important processes in the trade and industrial sectors for processing all types of metals. TYROLIT offers a comprehensive assortment of products for this purpose.

With the compact wheel range, TYROLIT offers you an ideal tool for the machining of surfaces without changing the surface geometry,

particularly for the removal of rust and dirt. Compact wheels consist of multilayer unitised fleece and are available in coarse to fine specifica-

tions depending on the number of layers. On the following pages, you will find our range of unitised compact wheels for angle grinders.

Application recommendations



Performance level	Design	All in One	Pages
★★★ PREMIUM	2 A MEDIUM, 2 C FINE, 3 C FINE, 6 A MEDIUM, 6 C FINE, 8 A COARSE	●	242, 243

Shapes



1UW Unitized wheel
(unitised wheel)

Coated
abrasives



Unitised compact wheels

for universal use

- + Ideally suited to hard-to-reach places thanks to their flexibility



- + Cool grinding and low clogging of the wheel for the best surface results

- + Universal tool with maximum brush life

Application:

- + For removing rust, burrs and scratches as well as for fading, glazing, finishing and grinding welding seams

We recommend:

- + 2/3 C FINE for deburring and polishing
- + 2 A MEDIUM for deburring, polishing and for transitions
- + 6 C FINE / 6 A MEDIUM for deburring, rounding sharp edges and for transitions
- + 8 A COARSE for deburring, rounding sharp edges and for transitions with increased abrasiveness
- + Adjustable angle grinders for the best results







★★★
PREMIUM

Unitised compact wheels for universal use



Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	PU
 	34257307	127x6x22.2	3 C FINE	10 000	6 000	2
	34190122	127x3x22.2	6 A MEDIUM	10 000	6 000	16
	34190123	127x6x22.2	3 C FINE	10 000	6 000	8
	34190124	127x6x22.2	6 A MEDIUM	10 000	6 000	8
	34190125	152x3x25.4	2 A MEDIUM	5 000	3 000	16
	34190209	152x3x25.4	6 A MEDIUM	7 500	4 500	16
	34190210	152x3x25.4	6 C FINE	7 500	4 500	16
	34190231	152x3x25.4	8 A COARSE	7 500	4 500	16
	34190274	152x6x25.4	2 A MEDIUM	5 000	3 000	8
	34190275	152x6x25.4	2 C FINE	5 000	3 000	8
	34190276	152x6x25.4	3 C FINE	5 000	3 000	8
	34190277	152x6x25.4	6 A MEDIUM	7 500	4 500	8
	34190279	152x6x25.4	8 A COARSE	7 500	4 500	8





4.6 POLISHING PROGRAM Angle grinder



Polishing program for angle grinders

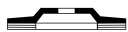
Working with an angle grinder is one of the most important processes in the trade and industrial sectors for processing all types of metals. TYROLIT offers an optimally tailored package for polishing metal.

There are many suppliers of polishing accessories. But anyone who has ever polished knows how important it is that all components should be perfectly matched to one another.

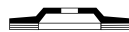
With TYROLIT you can get everything you need from one source. You can tell how perfectly our products are matched from the fact that you can get a mirror finish in only three steps

– without unwanted discolouration due to overheating.

Shapes



28PCA CONDITIONING



28PUA PRE-POLISH



28PWA POLISH



Disc POLISTAR

Recommended speeds

PREMIUM*** CONDITIONING	PREMIUM*** PRE-POLISH	PREMIUM*** POLISH
115 mm – 4 000 U/min	115 mm – 3 500 U/min	115 mm – 1 800 U/min
125 mm – 3 600 U/min	125 mm – 3 000 U/min	125 mm – 1 500 U/min

POLISHING PASTE:

- WHITE – high gloss PRE-POLISH (POLISH)
- BLUE – high gloss POLISH (S-POLISH)
- BROWN - special POLISH for nonferrous metals (POLISH-NE)



PREMIUM

TYROLIT polishing program

Three steps to a perfect mirror finish

+ Preparation

Preparing the untreated workpiece

To prepare the untreated material and get a mirror finish, you need:

PREMIUM*** fibre discs ZA-P48 Page 221

PREMIUM*** 2in1 flap discs Page 201

STANDARD** SOFTJOB Page 207

Our recommendation: grit size 120 or 80 depending on the material

+ Step 1

Remove rough scratch marks using the PREMIUM*** CONDITIONING disc

It removes all rough scratch marks from the surfaces to be machined.

A multi-dimensional flap design reduces clogging and prevents unwanted material discolouration.

Recommendation: "MEDIUM" grain

+ Step 2

Prepare for polishing with the PREMIUM*** PRE-POLISH disc

This provides optimum polishing preparation. The disc adapts flexibly to the material surface.

Recommendation: "FINE-P" grain

+ Step 3

POLISH with the PREMIUM*** POLISH disc

This allows you finally to achieve a perfect mirror finish.

Different grinding pastes enable processing of different materials, such as steel, stainless steel and nonferrous metals.

Recommendation: SHF with "S-POLISH" polishing paste





CONDITIONING discs for steel, stainless steel and nonferrous metals



Application

- + For removing the final scratches in preparation for polishing

Advantage

- + No discolouration thanks to low thermal load (heat build-up)
- + Specially developed to achieve the best results even on non-adjustable angle grinders
- + Three-dimensional flap design eliminates clogging of the disc

	Shape	Type no.	Dimension	Design	PU	Max. RPM	
		28PCA	742155	115x22.23	COARSE	5	12 000
		742157	115x22.23	MEDIUM	5	12 000	
		742158	115x22.23	VERY FINE	5	12 000	
		742148	125x22.23	COARSE	5	11 000	
		742153	125x22.23	MEDIUM	5	11 000	
		742154	125x22.23	VERY FINE	5	11 000	



PRE-POLISH discs for steel, stainless steel and nonferrous metals



Application

- + For preparing the surface for polishing

Advantage

- + Several layers of abrasive fabric for maximum lifetime and sturdiness
- + Can additionally be used for smaller deburring tasks
- + Specially developed to achieve the best results even on non-adjustable angle grinders

	Shape	Type no.	Dimension	Design	PU	Max. RPM	
		28PUA	742379	115x22.23	MEDIUM-Q	5	12 000
		742380	115x22.23	FINE-P	5	12 000	
		742381	115x22.23	VERY FINE-P	5	12 000	
		742382	125x22.23	MEDIUM-Q	5	11 000	
		742384	125x22.23	FINE-P	5	11 000	
		742385	125x22.23	VERY FINE-P	5	11 000	



POLISH discs for universal use



Application

- + For polishing various materials

We recommend

- + Use in combination with TYROLIT grinding paste for a perfect mirror finish
- + Note maximum speed

Advantage

- + Optimum heat distribution and cool grinding thanks to highly flexible flaps
- + Cool grinding prevents unwanted discolouration

	Shape	Type no.	Dimension	Specification	PU	Max. RPM	
		28PWA	742378	115x22.23	SHF	3	9 200
			742375	125x22.23	SHF	3	7 700



Polishing pastes for steel, stainless steel and nonferrous metals



Application

- + For enhancing polishing of steel, stainless steel and nonferrous metals

We recommend

- + POLISH – for a high-gloss pre-polish
- + S-POLISH – for a high-gloss polish
- + POLISH-NE – special polish for nonferrous metals

Advantage

- + Perfect mirror finish in combination with POLISH discs

	Type no.	Dimension	Specification	Colour	PU	
	90PP	741230	30x20x90	POLISH	WHITE	2
		741285	30x20x90	POLISH-NE	BROWN	2
		741291	30x20x90	S-POLISH	BLUE	2
		741347	60x45x160	POLISH	WHITE	1
		741348	60x45x160	POLISH-NE	BROWN	1
		741349	60x45x160	S-POLISH	BLUE	1



Polishing program set

for steel, stainless steel and nonferrous metals

+ Step 1 - PREMIUM***
CONDITIONING discs:
Removing coarse scratches
– the three-dimensional flap
design eliminates clogging of
the disc



+ Step 3 – PREMIUM***
POLISH discs:
Polishing for a perfect
mirror finish – different
grinding pastes enable
different materials to
be ground

+ Step 2 – PREMIUM*** PRE-
POLISH discs: Preparing for
polishing – the disc adapts
to the surface, providing the
perfect basis for polishing

Application:

+ Three steps to a mirror finish



Polishing program set for steel, stainless steel and nonferrous metals




Type no.	Shape	Dimension	Design	Type no.	PU
21262	28PCA	115x22.23	MEDIUM	742157	1
	28PUA	115x22.23	FINE-P	742380	1
	28PWA	115x22.23	SHF	742378	1
	90PP	30x20x90	S-POLISH	741291	2



Coated abrasives



	Type no.	Shape	Dimension	Design	Type no.	PU
	52433	28PCA	125x22.23	MEDIUM	742153	1
		28PUA	125x22.23	FINE-P	742384	1
		28PWA	125x22.23	SHF	742375	1
		90PP 00000	30x20x90	S-POLISH	741291	2



POLISTAR for stone



Application


- + Ceramic polishing pads for polishing various stone surfaces
- + Perfect results on granite, marble and terrazzo

We recommend

- + Use discs with increasing grit size until the required surface result is achieved

Advantage

- + Velcro fastening on the back for quick and easy mounting on the angle grinder
- + Grit sizes between 50 and 3000 for a perfect surface finish on the material

	Type no.	Dimension	Specification	Colour	PU	
	65A	293641	100x3	D50-B	BLACK	5
		293643	100x3	D150-B	GREEN	5
		293644	100x3	D300-B	RED	5
		293645	100x3	D500-B	BLUE	5
		293737	100x3	D1000-B	YELLOW	5
		293738	100x3	D2000-B	BEIGE	5
		293739	100x3	D3000-B	WHITE	5
ELKUPS	293790	100x3xM14			1	



PREMIUM

POLISTAR set for stone



Application

- + Ceramic polishing pads for polishing different stone surfaces
- + Perfect results on granite, marble, terrazzo

Advantage

- + The POLISTAR-Set includes all 7 different Polishing pads in the grit sizes 50, 150, 300, 500 1000, 2000, 3000 as well as a backing pad with M14 uptake.

	Type no.	Contents	Dimension	PU
	293740	293641	100x3	1
		293643	100x3	1
		293644	100x3	1
		293645	100x3	1
		293737	100x3	1
		293738	100x3	1
		293739	100x3	1
		293790	100x3xM14	1



4.7 QUICK-CHANGE DISCS
Mini angle grinder



QUICK-CHANGE DISCS

Mini angle grinder

QUICK-CHANGE DISCS are easy to use, without assembly tools being required. Easy handling on the mini angle grinder saves you a lot of time in your day-to-day work and increases your productivity.

A comprehensive assortment offers high-quality products for general grinding work, including fine surface finishing.

Two different mountings cover the main fixing systems. Type R can be used for Lockit, PowerLock III and

Roloc TR mountings, type S for SocAtt, PowerLock II and Roloc TSM.

Another special feature of the S type mounting is that it is made from nylon, making it immune to rust and other types of contamination.

TYROLIT offers QUICK-CHANGE DISCS in a wide range of grit sizes for different materials. Take a look at our wide-ranging assortment and see for yourself.

Application recommendations



Performance level	Design	Steel	Stainless steel	NF metals	PVC	Wood	All in One	Pages
★★★ PREMIUM	QUICK-CHANGE DISCS MINIDISC	●	●					256
	SOF TJOB	●	●					256
	A-P01 PE Y	●		●	●	●		260, 261
	ZA-P43 PC X	●						257
	ZA-P48 PE Y	●	●					258, 259
	CA-P93 PE Y	●	●					259, 260
★★★ PREMIUM	SCM QUICK-CHANGE DISCS EXTRA COARSE, COARSE, EXTRA MEDIUM, MEDIUM, VERY FINE	●	●	●	●	●		261, 262
★★★ PREMIUM	COMPACT WHEELS 2 A MEDIUM, 2 C FINE, 3 C FINE, 6 A MEDIUM, 6 C FINE, 8 A COARSE, 8 A MEDIUM FINE, MEDIUM, COARSE						●	263, 264
★★★ PREMIUM	ROUGH CLEANING WHEEL QUICK-CHANGE DISCS C COARSE, A EX COARSE						●	264

Coated abrasives

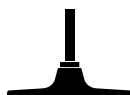
Shapes



QDisc-R



QDisc-S



Pad Q-Disc

★★
STANDARD

QUICK-CHANGE MINIDISCS

for steel and stainless steel



Application

- + For grinding and refining hard-to-reach places on steel and stainless steel with mini angle grinders

Advantage

- + Quick clamping system for quick and convenient tool changes

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding

	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		QDisc-R	679662	50	40	30 000	10
		666221	50	60	30 000	10	
		679663	50	80	30 000	10	
		679664	50	120	30 000	10	
		666276	75	40	20 000	10	
		666279	75	60	20 000	10	
		666280	75	80	20 000	10	
		666421	75	120	20 000	10	

★★
STANDARD

SOFTJOB MINIDISCS

for steel and stainless steel



Application

- + For grinding contours and profiled surfaces, for cleaning welding seams and for removing rust and paint residues using mini angle grinders

Advantage

- + Easy grinding of hard-to-reach places
- + High flexibility thanks to wide application area

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding

	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		QDisc-R	246982	50	40	30 000	10
		246984	50	60	30 000	10	
		246985	50	80	30 000	10	
		246986	50	120	30 000	10	
		289327	75	40	20 000	10	
		289329	75	60	20 000	10	
		289330	75	80	20 000	10	



PREMIUM

ZA-P43 PC X QUICK-CHANGE DISCS for steel



Application

- + For coarse grinding work, for removing rust and burrs from hard-to-reach steel surfaces

We recommend

- + Grit size 36/40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding

Advantage

- + Zirconia alumina guarantees maximum lifetime and abrasiveness on steel
- + TYROLIT QUICK-CHANGE system for fast disc changes

	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		QDisc-R	116061	50	36	25 000	50
		116065	50	40	25 000	50	
		116097	50	60	25 000	50	
		116111	50	80	25 000	50	
		116115	50	120	25 000	50	
		116127	75	36	20 000	25	
		116143	75	60	20 000	25	
		116152	75	80	20 000	25	



ZA-P48 PE Y QUICK-CHANGE DISCS

for steel and stainless steel

+ High abrasiveness guarantees maximum stock removal

+ Robust design ensures low grain break-out and high edge stability



+ Very durable tool thanks to three-layer product structure in combination with zirconia alumina and a coolant layer

Application:

- + For coarse grinding applications, for removing rust and burrs from hard-to-reach places on regular and hard steel and stainless steel surfaces

We recommend:

- + Grit size 24/36/40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding



ZA-P48 PE Y QUICK-CHANGE DISCS for steel and stainless steel





	Shape	Type no.	Diameter	Grain	Max. RPM	PU
		QDisc-R				
		112398	50	24	25 000	50
		112401	50	36	25 000	50
		112406	50	40	25 000	50
		112411	50	60	25 000	50
		112413	50	80	25 000	50
		112418	50	120	25 000	50
		112432	75	24	20 000	25
		112438	75	36	20 000	25
		112447	75	60	20 000	25
112449	75	80	20 000	25		
112452	75	120	20 000	25		



Coated abrasives



	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	 QDisc-S	112469	50	36	25 000	50
		112471	50	40	25 000	50
		112486	50	60	25 000	50
		112493	50	80	25 000	50
		112494	50	120	25 000	50
		112527	75	60	20 000	25
		112532	75	80	20 000	25



CA-P93 PE Y QUICK-CHANGE DISCS

for steel and stainless steel

Coated abrasives

+ Maximum abrasiveness guarantees maximum stock removal

+ Very durable tool thanks to three-layer product structure in combination with ceramic aluminium oxide and a coolant layer



+ Robust design ensures low grain break-out and very high edge stability

Application:

- + For coarse grinding applications, for removing rust and burrs from hard-to-reach places on hard steel and stainless steel surfaces

We recommend:

- + Grit size 36/40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding





CA-P93 PE Y QUICK-CHANGE DISCS
for steel and stainless steel



	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		QDisc-R	112917	50	36	25 000	50
			112918	50	40	25 000	50
			112923	50	60	25 000	50
			112924	50	80	25 000	50
			112928	50	120	25 000	50
			112934	75	36	20 000	25
			112935	75	40	20 000	25
			112937	75	60	20 000	25
			112947	75	80	20 000	25
		QDisc-S	112948	75	120	20 000	25
			112950	50	36	25 000	50
			112988	50	60	25 000	50
			113007	50	80	25 000	50
			113023	50	120	25 000	50
			113026	75	36	20 000	25
			113031	75	60	20 000	25
			113057	75	80	20 000	25
			113059	75	120	20 000	25

Coated abrasives



A-P01 PE Y QUICK-CHANGE DISCS
for steel, nonferrous metals, plastic and wood



Application

- + For general grinding tasks on a wide range of materials such as steel, nonferrous metals, plastic and wood

We recommend




- + Grit size 24/36/40/60 for maximum stock removal
- + Grit size 80/120 for fine grinding

Advantage

- + Maximum productivity thanks to easy handling
- + Strong, two-layer polyester backing for a long lifetime
- + Also available in the fine grit range (grit > 120) on request

	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		QDisc-R	111567	50	36	25 000	50
			111570	50	40	25 000	50
			111577	50	60	25 000	50
			111584	50	80	25 000	50
			111585	50	120	25 000	50
			111611	75	24	20 000	25
			111631	75	36	20 000	25



	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		QDisc-R	112204	75	60	20 000	25
			112205	75	80	20 000	25
			112242	75	120	20 000	25
		QDisc-S	112254	50	36	25 000	50
			112273	50	50	25 000	50
			112283	50	80	25 000	50
		112298	50	120	25 000	50	

★★★
PREMIUM

SCM QUICK-CHANGE DISCS

for steel, stainless steel, nonferrous metals, plastic and wood

+ Shortest grinding time thanks to easy handling and mounting

+ Best lifetime and very good stock removal



+ Versatile application options eliminate the need for 1-3 work steps

Application:

- + For reducing surface roughness, smoothing surfaces as well as cleaning and removing welding seams on a wide range of materials
- + Ideal for hard-to-reach places

We recommend:

- + "EXTRA COARSE/EXTRA MEDIUM" grain for cleaning, for removing rust and burrs and for minimal stock removal
- + "COARSE" grain for cleaning, for removing rust and coatings and for final finishing
- + "MEDIUM" grain for gentle cleaning, for removing burrs and for final finishing
- + "VERY FINE" grain as the final step





★★★
PREMIUM

SCM QUICK-CHANGE DISCS

for steel, stainless steel, nonferrous metals,
plastic and wood



Shape	Type no.	Diameter	Design	Colour	Max. RPM	Rec. speed PU	
	 QDisc-R	34072695	50	EXTRA COARSE	DARK BROWN / PURPLE	25 000 16 000 50	
		112543	50	COARSE	BROWN	25 000 16 000 50	
		34072696	50	EXTRA MEDIUM	DARK RED / PURPLE	25 000 16 000 50	
		112546	50	MEDIUM	RED	25 000 16 000 50	
		112550	50	VERY FINE	BLUE	25 000 16 000 50	
		34072700	75	EXTRA COARSE	DARK BROWN / PURPLE	20 000 13 000 25	
		112551	75	COARSE	BROWN	20 000 13 000 25	
		34072701	75	EXTRA MEDIUM	DARK RED / PURPLE	25 000 13 000 25	
		112581	75	MEDIUM	RED	20 000 13 000 25	
		112588	75	VERY FINE	BLUE	20 000 13 000 25	
		 QDisc-S	112589	50	COARSE	BROWN	25 000 16 000 50
			112590	50	MEDIUM	RED	25 000 16 000 50
			112591	50	VERY FINE	BLUE	25 000 16 000 50
			112599	75	VERY FINE	BLUE	20 000 13 000 25

★★★
PREMIUM

QUICK-CHANGE DISC unitised compact wheels

for universal use

+ Cool grinding and low clogging of the wheel guarantee maximum lifetime



+ Compact deburring tools are perfect for grinding hard-to-reach places and edges

+ Soft wheel surface maintains the surface geometry of the workpiece

Application:

+ For deburring, cleaning, fading, finishing and grinding welding seams on all materials

We recommend:



- + 2/3 C FINE for deburring and polishing
- + 2 A MEDIUM for deburring, polishing and for transitions
- + 6 C FINE / 6 A MEDIUM for deburring, rounding sharp edges and for transitions
- + 8 A MEDIUM / 8 A COARSE for deburring, rounding sharp edges and for transitions with increased abrasiveness





QUICK-CHANGE DISC unitised compact wheels for universal use



Shape	Type no.	Diameter	Design	Max. RPM	Rec. speed	PU	
	 QDisc-R	34190106	51	2 A MEDIUM	22 000	13 000	20
		34190107	51	2 C FINE	22 000	13 000	20
		34190108	51	3 C FINE	22 000	13 000	20
		34190110	51	6 A MEDIUM	22 000	13 000	20
		34190133	51	6 C FINE	22 000	13 000	20
		34190134	51	8 A COARSE	22 000	13 000	20
		34190135	76	2 A MEDIUM	15 000	9 000	10
		34190137	76	2 C FINE	15 000	9 000	10
		34190138	76	3 C FINE	15 000	9 000	10
		34190139	76	6 A MEDIUM	15 000	9 000	10
		34190140	76	6 C FINE	15 000	9 000	10
		34190142	76	8 A COARSE	15 000	9 000	10
		34201558	76	8 A MEDIUM	15 000	9 000	10



QUICK-CHANGE DISC rough cleaning wheels for steel, stainless steel and PVC



Application



- + For removing rust, paint, lacquer and underbody sealant using a mini angle grinder

We recommend

- + C COARSE design for fine work on surfaces
- + A EX. COARSE design for increased abrasiveness and use on edges

Advantage

- + Quiet and non-strenuous grinding with low generation of heat
- + Structure treated with nylon fibres guarantees aggressive grinding
- + No smearing or loading of the disc



Shape	Type no.	Diameter	Design	Colour	Max. RPM	Rec. speed	PU	
	 QDisc-R	112602	50	C COARSE	BLACK	10 500	6 300	20
		112603	75	C COARSE	BLACK	7 000	4 200	10
		34206231	50	A EX. COARSE	BLUE	10 500	7 000	20
		34206232	75	A EX. COARSE	BLUE	7 000	4 200	10

Accessories for QUICK CHANGE DISCS



Application


- + Accessory for QUICK-CHANGE DISCS for mounting on mini-angle grinders with diameter 50 mm and 70 mm

Shape	Type no.	Dimension	Grade	Mounting	Max. RPM	PU
  PAD Q-DISC	131779	50-6x40	MEDIUM	R	25 000	1
	131783	75-6x40	MEDIUM	R	20 000	1
	34472191	50-6x40	HARD	R	20 000	1
	131784	50-6x40	MEDIUM	S	25 000	1
	131786	75-6x40	MEDIUM	S	20 000	1

Accessories for Q-Disc compact wheels

Application

- + Accessory for fitting the Q-DISC adapters on an angle grinder

Shape	Type no.	Mounting	Specification	Max. RPM	PU
	34214177	R	P ADAPTER	22 000	1



QUICK-CHANGE DISC set for universal use




Application

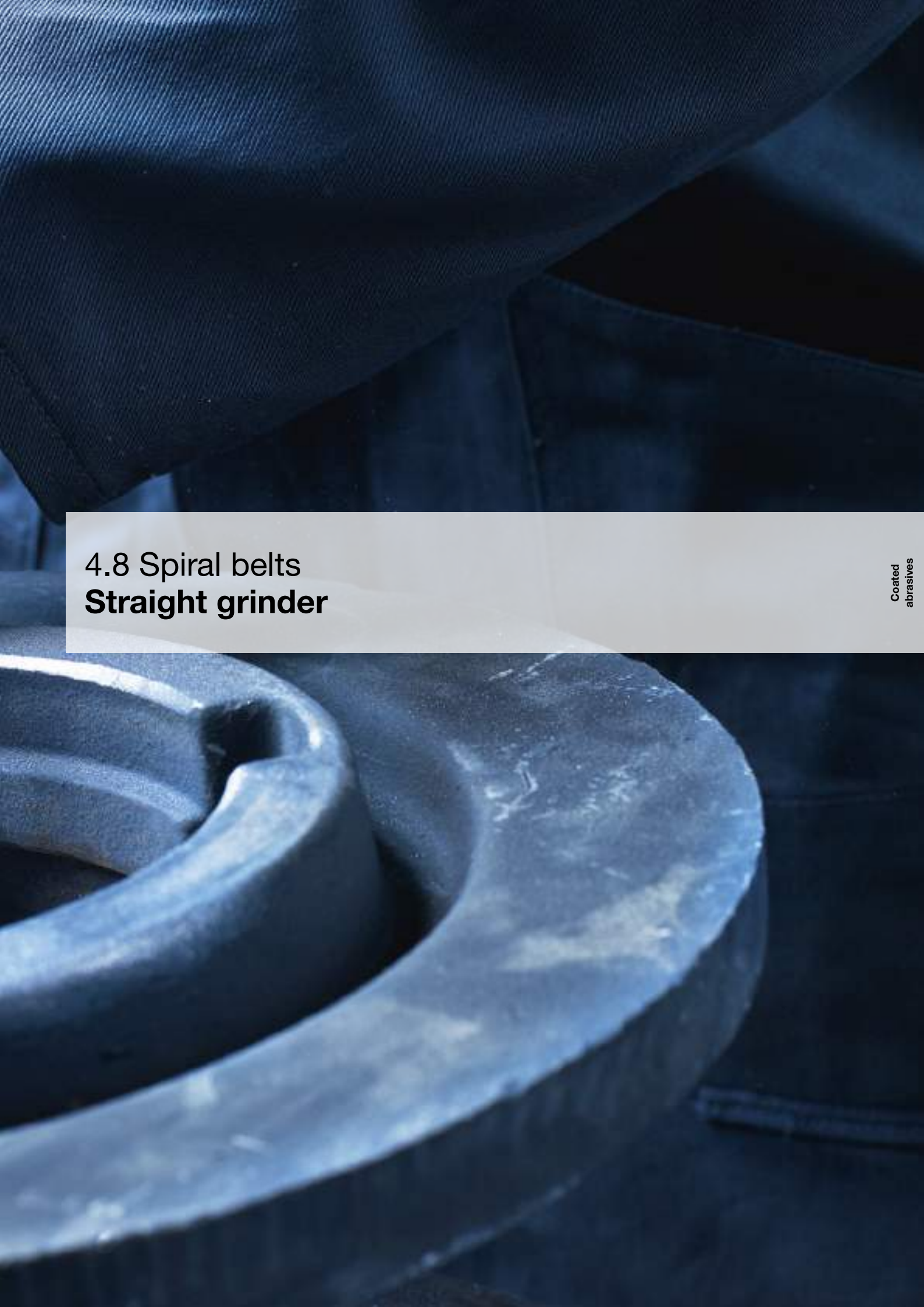
- + Set includes SCM discs, rough cleaning wheels and fibre discs in the specification ZA-P48, ZA-P93 and A-P01 as well as corresponding mounts

Advantage

- + Set of high-quality products for general grinding work all the way up to fine surface finishing

Shape	Type no.	Dimension	Mounting	Comments	PU
	34064598	50 & 75	R	DEMOBOX	1





4.8 Spiral belts
Straight grinder



Spiral belts Straight grinder

Straight grinders are used when you need to work precisely in hard-to-reach locations. TYROLIT spiral belts provide the help you need for every task. They're precise, yet flexible.

Our spiral belts allow you to work quickly and neatly on every type of metal, both ferrous and nonferrous. Applications range from simple deburring, to precision work, to the shaping of complex workpieces.

With many different grit sizes available, a wide range of possibilities is open to you. Naturally TYROLIT also offers suitable accessories for easy assembly on straight grinders.

Application recommendations



Performance level	Specification	Steel	Stainless steel	NF metals	Pages
★★★ PREMIUM	ZA-P43 PC X	●	●	●	270, 271

Shapes



Spiral Spiral belt



SBH Accessories



ZA-P43 PC X spiral belts for steel, stainless steel and aluminium



Application



- + For fine grinding and deburring work as well as shaping complex workpieces made of steel, stainless steel and aluminium

We recommend



- + Grit size 36/50/60 for maximum stock removal
- + Grit size 80/120 for fine work

Advantage

- + Combination of zirconium and coolant in the bond for use on a wide variety of materials
- + Easy mounting on an axle or an expandable mandrel
- + For grinding hard-to-reach places

	Shape	Type no.	Dimension	Grain	Max. RPM	PU
	 Spiral	706515	10x20	60	36 000	50
		706516	10x20	80	36 000	50
		706517	10x20	120	36 000	50
		706519	13x25	50	36 000	50
		706520	13x25	60	36 000	50
		706521	13x25	80	36 000	50
		706523	13x25	120	36 000	50
		706524	15x30	36	36 000	50
		706525	15x30	50	36 000	50
		706526	15x30	60	36 000	50
		706527	15x30	80	36 000	50
		706528	15x30	120	36 000	50
		706529	19x25	36	30 000	50
		706530	19x25	50	30 000	50
		706531	19x25	60	30 000	50
		706533	19x25	80	30 000	50
		706534	19x25	120	30 000	50
		706535	22x20	36	26 000	50
		706536	22x20	50	26 000	50
		706537	22x20	60	26 000	50
706538	22x20	80	26 000	50		
706539	22x20	120	26 000	50		
706540	25x25	36	24 000	50		
706541	25x25	50	24 000	50		
706542	25x25	60	24 000	50		
706543	25x25	80	24 000	50		
706544	25x25	120	24 000	50		
706545	30x30	36	19 100	50		
706546	30x30	50	19 100	50		
706547	30x30	60	19 100	50		
706548	30x30	80	19 100	50		



	Shape	Type no.	Dimension	Grain	Max. RPM	PU
	 Spiral	706550	30x30	120	19 100	50
		706551	38x25	36	15 000	50
		706552	38x25	50	15 000	50
		706553	38x25	60	15 000	50
		706555	38x25	80	15 000	50
		706557	38x25	120	15 000	50
		706558	45x30	36	12 700	50
		706559	45x30	50	12 700	50
		706560	45x30	60	12 700	50
		706561	45x30	80	12 700	50
		706562	45x30	120	12 700	50
		706566	51x25	80	11 200	50
		706568	60x30	36	9 500	50
		706569	60x30	50	9 500	50
		706570	60x30	60	9 500	50
		706571	60x30	80	9 500	50
		706573	60x30	120	9 500	50



Accessories for spiral belts



Application



- + Expandable rubber support for mounting TYROLIT spiral belts on straight grinders

Advantage

- + Flaps can be expanded for secure and easy mounting of the spiral belts

We recommend

- + Note maximum speed

	Shape	Type no.	Dimension	Max. RPM	PU
	 SBH	710011	10x20-6x40	44 000	5
		710012	13x25-6x40	44 000	5
		710013	15x30-6x40	36 000	5
		710014	19x25-6x40	30 000	5
		710015	22x20-6x40	26 000	5
		710016	25x25-6x40	24 000	5
		710017	30x30-6x40	19 100	5
		710018	38x25-6x40	15 000	5
		710022	45x30-6x40	12 700	5
		710023	51x25-6x40	11 200	5
		710025	60x30-6x40	9 500	5
		710026	75x30-6x40	7 600	5



4.9 Spindle-mounted fleece flap wheels
and mounted flap wheels
Straight grinder





Spindle-mounted fleece flap wheels and mounted flap wheels for straight grinders

Straight grinders are used when you need to work precisely in hard-to-reach locations. Especially when used in conjunction with TYROLIT spindle-mounted fleece flap wheels and mounted flap wheels, they are a flexible tool for producing optimum workpiece contours.

The fan-shaped, abrasive grain flaps of the mounted flap wheels allow precise work on all surfaces. They can be used not only on electrical but also on pneumatic straight grinders.

The TYROLIT assortment also includes a large number of spindle-mounted fleece flap wheels in different shapes and designs. They are highly adaptable and ensure that

no changes occur to the surface integrity. Spindle-mounted fleece flap wheels are available with or without embedded abrasive.

Application recommendations



Performance level	Specification	Steel	Stainless steel	NF metals	Pages
MOUNTED FLAP WHEELS ★★★ PREMIUM	A-P01 C X	●	●	●	276, 277, 278, 279
MOUNTED FLAP WHEELS ★ BASIC	A-B02 PC X	●	●	●	279, 280
FLEECE FLAP WHEELS SPINDLE MOUNTED ★★★ PREMIUM		●	●	●	281, 282

Shapes



52 VL Spindle-mounted fleece flap wheels



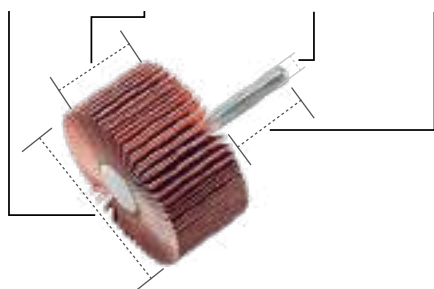
52 LAVL Spindle-mounted fleece flap wheels



552 LA Mounted flap wheels

Dimensions

50 x 30 – 6 x 40





A-P01 C X mounted flap wheels

for steel, stainless steel and nonferrous metals

+ Flexible flaps for precision work

+ Maximum lifetime and the best grinding results



+ Perfect for grinding hard-to-reach places

Application:

- + For various applications on steel, stainless steel and nonferrous metals
- + For matting, pre-polishing, removing rust or cleaning surfaces



We recommend:

- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for universal grinding
- + Grit sizes 150 to 320 for fine work
- + Note maximum speed



A-P01 C X flap wheels for steel, stainless steel and nonferrous metals



Shape	Type no.	Dimension	Grain	Max. RPM	Rec. speed	PU	
 	52LA-C	909383	10x10-3x40	80	35 000	26 000	10
	909385	10x10-3x40	120	35 000	26 000	10	
	661085	10x10-3x40	150	35 000	26 000	10	
	49856	20x10-6x40	60	30 000	20 000	10	
	816831	20x10-6x40	80	30 000	20 000	10	
	816833	20x10-6x40	120	30 000	20 000	10	
	886805	25x15-6x40	60	26 000	18 000	10	
	816846	25x15-6x40	80	26 000	18 000	10	







Shape	Type no.	Dimension	Grain	Max. RPM	Rec. speed	PU
  52LA-C	816847	25x15-6x40	120	26 000	18 000	10
	909390	30x5-6x40	80	26 000	16 000	10
	909393	30x5-6x40	120	26 000	16 000	10
	909397	30x10-3x40	80	26 000	16 000	10
	909398	30x10-3x40	120	26 000	16 000	10
	959241	30x10-6x40	40	26 000	16 000	10
	816855	30x10-6x40	60	26 000	16 000	10
	816871	30x10-6x40	80	26 000	16 000	10
	816872	30x10-6x40	120	26 000	16 000	10
	816873	30x10-6x40	150	26 000	16 000	10
	816874	30x10-6x40	240	26 000	16 000	10
	816875	30x10-6x40	320	26 000	16 000	10
	939107	30x15-6x40	40	26 000	16 000	10
	816880	30x15-6x40	60	26 000	16 000	10
	816893	30x15-6x40	80	26 000	16 000	10
	816905	30x15-6x40	120	26 000	16 000	10
	648425	40x10-6x40	60	20 000	13 000	10
	82078	40x10-6x40	80	20 000	13 000	10
	82079	40x10-6x40	120	20 000	13 000	10
	816907	40x15-6x40	60	20 000	13 000	10
	816908	40x15-6x40	80	20 000	13 000	10
	816909	40x15-6x40	120	20 000	13 000	10
	816911	40x15-6x40	150	20 000	13 000	10
	816914	40x20-6x40	40	20 000	13 000	10
	816915	40x20-6x40	60	20 000	13 000	10
	816916	40x20-6x40	80	20 000	13 000	10
	816918	40x20-6x40	120	20 000	13 000	10
	816919	40x20-6x40	150	20 000	13 000	10
	897078	40x20-6x40	180	20 000	13 000	10
	816920	40x20-6x40	240	20 000	13 000	10
	816922	50x15-6x40	60	16 000	11 000	10
	816923	50x15-6x40	80	16 000	11 000	10
816928	50x20-6x40	40	16 000	11 000	10	
816931	50x20-6x40	60	16 000	11 000	10	
816933	50x20-6x40	80	16 000	11 000	10	
816934	50x20-6x40	120	16 000	11 000	10	
816939	50x20-6x40	320	16 000	11 000	10	
910574	50x30-6x40	40	16 000	11 000	10	
816940	50x30-6x40	60	16 000	11 000	10	




★★★
PREMIUM

A-P01 C X flap wheels for steel, nonferrous metal and wood



Shape	Type no.	Dimension	Grain	Max. RPM	Rec. speed	PU	
 	52LA-C	816941	50x30-6x40	80	16 000	11 000	10
	816942	50x30-6x40	120	16 000	11 000	10	
	816943	50x30-6x40	150	16 000	11 000	10	
	433020	50x30-6x40	240	16 000	11 000	10	
	910572	50x30-6x40	320	16 000	11 000	10	
	816949	60x15-6x40	60	13 500	9 000	10	
	816950	60x15-6x40	80	13 500	9 000	10	
	910707	60x20-6x40	40	13 500	9 000	10	
	816953	60x20-6x40	60	13 500	9 000	10	
	816954	60x20-6x40	80	13 500	9 000	10	
	816955	60x20-6x40	120	13 500	9 000	10	
	816956	60x20-6x40	150	13 500	9 000	10	
	433039	60x20-6x40	180	13 500	9 000	10	
	816958	60x20-6x40	320	13 500	9 000	10	
	817011	60x30-6x40	40	13 500	9 000	10	
	816959	60x30-6x40	60	13 500	9 000	10	
	816960	60x30-6x40	80	13 500	9 000	10	
	816961	60x30-6x40	120	13 500	9 000	10	
	816962	60x30-6x40	150	13 500	9 000	10	
	909368	60x30-6x40	180	13 500	9 000	10	
	816963	60x30-6x40	240	13 500	9 000	10	
	816964	60x30-6x40	320	13 500	9 000	10	
	817012	60x40-6x40	40	13 500	9 000	10	
	816965	60x40-6x40	60	13 500	9 000	10	
	816966	60x40-6x40	80	13 500	9 000	10	
	816967	60x40-6x40	120	13 500	9 000	10	
	816969	60x40-6x40	240	13 500	9 000	10	
	816971	60x50-6x40	40	13 500	9 000	10	
	816972	60x50-6x40	60	13 500	9 000	10	
	816973	60x50-6x40	80	13 500	9 000	10	
	816976	80x20-6x40	60	10 000	6 000	10	
	910722	80x30-6x40	40	10 000	6 000	10	
	816981	80x30-6x40	60	10 000	6 000	10	
	816982	80x30-6x40	80	10 000	6 000	10	
816983	80x30-6x40	120	10 000	6 000	10		
816984	80x30-6x40	150	10 000	6 000	10		

Shape	Type no.	Dimension	Grain	Max. RPM	Rec. speed	PU	
	52LA-C	915573	80x30-6x40	240	10 000	6 000	10
		910720	80x30-6x40	320	10 000	6 000	10
		816985	80x40-6x40	60	10 000	6 000	10
		816986	80x40-6x40	80	10 000	6 000	10
		816987	80x40-6x40	120	10 000	6 000	10
		87910	80x50-6x40	40	10 000	6 000	10
		816990	80x50-6x40	60	10 000	6 000	10
		816991	80x50-6x40	80	10 000	6 000	10
		816992	80x50-6x40	120	10 000	6 000	10
		816993	80x50-6x40	150	10 000	6 000	10
		817001	80x50-6x40	240	10 000	6 000	10
		817003	80x50-6x40	320	10 000	6 000	10

★ BASIC **A-B02 PC X mounted flap wheels**
for steel, stainless steel and nonferrous metals



Application


- + For various applications on steel, stainless steel and nonferrous metals
- + For matting, pre-polishing, removing rust or cleaning surfaces
- + Can be used on both electric and pneumatic machines

Advantage

- + Flexible flaps for precision work
- + Perfect for grinding hard-to-reach places
- + Good lifetime

We recommend



- + Grit size 40/60 for high stock removal
- + Grit size 80/120 for medium-fine grinding
- + Grit size 180 for fine work

Shape	Type no.	Dimension	Grain	Max. RPM	Rec. speed	PU	
	52LA-C	34054619	30x10-6x40	60	26 000	16 000	10
		34054737	30x10-6x40	80	26 000	16 000	10
		34054660	30x10-6x40	120	26 000	16 000	10
		34054738	30x10-6x40	180	26 000	16 000	10
		34054751	40x15-6x40	60	20 000	13 000	10
		34054753	40x15-6x40	80	20 000	13 000	10
		34054759	40x20-6x40	40	20 000	13 000	10
		34054760	40x20-6x40	60	20 000	13 000	10



A-B02 PC X mounted flap wheels
for steel, stainless steel and nonferrous metals



Shape	Type no.	Dimension	Grain	Max. RPM	Rec. speed	PU	
 	52LA-C	34054783	40x20-6x40	80	20 000	13 000	10
		34054784	40x20-6x40	120	20 000	13 000	10
		34054785	40x20-6x40	180	20 000	13 000	10
		34054787	50x15-6x40	60	16 000	11000	10
		34054801	50x20-6x40	40	16 000	11000	10
		34054805	50x20-6x40	60	16 000	11000	10
		34054809	50x20-6x40	80	16 000	11000	10
		34054812	50x20-6x40	120	16 000	11000	10
		34054813	50x20-6x40	180	16 000	11000	10
		34054814	50x30-6x40	40	16 000	11000	10
		34054817	50x30-6x40	60	16 000	11000	10
		34054820	50x30-6x40	80	16 000	11000	10
		34054831	50x30-6x40	120	16 000	11000	10
		34054836	60x20-6x40	60	13 500	9 000	10
		34054837	60x20-6x40	80	13 500	9 000	10
		34054852	60x30-6x40	40	13 500	9 000	10
		34054854	60x30-6x40	60	13 500	9 000	10
		34054855	60x30-6x40	80	13 500	9 000	10
		34054856	60x30-6x40	120	13 500	9 000	10
		34054857	60x30-6x40	180	13 500	9 000	10
	34054858	80x30-6x40	40	10 000	6 000	10	
	34054860	80x30-6x40	60	10 000	6 000	10	
	34054861	80x30-6x40	80	10 000	6 000	10	
	34054862	80x30-6x40	120	10 000	6 000	10	

Coated abrasives



Fleece flap wheels spindle mounted for steel, stainless steel and nonferrous metals



Application




- + For finishing steel, stainless steel and nonferrous metals

We recommend

- + Fleece flap wheels spindle mounted with coated abrasive (VL-C) for increased stock removal
- + Fleece flap wheels spindle mounted without coated abrasive for fine work
- + Use on adjustable straight grinders

Advantage

- + Variety of grit sizes enables different surface roughnesses to be achieved
- + Perfect for grinding hard-to-reach places
- + Longest lifetime
- + Material grinding without altering the surface integrity



Shape	Type no.	Dimension	Grain	Design	Max. RPM	Rec. speed	PU	
	 52 LA VL	570473	40x20-6x40		A COARSE	9 000	7 500	10
		908708	40x20-6x40		A MEDIUM	9 000	7 500	10
		908712	40x20-6x40		A FINE	9 000	7 500	10
		388126	40x20-6x40		A VERY FINE	9 000	7 500	10
		136087	50x30-6x40		A MEDIUM	8 000	6 000	10
		136090	50x30-6x40		A VERY FINE	8 000	6 000	10
		908854	50x50-6x40		A MEDIUM	8 000	6 000	10
		570485	60x30-6x40		A COARSE	7 000	5 000	10
		908784	60x30-6x40		A MEDIUM	7 000	5 000	10
		908794	60x30-6x40		A FINE	7 000	5 000	10
		908795	60x30-6x40		A VERY FINE	7 000	5 000	10
		34054620	60x50-6x40		A COARSE	7 000	5 000	10
		908710	60x50-6x40		A MEDIUM	7 000	5 000	10
		908715	60x50-6x40		A FINE	7 000	5 000	10
		34054651	60x50-6x40		A VERY FINE	7 000	5 000	10
		908862	80x50-6x40		A COARSE	6 000	4 000	10
		372339	80x50-6x40		C MEDIUM	6 000	4 000	10
		908711	80x50-6x40		A MEDIUM	6 000	4 000	10
		908717	80x50-6x40		A FINE	6 000	4 000	10
		908796	80x50-6x40		A VERY FINE	6 000	4 000	10
 52LA VL-C		34053446	40x20-6x40	60	A COARSE	9 000	7 500	10
		908775	40x20-6x40	80	A MEDIUM	9 000	7 500	10
		908779	40x20-6x40	150	A FINE	9 000	7 500	10
		34053447	50x30-6x40	60	A COARSE	8 000	6 000	10
		136161	50x30-6x40	80	A MEDIUM	8 000	6 000	10
		457370	50x30-6x40	150	A FINE	8 000	6 000	10
		136164	50x30-6x40	240	A VERY FINE	8 000	6 000	10
		148718	50x50-6x40	120	A MEDIUM	8 000	6 000	10



★★★
PREMIUM

Fleece flap wheels spindle mounted for steel, stainless steel and nonferrous metals



Shape	Type no.	Dimension	Grain	Design	Max. RPM	Rec. speed	PU
 	52LA VL-C 148722	50x50-6x40	240	A VERY FINE	8 000	6 000	10
	263249	60x30-6x40	60	A COARSE	7 000	5 000	10
	910902	60x30-6x40	80	A MEDIUM	7 000	5 000	10
	908780	60x30-6x40	150	A FINE	7 000	5 000	10
	908821	60x30-6x40	240	A VERY FINE	7 000	5 000	10
	136168	60x40-6x40	80	A MEDIUM	7 000	5 000	10
	136173	60x40-6x40	240	A VERY FINE	7 000	5 000	10
	34054652	60x50-6x40	60	A COARSE	7 000	5 000	10
	34054655	60x50-6x40	80	A MEDIUM	7 000	5 000	10
	34054658	60x50-6x40	150	A FINE	7 000	5 000	10
	239448	80x30-6x40	240	A VERY FINE	6 000	4 000	10
	908871	80x50-6x40	60	A COARSE	6 000	4 000	10
	910864	80x50-6x40	80	A MEDIUM	6 000	4 000	10
	136193	80x50-6x40	120	A MEDIUM	6 000	4 000	10
	910853	80x50-6x40	150	A FINE	6 000	4 000	10
	908823	80x50-6x40	240	A VERY FINE	6 000	4 000	10
	908872	100x50-6x40	60	A COARSE	4 000	3 000	10
	910890	100x50-6x40	80	A MEDIUM	4 000	3 000	10
	908826	100x50-6x40	150	A FINE	4 000	3 000	10
	908825	100x50-6x40	240	A VERY FINE	4 000	3 000	10



4.10 Compact wheels
Straight grinders



Compact wheels for straight grinders

Straight grinders are always used where precision is required in hard-to-reach locations. TYROLIT offers a comprehensive assortment of unitised and convolute compact wheels.

With the compact wheel range, TYROLIT offers you an ideal tool for the machining of surfaces without changing the surface geometry, particularly for the removal of rust and dirt. Compact wheels consist of multilayer unitised fleece and are

available in coarse to fine specifications depending on the number of layers. Due to their soft structure, MMF (multi metal finishing) compact wheels are especially suitable for the fine machining of all metal surfaces, whereas DB (deburring) compact

wheels are particularly hard due to several layers and high pressure and are therefore suitable for deburring work.

On the following pages, you will find our range of unitised and convolute compact wheels for straight grinders.

Application recommendations



Performance level	Design	All in One	Pages
★★★ PREMIUM	2 A MEDIUM, 2 A COARSE, 2 C COARSE, 2 C MEDIUM, 2 C FINE, 3 C FINE, 5 A MEDIUM, 6 A MEDIUM, 6 C FINE, 8 A COARSE	●	286, 287, 288

Shapes



1UW Unitized wheel
(unitised wheel)



1CW Convolute wheel
(convolute wheel)

Coated abrasives



Unitised compact wheels

for universal use

+ Cool grinding and low clogging of the wheel for very long lifetime

+ Compact wheels do not alter the surface geometry of the workpiece



+ Can be used in hard-to-reach places

Application:

+ For removing rust, burrs and scratches as well as for fading, glazing, finishing and grinding welding seams

We recommend:

- + 2/3 C FINE for deburring and polishing
- + 2 A MEDIUM for deburring, polishing and for transitions
- + 6 C FINE / 6 A MEDIUM for deburring, rounding sharp edges and for transitions
- + 8 A MEDIUM / 8 A COARSE for deburring, rounding sharp edges and for transitions with increased abrasiveness
- + Use on adjustable straight grinders





Unitised compact wheels for universal use



	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	PU
		1UW					
		34201993	25x25x4,8	2 A MEDIUM	30 000	18 000	25
		34201994	25x25x4,8	2 C FINE	30 000	18 000	25
		34201995	25x25x4,8	3 C FINE	30 000	18 000	25
		34201996	25x25x4,8	6 A MEDIUM	35 000	21 000	25





	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	PU
		34201998	25x25x4,8	8 A COARSE	35 000	21 000	25
		34189233	51x6x6,3	2 A MEDIUM	16 000	9 600	25
		34189994	51x6x6,3	2 C FINE	16 000	9 600	25
		34189995	51x6x6,3	3 C FINE	16 000	9 600	25
		34189996	51x6x6,3	6 A MEDIUM	22 000	13 200	25
		34189997	51x6x6,3	6 C FINE	22 000	13 200	25
		34189999	51x6x6,3	8 A COARSE	22 000	13 200	25
		34204206	76x3x6,3	6 A MEDIUM	18 000	10 800	50
		34189552	76x6x6,3	2 A MEDIUM	15 000	9 000	25
		34189553	76x6x6,3	2 C FINE	15 000	9 000	25
		34189557	76x6x6,3	3 C FINE	15 000	9 000	25
		34189554	76x6x6,3	6 A MEDIUM	18 000	10 800	25
		34189555	76x6x6,3	6 C FINE	18 000	10 800	25
		34189556	76x6x6,3	8 A COARSE	18 000	10 800	25
		34257640	152x6x12,7	2 C FINE	5 000	3 000	2
		34190233	152x6x12,7	2 A MEDIUM	5 000	3 000	8
		34190235	152x6x12,7	2 C FINE	5 000	3 000	8
		34190236	152x6x12,7	3 C FINE	5 000	3 000	8
		34190237	152x6x12,7	6 A MEDIUM	7 500	4 500	8
		34190238	152x6x12,7	6 C FINE	7 500	4 500	8
		34190239	152x6x12,7	8 A COARSE	7 500	4 500	8
		34190280	152x13x12,7	2 A MEDIUM	5 000	3 000	4
		34190291	152x13x12,7	2 C FINE	5 000	3 000	4
		34190293	152x13x12,7	6 A MEDIUM	7 500	4 500	4
		34190294	152x13x12,7	6 C FINE	7 500	4 500	4
		34190297	152x25x12,7	2 A MEDIUM	5 000	3 000	2
		34190299	152x25x12,7	3 C FINE	5 000	3 000	2
		34190301	152x25x12,7	6 A MEDIUM	7 500	4 500	2
		34190302	152x25x12,7	6 C FINE	7 500	4 500	2
		34190303	152x25x12,7	8 A COARSE	7 500	4 500	2



MMF convolute compact wheels for universal use



Application

- + For various finishing work on all metal surfaces

We recommend

- + Use on adjustable straight grinders

Advantage

- + Surface finishing
- + Very soft structure enables the workpiece to be ground without altering the geometry
- + Universal use

	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	PU	
		1CW	34200686	152x25x25.4	2 C COARSE	6 000	3 600	2
		34200687	152x25x25.4	2 C MEDIUM	6 000	3 600	2	
		34200688	152x25x25.4	5 A MEDIUM	6 000	3 600	2	
		34200689	152x50x25.4	2 C COARSE	6 000	3 600	1	
		34200690	152x50x25.4	2 C MEDIUM	6 000	3 600	1	
		34200712	152x50x25.4	5 A MEDIUM	6 000	3 600	1	

Accessories for unitised wheels



Application

- + Easy and safe mounting of compact wheels on straight grinders

	Type no.	Dimension	Specification	PU
	34214172	25x25x4.8	UW	1

Flange for compact wheels



Application

- + Easy and safe mounting of compact wheels on straight grinders



Type no.	Dimension	Specification	PU
846442	S6/H6/L6	SS174	1
905336	S6/H13/L52	SS597	1



Unitised compact wheel set for universal use



Application

- + For various finishing work on all metal surfaces

Advantage

- + Set includes compact wheels for angle grinders, QUICK CHANGE DISCS for mini-angle grinders, for straight grinders as well as for floorstand grinders
- + Set also includes the necessary accessories and adapters



Type no.	Dimension	Specification	Comments	VE
34270968	50-150	UW + CW	DEMOBOX	1





4.11 Rough cleaning wheels
Straight grinder



Rough cleaning wheels for straight grinder

Straight grinders are used when you need to work precisely in hard-to-reach locations. Would you like to remove rust, paint and varnish with a minimum of effort? Or do you need to prepare surfaces for welding, soldering or anodising?

The highly porous nylon fibres are evenly treated with aggressive abrasives and are able to meet any challenge. All of our rough cleaning discs resist loading or smearing and offer long

life with an even grinding pattern, but also low heat generation and quiet, stress-free working.

Shapes



1GR Rough cleaning wheel

Application recommendations



Performance level Design

All in One Pages



C COARSE,
A EX. COARSE

● 293



Rough cleaning wheels for universal use



Application


- + For removing rust, paint and lacquer and for preparing surfaces for welding, soldering or anodising

We recommend

- + C COARSE design for fine work on surfaces
- + A EX. COARSE design for increased abrasiveness and use on edges
- + Two 1GR wheels can be clamped when using a longer clamping spike for a larger area of contact
- + Use on adjustable straight grinders

Advantage

- + Flexible nylon fibres treated with aggressive abrasive grain for universal use
- + Design prevents clogging and loading of the wheel
- + Low heat generation


Shape	Type no.	Dimension	Design	Colour	Max. RPM	Rec. speed	PU	
	1GR	898048	75x13x8	C COARSE	BLACK	10 500	8 000	5
		898044	100x13x13	C COARSE	BLACK	8 000	6 000	5
		898051	150x13x13	C COARSE	BLACK	5 300	4 100	5
		943168	200x13x13	C COARSE	BLACK	4 000	3 000	5
		34206234	100x13x13	A EX. COARSE	BLUE	8 000	6 000	5
		34206235	150x13x13	A EX. COARSE	BLUE	5 300	4 100	5

Adapters for straight grinders for rough cleaning wheels



Application

- + Permits easy and secure clamping of the compact wheels on straight grinders

Type no.	Dimension	Specification	PU		
	100SS	905335	S6/H8/L67	SS596	1
		905336	S6/H13/L52	SS597	1
		905337	S8/H13/L67	SS598	1



 SCANTOOL

 SCANTOOL



4.12 Belts
Belt grinder



Belts for mini belt grinders, portable belt grinders and contact grinders

In this chapter you will find belts for metal and wood processing in different sizes for mini belt grinders, portable belt grinders and large, stationary contact grinders.

Depending on the application, we have the right belt for an optimum result, whether you need long life, maximum stock removal or a perfect surface finish. With their high stock removal rate, belts with embedded ceramic grain offer a quick and easy

way of grinding metal. We also offer products with a range of flexible underlays and additional coatings. These allow you to work on harder materials, such as stainless steel, alloys, structural steel and non-ferrous metals. They can also be used

with woods, paints and lacquers. TYROLIT coated abrasives have been developed with particular applications in mind and thus achieve the best possible results in day-to-day use.

Shapes



Belt 1
For mini belt grinders



Belt 2
For portable belt grinders



Belt 3
For contact grinders

Belt joints

TYROLIT belts are available with two different belt joints.

JTS (Joint Tape Straight)
mainly for metal processing



JOT (Joint Overlap Top)
mainly for wood processing



Application recommendations



Performance level	Design	Steel	Stainless steel	NF metals	PVC	Wood	All in One	Pages
 PREMIUM	ZA-P48 PE Y F	●	●	●				298
	ZA-P41 PC X	●		●				298, 302, 303
	ZA-P48 PE Y	●	●					302
	ZA-P43 PE Y	●		●				303
	CA-P93	●	●					301
 BASIC	A-B06 PC X	●			●	●		299
SCM BELTS	FLEX						●	300
 PREMIUM	COARSE, MEDIUM, VERY FINE						●	303



ZA-P48 PE Y F / ZA-P41 PC X mini belts for steel, stainless steel and aluminium



Application



- + For universal use on steel, stainless steel and aluminium using mini belt grinders

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit size 80/120 for a perfect surface finish

Advantage

- + Zirconia alumina and an additional coolant layer for maximum lifetime and cool grinding
- + Very good stock removal
- + ZA-P48 polyester braid backing with coolant layer for higher abrasiveness, cooler grinding and edge stability

Shape	Type no.	Dimension	Grain	Connection	PU
  Belt 1	706292	9x533	40	JTS	33
	706293	9x533	60	JTS	33
	706295	9x533	80	JTS	33
	706299	9x533	120	JTS	33
	706300	10x330	40	JTS	20
	706301	10x330	60	JTS	20
	706302	10x330	80	JTS	20
	706303	10x330	120	JTS	20
	706306	12x330	60	JTS	20
	706309	12x457	40	JTS	20
	706310	12x457	60	JTS	20
	706311	12x457	80	JTS	20
	706313	12x533	40	JTS	20
	706314	12x533	60	JTS	20
	706315	12x533	80	JTS	20
	706316	12x533	120	JTS	20
	706317	13x455	40	JTS	20
	706318	13x455	60	JTS	20
	706320	13x455	80	JTS	20
	706323	13x455	120	JTS	20
	706337*	20x480	60	JTS	20
	706341*	20x520	40	JTS	20
	706342*	20x520	60	JTS	20
	706343*	20x520	80	JTS	20
	706344*	20x520	120	JTS	20
	706345*	29x533	40	JTS	20

* ZA-P41 PC X



A-B06 PC X belts for universal use



Application



- + For grinding various materials, especially wood, using portable hand sanders

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit size 80/120 for a perfect surface finish

Advantage

- + Universal use
- + Good lifetime
- + Good stock removal

	Shape	Type no.	Dimension	Grain	Connection	PU
		706368	75x457	40	JOT	10
		706369	75x457	60	JOT	10
		706370	75x457	80	JOT	10
		706371	75x457	100	JOT	10
		706372	75x457	120	JOT	10
		706383	75x533	40	JOT	10
		706384	75x533	60	JOT	10
		706385	75x533	80	JOT	10
		706386	75x533	100	JOT	10
		706387	75x533	120	JOT	10
		706404	100x610	40	JOT	10
		706405	100x610	60	JOT	10
		706406	100x610	80	JOT	10
		706407	100x610	100	JOT	10
		706408	100x610	120	JOT	10
		741455	100x690	40	JOT	10
		741460	100x690	60	JOT	10
		741464	100x690	80	JOT	10
		741471	100x690	100	JOT	10
		741474	100x690	120	JOT	10



SCM belts

for universal use

+ Outstanding economy thanks to maximum stock removal combined with short work-piece machining time



+ Robust belt design guarantees maximum lifetime

Application:

+ For reducing surface roughness, smoothing surfaces as well as cleaning and removing welding seams using stationary belt grinders



We recommend:

- + "COARSE" grain for cleaning, for removing rust and coatings and for final finishing
- + "MEDIUM" grain for gentle cleaning, for removing burrs and for final finishing
- + "VERY FINE" grain as the final step



SCM belts for universal use



	Shape	Type no.	Dimension	Design	Specification	Colour	PU	
		Belt 2	34206205	90x395mm	MEDIUM	FLEX	RED/LIGHT GREEN	5

★★★
PREMIUM

CA-P93 PE Y Belts

for steel and stainless steel

+ Highest possible stock removal thanks to the use of ceramic grain

+ Coolant layer for very cool grinding



+ Self-sharpening grain for constantly good surface result combined with reduced operator workload

Application:

+ For grinding regular and hard steel and stainless steel using belt grinders

We recommend:

+ Grit size 24/36/40 for maximum stock removal
+ Grit size 60/80/120 for a perfect surface finish

★★★
PREMIUM

CA-P93 PE Y belts for steel and stainless steel



	Shape	Type no.	Dimension	Grain	Connection	VE
		34168478	75x2000	24	JTS	10
		34168479	75x2000	36	JTS	10
		34168480	75x2000	40	JTS	10
		34168481	75x2000	60	JTS	10
		34168482	75x2000	80	JTS	10
		34168483	75x2000	120	JTS	10
		34221594	150X2000	36	JTS	10
		34218343	150X2000	40	JTS	10
		34218356	150X2000	60	JTS	10
		34228323	150X2000	80	JTS	10



ZA-P48 PE Y belts for steel and stainless steel



Application

- + For demanding applications on regular and hard steel and stainless steel, especially for dry applications

We recommend

- + Grit size 36/60 for maximum stock removal
- + Grit size 80/120 for a perfect surface finish

Advantage

- + Outstanding stock removal and ideal for grinding using high pressure through the use of hard zirconium
- + Minimal generation of heat while grinding thanks to active coolant layer
- + Durable polyester for a robust belt design

	Shape	Type no.	Dimension	Grain	Connection	PU
		706473	75x2000	36	JTS	10
		706474	75x2000	60	JTS	10
		706475	75x2000	80	JTS	10
		706477	75x2000	120	JTS	10



ZA-P41 PC X belts for steel and nonferrous metals



Application

- + For demanding applications on steel and nonferrous metals
- + In particular also for wet applications with oil, emulsion or water

We recommend



- + Grit size 40/60 for maximum stock removal
- + Grit size 80/120 for a perfect surface finish


Advantage

- + Outstanding stock removal and ideal for grinding using high pressure through the use of hard zirconium
- + Minimal generation of heat while grinding thanks to active coolant in the bond
- + Durable polycotton for a robust belt design
- + Grit sizes 24, 36 and 100 available on request

	Shape	Type no.	Dimension	Grain	Connection	PU
		706422	50x1000	80	JTS	12
		706463	75x2000	40	JTS	10
		706464	75x2000	60	JTS	10
		706465	75x2000	80	JTS	10
		706466	75x2000	120	JTS	10
		706494	100x915	60	JTS	10
		706497	100x915	80	JTS	10
		706499	100x915	120	JTS	10
		706500	100x1000	40	JTS	12
		706501	100x1000	60	JTS	12
		706502	100x1000	80	JTS	12



	Shape	Type no.	Dimension	Grain	Connection	PU
		706503	100x1000	120	JTS	10
		706504	150x2000	40	JTS	10
		706506	150x2000	60	JTS	10
		706507	150x2000	80	JTS	10

★★★ PREMIUM **ZA-P43 PE Y belts** for steel and nonferrous metals 

Application



- + For demanding applications on steel and nonferrous metals
- + In particular also for wet applications with oil, emulsion or water

We recommend

- + Grit size 36/40/60 for maximum stock removal
- + Grit size 80/120 for a perfect surface finish

Advantage

- + Outstanding stock removal and ideal for grinding using light and medium pressure
- + Minimal generation of heat while grinding thanks to active coolant in the bond
- + Stiff polyester for maximum stock removal

	Form	Typennummer	Abmessung	Korn	Verbindung	VP
	 Belt 3	706467	75x2000	36	JTS	10
		706469	75x2000	40	JTS	10
		706470	75x2000	60	JTS	10
		706471	75x2000	80	JTS	10
		706472	75x2000	120	JTS	10

★★★ PREMIUM **SCM belts** for universal use 

Application



- + For reducing surface roughness, smoothing surfaces as well as cleaning and removing welding seams using portable belt grinders

We recommend

- + "COARSE" grain for cleaning, for removing rust and coatings and for final finishing
- + "MEDIUM" grain for gentle cleaning, for removing burrs and for final finishing
- + "VERY FINE" grain as the final step


Advantage

- + Outstanding economy thanks to maximum stock removal combined with short workpiece machining time
- + Robust belt design guarantees maximum lifetime
- + Comprehensive assortment

	Shape	Type no.	Dimension	Design	Connection	Colour	PU
	 Belt 3	34049731	75x2000	COARSE	JTS	BROWN	4
		34049732	75x2000	MEDIUM	JTS	RED	4
		34049734	75x2000	VERY FINE	JTS	BLUE	4

Coated abrasives





4.13 Rolls

Hand sanding and orbital sanding



Rolls for hand and orbital sanding

Any kind of surface finishing requires thorough preparation. This can be done by hand or using an orbital sander.

Wood, paint or lacquer are usually abraded by hand. Deburring work can also be accomplished by hand. However, for perfect intermediate sanding, we recommend using an orbital sander. This also allows smooth finishing of coatings and smoothing of composite materials.

For jobs such as these we offer abrasive rolls in a wide range of designs, such as cloth, paper and fleece rolls. They allow easy and flexible working on virtually any material.

Shapes



Roll

Application recommendations



Performance level	Design	Steel	NF metals	Paint / lacquer	Wood	Wet	PVC	All in One	Pages
★★★ PREMIUM	PAPER ROLLS								
	A-P07 P C	●	●	●	●	●			308
★★★ PREMIUM	PAPER ROLLS								
	A-P21 D				●		●		308, 309
★ BASIC	CLOTH ROLLS								
	A-B01 C JX							●	310, 311
	A-B01 C JJ							●	311, 312
★★★ PREMIUM	FLEECE ROLLS								
	A COARSE, A MEDIUM, A FINE, A VERY FINE, C ULTRA FINE, A GP-GREEN							●	313



A-P07 P C paper sheets
for steel, nonferrous metals, wood, paints and lacquers



Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation

Advantage

- + With latex-finished backing for optimum results in wet and dry applications
- + Closed coating for an excellent surface finish
- + Universal use

	Shape	Type no.	Dimension	Grain	PU	
		Roll	705945	100x50M	60	1
		705946	100x50M	80	1	
		705947	100x50M	100	1	
		705948	100x50M	120	1	
		705959	100x50M	150	1	
		705960	100x50M	180	1	
		705962	100x50M	240	1	
		705965	115x50M	60	1	
		705966	115x50M	80	1	
		705967	115x50M	100	1	
		705968	115x50M	120	1	
		705969	115x50M	150	1	
		705970	115x50M	180	1	
		705972	115x50M	240	1	



A-P21 D paper rolls
for plastic, wood, paints and lacquers



Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation



Advantage

- + Perfect solution for dry grinding thanks to open distribution of grain on light paper backing
- + Semi-open coating prevents loading and delivers an excellent surface finish
- + Universal use



Coated abrasives



	Shape	Roll	Type no.	Dimension	Grain	PU
			34231862	100x5M	40	1
			34231863	100x5M	60	1
			34231864	100x5M	80	1
			34231865	100x5M	100	1
			34231866	100x5M	120	1
			34231867	100x5M	150	1
			34231868	100x5M	180	1
			34231869	100x5M	240	1
			34231870	115x5M	40	1
			34231871	115x5M	60	1
			34231872	115x5M	80	1
			34231873	115x5M	100	1
			34231874	115x5M	120	1
			34231875	115x5M	150	1
			34231876	115x5M	180	1
			34231877	115x5M	240	1
			34230618	100x50M	40	1
			34230619	100x50M	60	1
			34230620	100x50M	80	1
			34230631	100x50M	100	1
			34230632	100x50M	120	1
			34230633	100x50M	150	1
			34230634	100x50M	180	1
			34230635	100x50M	240	1
			34230636	115x50M	40	1
			34230637	115x50M	60	1
			34230638	115x50M	80	1
			34230639	115x50M	100	1
			34230640	115x50M	120	1
			34230641	115x50M	150	1
			34230642	115x50M	180	1
			34230643	115x50M	240	1

Coated abrasives



A-B01 C JX cloth rolls
for universal use





Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation



Advantage

- + Perfect solution for dry grinding thanks to open distribution of grain on semi-flexible cotton backing
- + Universal use

	Shape	Type no.	Dimension	Grain	PU	
		Roll	705824	25x50M	40	1
		705825	25x50M	60	1	
		705826	25x50M	80	1	
		705828	25x50M	100	1	
		705830	25x50M	120	1	
		705831	25x50M	150	1	
		705832	25x50M	180	1	
		705833	25x50M	220	1	
		705834	25x50M	240	1	
		705836	25x50M	320	1	
		705837	25x50M	400	1	
		705839	40x25M	40	1	
		705840	40x25M	60	1	
		705841	40x25M	80	1	
		705842	40x25M	100	1	
		705843	40x25M	120	1	
		705844	40x25M	150	1	
		705845	40x25M	180	1	
		705846	40x25M	220	1	
		705850	40x25M	240	1	
		705851	40x25M	320	1	
		705852	40x25M	400	1	
		705853	40x25M	600	1	
		705854	40x50M	40	1	
		705855	40x50M	60	1	
		705856	40x50M	80	1	
		705857	40x50M	100	1	
		705858	40x50M	120	1	
		705859	40x50M	150	1	
		705860	40x50M	180	1	
		705861	40x50M	220	1	
		705862	40x50M	240	1	
		705863	40x50M	320	1	

Coated abrasives



	Shape	Type no.	Dimension	Grain	PU	
		Roll	705864	40x50M	400	1
		705873	50x25M	40	1	
		705874	50x25M	60	1	
		705875	50x25M	80	1	
		705876	50x25M	100	1	
		705877	50x25M	120	1	
		705878	50x25M	150	1	
		705879	50x25M	180	1	
		705880	50x25M	220	1	
		705881	50x25M	240	1	
		705882	50x25M	320	1	
		705883	50x25M	400	1	
		705884	50x25M	600	1	
		705885	50x50M	40	1	
		705886	50x50M	60	1	
		705887	50x50M	80	1	
		705888	50x50M	100	1	
		705889	50x50M	120	1	
		705891	50x50M	150	1	
		705892	50x50M	180	1	
705894	50x50M	220	1			
705895	50x50M	240	1			
705896	50x50M	320	1			
705898	50x50M	400	1			

Coated abrasives

★ BASIC **A-B01 C JJ cloth rolls**
for universal use

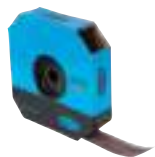



Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation

Advantage

- + Perfect solution for dry grinding thanks to open distribution of grain on fully flexible cloth backing
- + Universal use

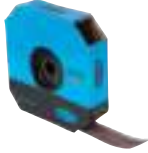

	Shape	Type no.	Dimension	Grain	PU	
		Roll	20781	40x50M	60	1
		20793	40x50M	80	1	
		20794	40x50M	100	1	
		20796	40x50M	120	1	
		20797	40x50M	150	1	





A-B01 C JJ cloth rolls
for universal use



	Shape	Type no.	Dimension	Grain	PU	
		Roll	20798	40x50M	180	1
		20799	40x50M	220	1	
		20801	40x50M	240	1	
		20803	40x50M	320	1	
		20805	40x50M	400	1	
		20806	50x50M	60	1	
		20807	50x50M	80	1	
		20811	50x50M	100	1	
		20813	50x50M	120	1	
		20816	50x50M	150	1	
		20817	50x50M	180	1	
		20819	50x50M	220	1	
		20821	50x50M	240	1	
		20822	50x50M	320	1	
		20824	50x50M	400	1	
		34061912	100x50M	60	1	
		34061913	100x50M	80	1	
		34061919	100x50M	100	1	
		34061934	100x50M	120	1	
		34061938	100x50M	150	1	
		34061939	100x50M	180	1	
		34061951	100x50M	240	1	
		34061953	100x50M	320	1	
		34061954	100x50M	400	1	
		34061960	115x50M	60	1	
		34062015	115x50M	80	1	
		34062021	115x50M	100	1	
34062022	115x50M	120	1			
34062023	115x50M	150	1			
34062024	115x50M	180	1			
34062025	115x50M	240	1			
34062026	115x50M	320	1			
34062027	115x50M	400	1			

Coated abrasives



Fleece rolls

for universal use



+ Maximum lifetime thanks to 100% impregnation - grain is thus also located inside the abrasive fabric

+ Various specifications enable the cleaning of welding seams all the way up to polishing of surfaces

+ Very flexible design and fabric adapts perfectly to the surfaces

Application:

- + For cleaning and grinding surfaces using an orbital sander or by hand
- + **We recommend:**
- + A COARSE / A MEDIUM for cleaning welding seams, removing rust and coatings as well as for light deburring

- + A FINE for grinding lacquer and paint, for cleaning machine components and for finishing
- + A VERY FINE / A ULTRA FINE for finishing any kind of workpiece
- + A GP – GREEN for fast all-round cleaning and finishing

Coated abrasives




Fleece rolls for universal use



	Shape	Type no.	Dimension	Conforms to	Design	Colour	PU
		120653	100x10m	P150	A COARSE	BROWN	1
		120667	100x10m	P220-240	A MEDIUM	REDBROWN	1
		120671	100x10m	P320	A FINE	REDBROWN	1
		120674	100x10m	P400-500	A VERY FINE	REDBROWN	1
		120676	100x10m	P800	C ULTRA FINE	GREY	1
		120682	100x10m	P400-500	A GP-GREEN	GREEN	1
		120688	115x10m	P150	A COARSE	BROWN	1
		120689	115x10m	P220-240	A MEDIUM	REDBROWN	1
		120693	115x10m	P320	A FINE	REDBROWN	1
		120694	115x10m	P400-500	A VERY FINE	REDBROWN	1
		120700	115x10m	P800	C ULTRA FINE	GREY	1
		120716	115x10m	P400-500	A GP-GREEN	GREEN	1





4.14 Sheets
Hand sanding and superfinishing



Sheets for hand sanding and superfinishing

Any kind of surface finishing requires thorough preparation. This can be done by hand or using an orbital sander.

Wood, paint or lacquer are usually abraded by hand. Deburring work can also be accomplished by hand. However, for perfect intermediate sanding, we recommend using an orbital sander. This also allows smooth finishing of coatings and smoothing of composite materials.

For jobs like these we offer abrasive sheets in a wide range of designs, such as cloth, paper and fleece rolls. They allow easy and flexible working on virtually any material.

Shapes



Sheet

Application recommendations



Performance level	Specification	Steel	NF metals	Paint / lacquer	Wood	Wet	Stone	PVC	All in One	Pages
	PAPER SHEETS									
	A-P07 P C	●	●	●	●	●				318
	C-P68 P A	●	●	●	●	●	●			318
	C-P68 P C	●	●	●	●	●	●			318, 319
	A-P21 P D			●	●			●		319
	CLOTH SHEETS									
	A-B01 C JX								●	320
	A-B01 C JJ								●	320
	FLEECE SHEETS								●	321



A-P07 P C paper rolls

for steel, nonferrous metals, wood, paints and lacquers



Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation

Advantage

- + Latex-finished backing for optimum results in wet and dry applications
- + Closed coating for an excellent surface finish
- + Universal use

	Shape	Type no.	Dimension	Grain	PU	
	■	Sheet	706001	230x280	60	50
		706002	230x280	80	50	
		706003	230x280	100	50	
		706004	230x280	120	50	
		706005	230x280	150	50	
		706006	230x280	180	50	
		706007	230x280	220	50	
		706008	230x280	240	50	
		706009	230x280	320	50	
		706010	230x280	400	50	
		706011	230x280	600	50	
		706012	230x280	800	50	
		706013	230x280	1000	50	
		706014	230x280	1200	50	



C-P68 P C | C-P68 P A paper sheets

for steel, nonferrous metals, wood, paints and lacquers



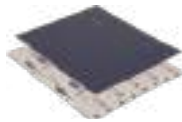
Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation

Advantage

- + Perfect solution for dry grinding thanks to open distribution of grain on light paper backing
- + Semi-open coating prevents loading and delivers an excellent surface finish
- + Universal use

	Shape	Type no.	Dimension	Grain	PU	
	■	Sheet	724257	230x280	80	50
		724264	230x280	100	50	
		724267	230x280	120	50	
		724268	230x280	150	50	
		724271*	230x280	180	50	
		724272*	230x280	220	50	

	Shape	Type no.	Dimension	Grain	PU	
	■	Sheet	724273*	230x280	240	50
		724275*	230x280	320	50	
		724276*	230x280	400	50	
		724281*	230x280	600	50	
		724283*	230x280	800	50	
		724284*	230x280	1000	50	
		724285*	230x280	1200	50	

* C-P68 P A



A-P21 P D paper sheets for plastic, wood, paints and lacquers




Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation

Advantage

- + Perfect solution for dry grinding thanks to open distribution of grain on light paper backing
- + Semi-open coating prevents loading and delivers an excellent surface finish
- + Universal use

	Shape	Type no.	Dimension	Grain	PU	
	■	Sheet	34230644	230x280	40	25
		34230677	230x280	60	25	
		34230678	230x280	80	25	
		34230679	230x280	100	50	
		34230680	230x280	120	50	
		34230701	230x280	150	50	
		34230702	230x280	180	50	
		34230703	230x280	240	50	



A-B01 C JX cloth sheets

for plastic, wood, paints and lacquers



Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation

Advantage

- + Perfect solution for dry grinding thanks to open distribution of grain on semi-flexible cotton backing
- + Universal use

	Shape	Type no.	Dimension	Grain	PU	
		Sheet	705989	230x280	40	50
		705990	230x280	60	50	
		705991	230x280	80	50	
		705992	230x280	100	50	
		705993	230x280	120	50	
		705994	230x280	150	50	
		705995	230x280	180	50	
		705996	230x280	220	50	
		705997	230x280	240	50	
		705998	230x280	320	50	
		705999	230x280	400	50	
		706000	230x280	600	50	



A-B01 C JJ cloth sheets

for plastic, wood, paints and lacquers



Application

- + For surface preparation by hand or in combination with an orbital sander
- + For levelling, smoothing, light deburring, fine grinding of coatings as well as for general surface preparation

Advantage

- + Perfect solution for dry grinding thanks to open distribution of grain on semi-flexible cotton backing
- + Universal use

	Shape	Type no.	Dimension	Grain	PU	
		Sheet	20832	230x280	60	50
		20833	230x280	80	50	
		20834	230x280	100	50	
		20835	230x280	120	50	
		20836	230x280	150	50	
		20842	230x280	180	50	
		20844	230x280	220	50	
		20851	230x280	240	50	
		20860	230x280	320	50	
		20868	230x280	400	50	



Fleece sheets

for universal use

+ Maximum lifetime thanks to 100% impregnation - grain is thus also located inside the abrasive fabric

+ Very flexible design and fabric adapts perfectly to the surfaces



+ Various specifications enable the cleaning of welding seams all the way up to polishing of surfaces

Application:

- + For cleaning and grinding surfaces using an orbital sander or by hand
- + **We recommend:**
- + A COARSE / A MEDIUM for cleaning welding seams, removing rust and coatings as well as for light deburring

- + A FINE for grinding lacquer and paint, for cleaning machine components and for finishing
- + A VERY FINE / C ULTRA FINE for finishing any kind of workpiece
- + A GP – GREEN for fast all-round cleaning and finishing

Coated abrasives



Fleece sheets for universal use



Shape	Type no.	Dimension	Conforms to	Design	Colour	PU
	120769	152x229	P150	A COARSE	BROWN	10
	120770	152x229	P220-240	A MEDIUM	REDBROWN	10
	120772	152x229	P320	A FINE	REDBROWN	10
	120774	152x229	P400-500	A VERY FINE	REDBROWN	10
	120777	152x229	P220-240	S MEDIUM	BLACK	10
	120779	152x229	P800	C ULTRA FINE	GREY	10
	120781	152x229	P400-500	A GP-GREEN	GREEN	10
	120787	152x229	-	POLISH	WHITE	10



TYROLIT

BOSCH
103
1000 W Nr. 1.83 A 340 W
154000001 2011
3-70749 Leinfelden-Echterdingen



**4.15 TYROLIT FAST CHANGE
Dual action sander**



TYROLIT FAST CHANGE for dual action sanders

TYROLIT FAST CHANGE discs offer a simple and convenient solution for surface treatment. Disc changes are quick and easy thanks to the Velcro fastening.

These tools are available with paper or film backings and can be used on nearly all materials. We offer discs with different numbers of holes for optimum material removal or extrac-

tion. They are easily applied to our back up pads.

The different grit sizes allow grinding from coarse to fine on ferrous and

nonferrous metals and on wood, lacquers, paint and composites.

Application recommendations



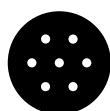
Performance level	Specification	Steel	All in One	Composites	PVC	Gel-Coat	Colour/Lack	Wood	Hard Stone	Marble	Pages	
★★★ PREMIUM	ZA-P45 V		●								326	
	ZA-P45 P F		●								326	
	A-P22 FI			●	●	●				●	326, 327	
	A-P22 P E (=Grain 40)			●	●	●	●			●	329, 330	
	A-P22 P D (=Grain 60-180)			●	●	●	●			●	329, 330	
	A-P22 P C (=Grain > 180)			●	●	●	●			●	329, 330	
	C-P65 P E	●		●	●					●	●	328
	A-P31 P F		●									331, 332

Coated abrasives

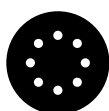
Shapes



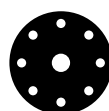
Disc



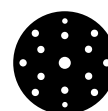
Disc 7H



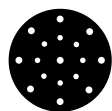
Disc 8H



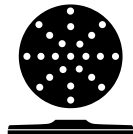
Disc 9H



Disc 15H



Disc 17H



Pad TFC 23



ZA-P45 V | ZA-P45 P F TFC
for universal use



Application

- + For coarse and fine grinding of steel, nonferrous metals, composites and gel coat

We recommend

- + Grit size 40 for grinding smaller welding seams and spot weld seams
- + Grit size 60 for maximum stock removal
- + Grit size 80/120 for a perfect surface finish

Advantage

- + Combination of zirconia alumina and a unique, strong paper backing for maximum abrasiveness and lifetime
- + Active coolant in the bond for cool and clean grinding
- + TYROLIT Fast Change system for quick and easy wheel changes thanks to velcro fastening

	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	Disc	706139	125	40	10 500	50
		706141*	125	60	10 500	50
		706142*	125	80	10 500	50
		706143*	125	120	10 500	50
		706144*	150	60	8 800	50
		706145*	150	80	8 800	50
		706146*	150	120	8 800	50

* ZA-P45 P F



A-P22 FI TFC
for plastic, composites, gel coat, wood and aluminium



Application

- + For coarse and fine grinding of workpieces made of plastic, composite, gel coat, wood and aluminium

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit sizes 80-120 for universal grinding work
- + Grit sizes 150-400 for a perfect surface finish

Advantage





- + Special film backing for improved edge stability and maximum stock removal
- + No clogging or loading of the disc
- + TYROLIT Fast Change system for quick and easy wheel changes thanks to Velcro fastening

	Shape	Type no.	Diameter	Grain	Holes	Max. RPM	PU
	Disc 8H	706147	125	40	8	10 500	50
		706148	125	60	8	10 500	50
		706149	125	80	8	10 500	50
		706150	125	100	8	10 500	50
		706151	125	120	8	10 500	50



Coated abrasives



	Shape	Type no.	Diameter	Grain	Holes	Max. RPM	PU	
		Disc 8H	706152	125	150	8	10 500	50
			706154	125	180	8	10 500	50
			706155	125	240	8	10 500	50
			706157	125	320	8	10 500	50
			706158	125	400	8	10 500	50
		Disc 15H	34063266	150	40	15	8 800	50
			34063267	150	60	15	8 800	50
			34063292	150	80	15	8 800	50
			34063294	150	100	15	8 800	50
			34063296	150	120	15	8 800	50
			34063298	150	150	15	8 800	50
			34063299	150	180	15	8 800	50
			34063300	150	240	15	8 800	50
			34063301	150	320	15	8 800	50
			34063303	150	400	15	8 800	50
		Disc 17H	34036456	150	40	17	8 800	50
			34036457	150	60	17	8 800	50
			34036458	150	80	17	8 800	50
			34036459	150	100	17	8 800	50
			34036460	150	120	17	8 800	50
			34036501	150	150	17	8 800	50
			34036502	150	180	17	8 800	50
			34036503	150	240	17	8 800	50
			34036504	150	320	17	8 800	50
			34036505	150	400	17	8 800	50

Coated abrasives

**C-P65 P E TFC**

for hard stone, steel, composites, plastics and soft stone

**Application**



- + For coarse and fine grinding of workpieces made of hard stone, steel, composites, plastics and soft stone

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit size 80/120 for universal grinding work
- + Grit sizes 150-800 for a perfect surface finish

Advantage

- + Sturdy "E" paper backing perfectly suited to coarse and fine grinding
- + TYROLIT Fast Change system for quick and easy wheel changes thanks to velcro fastening

	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	 Disc	6957	125	40	10 500	50
		6958	125	60	10 500	50
		6960	125	80	10 500	50
		6964	125	120	10 500	50
		6968	125	180	10 500	50
		6969	125	220	10 500	50
		6979	125	320	10 500	50
		6991	125	400	10 500	50
		6993	125	600	10 500	50
		7007	125	800	10 500	50
		7008	180	40	7 300	50
		7030	180	60	7 300	50
		7055	180	80	7 300	50
		7058	180	120	7 300	50
		7070	180	180	7 300	50
		7072	180	220	7 300	50
		7086	180	320	7 300	50
		7087	180	400	7 300	50
		7093	180	600	7 300	50
		7100	180	800	7 300	50



A-P22 P D/P E/P C TYROLIT FAST CHANGE

for plastics, composites, gel coat, wood, paint and lacquers

+ Elimination of clogging and loading of the disc enables maximum lifetime

+ Very high stock removal thanks to improved backing



+ TYROLIT Fast Change system for quick and easy wheel changes thanks to Velcro fastening

Application:

+ For coarse and fine grinding of workpieces made of plastic, composite, gel coat and wood

We recommend:

- + Grit size 40/60 for maximum stock removal
- + Grit sizes 80-120 for medium grinding
- + Grit sizes 150-400 for a perfect surface finish



A-P22 A-P22 P D/P E/P C TYROLIT FAST CHANGE

for plastics, composites, gel coat, wood, paint and lacquers



	Shape	Type no.	Diameter	Grain	Holes	Max. RPM	PU	
		Disc 8H	34230261	125	40	8	10 500	50
		34230417*	125	60	8	10 500	50	
		34230419*	125	80	8	10 500	50	
		34230420*	125	100	8	10 500	100	
		34230422*	125	120	8	10 500	100	
		34230446*	125	150	8	10 500	100	
		34230447*	125	180	8	10 500	100	
		34230449**	125	220	8	10 500	100	

*A-P22 PE **A-P22 PC

Coated abrasives



A-P22 P D/P E/P C TYROLIT FAST CHANGE

for plastics, composites, gel coat, wood, paint and lacquers



	Shape	Type no.	Diameter	Grain	Holes	Max. RPM	PU
		Disc 8H 34230450**	125	240	8	10 500	100
		34230452**	125	320	8	10 500	100
		34230453**	125	400	8	8 800	100
	Disc	34230486	150	40		8 800	50
		34230487*	150	60		8 800	50
		34230488*	150	80		8 800	100
		34230490*	150	120		8 800	100
		34230531*	150	150		8 800	100
		34230532**	150	180		8 800	100
		34230533**	150	240		8 800	100
	Disc 15H	34230534	150	40	15	8 800	50
		34230535*	150	60	15	8 800	50
		34230591*	150	80	15	8 800	100
		34230592*	150	100	15	8 800	100
		34230593*	150	120	15	8 800	100
		34230595*	150	150	15	8 800	100
		34230597*	150	180	15	8 800	100
		34230598**	150	220	15	8 800	100
		34230599**	150	240	15	8 800	100
		34230600**	150	320	15	8 800	100
		34230601**	150	400	15	8 800	100
	Disc 17H	34230605	150	40	17	8 800	50
		34230606*	150	60	17	8 800	50
		34230607*	150	80	17	8 800	100
		34230608*	150	100	17	8 800	100
		34230609*	150	120	17	8 800	100
		34230610*	150	150	17	8 800	100
		34230612*	150	180	17	8 800	100
		34230613**	150	220	17	8 800	100
		34230614**	150	240	17	8 800	100
		34230615**	150	320	17	8 800	100
34230616**	150	400	17	8 800	100		

*A-P22 PE **A-P22 PC

Coated abrasives



A-P31 P F TYROLIT FAST CHANGE

for universal use

+ Strong backing for very high abrasiveness and lifetime

+ High durability on edges



+ Grit size 320 and 400 available on request

Application:

+ For coarse and fine grinding of various materials



We recommend:

- + Grit size 40/60 for maximum stock removal
- + Grit sizes 80-120 for medium grinding
- + Grit sizes 150-240 for a perfect surface finish



A-P31 P F TYROLIT FAST CHANGE for universal use



	Shape	Type no.	Diameter	Grain	Max. RPM	PU	
		Disc	34230705	115	40	12 300	50
		34230706	115	60	12 300	50	
		34230707	115	80	12 300	50	
		34230708	115	100	12 300	50	
		34230709	115	120	12 300	50	
		34230710	115	150	12 300	50	
		34230711	115	180	12 300	50	
		34230712	115	240	12 300	50	
		34230713	125	40	10 500	50	



Coated abrasives





A-P31 P F TYROLIT FAST CHANGE
for universal use



	Shape	Type no.	Diameter	Grain	Max. RPM	PU
	 Disc	34230714	125	60	10 500	50
		34230715	125	80	10 500	50
		34230716	125	100	10 500	50
		34230717	125	120	10 500	50
		34230718	125	150	10 500	50
		34230719	125	180	10 500	50
		34230720	125	240	10 500	50
		34230721	150	40	8 800	50
		34230722	150	60	8 800	50
		34230723	150	80	8 800	50
		34230724	150	120	8 800	50
		34230725	150	150	8 800	50
		34230726	150	180	8 800	50



Pack up pads
for TYROLIT FAST CHANGE (TFC) discs





Application

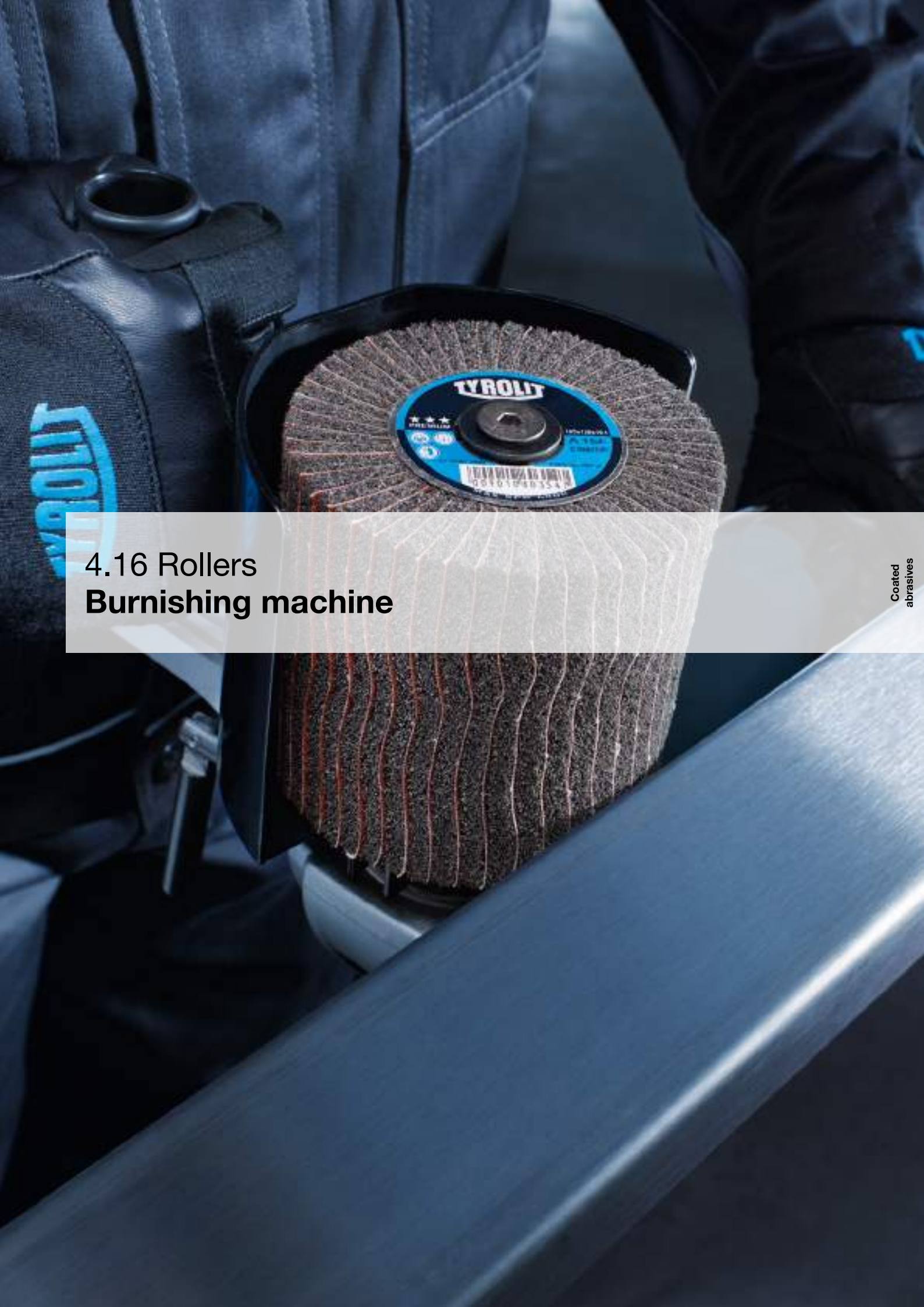
- + For quick and easy mounting of the discs on the dual action sander
- + Compatible with all TFC discs

Advantage

- + Ideal support for finishing and preparing surfaces
- + Back up pad design for outstanding dust extraction

	Shape	Type no.	Diameter	Design	Holes	Grade	Max. RPM	PU	
	 PAD TFC	710006	115	M14		HARD	13 300	5	
		710007	125	M14		HARD	12 300	5	
		34177464	150	5/16-M8	21	HARD	10 500	1	Suitable for discs with 0, 6, 7, 9, 15 holes
		710008	150	5/16-M8	23	HARD	10 500	1	Suitable for discs with 0, 6, 7, 9, 15 holes
		710009	150	5/16-M8	23	MEDIUM	10 500	1	Suitable for discs with 0, 6, 7, 9, 15 holes

Coated abrasives



4.16 Rollers
Burnishing machine



Rollers for burnishing machines

TYROLIT rollers are used on portable equipment such as burnishing machines for general grinding jobs, cleaning, finishing and for polishing uneven or curved surfaces.








Our products allow a consistent, high-quality surface finish throughout their lifetime. With our comprehensive assortment, we offer products for removing welding tracks, scratches or oxidation residues. These tools

are especially popular for surface pre-treatment over large areas.

The patented shape of the newly developed spiral rollers means they are extremely easy and convenient

to use without lateral deflection. You can also increase your productivity by avoiding typical roller imprinting on the workpiece. In addition, vibrations are considerably reduced and the load is minimised.

Application recommendations

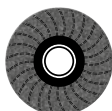
Performance level					Pages
	Steel	Stainless steel	NF metals	PVC	
ROLLERS 	•	•	•		336
SPIRAL ROLLERS 	•	•	•		337
ROUGH GRINDING WHEEL 	•	•		•	338

Coated abrasives

Shapes



1LA C Flap wheel



1LA VL Fleece wheel



1LA VL-C
Fleece flap wheel



Rollers for steel, stainless steel and nonferrous metals



Application

- + For cleaning, finishing, polishing or for general grinding processes on uneven or curved surfaces
- + For removing welding tracks, scratches and oxidation residues as well as for pre-treating the surface

Advantage

- + Consistent wear pattern for a consistently high-quality surface finish
- + Outstanding lifetime

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit size 80/120/180 for a perfect surface finish
- + A COARSE / A MEDIUM for cleaning welding seams, removing rust and coatings as well as for light deburring
- + A FINE for grinding lacquer and paint, for cleaning machine components and for finishing
- + A VERY FINE / A ULTRA FINE for finishing a wide variety of workpieces

	Shape	Type no.	Dimension	Grain	Design	Colour	Max. RPM	Rec. speed	PU	
		1LA C	62144	100x100x19.1 S4	40		6 800	3 700	1	
			62153	100x100x19.1 S4	60		6 800	3 700	1	
			62154	100x100x19.1 S4	80		6 800	3 700	1	
			62155	100x100x19.1 S4	120		6 800	3 700	1	
			62178	100x100x19.1 S4	180		6 800	3 700	1	
		1LA VL	60159	100x100x19.1 S4		A COARSE	REDBROWN	6 800	2 400	1
			60170	100x100x19.1 S4		A MEDIUM	REDBROWN	6 800	2 400	1
			60184	100x100x19.1 S4		A FINE	REDBROWN	6 800	2 400	1
			60185	100x100x19.1 S4		A VERY FINE	REDBROWN	6 800	2 400	1
		1LA VL-C	60337	100x100x19.1 S4	60	A COARSE	GREY	6 800	2 400	1
			60351	100x100x19.1 S4	80	A MEDIUM	GREY	6 800	2 400	1
			60352	100x100x19.1 S4	120	A FINE	GREY	6 800	2 400	1
			60354	100x100x19.1 S4	180	A VERY FINE	GREY	6 800	2 400	1



Spiral rollers for steel, stainless steel and nonferrous metals



Application

- + For cleaning, finishing, polishing or for general grinding processes on uneven or curved surfaces

Advantage

- + Easy handling: spiral cuts for very easy use, especially for inexperienced operators
- + Uniform results
- + Longest lifetime

We recommend

- + A COARSE / A MEDIUM for cleaning welding seams, removing rust and coatings as well as for light deburring
- + A FINE for grinding lacquer and paint, for cleaning machine components and for finishing
- + A VERY FINE / A ULTRA FINE for finishing a wide variety of workpieces
- + Grit size 60/80: for a coarser surface finish
- + Grit size 120/180: for a fine surface finish

	Shape	Type no.	Dimension	Grain	Design	Colour	Max. RPM	Rec. speed	PU
		1LA VL 94134	100x100x19.1 S4		A COARSE	REDBROWN	6 800	2 400	1
		94204	100x100x19.1 S4		A MEDIUM	REDBROWN	6 800	2 400	1
		94210	100x100x19.1 S4		A VERY FINE	REDBROWN	6 800	2 400	1
		1LA VL-C 94223	100x100x19.1 S4	60	A COARSE	GREY	6 800	2 400	1
		94234	100x100x19.1 S4	80	A MEDIUM	GREY	6 800	2 400	1

Coated abrasives



Rough cleaning rollers

for steel, stainless steel and PVC

+ Maximum lifetime and perfect surface result

+ Universal tool



+ For quiet and low-fatigue working

Application:

+ For removing rust, paint and underbody sealant as well as for preparing surfaces for welding, soldering and anodising


We recommend:

+ Best results at a speed of 2400 rpm
+ Note maximum speed



Rough cleaning rollers for steel, stainless steel and PVC



	Type no.	Dimension	Grain	Design	Colour	Max. RPM	Rec. speed	PU
	1GR 34077301	100x100x19.1 S4		C COARSE	BLACK	6 800	2 400	1

Coated abrasives



4.17 Rollers
Floorstanding grinder



Rollers for floorstanding grinders




TYROLIT rollers are used on stationary machines such as floorstanding grinders for general grinding jobs, cleaning, finishing and for polishing uneven or curved surfaces.

Our products allow a consistent, high-quality surface finish throughout their lifetime. With our comprehensive assortment, we offer products for

removing welding tracks, scratches or oxidation residues. These tools are especially popular for surface pre-treatment over large areas.

Rollers for floorstanding grinders are available in many different grain sizes and so always produce the desired result.

Application recommendations

Performance level				Pages
ROLLERS	●	●	●	342
★★★ PREMIUM				

Shapes



1LA C



Floorstand grinder rollers for steel, stainless steel and nonferrous metals



Application



- + For cleaning, finishing, polishing or for general grinding processes on uneven or curved surfaces
- + For removing welding tracks, scratches and oxidation residues as well as for pre-treating the surface

Advantage

- + Consistent wear pattern for a consistently high-quality surface finish
- + Outstanding lifetime

We recommend

- + Grit size 40/60 for maximum stock removal
- + Grit sizes 80-120 for medium grinding
- + Grit sizes 150-320 for a perfect surface finish


	Shape	Type no.	Shape	Dimension	Grain	Max. RPM	Rec. speed	PU
		1LA C 62180	1LA	165x25x25,4	40	5 200	3 300	2
		62181	1LA	165x25x25,4	60	5 200	3 300	2
		62190	1LA	165x25x25,4	80	5 200	3 300	2
		62194	1LA	165x25x25,4	120	5 200	3 300	2
		62202	1LA	165x25x25,4	180	5 200	3 300	2
		62212	1LA	165x25x25,4	220	5 200	3 300	2
		62239	1LA	165x25x25,4	320	5 200	3 300	2
		62353	1LA	165x50x54	40	5 200	3 300	1
		62384	1LA	165x50x54	50	5 200	3 300	1
		62409	1LA	165x50x54	60	5 200	3 300	1
		62416	1LA	165x50x54	80	5 200	3 300	1
		62419	1LA	165x50x54	100	5 200	3 300	1
		62434	1LA	165x50x54	120	5 200	3 300	1
		62436	1LA	165x50x54	150	5 200	3 300	1
		62448	1LA	165x50x54	220	5 200	3 300	1
		62453	1LA	165x50x54	240	5 200	3 300	1
		62471	1LA	165x50x54	320	5 200	3 300	1
		62518	1LA	250x50x100	60	3 000	2 000	1
		62548	1LA	250x50x100	220	3 000	2 000	1



Reduction bushes for floorstand grinder rollers

Application

- + Reduction bushes enable the original 54 millimetre bore diameter to be reduced to 32, 25, 22, 20, 16 or 12 millimetres

	Type no.	Dimension	Design	PU	
	27	34024028	54x32	Reduction from 54 to 32, 25, 22, 20, 16, 12	1





4.18 Compact wheels **Bench grinders**



Compact wheels for bench grinders

Compact wheels from TYROLIT are used on stationary machines such as bench grinders for general grinding work, cleaning, finishing and polishing surfaces.

Our products enable a consistent, high-quality surface finish throughout their lifetime. With the compact wheel range, TYROLIT offers you an ideal tool for the machining of surfaces without changing the surface geometry, particularly for the removal of rust and dirt.

Compact wheels consist of multilayer unitised fleece and are available in coarse to fine specifications depending on the number of layers. Due to their soft structure, MMF (multi metal finishing) compact wheels are especially suitable for the fine machining of all metal surfaces, whereas

DB (deburring) compact wheels are particularly hard due to several layers and high pressure and are therefore suitable for deburring work. On the following pages, you will find our range of unitised and convolute compact wheels for bench grinders.

Application recommendations



Performance level	Design	Steel	Stainless steel	All in One	Pages
★★★ PREMIUM	2 A MEDIUM, 2 C MEDIUM, 2 C COARSE, 2 C FINE, 3 C FINE, 5 A MEDIUM, 6 A MEDIUM, 6 C FINE, 7 C FINE, 8 A MEDIUM, 8 A COARSE, 8 C FINE, 9 C FINE			●	348, 349, 350

Shapes



1UW Unitized wheel



1CW Convolute wheel

Coated abrasives



Unitised compact wheels

for universal use

- + Maximum lifetime thanks to low clogging of the wheel and cool grinding



- + Universal tool

Application:

- + For removing rust, burrs and scratches as well as for fading, glazing and finishing and grinding welding seams

We recommend:

- + 2/3 C FINE for deburring and polishing
- + 2 A MEDIUM for deburring, polishing and for transitions
- + 6 C FINE / 6 A MEDIUM for deburring, rounding sharp edges and for transitions
- + 8 A COARSE for deburring, rounding sharp edges and for transitions with increased abrasiveness



Unitised compact wheels for universal use



	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	VE	
		1UW	34190233	152x6x12.7	2 A MEDIUM	5 000	3 000	8
		34190235	152x6x12.7	2 C FINE	5 000	3 000	8	
		34190236	152x6x12.7	3 C FINE	5 000	3 000	8	
		34190237	152x6x12.7	6 A MEDIUM	7 500	4 500	8	
		34190238	152x6x12.7	6 C FINE	7 500	4 500	8	
		34190239	152x6x12.7	8 A COARSE	7 500	4 500	8	
		34190280	152x13x12.7	2 A MEDIUM	5 000	3 000	4	



Coated abrasives



	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	VE
		34190291	152x13x12.7	2 C FINE	5 000	3 000	4
		34190292	152x13x12.7	3 C FINE	5 000	3 000	4
		34190293	152x13x12.7	6 A MEDIUM	7 500	4 500	4
		34190294	152x13x12.7	6 C FINE	7 500	4 500	4
		34190295	152x13x12.7	8 A COARSE	7 500	4 500	4
		34190297	152x25x12.7	2 A MEDIUM	5 000	3 000	2
		34190298	152x25x12.7	2 C FINE	5 000	3 000	2
		34190299	152x25x12.7	3 C FINE	5 000	3 000	2
		34190301	152x25x12.7	6 A MEDIUM	7 500	4 500	2
		34190302	152x25x12.7	6 C FINE	7 500	4 500	2
		34190303	152x25x12.7	8 A COARSE	7 500	4 500	2
		34190304	152x25x25.4	2 A MEDIUM	5 000	3 000	2
		34190305	152x25x25.4	2 C FINE	5 000	3 000	2
		34190306	152x25x25.4	3 C FINE	5 000	3 000	2
		34190308	152x25x25.4	6 A MEDIUM	7 500	4 500	2
		34190309	152x25x25.4	6 C FINE	7 500	4 500	2
		34190310	152x25x25.4	8 A COARSE	7 500	4 500	2

Coated abrasives

★★★ PREMIUM **Convolute compact wheels** for universal use



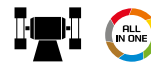
- | | |
|--|--|
| <p>Application</p> <ul style="list-style-type: none"> + For deburring lasered and stamped workpieces + Note maximum speed | <p>Advantage</p> <ul style="list-style-type: none"> + No alteration of the surface geometry and no chamfering at the edges + Outstanding lifetime + Very fine finish |
|--|--|

	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	VE
		34244233	150x20x32	7 C FINE	6 000	3 600	1
		34244235	150x20x32	9 C FINE	6 000	3 600	1
		34257324	152x25x25,4	7 C FINE	6 000	3 600	1
		34200286	152x13x25,4	7 C FINE	6 000	3 600	4
		34200287	152x13x25,4	8 A MEDIUM	6 000	3 600	4
		34200379	152x13x25,4	8 C FINE	6 000	3 600	4
		34200380	152x13x25,4	9 C FINE	6 000	3 600	4
		34200559	152x25x25,4	7 C FINE	6 000	3 600	2
		34200611	152x25x25,4	8 A MEDIUM	6 000	3 600	2
		34200612	152x25x25,4	8 C FINE	6 000	3 600	2
		34200614	152x25x25,4	9 C FINE	6 000	3 600	2





Convolute compact wheels for universal use



	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	VE	
		1CW	34200616	203x13x76,2	7 C FINE	4 500	2 700	4
			34200618	203x13x76,2	8 A MEDIUM	4 500	2 700	4
			34200619	203x13x76,2	8 C FINE	4 500	2 700	4
			34200623	203x25x76,2	8 C FINE	4 500	2 700	2
			34200624	203x25x76,2	9 C FINE	4 500	2 700	2
			34200626	203x50x76,2	7 C FINE	4 500	2 700	1
			34200627	203x50x76,2	8 A MEDIUM	4 500	2 700	1
			34200628	203x50x76,2	8 C FINE	4 500	2 700	1
			34200630	203x50x76,2	9 C FINE	4 500	2 700	1
			34200620	203x13x76,2	9 C FINE	4 500	2 700	4
			34200621	203x25x76,2	7 C FINE	4 500	2 700	2
			34200622	203x25x76,2	8 A MEDIUM	4 500	2 700	2



MMF convolute compact wheels for universal use



Application

- + For various finishing work on all metal surfaces

We recommend

- + Use on adjustable straight grinders

Advantage

- + Surface finishing
- + Very soft structure enables the workpiece to be ground without altering the geometry
- + Universal use

	Shape	Type no.	Dimension	Design	Max. RPM	Rec. speed	VE	
		1CW	34200686	152x25x25.4	2 C COARSE	6 000	3 600	2
			34200687	152x25x25.4	2 C MEDIUM	6 000	3 600	2
			34200688	152x25x25.4	5 A MEDIUM	6 000	3 600	2
			34200689	152x50x25.4	2 C COARSE	6 000	3 600	1
			34200690	152x50x25.4	2 C MEDIUM	6 000	3 600	1
			34200712	152x50x25.4	5 A MEDIUM	6 000	3 600	1
			34200716	203x25x76.2	2 C MEDIUM	4 500	2 700	2
			34200718	203x25x76.2	5 A MEDIUM	4 500	2 700	2
			34200719	203x50x76.2	2 C COARSE	4 500	2 700	1
			34200720	203x50x76.2	2 C MEDIUM	4 500	2 700	1
			34200721	203x50x76.2	5 A MEDIUM	4 500	2 700	1




Accessory set for compact wheels



Application

+ Aluminium flange for mounting convolute compact wheels

	Type no.	Dimension	VE
	34214174	76.2 FLANGE	1



Catalogue 21

Precision grinding

Precision grinding information 354

Explanation of labels	355
Precision tool specification	356
Pictograms	356
Delivery times	357
Example for breadth of product range	357

External cylindrical grinding 359

5.1 Conventional ceramic	359
CBN resin	363
Diamond resin	364

Surface grinding 365

5.2 Conventional ceramic	365
CBN resin	374
Diamond resin	375

Rectification plane 377

5.3 Profile surface grinding	377
Conventional ceramic	380
5.4 Surface grinding with rings and segments	381
Rings	384

Internal cylindrical grinding 385

5.5 Conventional ceramic	385
CBN resin	390
CBN galvanic	390
Diamond galvanic	391

Hand-guided grinding 393

5.6 Vitrified bonded	396
Elastic bonded	402
Resin bonded	403
Galvanic bonded	403

Bench grinders 404

5.7 Bench grinding wheels	404
5.8 Sharpening and polishing wheels	415

Saw sharpening 421

5.9 For automatic saw sharpening machines	421
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Tool grinding 431

5.10 Universal tool grinding	431
Conventional ceramic	435
CBN resin	438
5.11 CNC tool grinding	441
CBN resin	445
Diamond resin	446
Diamond metal	447
5.12 Dressing and sharpening	449

Precision tool specific Information

Product label



Precision grinding

Precision tool specification

Conventional ceramic

89A 60 M 5 V 217

	Bond designation	Internal code, which defines bond type
	Bond	
	V	vitrified bonded
	B	resin bonded
	E	elastic bonded
	G	galvanic bonded
	Structure	The higher the number, the more open the wheel
	Hardness	Hardness ascends alphabetically e.g.
	G	Soft
	R	Hard
	Grit size description	Grit size indication in mesh (sieve size per inch)
	14 – 36	COARSE
	46 – 60	MEDIUM
	80 – 220	FINE
	800 – 1 200	VERY FINE
	Abrasive description	
10A		Regular aluminium oxide
50A		Mixture of 89A and 10A
52A		Semi-friable aluminium oxide
80A		Mixture of 88A and special aluminium oxide
88A		Pink aluminium oxide
89A		White aluminium oxide
91A		Red aluminium oxide
92A		Mixture of 89A and special aluminium oxide
93A		Mixture of 89A and 91A
97A		Special aluminium oxide
454A		Mixture of sintered aluminium oxide and 89A
455A		Mixture of sintered aluminium oxide and 89A
C		Green silicon carbide
1C		Black silicon carbide
50C		Silicon carbide mixture Green/black

Precision grinding

Precision tool specification

CBN resin / Diamant

B 126 C50 B 54	
Bond designation	Internal code, which defines bond type
Bond	
B	Resin bonded
M	Metal bonded
Concentration	The grain concentration shows the grain volume in carat per unit volume of the grinding layer
Grit size description	Grit size indication in μm (average grit diameter according to FEPA))
35 – 181 μm	
Abrasive description	
B	CBN
D	Diamond

Pictograms



External-cylindrical grinding



Internal-cylindrical grinding



Surface grinding



Floorstand grinder



Hand-guided grinding



Tool grinding



Saw sharpening



Dressing and sharpening

Precision grinding

Delivery time

EXPLANATION OF TERMS

Stock type

All products in the chapter "Precision grinding" that are listed with type numbers are in stock.

Recommended stock type

A standard range created by a collaboration between our application engineers and marketing managers, which guarantees optimum grinding results for various grinding applications and the materials to be processed.

Alternative stock type

Existing stock products, which – based on our global market and product experience – also guarantee good grinding results, but which are replaced in the short to MEDIUM term by recommended stock types.

Breadth of product range

Precision is our business! However, if the specifications available in stock do not provide you with the perfect solution, modifications to the recommended product range (dimensions) can also be made, i.e. grit size, hardness and structure.

Example for breadth of product range

C	60	H	5	Stock type	→	Recommended standard specification
C	46-180	F-I	5-8	5-6 weeks DT	→	Possible range of modifications for grit sizes, hardness and structure
C	80	F	8		→	Example of a possible modification

Modification on request

To ensure quicker delivery times in urgent cases, existing stock types (recommended stock types) can be modified to suit customer requirements. The current delivery time and price will be provided according to the enquiry.



Precision data sheet			Recorded by: on:	
Customer	ATDB no.:		Country:	
	Target group:		Product family:	
	Item requirements:			
	Customer: *		Classification:	
	Department:		Customer no.:	
	Contact:		Tel. / Fax:	
Customer	Shape: *		1 set = item.:	
	Dimensions (mm): *			
	Dimensions (mm):		Tolerance:	
	Specifications:			
	Manufacturer:		Current price:	
	Vs max. (m/s)*		Order quantity:	
Customer	Grinding process:			
	Machine manufacturer:			
	Vs (m/s):			
	Coolant / lubricant:			
	Dressing tool:			
	Dressing cycle:		Dressing amount:	
Workpiece	Workpiece: *		Dimensions (mm):*	
	Material group:*		Stock (mm):	
	Condition: *		Hardness: *	
Aim	Surface roughness:		Contact time:	
	Lifetime:			
	Addition:			
Probe	Specification:			
	Specification:			
	Specification:			
Info			Drawing:	
Distributor:				

* COMPULSORY fields are marked in grey

Precision grinding



5.1 External cylindrical grinding
External cylindrical grinding tools



External cylindrical grinding

External cylindrical grinding is one of the most frequently used grinding processes, for example, in the automotive industry. In keeping with the requirements of our customers, we always offer the right tool.

The high-precision external cylindrical grinding tools from TYROLIT underlie an optimal quality assurance system and are produced using the most modern manufacturing technology and production facilities. We are therefore always able to comply with the requirements of our customers.

The decisive factor in the selection of the right product is the adaptation of the grinding wheel in the overall process to the specific requirements of the grinding application. Workpiece, tool, machine, parameters, cooling lubricant and the applied dressing technology contribute to the perfect

grinding result. The choice of the correct specification, as well as adaptation of the process parameters, can be optimised by TYROLIT to suit customer requirements.

Application recommendation



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened Hardened	Unhardened Hardened										
89A			●	●	●	●				●		●	362
B			●		●	●	●						363
D								●	●			●	364

- Extremely suitable
- Limited suitability

Application tips

The key factor is the adjustment of the grinding wheel in the overall process (workpiece, tool, machine, parameters, coolant, dressing technology etc., as well as the specific requirements of the particular grinding applications.

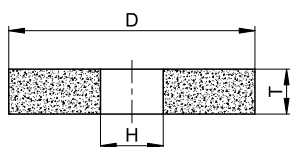
- The choice of specification, such as the adjustment of process parameters, can be optimised by TYROLIT application engineers to suit customer requirements
- Recommended operating speed: 25–35 m/sec
Workpiece peripheral speed: depends on workpiece diameter
- Overlap rate: 30–40 % of wheel width

Diamond and CBN tool

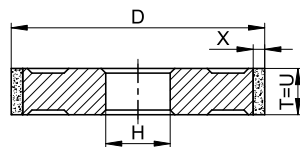
- For optimised dressing, see page 446 to 455
- Longitudinal feed/overlap rate:
30–50 % of thickness of diamond section width

- Workpiece peripheral speed: depends on workpiece diameter
- Recommended cutting speed for CBN grinding wheels for HSS and high-alloyed tool steel is 20–30 m/s
- Recommended cutting speed for diamond grinding wheels for cemented carbide and industrial ceramics is 15–25 m/s
- Concentrically trueing and sharpening of wheel before initial use with
 - unhardened structural steel shaft
 - silicon carbide grinding wheel
- Ensure good coolant supply

Shapes



Shape 1



Shape 1A1

External cylindrical grinding

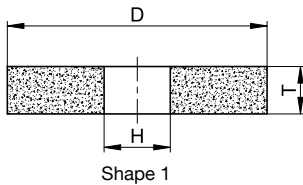
Conventional ceramic

For non and low-alloyed steels




Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A			●	●	●	●				●		●

Recommended stock type



In many industries, external cylindrical grinding is one of the most frequently used grinding processes. In the automotive industry, for example, camshafts, crankshafts and gear shafts designed to meet the most stringent demands and requirements are produced. Use of aluminium oxide especially for non and low-alloyed steels.

The grade and structure of the wheel affect the grinding result and are tailored perfectly to use on non and low-alloyed steels. Our assortment also includes wheels for angled flute grinding.

	Shape	Type no.	DxTxH	Specification	Vmax m/s	Comments
	1	690785	300x40x76.2	89A 802 J5A V217 50	50	Grit size 80 Ra approx. 0.20–0.35 µm
		39869	400x30x127	89A 802 J5A V217 50	50	
		620118	400x40x127	89A 802 J5A V217 50	50	
		39867	500x60x203.2	89A 802 J5A V217 50	50	

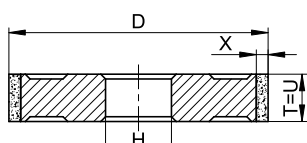
VIB STAR External cylindrical grinding CBN resin

For high-alloyed steels and HSS




Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
B			●		●	●	●					●

Recommended stock type



Shape 1A1

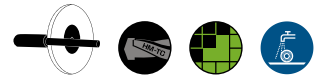
The VIB STAR external grinding wheel is made with a vibration-reducing core. This enables a consistent and quiet grinding process. A constant self-sharpening effect also guarantees consistent power consumption and therefore high economic efficiency of the tool. Low wear results in a high level of dimensional accuracy on the workpiece, thereby reducing dimensional inspections to a minimum.

	Shape	Type no.	DxTxH	Specification	U-X	Vmax m/s
	1A1	34448298	300x20x76.2	B126C50B VIB-STAR	20-3	63
		34448299	300x20x127	B126C50B VIB-STAR	20-3	63
		34448311	350x20x127	B126C50B VIB-STAR	20-3	63
		34447898	400x20x127	B126C50B VIB-STAR	20-3	63

* Please find information on dressing and sharpening from page 446.

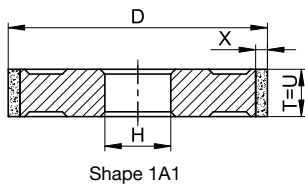
VIB STAR External cylindrical grinding Diamond resin

For tungsten carbide and industrial ceramics




Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
D								●	●			●

Recommended stock type



The resin-bonded diamond wheel with VIB STAR core is a particularly cost-effective solution for machining tungsten carbide. Low wear and a high level of dimensional accuracy are achieved by a constant self-sharpening effect. A high stock removal rate due to synthetic diamonds in resinoid bonds provides a significant advantage over less expensive silicon carbide wheels.

	Shape	Type no.	DxTxH	Specification	U-X	Vmax m/s
	1A1	34448315	200x10x51	D126C75B VIB-STAR	10-3	63
		34448319	300x20x127	D126C75B VIB-STAR	20-3	63

*Please find information on dressing and sharpening from page 446.



5.2 Reciprocating surface grinding
Reciprocating surface grinding tool



Reciprocating surface grinding

Reciprocating surface grinding is the most frequently used surface grinding process. Here, a high stock removal rate with an adequate surface finish is required. Due to the relatively large contact area between the grinding wheel and the workpiece, a special grinding wheel composition is necessary.

The high-precision reciprocating surface grinding tools from TYROLIT underlie an optimal quality assurance system and are produced using the most modern manufacturing technology and production facilities. We are therefore always able to comply with

the requirements of our customers. The decisive factor in the selection of the right product is the adaptation of the grinding wheel in the overall process to the specific requirements of the grinding application. Workpiece, tool, machine, parameters, cooling

lubricant and the applied dressing technology contribute to the perfect grinding result. The choice of the correct specification, as well as adaptation of the process parameters, can be optimised by TYROLIT to suit customer requirements.

Application recommendation



Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
89A		●	●	●	●	●						●	368, 369
F13A			●	●	●	●						●	368, 369
454A, 97A			●		●	●	●					●	370, 370
80A		●	●	●	●		●					●	372
454A				●	●	●	●					●	372
C	●				●	●	●	●	●	●		●	373
B			●		●	●	●					●	374
D								●	●			●	375

● Extremely suitable ● Limited suitability

Application tips

Conventional tool

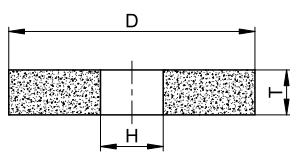
- Recommended operating speed: 20–30 m/s
- Table traverse speed: 10–20 m/min
- Infeed when roughing: 0.01–0.03 mm/stroke
- Infeed when finishing: 0.002–0.004 mm/stroke
- Transverse stroke (contact width in %): 30–40 % of wheel width
- Finishing: 1–3 strokes (without infeed)
- Ensure good coolant supply

Diamond and CBN tool

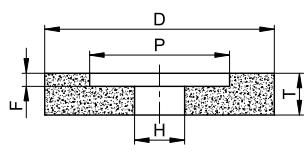
- Table traverse speed: 10–20 m/min
- Transverse stroke/overlap rate: 30–40 % of thickness of diamond section

- STANDARD value for infeed: 1/10 of grinding grit size (e.g. D126 → infeed 12 µm)
- Recommended cutting speed for CBN grinding wheels for HSS and high-alloyed tool steel is 20–25 m/s
- Recommended cutting speed for diamond grinding wheels for cemented carbide and industrial ceramics is 15–25 m/s
- Concentrically truing and sharpening of wheel before initial use with
 - unhardened structural steel block
 - AV500 dressing device with silicon carbide grinding wheel (see chapter “Dressing and sharpening”, page 449)
- Ensure good coolant supply

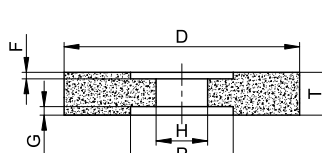
Shapes



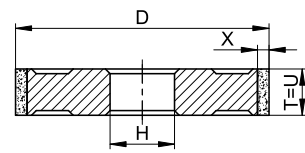
Shape 1



Shape 5



Shape 7



Shape 1A1

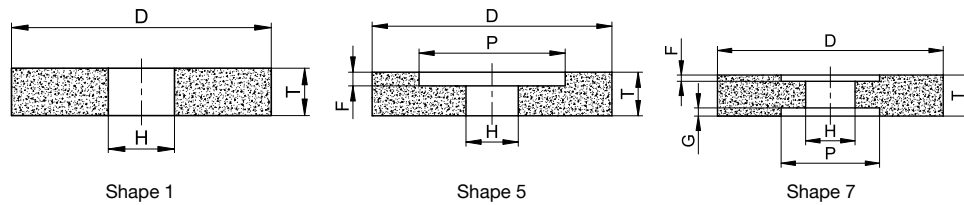
Precision grinding

Reciprocating surface grinding Conventional ceramic For non and low-alloyed steels



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
89A		●	●	●	●	●						●
F13A			●	●	●	●						●

Recommended stock type



Reciprocating grinding wheels are primarily used for rough and FINE grinding in machine construction and mould making. The aim is to achieve even and straight workpiece surfaces. Using highly porous grinding wheels and special aluminium oxides leads to an optimum surface result and a high stock removal rate.

Exceptional grinding results are achieved thanks to grade and structure specifications tailored to non and low-alloyed steels.


	Shape	Type no.	DxTxH	PxF	Specification	Comments
	1	498701	225x25x51		89A 46 I8A V217	For rough grinding operations
		331692	250x25x76.2		89A 46 I8A V217	
		936929	300x50x127		89A 46 I8A V217	
		56484	350x50x127		89A 46 I8A V217	
		215986	350x40x127		89A 46 I8A V217	
		64598	400x50x127		89A 46 I8A V217	
		664546	250x25x51		89A 802 J8A V217	
		666533	350x40x127		89A 802 J8A V217	
	1	441403	200x20x51		F13A 46 HH11 V	For rough grinding operations
		441401	225x25x51		F13A 46 HH11 V	
		441399	250x25x51		F13A 46 HH11 V	
		665269	300x50x127		F13A 46 HH11 V	
		665282	350x40x127		F13A 46 HH11 V	
		665296	400x50x127		F13A 46 HH11 V	
		593712	400x50x127	200x10	F13A 46 HH11 V	



Precision grinding



Recommended stock type

	Shape	Type no.	DxTxH	PxF/G	Specification	Comments
	7	665281	300x50x76.2	155x10/10	89A 46 I8A V217	For rough grinding operations
		664648	300x50x76.2	155x10/10	89A 802 J8A V217	For finer surface finishes
		664506	300x50x76.2	155x10/10	F13A 46 HH11 V	For rough grinding operations

Breadth of product range*

89A	46	I	8	Stock type	89	80	J	8	Stock type
89A	46-100	H-J	5-9	5-6 weeks DT	89A	46-100	H-J	5-9	5-6 weeks DT
F13A	46	HH	11	Stock type	89A	80	J	8	Stock type
F13A	46-120	FF-HH	11-12	5-6 weeks DT	89A	70-100	H-J	5-9	5-6 weeks DT

*For production reasons, the minimum quantity ordered may differ from non-stock types.

Alternative stock type

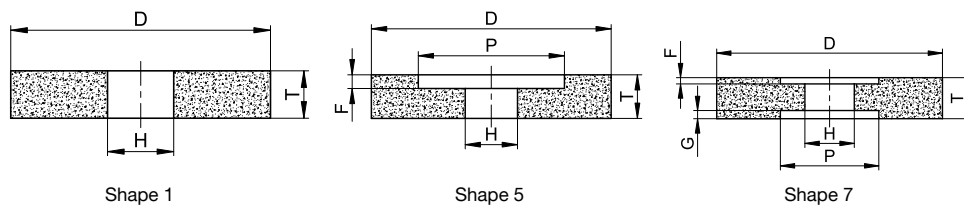
Shape	Type no.	DxTxH	Specification
1	33502	250x40x76.2	88A 46 J7A V217
	61571	350x50x127	88A 46 J7 V217
	850504	180x13x31.75	89A 60 K5A V217

Reciprocating surface grinding Conventional ceramic For high-alloyed steels and HSS



Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
454A, 97A			●	●	●	●	●					●

Recommended stock type



This reciprocating grinding wheel can be used universally on all high-alloyed steels and HSS. This is achieved by using special aluminium oxides and mixtures with sintered aluminium oxides combined with special bond systems.

Maximum stock removal rates can be achieved with sintered aluminium ox-


ide mixtures such as 454A. The next highest quality line is the resin-bonded VIB STAR CBN wheel from TYROLIT.

	Shape	Type no.	DxTxH	PxF	Specification		
	1	306283	200x20x32		454A 601 J10 V3		
		34074562	200x20x51		454A 601 J10 V3		
		664383	225x25x51		454A 602 J10 V3		
		664389	250x25x76.2		454A 602 J10 V3		
		494874	350x40x127		454A 602 J10 V3		
		664394	350x50x127		454A 602 J10 V3		
		664397	400x50x127		454A 602 J10 V3		
		441342	200x20x51		97A 462 H8A V237		
		664406	225x25x51		97A 801 H8A V237		
		664407	250x25x51		97A 801 H8A V237		
		664409	250x25x76.2		97A 801 H8A V237		
		664412	300x50x127		97A 801 H8A V237		
		441350	350x40x127		97A 462 H8A V237		
		664419	350x40x127		97A 801 H8A V237		
		664420	350x50x127		97A 801 H8A V237		
		664423	400x40x127		97A 801 H8A V237		
		630054	400x50x127		97A 462 H8A V237		
		664426	400x50x127		97A 801 H8A V237		
			5	664474	350x50x127	200x10	97A 801 H8A V237
				664476	400x50x127	200x10	97A 801 H8A V237



Precision grinding



	Shape	Type no.	DxTxH	PxF/G	Specification
	7	664485	300x50x76.2	155x10/10	454A 602 J10 V3
		664498	300x50x76.2	155x10/10	97A 801 H8A V237
		664504	400x80x127	190x15/15	97A 801 H8A V237

Breadth of product range*

454A	60	J	10	Stock type	97A	46	H	8	Stock type
454A	46-80	I-K	8-11	5-6 weeks DT	97A	46-100	H-J	5-9	5-6 weeks DT
97A	80	H	8	Stock type					
97A	46-100	H-J	5-9	5-6 weeks DT					

*For production reasons, the minimum quantity ordered may differ from non-stock types.

Alternative stock type

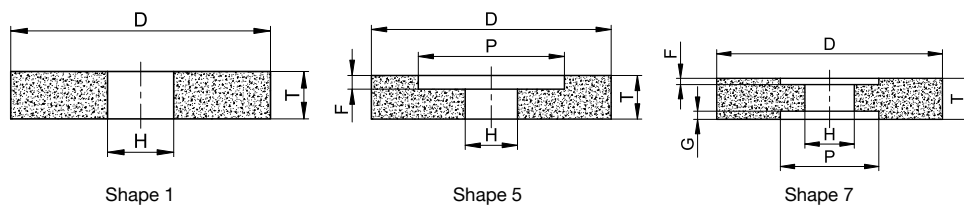
Shape	Type no.	DxTxH	Specification
1	34074549	180x13x32	454A 601 J10 V3
	34074261	180x16x32	454A 601 J10 V3
	494254	200x20x31.75	454A 601 L7G V3
	305260	200x20x32	454A 461 L7G V3
	305285	400x50x127	454A 462 H5 V3
	314990	180x13x32	89A 60 I7A V237
	344194	180x16x32	89A 46 I7A V237
	344195	180x20x32	89A 46 I7A V237
	749042	180x16x32	92A 602 H23 V237 W4 32
	57038	350x50x127	97A 462 I8A V217

Reciprocating surface grinding Conventional ceramic For stainless steel



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened	Unhardened Hardened	Unhardened Hardened							
80A		●	●	●	●		●					●
454A				●	●	●	●					●

Recommended stock type



Special aluminium oxide and sintered aluminium oxide mixtures are a cost-effective solution for the reciprocating surface grinding of stainless steel/Inox. They offer cool grinding and excellent cutting ability thanks to a special grain shape. A variety of shapes and dimensions mean they can cover the majority of applications.

	Shape	Type no.	DxTxH	PxF/G	Specification
	1	664383	225x25x51		454A 602 J10 V3
		664397	400x50x127		454A 602 J10 V3
		27420	400x50x127		80A 54 I9A V217 P23
	7	10845	300x50x76.2	155x10/10	80A 54 I9A V217 P23

Precision grinding

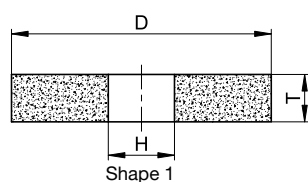
Reciprocating surface grinding Conventional ceramic

For tungsten carbide and cast iron



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
C	●	●				●	●	●	●	●		●

Recommended stock type



The silicon carbide wheel is a cost-effective variant for machining tungsten carbide for secondary applications. It really comes into its own when machining castings and nonferrous metals.

This silicon carbide wheel is a good alternative for working on nitrified workpieces with simple profiles or wear-resistant thermal sprayed alloys, as it can be profiled with STAN-DARD diamond dressing tools.

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	664536	400x50x127	C 801 H8A V18 50 A	50
		36890	300x20x127	C 60 J11 V18	50
		36918	300x40x127	C 60 J11 V18	50
		775149	400x40x203	C 60 J10 V18	50

Breadth of product range*

C	80	H	8	Stock type
C	46-180	F-I	5-8	5-6 weeks DT

*For production reasons, the minimum quantity ordered may differ from non-stock types.

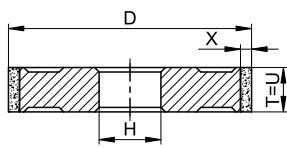
VIB STAR reciprocating surface grinding CBN resin

For high-alloyed steels and HSS




Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
B			●		●	●	●					●

Recommended stock type



Shape 1A1

The VIB STAR reciprocating grinding wheel is equipped with a vibration-reducing core that ensures a consistent and quiet grinding process. The constant self-sharpening effect guarantees consistent power consumption and therefore high economic efficiency. Low wear results in a high level of dimensional accuracy on the workpiece, thereby reducing dimensional inspections to a minimum.

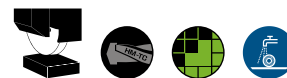
	Shape	Type no.	DxTxH	Specification	U-X	Vmax m/s
	1A1	34448298	300x20x76.2	B126C50B VIB-STAR	20-3	63
		34448299	300x20x127	B126C50B VIB-STAR	20-3	63
		34448311	350x20x127	B126C50B VIB-STAR	20-3	63
		34447898	400x20x127	B126C50B VIB-STAR	20-3	63

* Please find information on dressing and sharpening from page 446.

VIB STAR reciprocating surface grinding

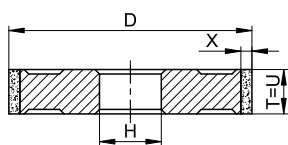
Diamond resin

For tungsten carbide and industrial ceramics



Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
D								●	●			●


Recommended stock type



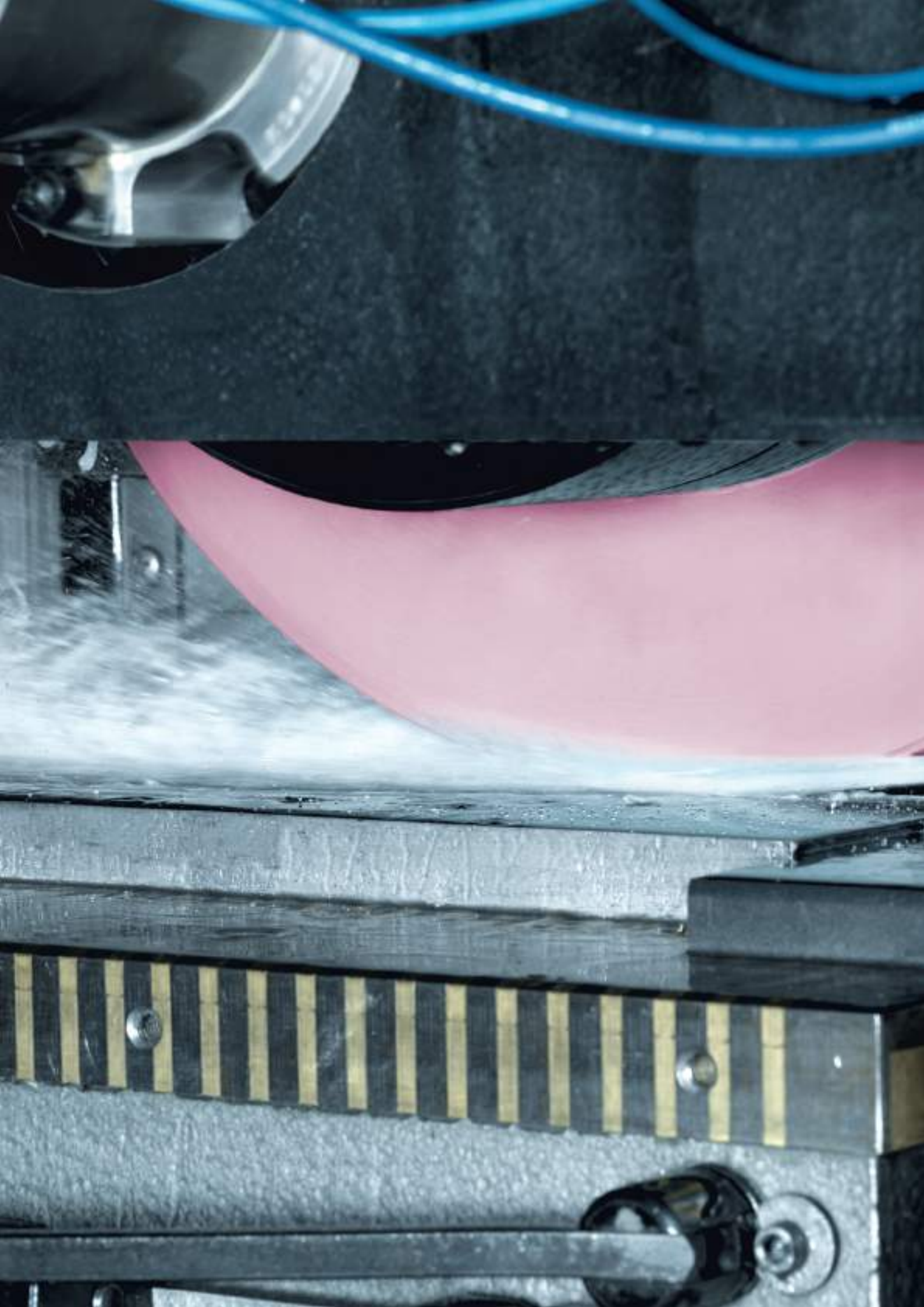
Shape 1A1


The resin-bonded diamond wheel with VIB STAR core is a particularly cost-effective solution for machining tungsten carbide. Low wear and a high level of dimensional accuracy are achieved by a constant self-sharpening effect.

The high stock removal rate of synthetic diamond in resinoid bonds provides a significant advantage over less expensive silicon carbide grinding wheels.

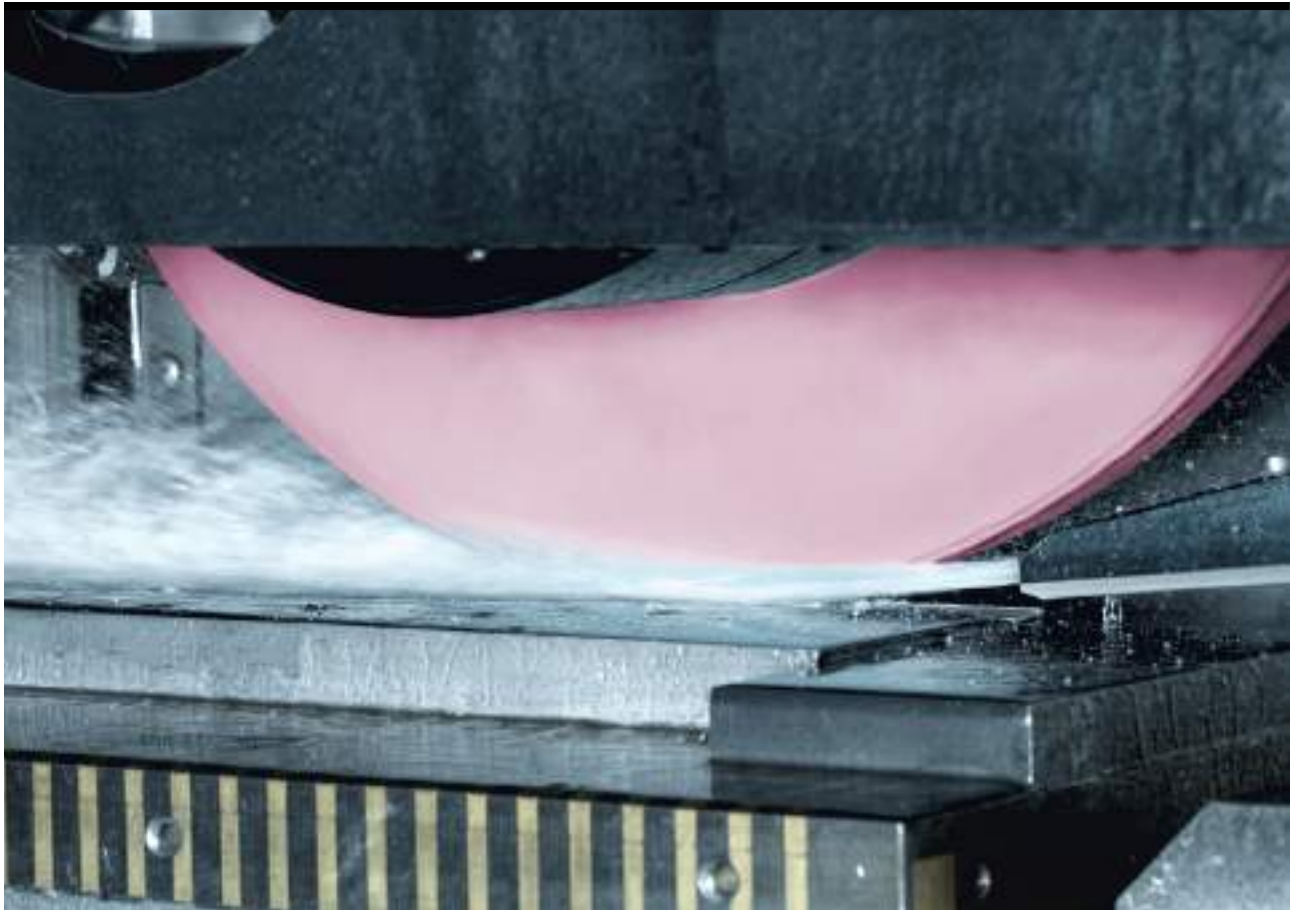
	Shape	Type no.	DxTxH	Specification	U-X	Vmax m/s
	1A1	34448315	200x10x51	D126C75B VIB-STAR	10-3	63
		34448319	300x20x127	D126C75B VIB-STAR	20-3	63

* Please find information on dressing and sharpening from page 446.





5.3 Profile surface grinding
Profile surface grinding tool



Profile surface grinding

In the profile surface grinding process, pre-defined profiles are ground into the material. In order to achieve this, it is important to apply a “negative profile” through dressing of the wheel. As a system supplier, TYROLIT offers not only suitable grinding wheels, but also an appropriate dresser for this purpose.

The precise profile surface grinding tools underlie an optimal quality assurance system and are produced using the most modern manufacturing technology and production facili-

ties. We are therefore always able to comply with the requirements of our customers.

TYROLIT produces this tool with a highly porous structure and special

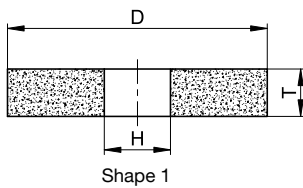
aluminium oxides. This enables us to offer you optimum profile retention with minimum dressing diamond wear.

Profile surface grinding Conventional ceramic




Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
80A		●	●	●	●		●					●

Recommended stock type



For conventional ceramic profile surface grinding applications we offer wheels with special aluminium oxides and a highly porous structure. They are available in grit sizes 80 and 120 for pendulum grinding and in silicon carbide in grit size C180 for creep feed grinding.

	Shape	Type no.	DxTxH	Specification
	1	876610	180x13x32	80A 1209 I7G V112
		876616	180x6x32	80A 1209 I7G V112
		876619	200x10x32	80A 1209 I7G V112
		876618	180x10x32	80A 809 J7G V111
		876591	180x13x32	80A 809 J7G V111
		688752	200x10x32	80A 809 J7G V111



5.4 Surface grinding with rings and segments



Surface grinding with rings and segments

In contrast to peripheral surface grinding, grinding is performed on the side when using rings and segments. This is often necessary because of the machine construction and workpiece dimensions and requires a reduction in the permissible operating speed.

This process offers a particularly high grinding performance due to the COARSE grit sizes used. Because breaks in the segments often occur during grinding, this also benefits

the coolant supply. However, not only particularly cool grinding, but also the self-sharpening effect of these tools make them extremely popular, especially for the grinding of planer knives.

Here too, coarse and extremely porous tools with low hardness are used.

Application recommendation



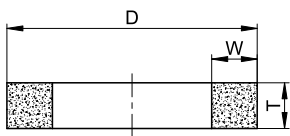
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
89A ceramic			●	●	●	●						●	384
89A Bakelit			●		●	●						●	384
92A			●		●	●						●	384

- Extremely suitable
- Limited suitability

Application tips

- Recommended operating speed: 25–30 m/s
- Traverse speed: 2–10 m/min
- Infeed 0.005–0.03 mm/stroke
- Sparking out without infeed 1–3 strokes
- Ensure good coolant supply

Shapes



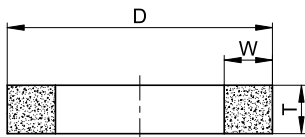
Shape 2

Surface grinding with rings Ceramic / Conventional resin For high-alloyed steels and HSS



Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A ceramic			●	●	●	●						●
89 A resin			●		●	●						●
92A			●		●	●						●

Recommended stock type



Shape 2

Rings for surface grinding are made of a highly porous vitrified bond in grit size 46 or resinoid bond in grit size 60. They are ideally suited to high-alloyed steels and HSS, and meet the most exacting surface quality requirements. Ring wheels with a high stock removal rate are required above all for paper and planer knives. Please be aware that resin-bonded ring wheels only exhibit limited coolant resistance.

	Shape	Type no.	DxTxH	Specification	Comments
	2	468751	200x100-W=20	89A 46 G10A V217 B3	
		469619	250x100-W=25	89A 602 G4 B22 W4E	
		664621	200x90-W=20	92A 461 H10A V237	Göckel, Reform (Planer and chopper knives)
		664622	200x100-W=20	92A 461 H10A V237	
	103	709899		103K02	Accessories: Vinapas adhesive 0.5 kg

Precision grinding

A close-up, high-angle photograph of an internal cylindrical grinding process. A polished metal workpiece is being ground by a rotating grinding wheel. The scene is illuminated with a strong blue light, highlighting the fine sparks and the smooth surface of the workpiece. The grinding wheel is visible on the right side, and the workpiece is on the left. The overall atmosphere is industrial and precise.

5.5 Internal cylindrical grinding
Internal cylindrical grinding tools



Internal cylindrical grinding

The internal cylindrical grinding process is mainly used for the finishing of internal functional surfaces. The process is especially often used for the connection with an axle or shaft. For example, gears, steering systems, injection systems or hollow shafts can be machined.

With vitrified-bonded tools, TYROLIT offers you optimum profile retention and, through cool grinding, a particularly low thermal load.

Depending on the application, we recommend our diamond and CBN wheels instead of conventional grinding tools.

Application recommendation



Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
89A		●	●	●	●	●				●		●	388
97A, AT			●		●	●	●					●	389
B			●		●	●	●				●	●	390, 391
D								●	●		●	●	391

● Extremely suitable ● Limited suitability

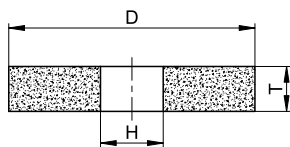
Application tips

- Recommended operating speed: 30–50 m/s
- Pre-grinding infeed: 0.02–0.05 mm/stroke
- Semi-finish grinding infeed: 0.01–0.005 mm/stroke
- Finish grinding infeed: 0.001–0.002 mm/stroke
- Spark-out infeed: 5 strokes
- Ensure good coolant supply

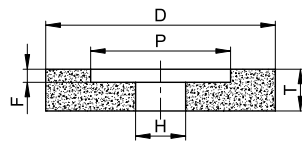
Diamond and CBN tool

- Recommended cutting speed for HSS and high-alloyed tool steel is 15–35 m/s
- Recommended cutting speed for cemented carbide and industrial ceramics is 15–25 m/s
- Cooling with emulsion recommended

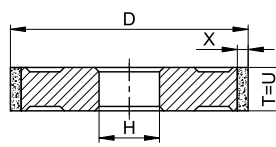
Shapes



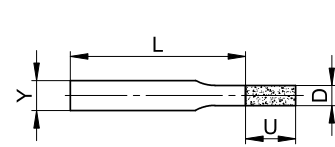
Shape 1



Shape 5



Shape 1A1



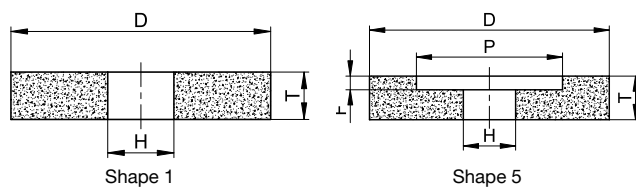
Shape 1A1W

Internal cylindrical grinding Conventional ceramic For non and low-alloyed steels



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
89A		●	●	●	●	●						●

Recommended stock type



These universal internal cylindrical grinding wheels made from special aluminium oxide are used for the grinding of through-holes and alignment holes. They offer high stock removal rates and excellent shape retention. Specification 89A60 is used primarily for soft steels and 89A80 for hardened steels.

	Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	PU
	1	807005	15x15x6		89A 802 I5 V111 50	50	25
		234390	20x20x6		89A 602 J5 V111 50	50	25
		234387	50x40x16		89A 602 J5 V111 50	50	10
		664708	50x50x16		89A 602 J5 V111 50	50	10
	5	664777	32x32x10	18x16	89A 602 J5 V111 50	50	10
		664793	32x32x10	18x16	89A 802 I5 V111 50	50	10
		664780	40x40x13	20x20	89A 602 J5 V111 50	50	10
		664794	40x40x13	20x20	89A 802 I5 V111 50	50	10
		664796	50x50x16	25x25	89A 802 I5 V111 50	50	10

Internal cylindrical grinding Conventional ceramic For high-alloyed steels and HSS



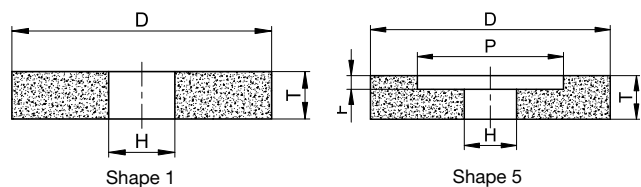
Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
97A, AT			●	●	●	●	●					●





Precision grinding



Recommended stock type



This vitrified internal cylindrical grinding tool offers a cost effective alternative to CBN tools with good stock removal. The specification AT60 can be used universally. Our wide range means you can choose exactly the right tool for the application.

Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	PU	
	1	664672	32x25x10	97A 802 I5 V112 80	80	10	
		747519	32x32x10	97A 602 K6 V112 80	80	10	
		664673	32x32x10	97A 802 I5 V112 80	80	10	
		747522	40x25x10	97A 602 K6 V112 80	80	10	
		664675	40x40x13	97A 802 I5 V112 80	80	10	
		664677	50x40x16	97A 802 I5 V112 80	80	10	
		664683	15x15x6		AT 60 J6 VCOL 80	80	25
	664684	20x20x6		AT 60 J6 VCOL 80	80	25	
	5	664728	20x20x6	13x7	97A 802 I5 V112 80	80	10
		664738	25x25x10	16x10	97A 802 I5 V112 80	80	10
		664737	25x25x6	12x13	97A 802 I5 V112 80	80	10
		664742	32x32x10	18x16	97A 802 I5 V112 80	80	10
		664744	40x40x13	20x20	97A 802 I5 V112 80	80	10
		664746	50x40x16	30x13	97A 802 I5 V112 80	80	10
		664749	50x50x16	25x25	97A 802 I5 V112 80	80	10
		664757	20x20x6	13x7	AT 60 J6 VCOL 80	80	10
		664761	32x32x10	18x16	AT 60 J6 VCOL 80	80	10
		664764	40x40x13	20x20	AT 60 J6 VCOL 80	80	10
		664766	50x40x16	30x13	AT 60 J6 VCOL 80	80	10

Alternative stock type

Shape	Type no.	DxTxH	PxF	Specification	Vmax m/s	PU
5	232811	40x40x10	16x20	455A 801 L6 V3 80	80	10
	747530	50x40x16	30x13	97A 602 K6 V112 80	80	10

Internal cylindrical grinding

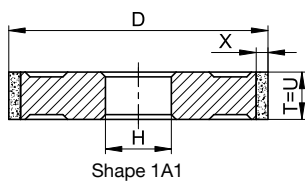
CBN resin-bonded

For high-alloyed steels and HSS



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
B			●		●	●	●				●	●

Recommended stock type



Compared to conventional ceramic grinding tools, CBN tools are characterised by a long lifetime and much shorter grinding times. They also offer a high level of dimensional accuracy.

This resin-bonded tool is primarily used for machining high-alloyed steels and HSS, but it can also be used for machining INOX.

	Shape	Type no.	DxTxH	U-X	Specification
	1A1	34937	15x10x6	10-2	B 126 C75 B 54 AL
		127356	20x10x6	10-2	B 126 C75 B 54 AL
		43017	30x10x10	10-3	B 126 C75 B 54 AL

Internal cylindrical grinding

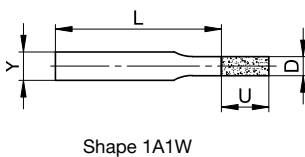
CBN electroplated

For high-alloyed steels and HSS



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
B			●		●	●	●				●	●

Recommended stock type




Compared to conventional ceramic grinding tools, CBN tools are characterised by a long lifetime and much shorter grinding times. They also offer a high level of dimensional accuracy.

This resin-bonded tool is primarily used for machining high-alloyed steels and HSS, but it can also be used for machining INOX.





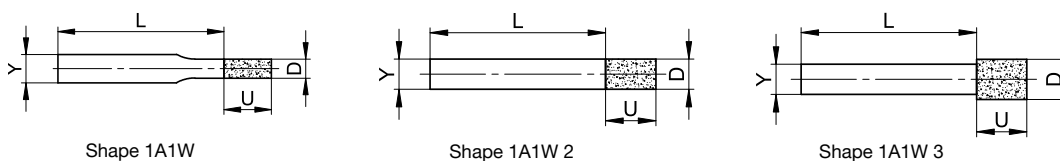
	Shape	Type no.	DxU	YxL	Specification	PU	Comments
	1A1W	477409	3x5	5xS3	B 91 GST	5	CBN, single layer
		477412	5x7	7xS3	B 126 GST	5	
		477413	6x7	7xS6	B 126 GST	5	

Internal cylindrical grinding Diamond electroplated For tungsten carbide and industrial ceramics




Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
D								●	●		●	●

Recommended stock type



This electroplated tool is primarily used for the machining of tungsten carbide and industrial ceramics. Compared to conventional ceramic grinding tools, diamond tools are characterised by a long lifetime and much shorter grinding times.

They also offer a high level of dimensional accuracy and exert a low grinding pressure. They are therefore ideally suited to machining small diameters.

	Shape	Type no.	DxU	YxL	Specification	PU	Comments
	1A1W	477342	2x4	4xS3x51	D 91 X GST	5	Diamond layer, single
		477346	3x5	5xS3x50	D 91 X GST	5	
		477349	4x5	5xS3x50	D 126 X GST	5	



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5.6 Hand-guided grinding

Files and stones



Hand-guided grinding

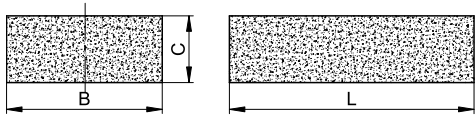
In the area of hand-guided tools, TYROLIT offers a wide selection of files, stones and hand rubbing bricks. We offer these tools in both aluminium oxide as well as silicon carbide.

Our files, bench stones, knife blade files and hollow chisel stones are available in different grit sizes from

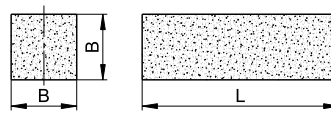
coarse to "VERY FINE", depending on your intended area of application. A tool that is a must for every workshop

is the TYFIX hand rubbing brick. This enables easy removal of dirt, rust and paint from your surfaces.

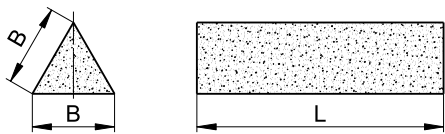
Shapes



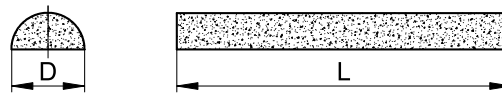
Shape 9010



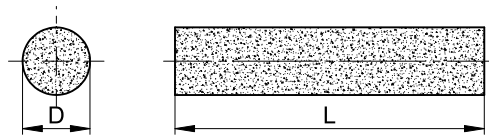
Shape 9011



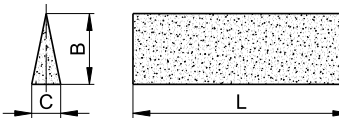
Shape 9020



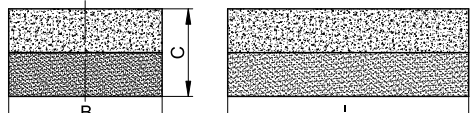
Shape 9040



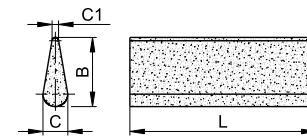
Shape 9030



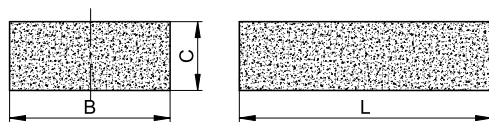
Shape 90FMK



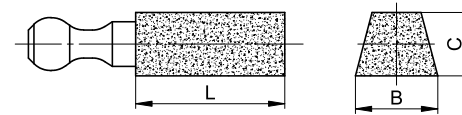
Shape 90K



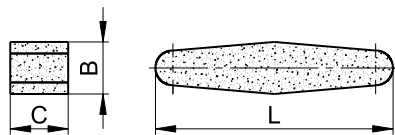
Shape 90HM



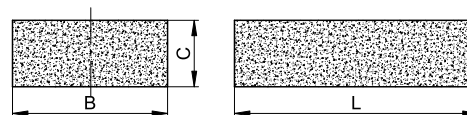
Shape 90B



Shape 90FHG

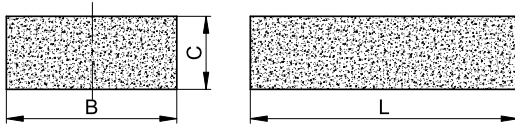


Shape 90W



Shape 90TY

Flat stick Vitrified-bonded



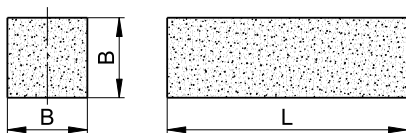
Shape 9010

These files are used in particular for machining tools in the wood and machine construction industries. Thanks to the varying grit sizes you can select the perfect tool for your application.

Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

Shape	Type no.	BxCxL	Specification	Grit size	PU	
	9010	557	6x3x100	C MEDIUM	240	10
	556	6x3x100	C COARSE	120	10	
	555	6x3x100	C FINE	400	10	
	548	6x3x100	89A MEDIUM	240	10	
	547	6x3x100	89A FINE	400	10	
	566	30x13x200	C MEDIUM	240	10	
	564	30x13x200	C FINE	400	10	
	554	30x13x200	89A MEDIUM	240	10	
	563	13x6x150	C MEDIUM	240	10	
	562	13x6x150	C COARSE	120	10	
	561	13x6x150	C FINE	400	10	
	552	13x6x150	89A MEDIUM	240	10	
	551	13x6x150	89A FINE	400	10	
	560	10x5x100	C MEDIUM	240	10	
	559	10x5x100	C COARSE	120	10	
	558	10x5x100	C FINE	400	10	
550	10x5x100	89A MEDIUM	240	10		
549	10x5x100	89A FINE	400	10		

Square file Vitrified-bonded



Shape 9011

The square files are used primarily for efficient machining of tools in the wood and machine construction industries. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

Thanks to the varying grit sizes you can select the perfect tool for your application.

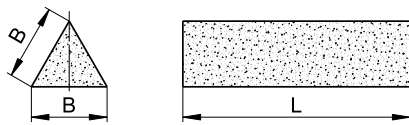
Shape	Type no.	BxCxL	Specification	Grit size	PU	
	9011	728	6x100	89A FINE	400	10
	729	6x100	89A MEDIUM	240	10	
	747	6x100	C FINE	400	10	
	749	6x100	C MEDIUM	240	10	
	732	10x100	89A MEDIUM	240	10	
	733	10x100	89A FINE	400	10	
	752	10x100	C FINE	400	10	





Shape	Type no.	BxCxL	Specification	Grit size	PU	
	9011	754	10x100	C MEDIUM	240	10
		738	13x150	89A FINE	400	10
		739	13x150	89A MEDIUM	240	10
		758	13x150	C FINE	400	10
		760	13x150	C MEDIUM	240	10
		741	16x150	89A FINE	400	10
		742	16x150	89A MEDIUM	240	10
		761	16x150	C FINE	400	10
		763	16x150	C MEDIUM	240	10
		746	20x200	89A MEDIUM	240	10
		767	20x200	C FINE	400	10
		768	20x200	C COARSE	120	10
		769	20x200	C MEDIUM	240	10
		6341	20x200	89A FINE	400	10

Triangular file
Vitrified-bonded



Shape 9020

These files are used in particular for machining tools in the wood and machine construction industries. Thanks to the varying grit sizes you can select the perfect tool for your application. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

Shape	Type no.	BxL	Specification	Grit size	PU	
	9020	501	6x100	89A MEDIUM	240	10
		518	6x100	C FINE	400	10
		519	6x100	C MEDIUM	240	10
		505	10x100	89A FINE	400	10
		504	10x100	89A MEDIUM	240	10
		523	10x100	C FINE	400	10
		525	10x100	C MEDIUM	240	10
		511	13x150	89A FINE	400	10
		510	13x150	89A MEDIUM	240	10
		531	13x150	C FINE	400	10
		533	13x150	C MEDIUM	240	10
		8807	16x150	89A FINE	400	10
		512	16x150	89A MEDIUM	240	10
		534	16x150	C FINE	400	10
		536	16x150	C MEDIUM	240	10
		8808	20x200	89A FINE	400	10
		516	20x200	89A MEDIUM	240	10
		540	20x200	C FINE	400	10
		542	20x200	C MEDIUM	240	10

Half round file

Vitrified-bonded



Shape 9040

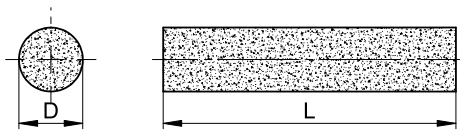
The half round files are used primarily for efficient machining of tools in the wood and machine construction industries. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

Thanks to the varying grit sizes you can select your tool based on the application.

	Shape	Type no.	DxL	Specification	Grit size	PU
	9040	6313	6x100	89A MEDIUM	240	10
		603	10x100	89A MEDIUM	240	10
		607	13x150	89A MEDIUM	240	10
		629	13x150	C FINE	400	10
		610	16x150	89A MEDIUM	240	10
		632	16x150	C FINE	400	10
		633	16x150	C MEDIUM	240	10
		637	20x200	C MEDIUM	240	10

Round file

Vitrified-bonded



Shape 9030

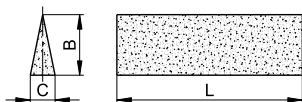
These files are used in particular for machining tools in the wood and machine construction industries. Thanks to the varying grit sizes you can select the perfect tool for your application. Silicon carbide files are primarily used for tungsten carbide or tungsten carbide tipped tools and are grey-green in colour. Orange is used primarily for all types of steels and stainless steel.

	Shape	Type no.	DxL	Specification	Grit size	PU
	9030	614	6x100	C FINE	400	10
		616	6x100	C MEDIUM	240	10
		660	6x100	89A FINE	400	10
		656	10x100	C FINE	400	10
		664	10x100	89A FINE	400	10
		666	10x100	89A MEDIUM	240	10
		657	13x150	89A FINE	400	10
		671	13x150	89A MEDIUM	240	10
		691	13x150	C FINE	400	10
		693	13x150	C MEDIUM	240	10
		674	16x150	89A MEDIUM	240	10
		696	16x150	C FINE	400	10
		698	16x150	C MEDIUM	240	10

Precision grinding

Knife blade file

Vitrified-bonded



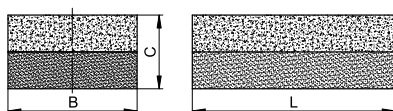
Shape 90FMK

The ceramic knife blade file is used for grinding and whetting knife blades. It is ideally suited to machining blades made of HSS and high-alloyed steels. Thanks to the varying grit sizes you can select your tool based on the application.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90FMK	6321	25x3x100	89A FINE	400	10
		6322	25x3x100	89A MEDIUM	240	10
		6324	25x3x100	C MEDIUM	240	10

Combination stone

Vitrified-bonded



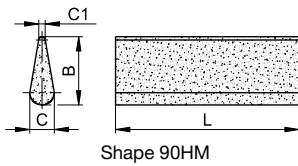
Shape 90K

You can use the TYROLIT combination stone for deburring various workpieces. Due to its two different grit sizes, you will always be equipped for the respective application. This product can also be used for whetting magnetic tables.

	Shape	Type no.	BxCxL	Specification	Grit size	PU	
	90K	185988	18x10x75	89A KOMBI	120/400	10	
		186109	18x10x75	C KOMBI	120/400	10	
		642	25x13x100	C KOMBI	120/400	10	
		6314	25x13x100	89A KOMBI	120/400	10	
		6317	40x20x125	C KOMBI	120/400	10	
		640	40x20x125	89A KOMBI	120/400	10	
		644	50x25x150	C KOMBI	120/400	10	
		645	50x25x200	C KOMBI	120/400	10	
		6315	50x25x150	89A KOMBI	120/400	10	
		6316	50x25x200	89A KOMBI	120/400	10	
		90SK	6318	25x20x100	C KOMBI	150/400	10

Hollow chisel stone

Vitrified-bonded



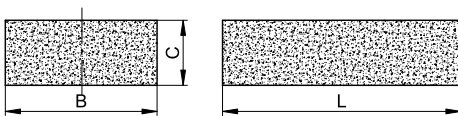
Shape 90HM

The ceramic hollow chisel stones are ideally suited to whetting narrow-toothed tools. Thanks to the varying grit sizes you can select your tool based on the individual application. Due to the conical shape it is possible for you to grind and deburr right down to the tooth base.

	Shape	Type no.	BxC/C1xL	Specification	Grit size	PU
	90HM	576	25x6/1x100	89A FINE	400	10
		577	25x6/1x100	89A MEDIUM	240	10
		583	25x6/1x100	C FINE	400	10
		584	25x6/1x100	C MEDIUM	240	10
		579	45x6/2x115	89A MEDIUM	240	10
		587	45x6/2x115	C MEDIUM	240	10
		9017	45x6/2x115	C FINE	400	10
		15885	45x6/2x115	89A FINE	400	10
		578	45x10/3x100	89A FINE	400	10
		586	45x10/3x100	C MEDIUM	240	10
		6309	45x10/3x100	89A MEDIUM	240	10
		6310	45x10/3x100	C FINE	400	10
		28465	45x10/3x100	89A SUPER T3	1200	10
		20332	50x16/5x150	C FINE	400	10

Bench stone

Vitrified-bonded



Shape 90B

The TYROLIT bench stones are primarily used for sharpening and whetting knives and blades. They are therefore perfectly suited for all gardening and woodwork tools. Thanks to the varying grit sizes you can select your tool based on the individual application.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90B	469	25x13x100	C MEDIUM	240	10
		8804	25x13x100	89A MEDIUM	240	1
		20313	25x13x100	C FINE	400	10
		20311	25x6x100	C FINE	400	10
		28466	45x13x100	89A SUPER T3	1200	1
		456	50x25x150	89A MEDIUM	240	1
		457	50x25x150	89A FINE	400	1
		479	50x25x150	C FINE	400	1
		481	50x25x150	C MEDIUM	240	1

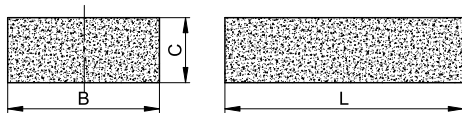


Precision grinding



	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90B	28467	50x25x150	89A SUPER T3	1200	1
		461	50x25x200	89A FINE	400	1
		462	50x25x200	89A MEDIUM	240	1
		485	50x25x200	C MEDIUM	240	1
		486	50x25x200	C FINE	400	1

COARSE bench stone
Vitrified-bonded

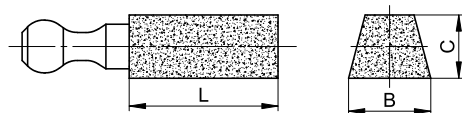


Shape 90B

COARSE bench stones from TYROLIT can be used to deburr large workpieces that have no surface quality requirements. For example, these bench stones are used for pre-grinding large woodwork tools such as wood splitters.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90B	29382	50x25x200	1C 24 M5 V15	24	10
		103622	50x25x200	1C 36 L5 V15	36	10
		28869	50x50x200	1C 24 M5 V15	24	10

File with handle
Vitrified-bonded



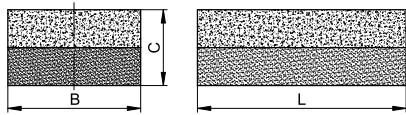
Shape 90FHG

The file with handle from TYROLIT can be used to deburr large workpieces that have no surface quality requirements. For example, these bench stones are used for pre-grinding large woodwork tools such as wood splitters.

	Shape	Type no.	BxCxL	Specification
	90FHG	79664	40x30x230	C 70 O5 V18



Combined rubbing brick for tiles

Vitrified-bonded



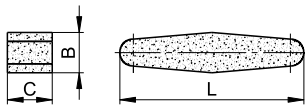
Shape 90K

The rubbing brick for tiles in shape 90K facilitates deburring and creating a bevelled edge on flags and tiles. Using the rubbing brick in shape 90RH you can machine and smooth floor screeds, concrete and plaster mixtures with ease. You can achieve even surfaces when smoothing window and door lintels before coating them. It is also possible to work difficult-to-reach places with ease.

	Shape	Type no.	BxCxL	Specification
	90K	175220	80x30x160	C 24 M5 V15/C 70 L5 V15
		146640	120x30x200	C 24 M5 V15/C 70 L5 V15
	90RH	20450	90x40x205	1C 24 L5 V15


Whetstone

Vitrified-bonded



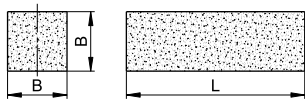
Shape 90W

Our whetstones are used for re-sharpening scythes and sickles. This tool is only available in a silicon carbide design.

	Shape	Type no.	BxCxL	Specification
	90W	362775	35x13x230	AC-V


Square file

Elastic-bonded



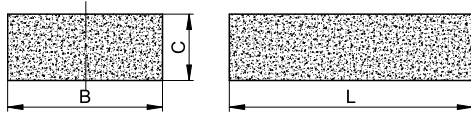
Shape 9011

The elastic-bonded square file can be used to lightly deburr and polish workpieces. Due to its composition it can be used on the widest variety of materials. Select coarse grain for light deburring or fine grain for polishing depending on the application.

	Shape	Type no.	BxL	Specification	PU	Comments
	9011	35677	15x100	C 80 - BE15	10	Deburring (COARSE)
		6335	20x100	C 400 - BE15	10	Polishing (FINE)

TYFIX hand rubbing brick

Elastic-bonded



Shape 90TY

The TYFIX hand rubbing brick is an eraser used to improve surfaces. Its main tasks include deburring, polishing, and removing rust, dirt and paint.

The TYFIX is especially suited for use in the home to clean domestic appliances, pans, etc. made of stainless steel and aluminium. It can also be used to clean tile joints.

	Shape	Type no.	BxCxL	Specification	Grit size	Colour
	90TY	1870	40x20x50	C 100-BE5	100	GREEN
		501861	40x20x80	C MEDIUM	100	GREY
		1872	50x20x80	C 60-BE5	60	GREEN
		1873	50x20x80	C 100-BE5	100	GREEN
		1874	50x20x80	C 240-BE5	240	GREEN
		502437	55x30x110	C MEDIUM	100	DARK-BLUE
		502457	55x30x110	C FINE	240	LIGHT-BLUE

Lappers

Resin-bonded



The resin-bonded lappers are primarily used for deburring and lapping extremely hard materials. They are therefore the common choice for whetting tungsten carbide cutting edges.

This product is only available in a diamond grain design with a grit size of D35.

	Shape	Type no.	L	L2-W-X	Specification
	90H	91963	150	40-10-2	11D 35 C50 B 52 AL
		95717	150	25-10-2	11D 35 C50 B 52 AL

Diamond files

Galvanic-bonded



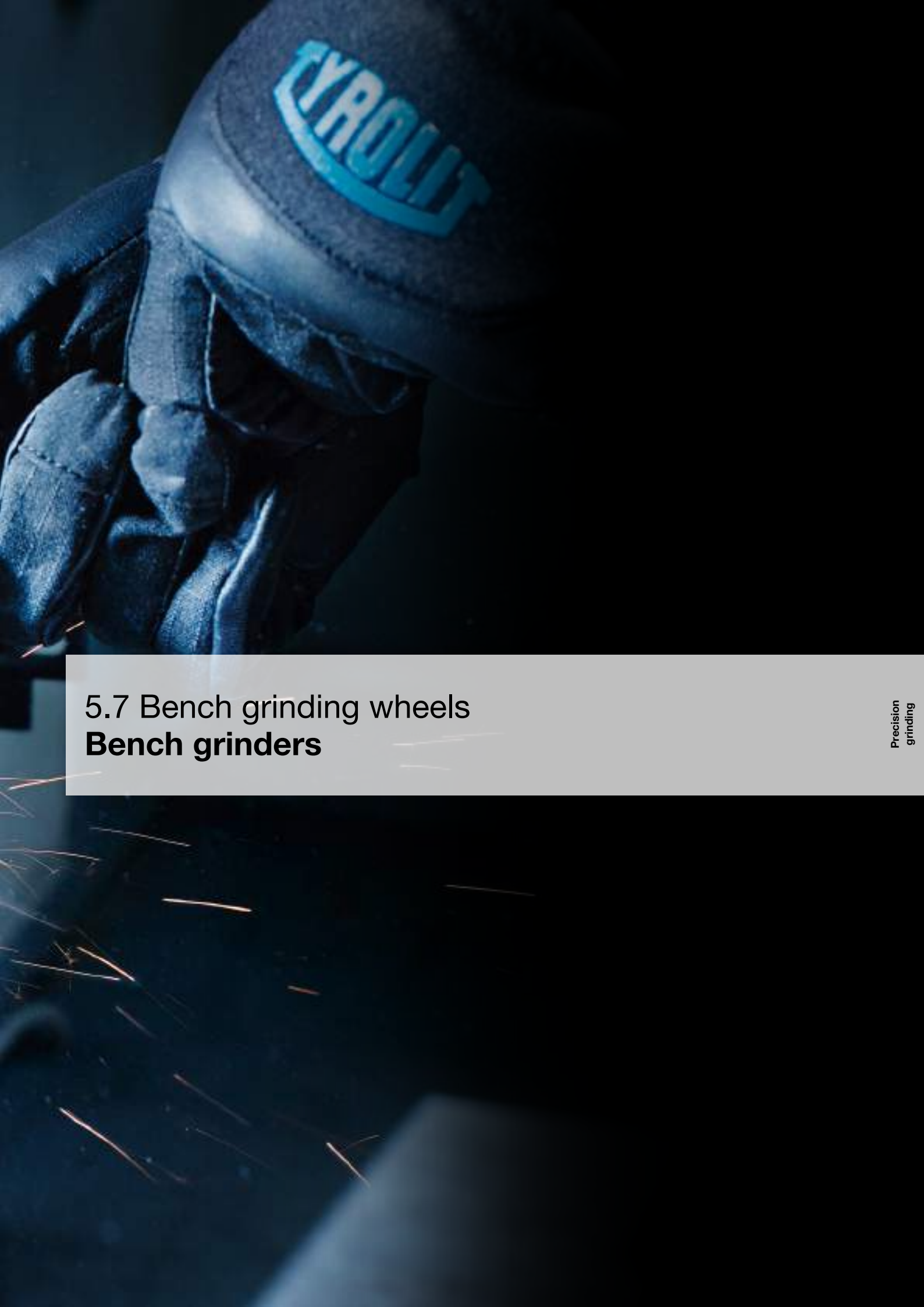
These galvanic-bonded diamond files are primarily used for machining hardened steels and tungsten carbide. However, they are also suitable for glass, ceramics and materials above 40 HRC.

D126 and is standard equipment for every toolmaker. FINE grit sizes are available on request.

This product is only available in a diamond grain design with a grit size of

	Shape	Type no.	L	L2-W-XxY/AUFN	Specification	File shape
	90N	136535	140	70-3.6-1.5x2.92X70	D 126 GST	Square
		477283	140	70-2.4x3X70	D 126 GST	Half round
		477289	140	70-5-1.5x3X70	D 126 GST	Flat point
		477422	140	70-5-1.5x3X70	D 126 GST	Triangular
		477430	140	70-5-2x3X70	D 126 GST	Flat





5.7 Bench grinding wheels

Bench grinders



Bench grinding wheels

The bench grinder is a versatile machine used in many workshops for machining various materials. The TYROLIT range of bench grinding wheels therefore contains the right wheel for every material.

The wheels with the universal application specification impress in particular through their smooth running

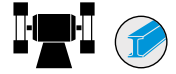
and easy handling. A reduction bush set is included in each package for proper assembly. The packaging itself

is suitable for stacking on racks and thus saves space and storage costs.

Bench grinding wheels

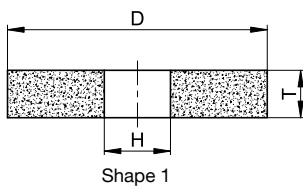
Conventional ceramic

For non and low-alloyed steels



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
10A		●	●							●	●	

Recommended stock type



Vitrified bonded bench grinding wheels are primarily used in workshops and repair companies. They can be used universally for grinding and sharpening various components. The tailored specifications enable them to be used for a wide range of applications, from coarse to fine grinding.

These wheels are supplied in packaging suitable for retailers so that they take up minimum space in storage. A reduction bush set is included in the packaging or can be reordered.

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	7205	150x20x32	10A 46 N5A V217	40
		2693	150x20x32	10A 60 M5A V217	40
		52223	150x25x32	10A 46 N5A V217	40
		2758	150x25x32	10A 60 M5A V217	40
		2962	175x25x32	10A 60 M5A V217	40
		68134	175x25x51	10A 60 M5A V217	40
		548815	175x32x32	10A 60 M5A V217	40
		600134	200x20x32	10A 36 N5A V217	40
		15842	200x20x32	10A 46 N5A V217	40
		15839	200x20x32	10A 60 M5A V217	40
		781702	200x20x51	10A 60 M5A V217	40
		31694	200x25x32	10A 46 N5A V217	40
		9572	200x25x32	10A 60 M5A V217	40
		3217	200x25x32	10A 80 M5A V217	40
		116708	200x25x51	10A 46 N5A V217	40
		718361	200x25x51	10A 60 M5A V217	40
		664256	200x32x51	10A 36 N5A V217	40
		675264	200x32x51	10A 46 N5A V217	40
		516594	200x32x51	10A 60 M5A V217	40
		3474	250x25x32	10A 60 M5A V217	40
		664261	250x32x32	10A 36 N5A V217	40
		3538	250x32x32	10A 60 M5A V217	40
		737812	250x32x51	10A 60 M5A V217	40
		110032	300x40x51	10A 60 M5A V217	40
		34983	300x40x76	10A 60 M5A V217	40





Alternative stock type

Shape	Type no.	DxTxH	Specification	Vmax m/s
1	34046758	125x15x32	10A 36 M5A V17	40
	34046770	125x15x32	10A 60 M5A V17	40
	147626	125x20x32	10A 60 M5A V17	40
	147698	125x20x32	10A 36 M5A V17	40
	34046759	150x15x32	10A 36 M5A V17	40
	34046772	150x15x32	10A 60 M5A V17	40
	146965	150x20x32	10A 601 M5A V217	40
	147574	150x20x32	10A 36 P5A V17	40
	147601	150x25x32	10A 36 P5A V17	40
	16577	175x20x32	10A 36 P5A V17	40
	147600	175x25x32	10A 36 P5A V17	40
	147656	200x20x40	10A 36 P5A V17	40
	146910	200x25x32	10A 361 P5A V17	40
	147652	200x25x51	10A 36 P5A V17	40
	34046763	200x32x40	10A 36 P5A V17	40
	34046781	200x32x40	10A 60 M5A V17	40
	34046764	250x25x40	10A 36 P5A V17	40
	34046765	250x32x40	10A 36 P5A V17	40
	147701	250x32x51	10A 36 P5A V17	40
	34046785	300x40x40	10A 60 M5A V17	40
	32981	350x50x127	10A 24 Q5A V17	40

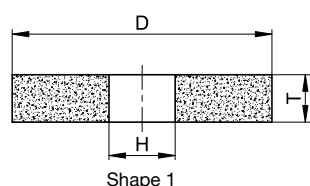
Precision grinding

Bench grinding wheels
Conventional ceramic
For high-alloyed steels and HSS



Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A			●	●	●	●				●	●	

Recommended stock type



This wheel is preferable for grinding and sharpening temperature-sensitive steels and HSS tools. The use of aluminium oxide results in particularly cool grinding so that the workpiece is not subjected to additional thermal load.

We offer a wide spectrum of dimensions to cover the most common applications. A reduction bush set is included in the packaging or can be reordered.






Recommended stock type

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	34046786	125x15x32	89A 60 L5A V217	40
		2536	125x20x32	89A 60 M5A V217	40
		281719	125x20x32	89A 80 M5A V217	40
		449559	125x20x32	89A 46 M5A V217	40
		664052	150x13x25	89A 80 M5A V217	40
		34046788	150x15x32	89A 60 L5A V217	40
		2697	150x20x32	89A 46 M5A V217	40
		2699	150x20x32	89A 60 M5A V217	40
		764468	150x20x32	89A 80 M5A V217	40
		2762	150x25x32	89A 60 M5A V217	40
		147614	150x25x32	89A 80 L5A V217	40
		853353	150x25x32	89A 46 M5A V217	40
		2916	175x20x32	89A 60 M5A V217	40
		543615	175x20x32	89A 80 M5A V217	40
		2973	175x25x32	89A 80 L5A V217	40
		16022	175x25x32	89A 60 M5A V217	40
		377415	175x25x51	89A 80 M5A V217	40
		723118	175x25x51	89A 60 M5A V217	40
		3020	175x32x32	89A 60 M5A V217	40
		918448	175x32x32	89A 80 M5A V217	40
		471114	200x20x31.75	89A 60 M5A V217	40
		3142	200x20x32	89A 46 M5A V217	40
		3145	200x20x32	89A 60 M5A V217	40
		820958	200x20x32	89A 80 M5A V217	40
		664048	200x20x51	89A 46 M5A V217	40
		826839	200x20x51	89A 80 M5A V217	40
		841086	200x20x51	89A 60 M5A V217	40
		3220	200x25x32	89A 46 M5A V217	40
		39540	200x25x32	89A 60 M5A V217	40
		129550	200x25x32	89A 80 M5A V217	40
		33435	200x25x51	89A 80 L5A V217	40
		50184	200x25x51	89A 46 M5A V217	40
		534539	200x25x51	89A 60 M5A V217	40
		34046791	200x32x40	89A 60 L5A V217	40
		78379	200x32x51	89A 80 M5A V217	40
		99864	200x32x51	89A 46 M5A V217	40
		723117	200x32x51	89A 60 M5A V217	40
		831179	250x25x32	89A 60 M5A V217	40
		3545	250x32x32	89A 60 M5A V217	40
		126665	250x32x32	89A 80 M5A V217	40





Shape	Type no.	DxTxH	Specification	Vmax m/s	
	1	111799	250x32x51	89A 60 M5A V217	40
		34046794	300x40x40	89A 60 L5A V217	40
		867598	300x40x51	89A 60 M5A V217	40
		30840	300x40x76	89A 60 M5A V217	40

Alternative stock type

Shape	Type no.	DxTxH	Specification	Vmax m/s
1	73667	150x10x20	89A 80 L5A V55	40
	103872	150x20x16	89A 60 M5A V55	40
	413774	150x20x20	89A 60 L5A V217	40
	7210	150x20x32	89A 60 K5A V217	40
	122996	200x20x20	89A 60 L5A V217	40
	184247	200x20x20	89A 60 M5A V55	40
	3144	200x20x32	89A 60 K5A V217	40
	16615	200x20x32	89A 46 K5A V217	40
	68340	200x25x20	89A 60 M5A V55	40
	122997	200x25x20	89A 60 L5A V217	40
	3222	200x25x32	89A 60 K5A V217	40
	7374	200x25x32	89A 80 L5A V217	40
	146630	200x25x32	89A 461 K5A V217	40
	407610	250x10x32	89A 60 K5A V217	40
	127554	300x32x127	89A 602 K5A V217	40

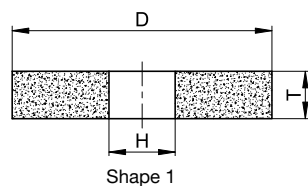
Precision grinding

Bench grinding wheels
Conventional ceramic
 For tungsten carbide and cast iron



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C						●	●	●	●	●	●	

Recommended stock type



When sharpening solid carbide or tungsten carbide tipped tools, only wheels with silicon carbide specifications should be used. Due to their special grain shape you can achieve good results even on extremely hard workpieces.

This wheel can also be used for cast iron. A reduction bush set is included in the packaging or can be reordered.





Recommended stock type

	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1	706631	125x15x32	C 602 J5 V15	40
		2529	125x20x32	C 80 J5 V15	40
		664185	150x13x25	C 80 J5 V15	40
		56155	150x16x32	C 80 J5 V15	40
		2658	150x20x20	C 80 J5 V15	40
		2680	150x20x32	C 46 K5 V15	40
		123633	150x20x32	C 80 J5 V15	40
		861009	150x20x32	C 60 K5 V15	40
		2751	150x25x32	C 46 K5 V15	40
		2753	150x25x32	C 80 J5 V15	40
		333180	150x25x32	C 60 K5 V15	40
		34165304	150x32x32	C 602 J5 V15	40
		2905	175x20x32	C 80 J5 V15	40
		2956	175x25x32	C 80 J5 V15	40
		9653	175x25x51	C 80 J5 V15	40
		7348	200x20x20	C 80 J5 V15	40
		154428	200x20x31.75	C 80 J5 V15	40
		3132	200x20x32	C 46 K5 V15	40
		3135	200x20x32	C 80 J5 V15	40
		596597	200x20x32	C 60 K5 V15	40
		837436	200x20x51	C 46 K5 V15	40
		872497	200x20x51	C 80 J5 V15	40
		3186	200x25x20	C 80 J5 V15	40
		3206	200x25x32	C 46 K5 V15	40
		3210	200x25x32	C 80 J5 V15	40
		819893	200x25x32	C 60 K5 V15	40
		263506	200x25x51	C 60 K5 V15	40
		822622	200x25x51	C 80 J5 V15	40
		103851	200x25x76.2	C 80 J5 V15	40
		34165307	200x32x40	C 602 J5 V15	40
		9651	200x32x51	C 80 J5 V15	40
		879608	200x32x51	C 46 K5 V15	40
		75079	250x25x32	C 80 J5 V15	40
		49680	250x25x76	C 80 J5 V15	40
58964	250x32x32	C 80 J5 V15	40		
822623	250x32x51	C 80 J5 V15	40		
822624	300x40x51	C 80 J5 V15	40		
9652	300x40x76	C 80 J5 V15	40		





Alternative stock type

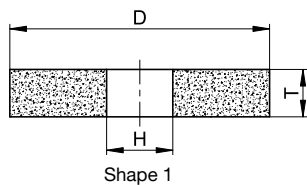
Shape	Type no.	DxTxH	Specification	Vmax m/s
1	11182	150x20x32	C 120 J5 V15	40
	146906	150x20x32	C 801 J5 V15	40
	450328	150x20x32	C 60 J5A V15	40
	146644	150x25x32	C 801 J5 V15	40
	3208	200x25x32	C 60 J5 V15	40
	72045	203x20x32	C 120 J5 V15	40
	59861	203x25x32	C 120 J5 V15	40
	28584	350x32x127	C 60 J5 V15	40

**Bench grinding wheels
Conventional ceramic
For nonferrous metals**




Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
C	●										●	

Recommended stock type



An inhouse-developed clean-cutting specification for bench grinding wheels enables the grinding of nonferrous metals such as aluminium, aluminium base alloys, bronze, copper, copper alloys and titanium. High-quality silicon carbide provides for effortless surface grinding and deburring of workpieces. Through minimal clogging of the grinding wheel, dressing times are reduced and dressing cycles prolonged.


Shape	Type no.	DxTxH	Specification	Vmax m/s	
	1	34287483	150x20x32	C46H5AV18	40
		34287486	175x25x32	C46H5AV18	40
		34287490	200x25x51	C46H5AV18	40


Precision grinding

Floorstand grinder accessories

Reduction bushes

The enclosed reduction bush set minimises the range of tools required and saves on storage space. Reduction bushes are available free of charge to be used with all bench grinding wheels, see table.

	Shape	Type no.	DxTxH
	100RR	111434	32x19x16
		667841	51x10x31.75
		911408	51x9x32
		111436	76x9x40



5.8 Sharpening and polishing wheels
Bench grinders



Sharpening and polishing wheels

The bench grinder is a versatile machine used in many workshops for machining various materials. The TYROLIT range of bench grinding wheels therefore contains the right wheel for every material.

TYROLIT sharpening and polishing wheels are particularly supple and provide for easy profiling. On the basis of their structure, they can quickly create the finest surfaces. When used

at the recommended speed, they provide for a long tool life and particularly cool grinding. Through their use, you improve the cutting ability of your cutting tools and benefit from

the easiest handling. In this way, your tool cutting edges are quickly resharpened.

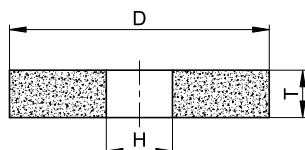
Sharpening wheel for cutting tool

For steel, HSS, stainless steel and tungsten carbide



Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C		●	●	●	●	●	●	●			●	

Recommended stock type



Shape 1

This product was specially developed for sharpening whittlers. Its grit size and tailored bond system enable you to achieve particularly cool grinding. Its fine surface improves the cutting ability and lifetime of the cutting tools.

Ensure that you pay attention to the direction of rotation of the wheel when in use. **The sharpening wheel must always move away from the cutting edge. In addition, the wheel flange diameter must be at least two thirds of the wheel diameter.**

	Shape	Type no.	DxTxH	Specification	Vmax m/s	Degree of hardness	Comments
	1	10016	125x20x32	C 800 - BE11	25	Medium	Sharpening of whittlers
		7133	125x25x20	C 800 - BE11	25	Medium	
		2540	125x25x32	C 800 - BE11	25	Medium	
		669110	150x20x20	C 800 - BE11	25	Medium	
		7204	150x20x32	C 800 - BE11	25	Medium	
		669109	175x20x32	C 800 - BE11	25	Medium	

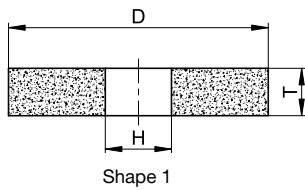
Fine grinding and polishing wheels

For steel, HSS, stainless steel, tungsten carbide and cast iron



Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C	●	●	●	●	●	●	●	●	●	●	●	●

Recommended stock type



The soft elastic specification of this wheel means it perfectly follows the contours of the work-piece and does not alter the surface geometry. It can be used for polishing, fine grinding, effect grinding, deburring, matting and whetting. However, it is not suitable for large burrs or high stock removal rates.

	Shape	Type no.	DxTxH	Specification	Vmax m/s	Degree of hardness	PU	Comments	
	1	19435	125x20x20	C 400 - BE15	20	Medium	1	Sharpening of kitchen knives	
		7203	150x20x32	C 400 - BE15	20	Medium	1		
		22411	200x25x32	C 400 - BE15	20	Medium	1		
		802276		150x10x25	C 150 - BE13	16	Soft	1	Surface improvement on pre-ground workpieces (low stock removal)
		2661		150x20x20	C 150 - BE15	20	Medium	1	
		71212		150x20x20	C 400 - BE16	32	Hard	1	
		7186		150x20x20	C 80 - BE15	20	Medium	1	
		22257		150x20x32	C 150 - BE16	32	Soft	1	
		320369		200x25x20	C 240 - BE15	20	Medium	1	
		7362		200x25x20	C 80 - BE15	20	Medium	1	
		32765		200x25x32	C 150 - BE15	20	Medium	1	

Precision grinding





5.9 Saw sharpening tools

Saw sharpening



Saw sharpening

Only a sharp tool is a good tool. For this reason, TYROLIT produces an extensive range of grinding wheels for sharpening saws.

This spans everything from conventional grinding wheels through to diamond and CBN grinding tools. In conjunction with its proven application engineering service, TYROLIT

provides specific solutions that ensure maximum customer benefit. Specially selected grain qualities and innovative bond systems with efficient grinding wheel design guarantee

optimum quality at the cutting edges. TYROLIT is therefore your competent partner in the saw industry.

Application recommendation

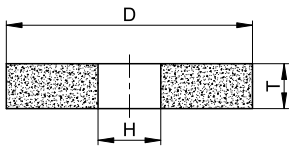
Specification	Aluminum		Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
	Unhardened	Hardened	Unhardened	Hardened	Unhardened	Hardened								
SA					●		●					●	●	425, 426, 427
A			●	●								●	●	425
88A, 89A, 50A				●	●		●					●	●	424, 425, 426, 427, 428
455A, 765A					●								●	426, 427, 428
52A			●									●	●	425, 426, 428
454A							●							428
C							●		●					428

● Extremely suitable ● Limited suitability

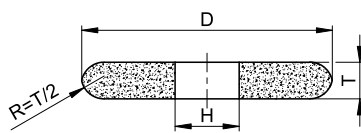
Application tips

Operating speed: 25–40 m/s

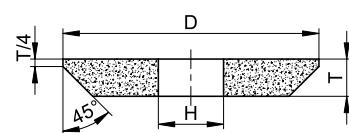
Shapes



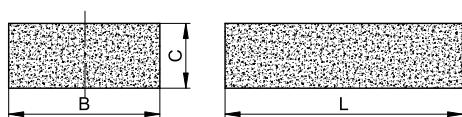
Shape 1



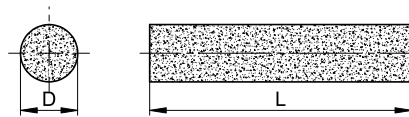
Shape 1F



Shape 1C



Shape 54SCHP / 90B



Shape 9030

Precision grinding

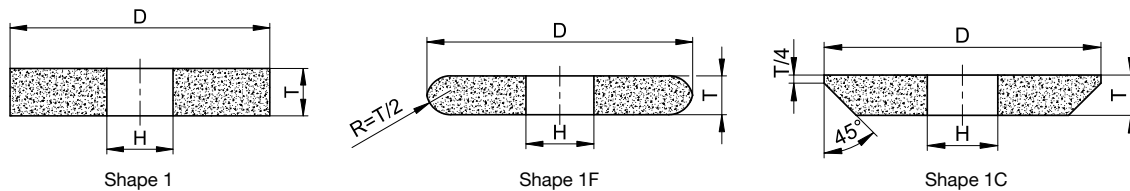
Grinding tools for automatic saw

For circular saws, stellite band and gang saws



Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
SA						●					●	●
A		●	●								●	●
88A, 89A			●			●		●			●	●
455A, 765A						●						●
52A		●									●	●

Recommended stock type



TYROLIT sells a wide assortment of tools tailored to various grinding machines and tooth pitches. They are suitable for dry and wet grinding for HSS, chrome vanadium and stellite saws.

The products are available with different edge profiles; shape 1, 1F, 1C, in diameters ranging from 150 to 350 mm.

	Shape	Type no.	DxTxH	Specification	Vmax m/s	PU	Comments
	1	18825	150x3x30	88A 80 M5A V217	40	10	
		55375	150x3x32	88A 80 M5A V217	40	10	
		9293	150x4x20	88A 80 M5A V217	40	10	
		291120	150x4x32	88A 80 M5A V217	40	10	
		719904	150x6x38	88A 60 K5A V217	40	10	
		490222	150x6x38	88A 80 K5A V217	40	10	
	1	10265	150x10x32	89A 60 M5A V217	40	10	
		455124	150x8x32	89A 60 M5A V217	40	10	
		719906	175x3x51	89A 60 M5A V217	40	10	
		123222	175x6x51	89A 60 M5A V217	40	10	
		50845	175x8x51	89A 60 M5A V217	40	10	
		3085	200x10x20	89A 60 M5A V217	40	10	
		3091	200x10x32	89A 60 K5A V217	40	10	
		3092	200x10x32	89A 60 M5 V217	40	10	
		608080	200x10x32	89A 60 M5A V217	40	10	Lateral face impregnation
		762445	200x10x32	89A 60 M5A V217 E5	40	10	
		51494	200x13x32	89A 60 M5A V217	40	10	
		448603	200x2x32	88A 80 M5A V217	40	10	





Recommended stock type

	Shape	Type no.	DxTxH	Specification	Vmax m/s	PU	Comments	
	1	7318	200x3x32	88A 80 M5 V217	40	10		
		3070	200x6x20	89A 60 M5A V217	40	10		
		110554	200x6x32	89A 60 K5A V217	40	10		
		7328	200x6x32	89A 60 M5 V217	40	10		
		107050	200x6x32	89A 60 M5 V227	40	10		
		3077	200x8x20	89A 60 M5A V217	40	10		
		525686	200x8x32	89A 60 M5A V217	40	10		
		3424	250x10x20	89A 60 M5A V217	40	10		
		461239	250x10x32	89A 60 M5A V217 E5	40	10	Lateral face impregnation	
		33249	250x13x20	89A 60 M5A V217	40	10		
		719922	250x13x32	89A 60 M5A V217	40	10		
		1C	28549	200x10x32	89A 40 M5S V217	40	10	
			935730	150x2x32	SA 80 L4 VN-M OD	63	10	
47009	150x3x32		SA 80 L4 VN-M OD	63	10			
226295	150x3x32		SA 80 L5 VN-M OD	63	10			
159000	150x4x32		SA 80 L5 VN-M OD	63	10			
667182	150x5x32		SA 80 L5 VN-M OD	63	10			
946904	150x6x32		SA 60 L5 VN-M OD	63	10			
47005	150x6x32		SA 80 L4 VN-M OD	63	10			
17256	150x6x38		SA 60 K5 VN-M OD	63	10			
441302	150x8x32		SA 60 L5 VN-M OD	63	10			
922647	200x1.5x32		SA 80 L4 VN-M OD	63	10			
804979	200x10x32		SA 60 L5 VN-M OD	63	10			
867603	200x2.5x32		SA 80 L4 VN-M OD	63	10			
922857	200x2x32		SA 80 L4 VN-M OD	63	10			
804957	200x3.5x32		SA 80 L5 VN-M OD	63	10			
922860	200x3x32		SA 80 L5 VN-M OD	63	10			
804945	200x4x32		SA 80 L5 VN-M OD	63	10			
804993	200x5x32		SA 60 L5 VN-M OD	63	10			
805000	200x6x32		SA 60 L5 VN-M OD	63	10			
804976	200x8x32		SA 60 L5 VN-M OD	63	10			
901252	250x3x32		SA 80 L4 VN-M OD	63	10			
901254	250x4x32		SA 80 L4 VN-M OD	63	10			
901256	250x5x32		SA 60 L5 VN-M OD	63	10			
901258	250x6x32		SA 60 L5 VN-M OD	63	10			
437634	250x10x32		52A 54 M5A V217 E5	63	10	Lateral face impregnation		
19117	150x4x20		A 60 N4 B2	50	10			

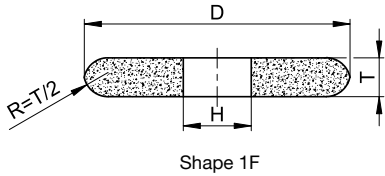




Recommended stock type


	Shape	Type no.	DxTxH	Specification	Vmax m/s	PU	Comments
	1C	237227	250x10x32	M455A 609 M7 B82	63	1	For stellite band and gang saws
		527875	300x10x32	M455A 609 L7 B82	63	1	
		241857	300x10x32	M455A 809 K6 B22	63	1	
		313636	300x10x40	M455A 609 M7 B82	63	1	
		179959	300x10x40	M455A 80 M6 B22	63	1	
		226679	350x10x127	M455A 802 M6 B22	63	1	
		226680	350x13x127	M455A 802 M6 B22	63	1	
		34340596	350x10x127	765A 801 P6 B100	63	1	
	1F	150403	200x10x32	M455A 609 M7 B82	63	1	For stellite band and gang saws
		476545	250x12x32	M455A 609 M7 B82	63	1	
		150402	300x10x32	M455A 609 L7 B82	63	1	
	1F	805007	200x8x32	SA 60 K5 VN-M OD	63	10	
		805008	200x10x32	SA 60 K5 VN-M OD	63	10	
		805015	250x13x32	SA 60 K5 VN-M OD	63	10	
		805017	250x8x32	SA 60 K5 VN-M OD	63	10	
		805018	250x10x32	SA 60 K5 VN-M OD	63	10	
		805019	250x12x32	SA 60 K5 VN-M OD	63	10	
		804983	200x10x32	SA 60 L5 VN-M OD	63	10	
		804986	200x8x32	SA 60 L5 VN-M OD	63	10	
	1C	161678	250x10x20	88A 60 N4A V217/ 89A 60 M5A V217	63	10	Two-layer wheels
		172352	175x8x20	88A 60 N4A V217/ 89A 60 M5A V217	63	10	
		719918	200x10x20	88A 60 N4A V217/ 89A 60 M5A V217	63	10	
		720012	200x10x32	88A 60 N4A V217/ 89A 60 M5A V217	63	10	
	1	20917	125x2x32	SA80J5VN-MOD	63	10	
		78052	150x4.76x15.87	SA80J5VN-MOD	63	10	
		27867	150x6x32	SA80J5VN-MOD	63	10	
		680277	150x6x38	SA80J5VN-MOD	63	10	
		740907	150x6x38	SA80J5VN-MOD	63	10	
		740912	150x6x38	SA80J5VN-MOD	63	10	
		614332	175x3x51	SA80J5VN-MOD	63	10	
		761917	200x1.5x32	SA80J5VN-MOD	63	10	
		922858	200x2.25x32	SA80J5VN-MOD	63	10	
		54153	250x10x32	SA80J5VN-MOD	63	10	
	1	14515	150x4x20	89A60J5AV217	40	10	
		455120	150x5x32	89A60M5AV217	40	10	
		305800	150x6x32	89A60M5AV217	40	10	
		50844	175x4x51	89A60M5AV217	40	10	
		760612	200x6x51	89A60K5AV217	40	10	

Grinding tool for chain saw sharpening machines For steel



With this wheel you receive a precise product that will significantly increase the lifetimes of your chain saws. The profile radius of this product corresponds to half the wheel width and is optimally tailored to the tooth base radius.

This tool is suited to dry grinding with edge profile shape 1F and a 140 mm diameter.

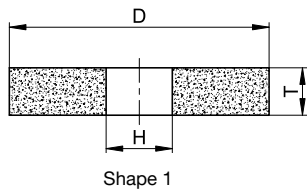
	Shape	Type no.	DxTxH	Specification	Vmax m/s
	1F	740908	140x3.2x12	88A 54 K5A V217	63
		244477	140x4.5x12	88A 54 K5A V217	63
		123716	140x3.8x12	50A 541 K5A V217	63

Vitrified-bonded and CBN resin-bonded profile grinding wheels For tungsten carbide and HSS



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A, 455A						●						●

Recommended stock type



For profile grinding of HSS you can use aluminium oxide or CBN wheels. Tungsten carbide should however only be ground using diamond. For pre-grinding we recommend using grit size 54 in aluminium oxide and sintered aluminium oxide mixture.



Grit size 100 should be used for finish grinding and fine profiles, or alternatively B151 in CBN. Finer grit sizes are usually used for tungsten carbide.

Precision grinding





Recommended stock type

	Shape	Type no.	DxTxH	Specification	Comments
	1	30806	225x5x60	89A 54 I5A V53	
		102804	225x5x60	89A 100 H5 V111	
	1	619872	225x5x60	455A 541 L6 V3 50	Weinig Rondamat for HSS tools

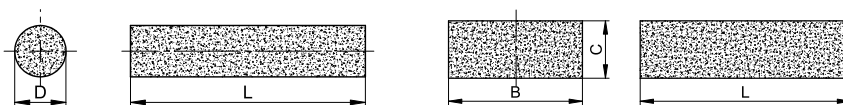
Vitrified-bonded and resin-bonded jointing stones

For tungsten carbide and HSS



Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
454A						●						
C						●		●				

Recommended stock type





Shape 9030

Shape 90B | 54SCHP

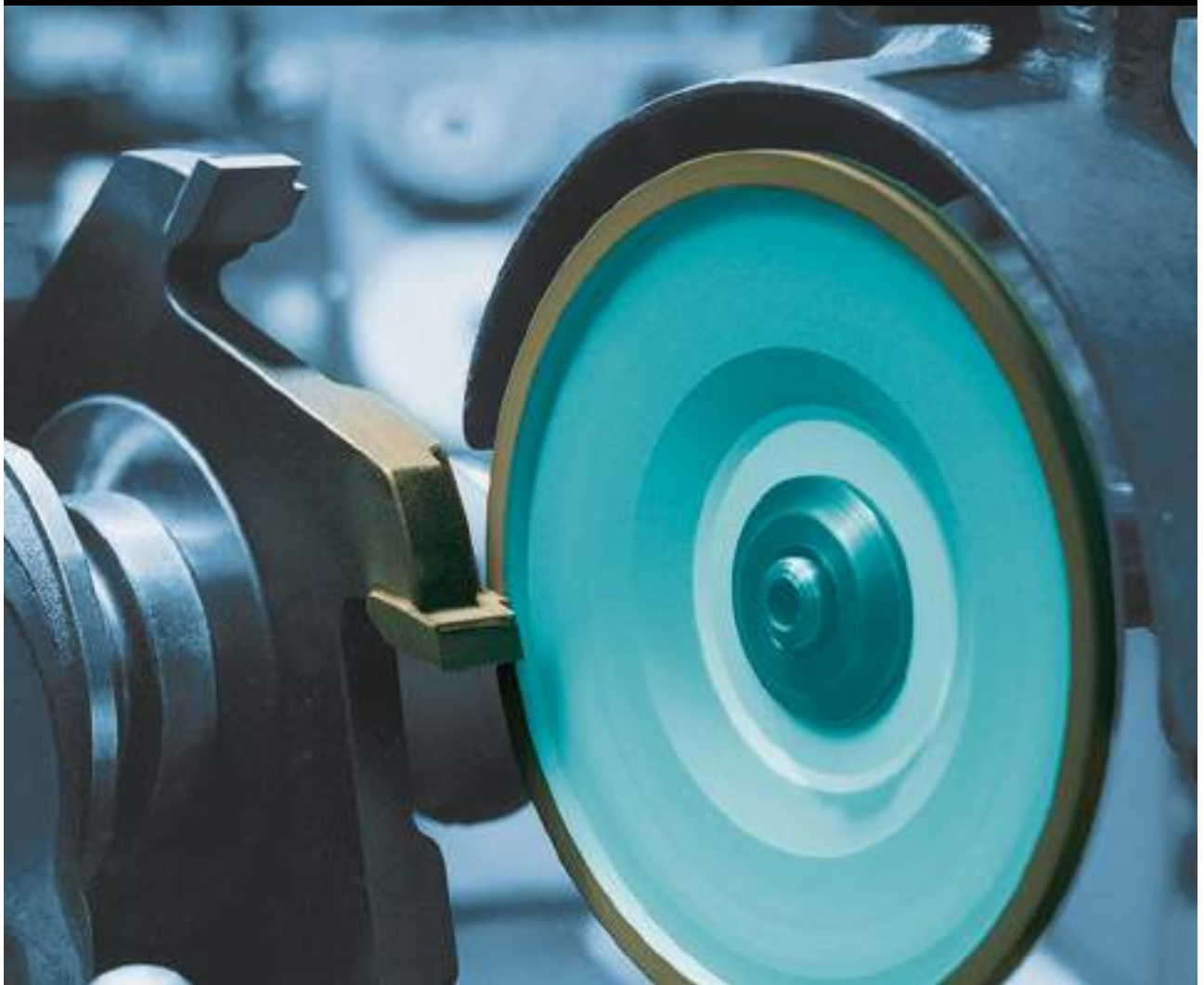
To achieve the highest planing quality, micro-size planer heads are levelled with jointing stones. Products from TYROLIT achieve optimum dressing effects.

It is possible to level HSS and tungsten carbide planer knives with this product.

	Shape	Type no.	BxCxL	Specification	PU
	9030	775476	12x32	C 280 J5 V18	10
	54SCHP	917288	60x15x160	454A 500 D2 B22	10



5.10 Tools
Universal tool grinding



Universal tool grinding

TYROLIT offers a comprehensive range of grinding tools for tool grinding. This makes a high-quality range available for tool production as well as tool regrinding.

It includes conventional grinding wheels as well as diamond and CBN grinding tools for wet and dry

grinding. Grain qualities adapted to the grinding process and innovative bond systems combined with efficient

grinding wheel design always guarantee optimum quality of your tools.

Application recommendation



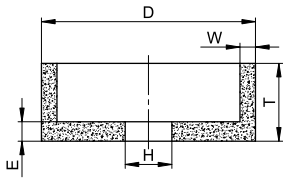
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened	Hardened	Unhardened	Hardened								
89A			●		●	●					●		433, 434
91A						●					●		434
454A					●	●					●		433
C								●			●		435
AMIGO, B			●		●	●					●		437
DIAGO, D								●			●		438

● Extremely suitable

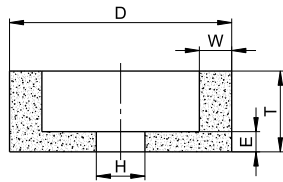
Application tips CBN

- Recommended operating speed for cemented carbide: 16–22 m/s
- Recommended operating speed for HSS: 20–25 m/s

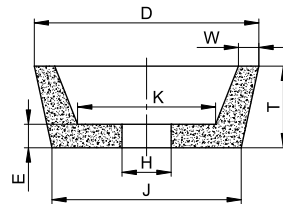
Shapes



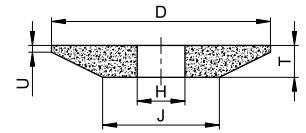
Shape 6



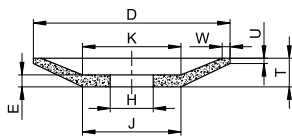
Shape 6BB



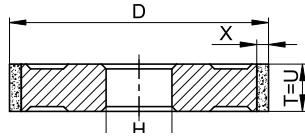
Shape 11



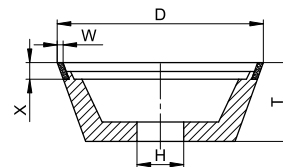
Shape 3



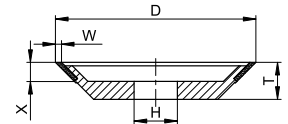
Shape 12



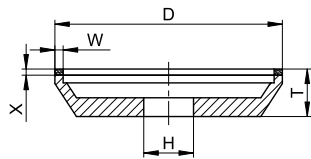
Shape 1A1



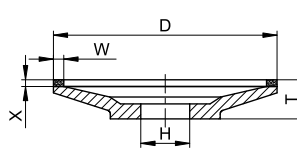
Shape 11V9



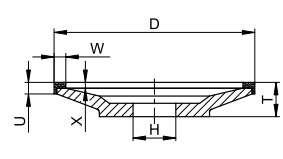
Shape 12V9



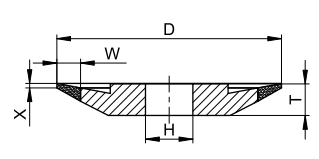
Shape 12A2D



Shape 12A2F



Shape 12C2F



Shape 4BT9

Precision grinding

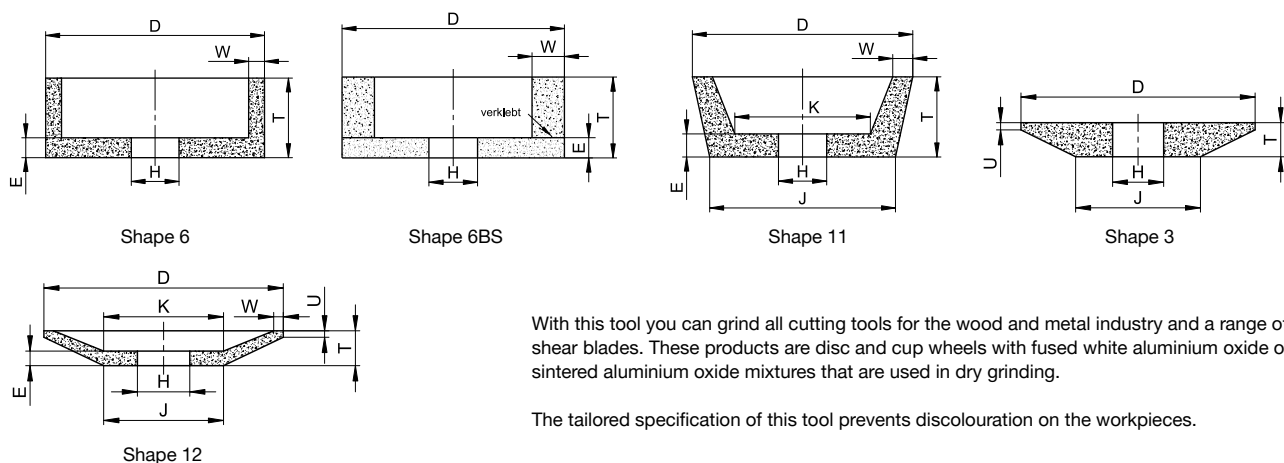
Conventional ceramic for dry grinding

For non and low-alloyed steels, high-alloyed steels and HSS.



Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
89A			●		●	●					●	
91A						●					●	
454A					●	●					●	

Recommended stock type



With this tool you can grind all cutting tools for the wood and metal industry and a range of shear blades. These products are disc and cup wheels with fused white aluminium oxide or sintered aluminium oxide mixtures that are used in dry grinding.

The tailored specification of this tool prevents discolouration on the workpieces.

	Shape	Type no.	DxTxH	W/E	Specification	Comments
	6	34048152	80x40x20	W6/E10	454A 801 N5 V3 U5	With peripheral impregnation
		34048027	100x50x20	W10/E10	454A 801 K5 V3 U5	
	6	5843	80x40x20	W6/E10	89A 60 K5A V53	With peripheral impregnation
		34924	100x50x20	W10/E10	89A 462 K5A V53	
		19040	100x50x20	W8/E10	89A 542 I5A V53	
		5886	100x50x20	W10/E10	89A 60 J5A V53	
		5887	100x50x20	W10/E10	89A 60 K5A V53	
		49273	100x50x20	W10/E10	89A 60 M5A V53	
		9627	100x50x20	W10/E10	89A 80 I7A V53	
		568265	100x50x20	W10/E10	89A 80 I7A V53 U5	
		5889	100x50x20	W10/E10	89A 80 J5A V53	
		8641	100x50x20	W10/E10	89A 80 K5A V53	
		54820	100x50x20	W10/E10	89A 80 L5 V55	
		131991		125x50x32	W13/E13	

Precision grinding





	Shape	Type no.	DxTxH	W/E	Specification	Comments
	6	451151	125x63x20	W8/E13	89A 542 I5A V53	
		78847	150x50x32	W12/E15	89A 60 K5 V53	
		77824	150x60x50	W15/E15	89A 36 H7 V217	
		84809	150x70x28	W17/E16	89A 36 H8 V217	
		186445	150x80x32	W10/E16	89A 60 J5A V217	
		365824	150x80x50	W10/E16	89A 461 H7A V53	
		54119	175x75x76.2	W17.5/E17	89A 36 J8 V217	
		126245	175x75x78	W15/E18	89A 36 H7A V217	
		712490	175x75x78	W15/E18	89A 36 J10A V237 P22	
		91441	175x75x78	W15/E18	89A 46 H7 V217	
		587026	175x80x32	W13/E20	89A 46 G10A V217	
		305227	200x80x30	W17.5/E20	89A 60 K7A V227	Mower knife
		210314	200x80x35	W20/E20	89A 46 J8A V53	Sickle
		70128	200x80x78	W20/E20	89A 36 H7 V217	
		798715	200x80x78	W20/E20	89A 36 J10A V237 P22	
122989	100x50x20	W10/E10	91A 80 L5A V217			
	6	438088	150x63x32	W15/E16	91A 46 G9A V217 P3	
		75803	165x60x32	W15/E15	91A 46 G9A V217 P3	
	11	338237	80/57x32x20	W6/E8/K46	89A 601 K5A V53	
		4917	100/71x40x20	W8/E10/K56	89A 462 J5A V53	
		4924	100/71x40x20	W8/E10/K56	89A 601 K5A V53	
		631057	100/71x40x32	W8/E10/K56	89A 601 J5A V53	
		63195	100/80x50x32	W9/E13/K67	89A 60 K5 V53	
		31675	125/96x40x20	W8/E10/K81	89A 462 K5A V53	
		331500	125/96x40x32	W8/E10/K81	89A 601 J5A V53	
		203176	150/114x50x32	W10/E13/K96	89A 462 I5A V53	
		498229	150/114x50x32	W10/E13/K96	89A 601 J5A V53	
			3	31009	150/75x8/2x20	
	12	9398	150/75x16/3x20	W10/E10/K85	89A 601 J5A V53	
		19659	100/50x13/3x20	W5/E7/K50	89A 601 K5A V53	
		216789	125/63x13.3/3x20	W6/E7/K63	89A 461 J5A V53	
		364685	125/63x13/3x20	W6/E7/K63	89A 601 I5A V53	
		9833	175/85x18/3x20	W10/E10/K85	89A 601 I5A V53	

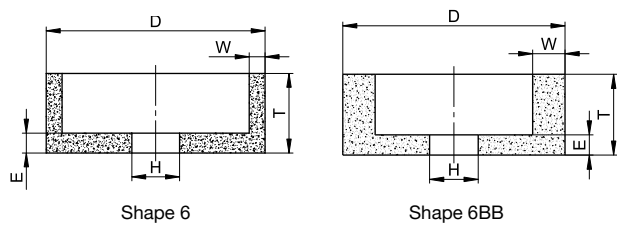
Precision grinding

Conventional ceramic for dry grinding For tungsten carbide





Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
C								●			●	

Recommended stock type



This silicon carbide wheel is a cost-effective variant for machining tungsten carbide for secondary applications. It is primarily used for working on castings and nonferrous metals.

It is ideally suited to grinding mining drills and re-sharpening tools in stone-masons' workshops.

	Shape	Type no.	DxTxH	W/E	Specification	Comments
	6	139155	100x50x20	W10/E10	C 80 I5 V15	For HM and coated tools
	6BB	24299	127x63x32	W22.5/E13	C 46 J5 V15	For mining drill grinding machines
		108479	200x100x32	W25.5/E20	C 46 J5 V15	

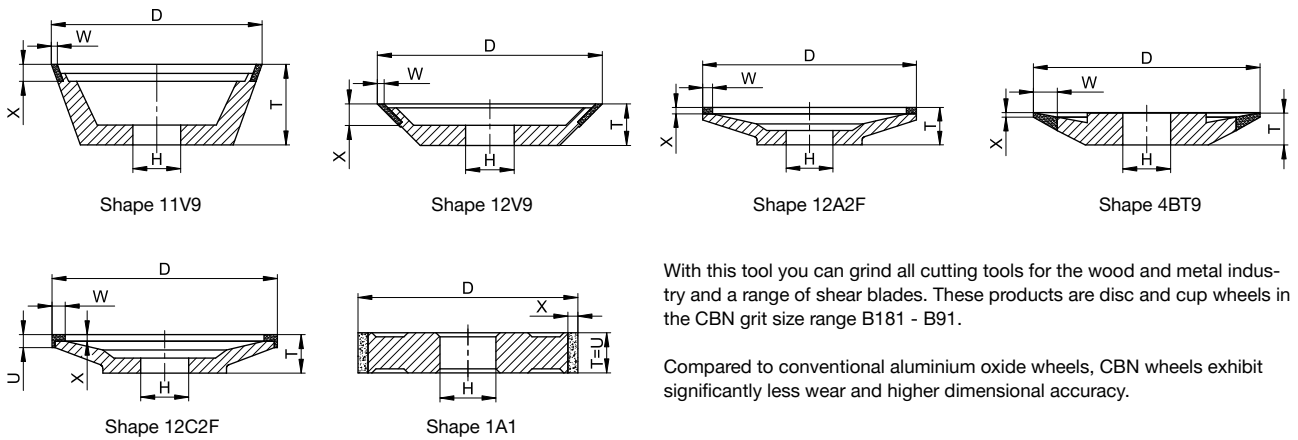
CBN resin-bonded for dry grinding

For non and low-alloyed steels, high-alloyed steels and HSS



Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
AMIGO, B		●		●		●					●	

Recommended stock type






	Shape	Type no.	DxTxH	W-X	Specification
	11V9	640777	75x30x20	2-10	B 126 C75 B AMIGO
		641854	125x40x20	2-10	B 126 C75 B AMIGO
		666288	100x35x20	2-10	B 181 C75 B AMIGO
		617388	100x35x20	2-10	B 126 C75 B AMIGO
		636398	100x35x20	3-10	B 126 C75 B AMIGO
	12V9	703242	75x20x20	2-6	B 126 C75 B AMIGO
		636658	100x20x20	2-10	B 126 C75 B AMIGO
		840506	125x25x20	2-10	B 126 C75 B AMIGO
		337051	150x18x20	4-3	B 126 C75 B 54 AL
	12A2F	69502	125x23x20	5-4	B 126 C50 B 75 AL



Precision grinding



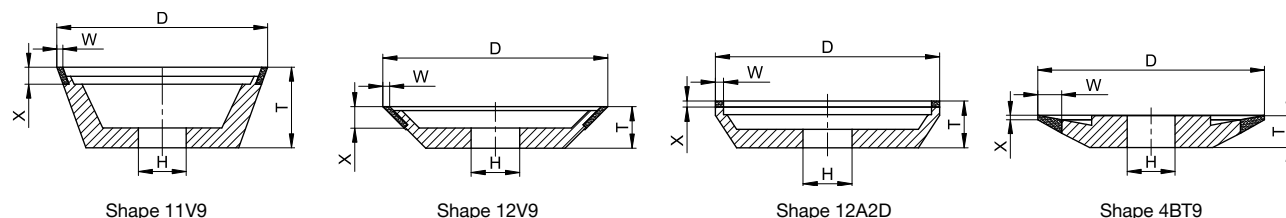
	Shape	Type no.	DxTxH	W-X	Specification
	4BT9	119325	100x10x20	10-1	B 126 C75 B 75 AL
	Shape	Type no.	DxTxH	W/U-X	Specification
	12C2F	641839	125x23x20	5/5-4	B 151 C75 B AMIGO
	Shape	Type no.	DxTxH	U-X	Specification
	1A1	620464	100x10x20	10-6	B 126 C50 B 54 BA

Diamond resin-bonded for dry grinding
For tungsten carbide

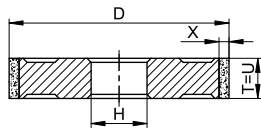


Specifica- tion	Alumin- ium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened Hardened	Unhardened Hardened									
DIAGO, D								●			●	

Recommended stock type



Precision grinding



Shape 1A1

With this tool you can grind all tungsten carbide cutting tools for the wood and metal industry and a variety of shear blades. These products are disc and cup wheels in the diamond grain size range D181 - D64.

Compared to conventional silicon carbide wheels, diamond wheels exhibit significantly less wear and higher dimensional accuracy.

	Shape	Type no.	DxTxH	W-X	Specification	Comments
	11V9	679634	75x30x20	2-10	D 126 C75 B DIAGO	
		721301	75x30x20	2-10	D 64 C50 B DIAGO	
		679946	125x40x20	3-10	D 126 C75 B DIAGO	
		335803	100x35x31.75	2-10	D126B DIAGO	
		5028	100x35x20	3-10	D 126 C75 B 52 BG	Long-life B52
		675309	100x35x20	2-10	D 126 C75 B DIAGO	
		675318	100x35x20	3-10	D 126 C75 B DIAGO	
		676589	100x35x20	2-10	D 181 C75 B DIAGO	
		675272	100x35x20	2-10	D 64 C50 B DIAGO	
		721303	100x35x20	3-10	D 64 C50 B DIAGO	
	12V9	696324	75x20x20	2-6	D 126 C75 B DIAGO	
		721319	75x20x20	2-6	D 64 C50 B DIAGO	
		689930	100x20x20	2-10	D 126 C75 B DIAGO	
		194540	100x20x20	2-10	D91B DIAGO	
	12A2D	28162	100x25x20	6-2	D 126 C75 B 52 AL	
		38012	100x25x20	6-2	D 64 C50 B 52 AL	
		104376	100x25x20	5-3	D 91 C75 B 52 AL	
		779789	100x25x20	10-3	D 91 C75 B 52 AL	
		102902	125x23x20	5-4	D126B DIAGO	
		731387	125x23x20	5-4	D 64 C50 B DIAGO	
		731399	125x23x20	5-4	D 151 C75 B DIAGO	
		416671	150x22x20	4-3	D 64 C50 B 52 AL	
	Shape	Type no.	DxTxH	U-X	Specification	Comments
	4BT9	255835	100x10x20	10-1	D 91 C75 B 73 AL	
	1A1	640978	100x10x20	10-6	D 64 C50 B 52 BA	

Precision grinding

A man with dark hair, wearing a grey long-sleeved shirt, is shown in profile, looking down at a metal drill bit he is holding in his hands. He is in a workshop environment, with various mechanical parts and tools visible in the background. A semi-transparent white banner is overlaid across the middle of the image, containing text. The overall lighting is cool and industrial.

5.11 Tools
CNC tool grinding



CNC tool grinding

Productivity demands are constantly growing for applications that involve machining an extremely wide range of different materials. At the same time, quality requirements are also increasing. Both of these requirements demand perfectly ground cutting tools that have been manufactured on the most modern CNC tool grinding machines.

For this purpose, TYROLIT provides you with a perfectly tailored range of products. This ensures that you fully exploit the advantages of the CNC machines used in the manufactur-

ing of cutting tools. You therefore increase your productivity and, at the same time, fulfil the high quality requirements.

In the following, you can find grinding

tools that fulfil the requirements of the tool manufacturer just as well as those of the tool regrinder.

Application recommendation



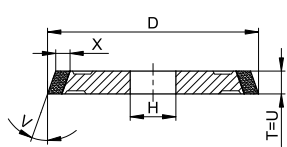
Specification	Aluminium	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding	Page
		Unhardened Hardened	Unhardened Hardened										
STARTEC-BASIC, B				●		●						●	442
STARTEC-BASIC, D								●				●	442, 443
START EC- XP-P, D								●				●	444

● Extremely suitable

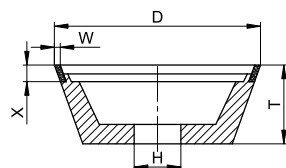
Application tips

- Cutting speed for CBN cup grinding wheels should be up to 30% higher than for diamond wheels
- Optimum peripheral speed for CBN grinding wheels (for flute grinding) 20–25 m/s
- Cutting speed recommendation for flute grinding
Solid carbide: 16–18 m/s
HSS: 20–25 m/s
- Cutting speed recommendation for cup grinding wheels
Solid carbide: 18–24 m/s
HSS 20–30 m/s
- Use STARTEC XP-P for optimum cutting performance
- Use STARTEC HP for standard applications
- Always ensure enough coolant is available
- Dressing and sharpening instructions see page 446

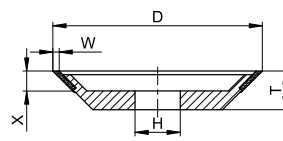
Shapes



Shape 1V1



Shape 11V9



Shape 12V9

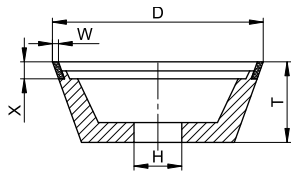
CNC tool grinding with resin-bonded CBN for wet grinding

For non and low-alloyed steels, high-alloyed steels and HSS



Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
STARTEC-BASIC, B						●						●


Recommended stock type



Shape 11V9

With this tool you can grind all cutting tools for the wood and metal industry and a variety of shear blades.

The wear-resistant bond and a high grain concentration significantly increase lifetimes compared to dry-grinding wheels.

	Shape	Type no.	DxTxH	W-X	Specification	V opt. m/s
	11V9	75669	75x30x20	2-10	BL1263PD STARTEC-BASIC	25-30
		494985	100x35x20	2-10	BL763PD STARTEC-BASIC	25-30

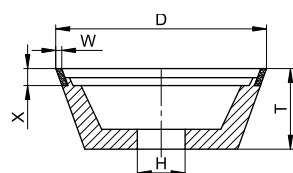
CNC tool grinding with resin-bonded diamond for wet grinding

For tungsten carbide

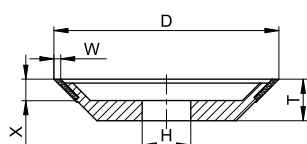


Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
STARTEC-BASIC, D								●				●

Recommended stock type





Shape 11V9



Shape 12V9

With this diamond wheel you can grind all tungsten carbide cutting tools for the wood and metal industry and a variety of shear blades. Grinding wheel sets for complete machining in the diamond grain size range D126 - D54.

The wear-resistant bond and a high grain concentration significantly increase lifetimes compared to dry-grinding wheels.

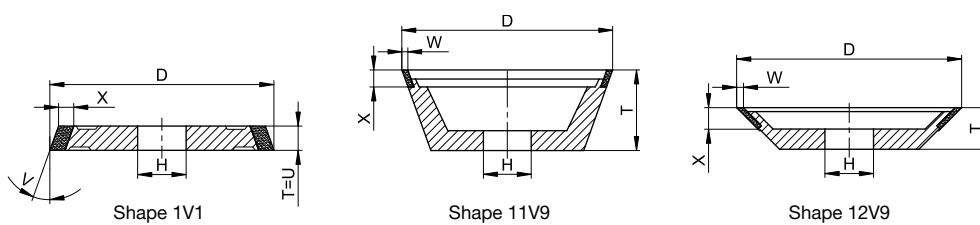
	Shape	Type no.	DxTxH	W-X	Specification	V opt. m/s	Comments
	11V9	390970	75x30x20	2-10	DE643BS STARTEC-BASIC	18-25	
		357223	100x35x20	2-10	DE643BS STARTEC-BASIC	18-26	
		532514	100x35x20	3-10	DE643BS STARTEC-BASIC	18-27	
	12V9	532510	100x20x20	2-10	DE643BS STARTEC-BASIC	18-25	
		532540	125x25x20	3-10	DE643BS STARTEC-BASIC	18-25	
		495044	125x25x20	15-3	D 54 C75 B 48 AL	18-25	

CNC tool grinding with metal-bonded diamond for wet grinding For tungsten carbide






Specification	Aluminum	Non and low-alloyed steels		High-alloyed steels		HSS	INOX	Tungsten carbide	Industrial ceramics	Cast iron	Dry grinding	Wet grinding
		Unhardened	Hardened	Unhardened	Hardened							
STARTEC-XP-P, D STARTEC-HP, D								●				●

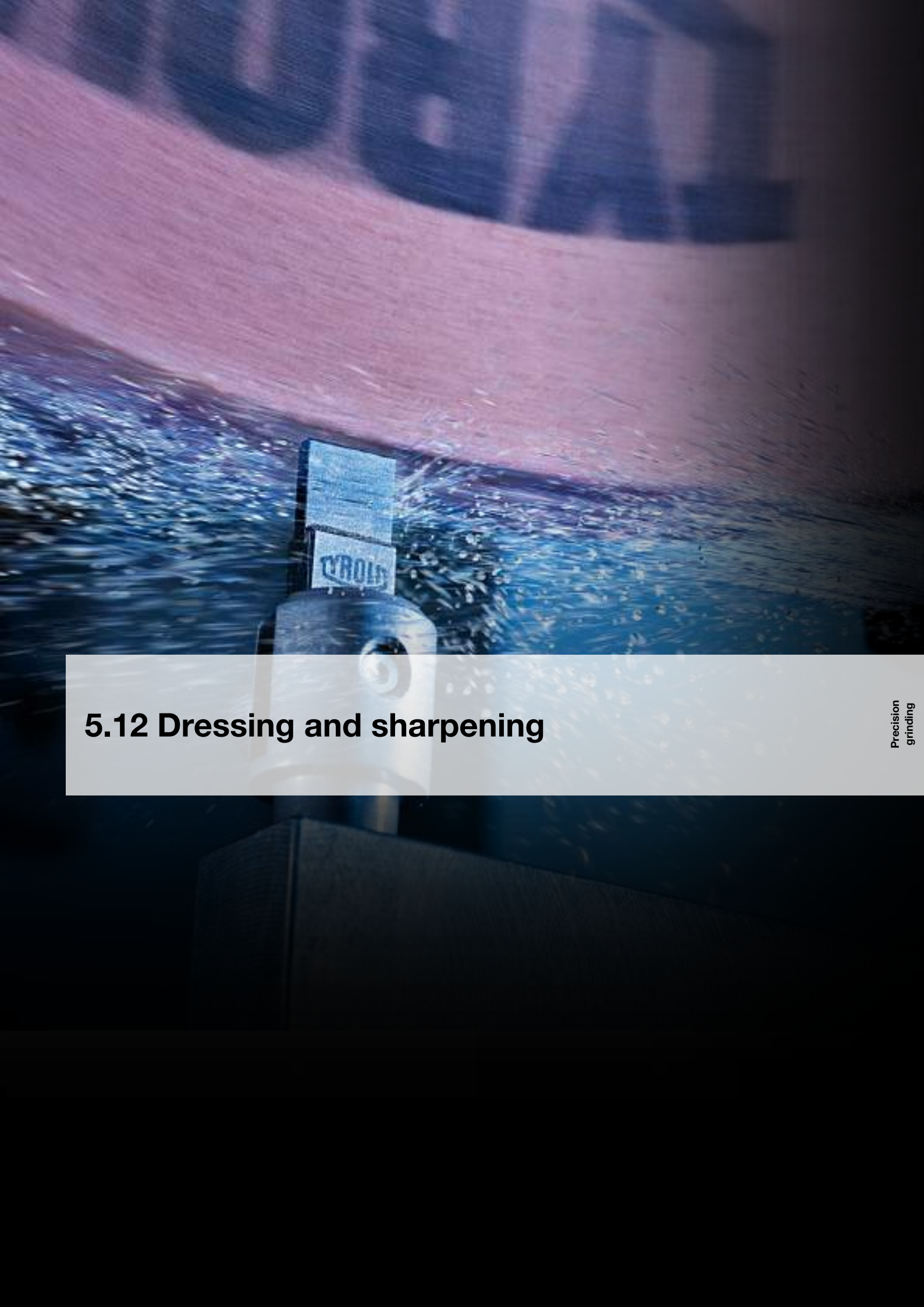
Recommended stock type



With this diamond wheel you can grind all tungsten carbide cutting tools for the wood and metal industry and a variety of shear blades. Grinding wheel sets for complete machining in the diamond grain size range D64 - D46. It is important that this wheel is only used for deep grinding.

The perfect combination of grit size, concentration and bond delivers exceptionally long tool lifetimes and a high level of profile accuracy.

	Shape	Type no.	DxTxH	U-X V	Specification	V opt. m/s
	1V1	680115	125x10x20	10-10 V45	D54MXPP STARTEC-XP-P	16-18
	11V9	34039198	75x30x20	3-10	D64BXPP STARTEC-XP-P	18-24
		34039199	100x35x20	3-10	D64BXPP STARTEC-XP-P	18-24
	12V9	34044248	100x20x20	3-10	D64BXPP STARTEC-XP-P	18-24
		34056064	125x25x20	3-10	D64BXPP STARTEC-XP-P	18-24



5.12 Dressing and sharpening



Dressing and sharpening








As a result of changes in the bond, the abrasive grain and the shape of the grinding wheel caused by wear to the wheel, grinding is an ever-changing process.

The changes affect grinding forces, workpiece surfaces and geometric accuracy. To ensure the grinding wheel is always able to provide optimum grinding results, a periodic

conditioning cycle must be maintained. This cycle enables the grinding capability of the grinding body to be reproduced. By “conditioning” a grinding wheel correctly, the sub-

sequent grinding process can be optimised in terms of performance, efficiency and surface finish.

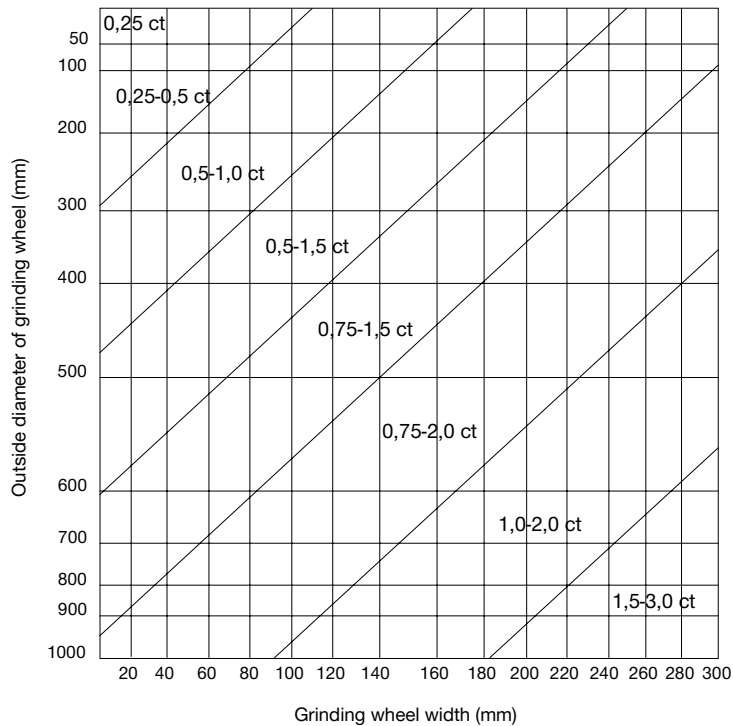
Choosing the right dresser

Dressing tool		Grinding wheel profile	Grinding process/production type
Photo	Detailed description		
Single-edge	Single-grain dresser 	Linear (cylindrical, conical) Single-profile (convex, concave radii)	External cylindrical, surface, internal cylindrical and centreless grinding Single and small-lot production
	Profile diamond 	Multi-profile (complex profiles with steep flanks and narrow radii)	External cylindrical, surface and centreless grinding Single and small-lot production
	Multi-set diamond dresser 	Linear (cylindrical, conical)	Surface and external cylindrical grinding Single and small-lot production
	Multi-grain diamond dresser 	Linear (cylindrical, conical)	Surface and external cylindrical grinding Single and small-lot production
Multi-edge	Diamond grain dressing plate 	Linear (cylindrical, conical) Single-profile (convex, concave radii)	External cylindrical, surface and centreless grinding Single to large-scale production
	Needle dressing plates 	Linear (cylindrical, conical) Single-profile (convex, concave radii)	External cylindrical, surface and centreless grinding Single to large-scale production
	Dressing plates with MCD rods 	Linear (cylindrical, conical) Single-profile (convex, concave radii)	External cylindrical, internal cylindrical, surface and centreless grinding Single to large-scale production

Prevention of common errors when dressing

- + Return strokes with the dressing tool smooth the grinding wheel surface and reduce the cutting ability.
- + The free clamping length of the dresser is too large. Vibrations arise and the grinding wheel surface becomes irregular. This topography is reproduced on the workpiece in the subsequent grinding process.
- + The dressing infeed selected ($ae > 0.03 \text{ mm}$) is too high. This results in fracture of the bond bridges in the grinding wheel and the grains break out prematurely. The consequences are: a rough workpiece surface and increased dressing tool wear.
- + The cooling system is switched on too late: high temperatures lead to thermal deterioration and high wear. Remedy: the cooling system must be switched on before the first contact with the dressing tool.
- + Strongly rounded single-grain diamonds permanently alter the dressing results and the cutting ability of the wheel is consequently reduced.

Diamond size (carat) in relation to grinding wheel dimensions



Interrelationship of profile radius | grit size

The table below provides an overview of which grit size can achieve a minimum profile radius. As a standard value, it can be assumed that three abrasive grains are required to maintain a minimum profile radius. To achieve a profile radius of 0.3 mm, an approximate grit size diameter of 0.1 mm is required.

Grit size		36	46	60	80	100	120	150	180	220
Min. profile radius	mm	1	0.80	0.60	0.45	0.30	0.20	0.15	0.12	0.10
	Inches	0.04	0.03	0.03	0.02	0.10	0.01	0.01	0.01	0.00

Interrelationship of surface roughness | grit size

The table below will help you select the right grit size to achieve the required surface roughness result. Variable process parameters (e.g. the dressing method) have a significant effect as to which surface roughness can be achieved with a certain grit size. For this reason, the following table also lists the surface areas/grit size.

You should take into account that large grit sizes facilitate the removal of chips (material). It is not necessary to select the finest grain for each initial selection of the grit size.

Surface		Grit size								
Micro inch CLA	µm Ra	36	46	60	80	100	120	150	180	220
42	1.10	●								
32	0.80	●	●							
26	0.70		●							
21	0.50		●	●						
16	0.40			●						
14	0.35			●	●					
11	0.25				●					
8	0.20				●	●				
7	0.17					●				
6	0.14					●	●			
5	0.12						●	●		
4	0.10							●	●	
3	0.08								●	●
2	0.05									●

Application tips

- Ensuring sufficient coolant supply while dressing increases lifetime (to prevent thermal overload of dressing diamonds)
- The active width (bd) describes the effective diamond width of the dressing tool for a certain infeed depth when dressing
- With the overlap rate (Ud), surfaces and stock removal rates can be significantly influenced

- The overlap rate (Ud) defines the number of grinding wheel rotations during which the dressing tool has deployed to its active width
- An increased overlap rate makes the grinding wheel surface smoother and, as a consequence, the actual surface roughness lower





STANDARD values for the overlap rate:

- Roughing 2-3
- STANDARD grinding 4-6
- Fine grinding ≥ 7

The formulas specified only apply to dressers with defined effective widths b_d (single-grain dresser, dressing plate)

$$U_d = \frac{\text{Diamond effective width}}{\text{Tool feed}} = \frac{b_d \cdot n_s}{v_d}$$

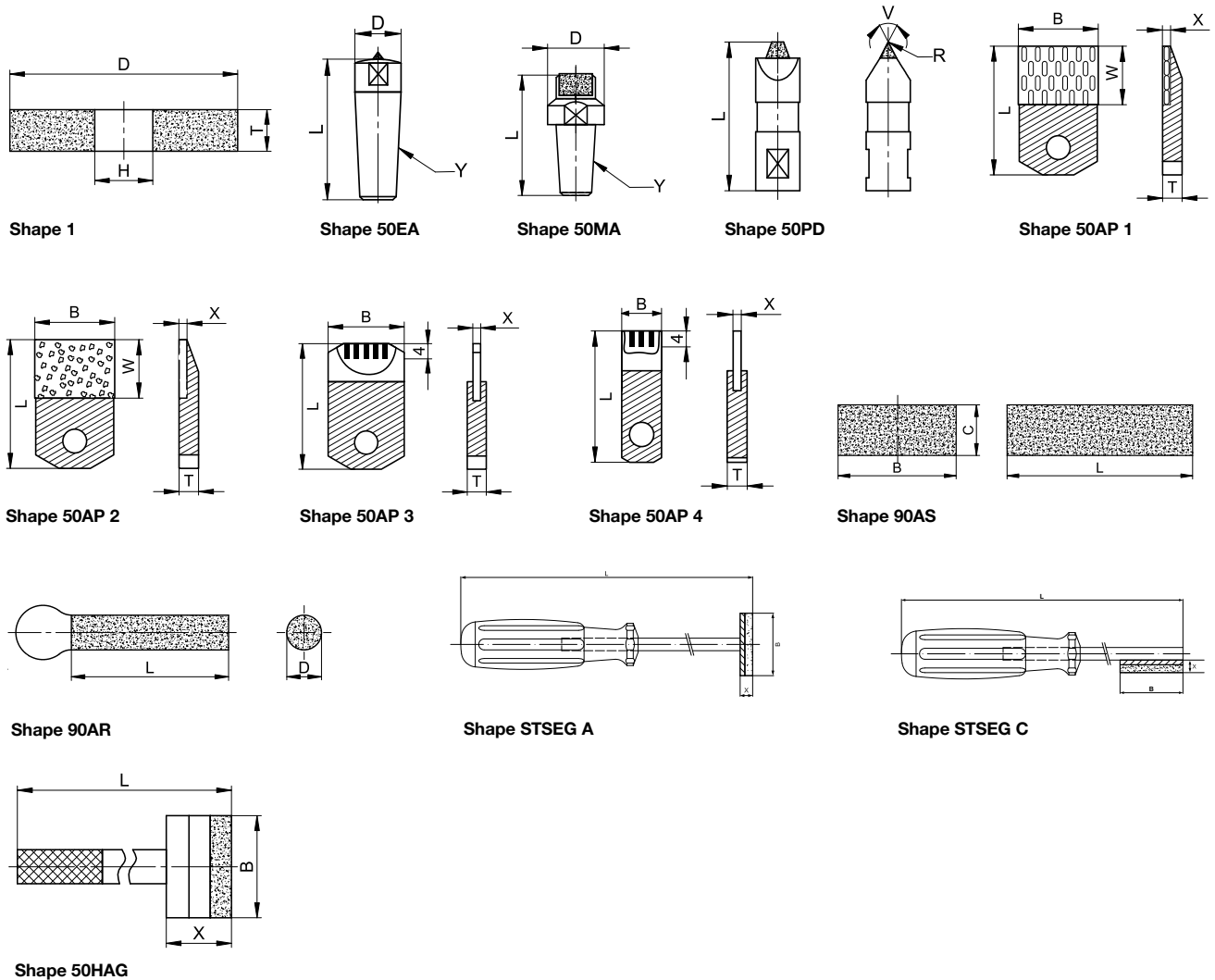
$$v_d = \frac{n_s \cdot b_d}{u_d}$$

b_d = dressing tool effective width

n_s = wheel speed

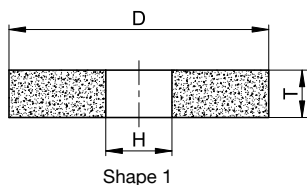
v_d = feed speed of dresser

Shapes




Brake dressing

Dressing wheels for diamond and wheels



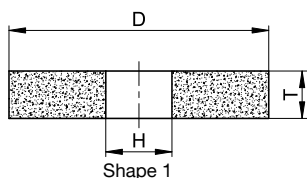
These dressing wheels are used for dressing all types of diamond and CBN grinding wheels, regardless of their bond systems. Sensitive layers can also be dressed with minimal grinding pressure.

Please be aware that electroplated wheels cannot be dressed with them. The silicon carbide wheels are available in 200–250 mm diameters.

	Shape	Type no.	DxTxH	Specification	PU	Comments
	1	34163206	200x20x20	C 120 J5 V15	1	For grit sizes ≤ D91
		413027	250x12x51	C 120 H5A V18	1	For grit sizes ≤ D91
		250491	250x12x51	C 80 H8 V15	1	STANDARD hardness, for grain sizes D151-D64
		619701	250x12x51	C 80 J5 V15	1	Harder than standard, for grit sizes D151-D64



Dressing device for brake dressing

Dressing wheels for diamond and CBN grinding wheels



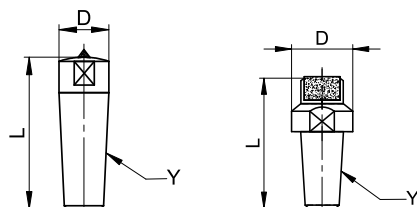
These dressing wheels are used for dressing all types of diamond and CBN grinding wheels, regardless of their bond systems. The AV500 dressing device is ideally suited to dressing resin and metal-bonded wheels during dry grinding.

The silicon carbide wheels are available in a 75 mm diameter. Use the 1C70M5V15 specification for robust layers only.

	Shape	Type no.	Description	PU	Comments	
	96	96821	AV500		For concentrically trueing resin and metal-bonded diamond and CBN grinding wheels. Optimum results up to grinding wheel diameter of 250 mm	
		34045604	AVB	3	Replacement brake pads	
	Shape	Type no.	DxTxH	Specification	PU	Comments
	1	7035	75x25x12,7	1C 70 M5 V15	10	Long life, for wider layers, D151-D64
		443944	75x25x12,7	1C 80 G7 V15	10	STANDARD hardness, for grain sizes D151-D64
		448482	75x25x12,7	C 80 J5 V18	10	Harder than standard, for grit sizes D151-D64

Stationary dressing

Single-grain dresser, multi-grain dresser, multi-grain diamond dresser



Shape 50EA

Shape 50MA/50VA

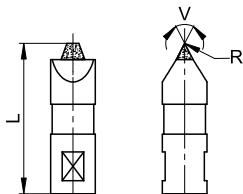
The TYROLIT single-grain, multi-grain and multi-grain diamond dressers are ideal for dressing all aluminium oxide and silicon carbide wheels. Multi-grain and multi-grain diamond dressers are often used for surface and external cylindrical grinding wheels. Large and wide wheels require a higher carat number to reduce diamond wear.

Single-grain dressers are graded according to diamond size. Multi-grain and multi-grain diamond dressers therefore have a higher carat content.

	Shape	Type no.	DxLxY	Y/AUFN	Specification	Comments
	50EA	856232	9.3x31.5x8	MK0	DD 10 ST	For conventional tools; Single dressers for cylindrical and surface grinding machines; Wrench width for MK0 and MK1 only
		331997	14x57x12	MK1	ED 15 ST	
		313466	12.4x49x10	MK1	BD 5 ST	
		316272	12.4x49x10	MK1	BD 10	
		313127	8x90	8ZYL	BD 5 ST	
		363249	10x90	10ZYL	ED 5 ST	
		611499	10x90	10ZYL	ED 10 ST	
	50MA	446432	12x50	10x10x37	M65	Diamond grains set in layers
		446453	12x90	10x10x77	M65	
		315877	14x57x12	10xMK1	M65	
		316286	14x57x12	10xMK1	M125	
	50VA	34173161	10x60	10ZYL	V800-8X11	Irregular distribution of diamond grains
		34172978	14x42x12	11xMK0	V800-8X11	
		34172980	14x57x12	11xMK1	V800-8X11	

Stationary dressing

Profile diamonds



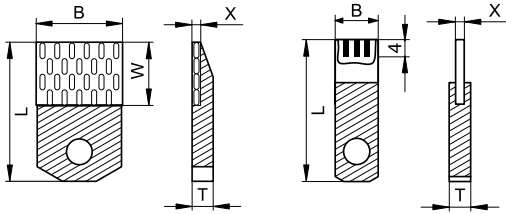
Shape 50PD

Profile diamonds are used for dressing all conventional profile grinding wheels made of aluminium oxide or silicon carbide. The huge advantage of profile diamonds is that they can be reground using a special process. They are frequently used with Diaform and CNC-controlled grinding machines.

	Shape	Type no.	B/L2xY/AUFN/V/R	Specification
	50PD	475960	44.5xDF/V40/R250	D 0.4 ST
		477837	44.5xDF/V60/R750	D 0.4 ST

Stationary dressing

Diamond dressing plates/CSS dressing plates



Shape 50AP 1

Shape 50AP 4

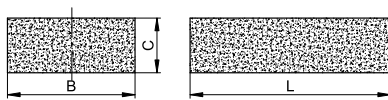
The dressing plates are a high-quality alternative to conventional single-grain diamonds. They are ideal for dressing all aluminium oxide and silicon carbide wheels. They are primarily used for dressing wide wheels and profile wheels with a shallow edge.

By using dressing plates it is possible to achieve maximum precision in the dressing process.

	Shape	Type no.	BxLxT	W-X	Specification	Comments
	50AP 1	477755	10x33x5	15-1.8	B180	Needle dressing plates
		477760	20x28x5	10-1.8	C180	
	50AP 4	853704	10x33x5	10-2	W3R071004	For aluminium oxide wheels; long life; 3 dia rods

Hand-operated dressing

Dressing sticks for aluminium oxide and silicon carbide grinding wheels



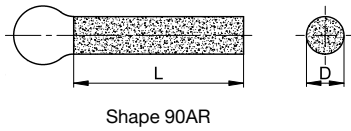
Shape 90AS

Dressing sticks are ideal for dressing all aluminium oxide and silicon carbide wheels. They can be used as an inexpensive dressing tool for vitrified-bonded bench grinding wheels. Dressing sticks are only available in black silicon carbide.

	Shape	Type no.	BxCxL	Specification
	90AS	43311	25x25x150	C COARSE
		9009	50x20x150	C COARSE
		153	50x25x200	C MEDIUM
		6216	50x25x200	C COARSE


Hand-operated dressing

Dressing tubes



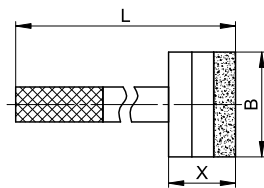
Shape 90AR

The dressing tubes are ideal for dressing all aluminium oxide and silicon carbide wheels. They can be used as an inexpensive dressing tool for vitrified-bonded bench grinding wheels. Dressing tubes are only available in green silicon carbide.

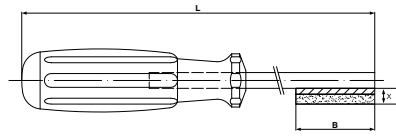
	Shape	Type no.	DxL	Specification
	90AR	351767	17x290	C 16 - B

Hand-operated dressing

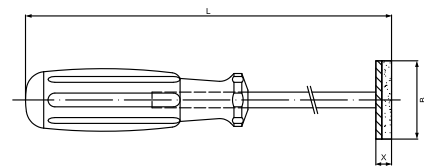
Diamond dresser



Shape 50HAG





Shape STSEG C



Shape STSEG A

This diamond dresser provides you with a high-quality dressing tool for bench grinding wheels in the precision machining sector. Depending on their design they can be used for peripheral or lateral face machining.

The diamond dressers therefore have either a diamond segment soldered on the face or longitudinally.

	Shape	Type no.	LxBxX	Specification	Comments
	50HAG	477724	185x20x8	D 30 ST	Steel shaft, diamond segment face
		477726	185x30x10	D 26 ST	
		477254	250x40x10	D 35 ST	
	STSEG	195112	185x40x8	HA_DIA	Plastic handle, diamond segment face
		34057995	185x40x8	HA_DIA	Plastic handle, diamond segment longitudinally

Hand-operated dressing

Grinding wheel dresser set





This dresser set is used primarily for large resin-bonded bench grinding wheels and above all in the foundry industry. Steel rollers enable you to achieve efficient dressing and sharpening of the wheel.


The huge advantage of this dressing tool is that it can be quickly and easily re-equipped with replacement rollers.



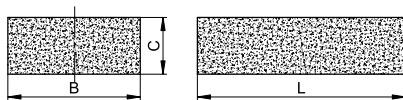


	Shape	Type no.	Specification	D	T max	Grit size	Hardness
	100AKO	15321	S3510	120-250	40	24-80	H-Q
		74497	S3511	300-600	63	16-60	H-Q
		117871	S3512	300-600	63	16-60	H-Q
	100AKO	126781	S3513	300-600	70	16-60	H-Q

Replacement parts


	Shape	Type no.	DxTxH	Specification	PU	Comments
	100ARO	74492	36x21x8	S3610	1	Replacement rollers
		74493	55x39x12	S3611	1	
		75915	55x65x12	S3612	1	
		886902	40x2x10	S3613	250	

Hand-operated dressing Sharpening sticks for diamond and CBN grinding wheels



Shape 90AS

The TYROLIT sharpening sticks sharpen and clean all CBN and diamond grinding wheels, and are used in production and re-sharpening applications. The sticks are made of aluminium oxide and are available in grit sizes 120–600. They can be used for hand-operated and mechanical applications.

	Shape	Type no.	BxCxL	Specification	Grit size	PU
	90AS	845593	24x13x100	89A 120 H7A V17	≥ 126	10
		845594	24x13x100	89A 120 J7A V17	≥ 126	10
		845595	24x13x100	89A 240 J7A V17	> 46 and < 126	10
		577953	24x13x200	89A 600 J5A V83	≤ 46	10
		678953	24x13x200	A 240 STARTEC	STARTEC XP-P and HP	10
		33531	25x13x100	89A 600-25 V83	≤ 46	10
		932780	25x13x200	89A 240 H5A V83	> 46 and < 126	10
		112055	50x25x200	50C 2208 C4 B22	> 46 and < 126	1
		251584	50x25x200	89A 600-25 V83	≤ 46	1
		391718	50x25x200	89A 240-35 V83	> 46 and < 126	1
		395773	50x25x200	89A 120 H7A V17	≥ 126	1
		460976	50x25x200	89A 120 J7A V17	≥ 126	1
		464290	50x25x200	89A 240 J7A V17	> 46 and < 126	1



Catalogue 21

Diamond tools and machines

Information diamond tools	458
Product label	458
Colour codes	458
Specification	459
Machines	459
Overview of technologies	460
Angle grinder	463
6.1 Dry cutting saw blades	464
6.2 Diamond cup wheel	473
Petrol saws	479
6.3 Dry cutting saw blades	480
Table sawing	487
6.4 Table saw blades	488
6.5 Table saws	492
Floor sawing	501
6.6 Floor saw blades	502
6.7 Floor saws	506
Core drilling	509
6.8 Diamond wet drill bits	510
6.9 Diamond dry drill bits	517
6.10 Tile drills	523
6.11 Core drill systems	529

Specific information Diamond tools

Product label

NEW



Colour codes



Label

Universal Plastic Concrete Hard stone Tiles Marble Asphalt Abrasive materials Cast iron

Colour code



Material

Universal building materials Plastic Concrete Hard stone Tiles, ceramic materials Soft stone, marble Abrasive materials Abrasive materials Cast iron

Diamond tool

Specification

DCU-FASTCUT

	FC	FASTCUT
	S	SILENT
	LL	LOGLIFE
A+C		Asphalt/Concrete
U		Universal building materials
C		Concrete
H		Hard stone
A		Asphalt
M		Marble, soft stone
T		Soft stone, ceramics
DC		Dry cutting
TS		Table sawing
DG		Dry grinding
HS		Hand sawing
RS		Ring sawing

Machines



Angle grinder



Petrol cutting saw



Table saw



Wet core drill



Dry core drill



Joint cutter



Electrical hand saw

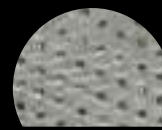
Convincing, technologies



TGD® – TYROLIT GRAIN DISTRIBUTION

TYROLIT diamond tools with TGD® technology feature intelligently distributed diamonds that enable even load distribution, optimised cooling and a constantly high cutting performance. This significantly extends the tool lifetime and the load on the machines is reduced.

- + Long lifetime
- + High cutting ability
- + Enhanced efficiency



TGD® Segment



Conventional segment



Products with these technologies are identified by these icons on the following pages.

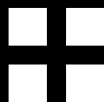


P2®
PERMANENT
POWER

P2® - PERMANENT POWER

P2® - PERMANENT POWER - is a high-frequency technology registered by TYROLIT, which combines the compact design of electrical systems with the reliability and performance of hydraulic systems in a single machine to optimum effect. This innovative drive concept is based on the principle of drive motors with permanent magnets and enables operation at a high torque, with simultaneously reduced motor speeds. The maintenance-friendly layout of the compact devices makes servicing easier and reduces costs.

- + High reliability
- + Powerful performance
- + Compact design



**Modular
System**

Modular System

Thanks to the TYROLIT Modular System, individual components can be used for the same area of application and for different applications. This not only makes the work easier and more efficient, it also saves on costs. One part of the TYROLIT Modular System is the ModulDrill™ quick clamping system, for example, which enables our drill motors to be rapidly attached to different TYROLIT drill rigs.



- + High cost efficiency
- + Efficient working
- + Easy operation



A person wearing a blue long-sleeved shirt is shown from the side, working on a rough concrete ledge. The background is a blurred outdoor setting with hills. The image has a blue color cast.

6.1 Dry cutting saw blades
Angle grinder



Dry cutting saw blades for angle grinders

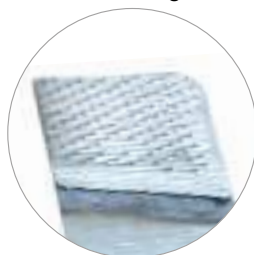
TYROLIT provides laser welded and directly sintered dry cutting saw blades that meet the highest standards of quality and safety.

With TYROLIT dry cutting saw blades, plastics, fibreglass or bullet-proof glass can be machined in addition to countless standard materials, such as hard stone, concrete or asphalt. Innovative products, such as ultra-thin and sound-insulated dry cutting saw blades, underline the continuous further development and optimisation of diamond products.

TGD®-technology

TGD® (TYROLIT GRAIN DISTRIBUTION) is a unique technology developed by TYROLIT, which ensures consistently fast cutting rates, an extremely long lifetime and noticeable smooth running through optimised grain distribution. This provides for clean cuts that require no reworking. Furthermore, significantly less vibration is generated, resulting in less strain on the operator and the machine. These advantages are

particularly economically evident in continuous operation: The operator can distribute his effort evenly over the day and machines remain serviceable longer.



TGD®
TYROLIT GRAIN
DISTRIBUTION

Service

- + Quick delivery
- + Available in all relevant diameters
- + Conventional dimensions on stock

Remarks / Recommendations

- + Observe safety and user instructions
- + On request safety instructions may also be sent separately
- + Maximum working speed 80 m/s



Dry cutting saw blade

DCU | in TGD®-Technology

+ Low cutting costs because of high cutting speed.

+ Universal use on concrete, hard stone, abrasive materials and steel.



+ Reduced load for the user as a result of unique smooth running.



Materials able to be machined: Universal building materials, such as concrete, natural stone, clay brick, cellular concrete, etc. Details: the DCU dry cutting saw blade impresses

with excellent results when cutting concrete, hard stone, abrasive materials and steel. The possibility for universal use offers the user a product which is ready-

to-use at any time without a wheel change and ensures the successful completion of a project.

NEW **★★★ PREMIUM** **Dry cutting saw blade**
DCU | in TGD®-Technology



	Shape	Type no. old	Type no. new	Dimension	Segment height
		C73W 704617	34468871	230x2.4x22.23	14

NEW **★★★ PREMIUM** **Dry cutting saw blade DCU**



Materials able to be machined: Universal building materials, such as concrete, clay brick, natural stone, steel, etc.

	Shape	Type no. old	Type no. new	Dimension	Segment height
		464537	34430790	115x2.4x22.23	10
		464539	34425401	125x2.4x22.23	10
		464540	34430832	150x2.6x22.23	12
		464543	34430833	180x2.6x22.23	12
		464544	34434386	230x2.6x22.23	12

★★★ PREMIUM **Dry cutting saw blade DCU FASTCUT**



	Shape	Type no.	Dimension	Segment height
		474743	115x2x22.23	10
		474746	125x2x22.23	10
		474751	150x2.4x22.23	9
		474752	180x2.4x22.23	9
		474753	230x2.4x22.23	9

★★★ PREMIUM **Dry cutting saw blade DCU | in SILENT design**



	Shape	Type no.	Dimension	Segment height
		474771	230x2.6x22.23	9

★★★ PREMIUM **Cutting and chamfering disc DCCI Combi**



The new cutting and chamfering disc DCCI Combi has been especially developed for the treatment of plastic pipes. The galvanized cutting edge and the diamond-coated chamfering enable a constant and clean cutting

and chamfering at the same time. A cutting depth stop serves as an additional aid.

	Shape	Type number	Dimension	Segment height
		34228075	125x3x22.23	3

Diamond tool

★★ **Dry cutting saw blade**
DCU



Materials able to be machined: Universal building materials, such as concrete, clay brick, natural stone, steel, etc.

	Shape	Type number	Dimension	Segment height	
		C3	467443	115x2x22.23	7
			467444	125x2x22.23	7
			467445	150x2.6x22.23	9
			467446	180x2.6x22.23	9
			467448	230x2.6x22.23	9

DCU-FASTCUT

		C3R	467414	115x2x22.23	7
			467416	125x2x22.23	7
		C3R	467428	150x2.4x22.23	9
			467430	180x2.4x22.23	9
			467431	230x2.4x22.23	9

★ **Dry cutting saw blade**
DCU



Materials able to be machined: Universal building materials, such as concrete, clay brick, natural stone, etc. Details: A 20–16 mm reduction bush is supplied with a disc diameter of 105 mm.

	Shape	Type number	Dimension	Segment height	
		C3	466082	105x2x20	7
			466083	115x2x22.23	7
			466084	125x2x22.23	7
			466086	150x2.6x22.23	9
			466087	180x2.6x22.23	9
			466090	230x2.6x22.23	9



DCU-FASTCUT

		C3R	467266	105x2x20	7
			467267	115x2x22.23	7
			467268	125x2x22.23	7
		C3R	467271	150x2.4x22.23	9
			467273	180x2.4x22.23	9
			467276	230x2.4x22.23	9

NEW **★★★ PREMIUM** **Dry cutting saw blade**
DCC



Materials able to be machined: concrete, reinforced concrete, concrete products, hard materials, etc.



	Shape	Type no. old	Type no. new	Dimension	Segment height	
		C73W	465489	34468731	125x2.4x22.23	10
			465492	34468734	230x2.6x22.23	12

★★★ PREMIUM **Dry cutting saw blade**
DCC-FASTCUT Wall chaser blade



Materials able to be machined: Concrete, clay brick, cellular concrete. Details: tool for the milling of slots in concrete and masonry.



For use with all common wall chasers.

	Shape	Type number	Dimension	Segment height	
		C3R	598008	125x2x22.23	7
			598010	140x2.4x22.23	9
			598011	150x2.4x22.23	9

★★ STANDARD **Dry cutting saw blade**
DCC



Materials able to be machined: concrete, reinforced concrete, concrete products, hard materials, etc.

	Shape	Type number	Dimension	Segment height	
		C3	474775	125x2x22.23	7
			474780	230x2.6x22.23	9

Diamond tool



Dry cutting saw blade

DCH | in TGD®-Technology

+ Low cutting costs because of high cutting speed.

+ No reworking due to very clean cutting edges.

+ Reduced load for the user as a result of unique smooth running.



+ Consistently very fast cutting performance, very long life-time and noticeable smooth running with TGD®-Technology (TYROLIT Grain Distribution), a unique technology developed by TYROLIT for the optimised distribution of grain.

Materials able to be machined: Concrete blocks, granite, gneiss, porphyry, paving slab, etc. Details: the DCH dry cutting saw blade, specially developed using TGD® Technology



for hard stone, impresses with its cutting ability and smooth running. Reduced effort over the entire lifetime allows for higher productivity. The perfectly optimised segments

for the application create very clean, chip-free edges and ensure a flawless result.

Diamond tool

NEW **★★★ PREMIUM** **Dry cutting saw blade**
DCH | in TGD®-Technology





	Shape	Type no. old	Type no. new	Dimension	Segment height
		C73W 707365	34468872	230x2,4x22,23	14

NEW ★★★ **PREMIUM** **Dry cutting saw blade**
DCH



Materials able to be machined: Granite, gneiss, porphyry, paving slab, hard limestone, etc.




	Shape	Type no. old	Type no. new	Dimension	Segment height	
		C73W	–	34475858	115x2.4x22.23	10
			464698	34475856	125x2.4x22.23	10

★★★ **PREMIUM** **Dry cutting saw blade**
DCH-FASTCUT



The DCH-FASTCUT from TYROLIT enables the user to carry out cutting work swiftly and to precise dimensions, without any great exertion. The DCH-FASTCUT is an ultra-thin diamond cut-off wheel with a segment



thickness of 1.2 or 1.9 mm. It is distinguished by an extremely high cutting ability with minimal dust generation and extremely smooth running.

	Shape	Type number	Dimension	Segment height	
		C3	475790	115x1.2x22.23	7
			475793	125x1.2x22.23	7
		C3W	475797	180x1.9x22.23	9
			475800	230x1.9x22.23	9

★★★ **PREMIUM** **Dry cutting saw blade**
DCT



Materials able to be machined: Ceramic tile, fine stoneware, porcelain. Details: A 20–16 mm reduction bush is supplied with a disc diameter of 105 mm.

	Shape	Type number	Dimension	Segment height	
		1A1R	639558	105x1x20	10
			639559	115x1.2x22.23	10
			639560	125x1.2x22.23	10
			639634	180x1.4x22.23	10
			676791	200x1.6x22.23	10
			639635	230x1.6x22.23	10

Diamond tool



Dry cutting saw blade
DCT



Materials able to be machined: Ceramic tiles.

	Shape	Type number	Dimension	Segment height	
		1A1R	475975	100x1.6x22.23	7
		475978	115x1.6x22.23	7	
		475980	125x1.6x22.23	7	
		475983	180x2x22.23	9	
		475986	230x2x22.23	9	

Accessories dry cutting saw blade
Sharpening plate for tiles



	Type number	Dimension
	SP6	662791
		55x25x320



Roofer's cutting wheel

+ Universal use for all common roofing materials.

+ Overheating-free even in the case of high loads.



+ Ribbed cutting rim for minimal cutting pressure.

+ Ensures straight cuts and clean-cut edges.

The TYROLIT roofer's cutting wheel was specially developed for the wide-ranging roofing application scenarios and is suitable for cutting

all common roofing materials – from concrete and clay roof tiles through to fibre cement. The ribbed cutting rim and the hardened steel core ensure



minimum cutting pressures and clean straight cuts throughout the wheel life.

Diamond tool



Roofer's cutting wheel



	Shape	Type number	Dimension	Segment height
	 C6R	103283	230x2.4x22.23	9



6.2 Diamond cup wheel **Angle grinder**



Diamond cup wheel for angle grinders

TYROLIT diamond cup wheels enable quick and accurate grinding of uneven concrete, stone and floor pavement surfaces. In addition to their universal range of applications, high stock removal rates and a long lifetime are main characteristics of TYROLIT diamond cup wheels.

Service

- + Quick delivery
- + Available in all relevant diameters
- + Conventional dimensions on stock

Remarks / Recommendations

- + Observe safety and user instructions
- + On request safety instructions may also be sent separately

★★★
PREMIUM**Diamond cup wheel**
DGU

Materials able to be machined: Concrete, natural stone and general building materials. Details: with PU foam coating for quiet grinding and shaping

of corners and edges.

	Shape	Type number	Dimension	Segment height	
		STHD	348387	125x18x22,23	5
			828013	180x19x22,23	5

★★
STANDARD**Diamond cup wheel**
DGU Single row

Materials able to be machined: Concrete, natural stone and general building materials. Details: single row segments for high stock removal.

A 22, 23–16 mm reduction bush is supplied.

	Shape	Type number	Dimension	Segment height	
		STS-S	494333	100x18x22,23	5

★★
STANDARD**Diamond cup wheel**
DGU Double row

Materials able to be machined: Concrete, natural stone and general building materials. Details: double row segments for medium stock removal

and long lifetime. A 22, 23–16 mm reduction bush is supplied with wheel diameters of 100 and 110 mm.

	Shape	Type number	Dimension	Segment height	
		STS-D	494339	100x18x22,23	5
			494349	110x18x22,23	5
			494361	125x18x22,23	5
			494394	180x32x22,23	5





Diamond cup wheels DGU-Turbo



Machinable materials: Concrete, natural stone and general building materials. Details: Turbo style arranged segments for a fine grinding surface pattern and shaping of corners and edges.

Quick dust removal. A 22.23–16 mm reduction bush is supplied with a wheel diameter of 100 mm.

	Shape	Type number	Dimension	Segment height	
		STS-T	494342	100x18x22.23	5
			494365	125x20x22.23	5
			494391	180x32x22.23	5





Diamond cup wheels DGU-T | Continuous



Machinable materials: Concrete, natural stone and general building materials. Details: Turbo style arranged segments for exceptional surface finish

and high grinding power.

	Shape	Type number	Dimension	Segment height	
		STS-TC	34247005	100x18.5x22.23	6
			34247126	115x18.5x22.23	6
			34247127	125x18.5x22.23	6
			34247128	180x18.5x22.23	6





Diamond cup wheels DGAB | T-Segment



Machinable materials: Abrasive concrete, cellular concrete, floor pavement, plaster, pumice stone, etc.

Details: Grinding disc with T segment for abrasive materials. Excellent grinding power.



	Shape	Type number	Dimension	Segment height	
		STS-TS	34247129	100x21x22.23	5
			34247130	115x21x22.23	5
			34247151	125x21x22.23	5
			34247152	180x30.2x22.23	5



Diamond cup wheels DGC | T-Segment



Machinable materials: Concrete and general building materials. Details:
Grinding disc with T segment for universal use. Excellent grinding power.



	Shape	Type number	Dimension	Segment height	
		STS-TS	34247153	100x21x22.23	5
			34247154	115x21x22.23	5
			34247155	125x21x22.23	5
			34247156	180x30.2x22.23	5



Diamond cup wheels DGH | T-Segment



Machinable materials: Natural stone, granite and hard building materials. Details:
Grinding disc with T segment for hard materials. Excellent grinding power.

	Shape	Type number	Dimension	Segment height	
		STS-TS	34247157	100x21x22.23	5
			34247158	115x21x22.23	5
			34247159	125x21x22.23	5
			34247160	180x30.2x22.23	5





Diamond cup wheels DGU-FASTCUT | L-Segment



Machinable materials: Concrete and general building materials. Details:
Grinding disc with L segment, with particularly large holes for better extraction, for universal use.

Fast Cut Version – very high stock removal rate.

	Shape	Type number	Dimension	Segment height	
		STS-LS	34247161	100x20.5x22.23	5
			34247162	115x20.5x22.23	5
			34247164	125x20.5x22.23	5
			34247165	180x30x22.23	5



A large, textured concrete wall with a dark, rectangular object in the foreground. The wall is made of large, rectangular panels with visible joints. The foreground object is dark and appears to be a piece of machinery or a container. The overall scene is industrial and somewhat dimly lit.

6.3 Dry cutting saw blades **Petrol saws**



Dry cutting saw blades for petrol saws

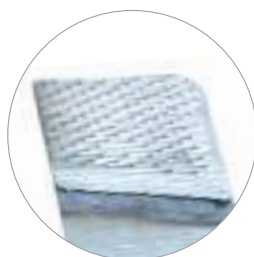
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With TYROLIT dry cutting saw blades, plastics, fibreglass or bullet-proof glass can be machined in addition to countless standard materials, such as hard stone, concrete or asphalt. Innovative products, such as ultra-thin and sound-insulated dry cutting saw blades, underline the continuous further development and optimisation of diamond products.

TGD®-technology

TGD® (TYROLIT GRAIN DISTRIBUTION) is a unique technology developed by TYROLIT, which ensures consistently fast cutting rates, an extremely long lifetime and noticeable smooth running through optimised grain distribution. This provides for clean cuts that require no reworking. Furthermore, significantly less vibration is generated, resulting in less strain on the operator and the machine. These advantages are particularly economically evident in continuous operation:

The operator can distribute his effort evenly over the day and machines remain serviceable longer.



TGD®
TYROLIT GRAIN
DISTRIBUTION

Service

- + Quick delivery
- + Available in all relevant diameters
- + Conventional dimensions on stock

Remarks / Recommendations

- + Observe safety and user instructions
- + On request safety instructions may also be sent separately
- + Maximum working speed 80 m/s



Dry cutting saw blade

DCU | in TGD®-Technology

+ Low cutting costs because of high cutting speed.

+ Universal use on concrete, hard stone, abrasive materials and steel.



+ Reduced load for the user as a result of unique smooth running.

Materials able to be machined: Universal building materials, such as concrete, natural stone, clay brick, cellular concrete, etc. Details: the DCU dry cutting saw blade impresses

with excellent results when cutting concrete, hard stone, abrasive materials and steel. The possibility for universal use offers the user a product which is ready-

to-use at any time without a wheel change and ensures the successful completion of a project.

NEW **★★★ PREMIUM** **Dry cutting saw blade**
DCU | in TGD®-Technology



Diamond tool

	Shape	Type no. old	Type no. new	Dimension	Segment height	
		C73W	736088	34434257	300x2.6x20	14
		22373	34462046	300x2.6x22.23	14	
		59580	34462047	300x2.6x25.4	14	
		736102	34435145	350x3.2x20	14	
		-	34462048	350x3.2x22.23	14	
		22377	34462049	350x3.2x25.4	14	
		59543*	34435148*	400x3.2x20	14	
		59545*	34462050*	400x3.2x25.4	14	

*Only permitted for wet grinding

NEW ★★★ **PREMIUM** **Dry cutting saw blade DCU**



Materials able to be machined: Universal building materials, such as concrete, clay brick, natural stone, steel, etc.

	Shape	Type no. old	Type no. new	Dimension	Segment height
		C73W 464545	34428610	300x2,6x20	12
		464546	34431007	300x2,6x22,23	12
		464549	34431008	300x2,6x25,4	12
		464551	34430834	350x3,2x20	12
		464552	34430835	350x3,2x22,23	12
		464553	34430836	350x3,2x25,4	12
		464555	34428721	400x3,2x20	12
		464556	34431009	400x3,2x25,4	12

★★ **STANDARD** **Dry cutting saw blade DCU**



Materials able to be machined: Universal building materials, such as concrete, clay brick, natural stone, steel, etc.

	Shape	Type no.	Dimension	Segment height
		C3 464853	300x2.6x20	10
		464854	300x2.6x22.23	10
		464855	300x2.6x25.4	10
		464858	350x3x20	10
		464859	350x3x25.4	10
		465667	400x3.2x20	10

★★ **STANDARD** **Dry cutting saw blade DCU FASTCUT**



	Shape	Type no.	Dimension	Segment height
		C3R 467433	300x3x20	10
		467434	300x3x22.23	10
		467435	300x3x25.4	10
		467436	350x3x20	10
		467439	350x3x25.4	10

Diamond tool





**Dry cutting saw blade
DCU**



Materials able to be machined: Universal building materials, such as concrete, clay brick, natural stone, etc. Details: A 20–16 mm reduction bush is



supplied with a disc diameter of 105 mm.

	Shape	Type no.	Dimension	Segment height
 	C3	466093	300x2.6x20	10
		466094	300x2.6x22.23	10
		466095	300x2.6x25.4	10
		466096	350x3x20	10
		466098	350x3x22.23	10
		466099	350x3x25.4	10
		529399	400x3.2x25.4	10
		529401	450x3.2x25.4	10



**Dry cutting saw blade
DCU FASTCUT**



	Shape	Type no.	Dimension	Segment height
 	C3R	467280	300x3x20	10
		467281	300x3x22.23	10
		467282	300x3x25.4	10
		467285	350x3x20	10
		467288	350x3x22.23	10
		467289	350x3x25.4	10



Dry cutting saw blade

DCH | in TGD®-Technology

- + Low cutting costs because of high cutting speed.
- + No reworking due to very clean cutting edges.
- + Reduced load for the user as a result of unique smooth running.



- + Consistently very fast cutting performance, very long life-time and noticeable smooth running with TGD®-Technology (TYROLIT GRAIN DISTRIBUTION), a unique technology developed by TYROLIT for the optimised distribution of grain.

Materials able to be machined: Concrete blocks, granite, gneiss, porphyry, paving slab, etc. Details: the DCH dry cutting saw blade, specially developed using TGD® Technology

for hard stone, impresses with its cutting ability and smooth running. Reduced effort over the entire lifetime allows for higher productivity. The perfectly optimised segments

for the application create very clean, chip-free edges and ensure a flawless result.

Diamond tool

NEW



Dry cutting saw blade DCH | in TGD®-Technology



	Shape		Type no. old	Type no. new	Dimension	Segment height
		C3W	736095	34435150	300x2.6x20	14
			43485	34462092	300x2.6x25.4	14
			736105	34435151	350x3.2x20	14
			43490	34462093	350x3.2x25.4	14



Dry cutting saw blade

DCA+C

+ Increased flexibility suitable for cutting stone and concrete.

+ Can also be used on floor saws and for wet cutting thanks to optimised specification.



+ Inclined protective segments guard against segment loss reduce the effect of the undercutting of the core.

Materials able to be machined: asphalt, green concrete with soft to

hard material aggregates and a small amount of cured concrete. Details:

protective segments against the undercutting-effect.



Diamond tool

NEW



Dry cutting saw blade DCA+C



	Shape	Type number	Dimension	Segment height
		C73SW 34472010	300x2.6x20	10
		34472008	350x3.2x25.4	10







Dry cutting saw blade
DCA+C



Materials able to be machined: asphalt, green concrete with soft to hard material aggregates and a small amount of cured concrete.

Details: protective segments against the undercutting-effect.

	Shape	Type number	Dimension	Segment height	
		C1SW	34168634	300x2.8x20	10
			34237091	300x2.8x25.4/20	10
			34168635	350x3x20	10
			34237092	350x3x25.4/20	10





Dry cutting saw blade
DCA+C



Materials able to be machined: asphalt, green concrete with soft to hard material aggregates and a small amount of cured concrete.

Details: protective segments against the undercutting-effect.

	Shape	Type number	Dimension	Segment height	
		C1SW	736309	300x2.8x20	10
			736311	300x2.8x25.4	10
			736313	350x3x20	10
			80653	350x3x25.4	10





6.4 Table saw blades

Table sawing



Diamond saw blades for table saws


TYROLIT table saw blades impress with an excellent cutting performance and a long lifetime. They are optimised for the relevant material or application.

TYROLIT table saw blades are developed to work perfectly with TYROLIT Hydrostress machines and therefore

meet all cutting work challenges and deliver the best results.

Application recommendation



Performance Level	Specification	Universal	Hard stone	Tiles	Pages
 PREMIUM	TSU	•			490
	TSU-SILENT	•			491
	TSH		•		491
	TSH-SILENT		•		491
	DCT				•

Service

- + Quick delivery
- + Available in all relevant diameters
- + All relevant dimensions on stock
- + Designed to perfectly harmonise with TYROLIT Hydrostress machines
- + Reduction bushes for various machine types

Remarks / Recommendations

- + Please observe the safety and user instructions
- + On request safety instructions may also be sent separately
- + Maximum working speed 63 m/s
- + Tools only to be used for wet-cutting (exceptions are explicitly stated)



Table saw blade

TSU

- + Universal use for various building materials, such as clay brick, concrete, sand-lime brick, etc.



- + Broad product range.

- + Maximum performance and lifetime.

Materials able to be machined:
Cellular concrete, sand-lime brick,
pumice stone, clay brick, etc. Details:

35–30 mm and 30–25.4 mm reduction
bushes are included with disc diam-
eters up to 550 mm. A 60–55 mm

reduction bush is supplied with disc
diameters of 625 mm and upwards.



Table saw blade TSU



	Shape	Type number	Dimension	Segment height
		C2W		
		34180849	250x2.2x35	10
		34180294	300x2.4x35	10
		34180293	350x2.8x35	10
		34180291	400x3.2x35	10
		34180270	450x3.2x35	10
		34218744	500x3.6x35	10
		34180268	550x3.6x35	10
	C1W	34180263	625x3.6x60/55	10
		34171018	650x3.9x60/55	10
		34171019	700x3.9x60/55	10
		34171020	900x4.8x60/55	10
		34171031	1000x4.8x60/55	10



Table saw blade TSU-SILENT



Materials able to be machined: Cellular concrete, sand-lime brick, pumice stone, clay brick, etc. Details: 35–30 mm and 30–25.4 mm reduction bush-

es are included with disc diameters up to 550 mm. A 60–55 mm reduction bush is supplied with disc diameters of 625 mm and upwards.






	Shape	Type number	Dimension	Segment height	
		C2GW	34180292	350x2.8x35	10
		C1GW	34181275	625x3.6x60	10
			34180295	700x3.9x60/55	10
			34305288	900x4.8x60/55	10



Table saw blade TSH



Materials able to be machined: Granite, gneiss, hard sand-lime brick, hard clay brick. Details: 35–30 mm and 30–25.4 mm reduction bushes are supplied.

	Shape	Type number	Dimension	Segment height	
		C2	34277672	250x2.2x35	10
			34221327	300x2.8x35	14
			34221325	350x2.8x35	14

TSH-SILENT



		C2G	34221324	300x2.8x35	14
			34097755	350x2.8x35	14





Table saw blade DCT



Materials able to be machined: Ceramic tiles, fine stoneware, porcelain, terrazzo slabs. Details: ultra-thin saw blades with excellent properties.

35–30 mm and 30–25.4 mm reduction bushes are supplied.

	Shape	Type number	Dimension	Segment height	
		1A1R	639566	180x1.4x35	10
			701934	200x1.6x35	10
			639568	230x1.6x35	10
			639569	250x1.6x35	10
			639570	300x2x35	10
			639571	350x2x35	10

★★★
PREMIUM

Tile saw TRE250

Cutting depth up to 60 mm



Cutting length up to 1 m for cutting large tiles



Clean cuts thanks to precise saw head guide and robust design



Safe and easy transport thanks to folding feet and transport wheels

The TRE250 tile saw enables the cutting of various tile sizes and types to a cutting length of 1 m. A range of adjustment and application options ensure maximum flexibility. The

robust design and precise saw head guide guarantee a clean cut. Transport wheels and folding table feet facilitate transport and position at the location of use.

System & Accessories

Technical data

Saw blade	
Max. cutting depth	60 mm
Max. saw blade Ø	250 mm
Cutting length	940 mm (1 050 mm)*
Saw blade speed	2 800 rpm
Saw blade holder Ø	25.4 mm

* Plunge cut

Drive

Drive / motor	Electric
Output	1.3 kW
Standard voltage / frequency	230 V / 50 Hz
Optional voltage / frequency	110 V / 60 Hz
Engine cooling	Air cooling
Saw blade drive	Direct

Design

Infinitely adjustable cutting depths
Angle cutting function (angle stop)
Mitre cutting function
Cap cutting function
Electric water pump
Folding legs

Dimensions & Weight

Length	1 375 mm
Width	740 mm
Height	1 275 mm
Weight	79 kg

System & Accessories

Tile saw TRE250	
10989500	Tile saw TRE250 / 230 V
10989100	Tile saw TRE250 / 110 V

Accessories	
10995459	Side splash guard
10995489	Parallel guide

★★
STANDARD

Masonry saw TBE400

Cutting depth up to 125 mm



Swivelling saw head enables 45° mitre cuts



Folding feet, transport wheels and carrying handles ensure total manoeuvrability at the location of use



Angle stop provided for cuts of 30° to 90°

The TBE400 table saw offers an uncompromising price-performance ratio as well as high flexibility through numerous settings and application options. A sturdy saw table with anti-slip support guarantees clean cuts. The swivelling saw head allows mitre

cuts to be made with ease. Transport wheels and folding table feet facilitate transport and position at the location of use.

System & accessories

Technical data

Saw blade	
Max. cutting depth	125 mm
Max. saw blade Ø	400 mm
Cutting length	600 mm
Saw blade speed	2 800 rpm
Saw blade arbour Ø	25.4 mm

Drive

Drive / motor	Electric
Power	2.2 kW
Voltage / standard frequency	230 V / 50 Hz
Motor cooling	Air cooling
Saw blade drive	Direct

Design

Continuously variable cutting depth
Angle cutting function (angle stop)
Mitre cutting function (swivelling saw head)
Cap cutting function
Water tank made of powder-coated steel
Easy to replace electric water pump
Folding feet and transport handles

Dimensions & weight

Length	1 210 mm
Width	655 mm
Height	1 285 mm
Weight	86 kg

System & accessories

Masonry saw TBE400	
10998400	Masonry saw TBE400 / 230 V

★★★
PREMIUM

Masonry saw TME700

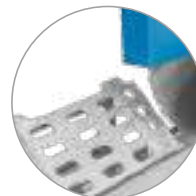
Cutting depth up to 270 mm



Removable water tank for easier cleaning



Sturdy, balanced transport hook for easy crane transport



Precise mitre cutting thanks to mitre stop

The TME700 convinces through maximum stability and robustness. The precise stainless-steel saw table guide guarantees a clean cut. Construction-site suitable leading pulleys, forklift guides and a crane hook ensure trouble-free transport.

The anti-contamination positioning of the water pump reduces servicing requirements to a minimum and ensures permanent tool cooling. The intelligent blade guard construction enables quick and easy blade installation.

System & Accessories

Technical data

Saw blade	
Max. cutting depth	270 mm
Max. saw blade Ø	700 mm
Cutting length	600 mm
Saw blade speed	1 380 rpm
Saw blade holder Ø	60 mm
Carrier Ø	11.5 mm
Reference circle Ø	120 mm

Drive

Drive / motor	Electric
Output	5.5 kW
Standard voltage / frequency	400 V / 50 Hz
Engine cooling	Air cooling
Saw blade drive	Direct

Design

Infinitely adjustable cutting depths
Angle cutting function (angle stop)
Mitre cutting function (swiveling saw head)
Transport hook and fork lift guides
Pull-out water tank
Electric water pump

Dimensions & Weight

Length	1 470 mm
Width	910 mm
Height	1 350 mm
Weight	220 kg

System & Accessories

Masonry saw TME700	
10989600	Masonry saw TME700 / 400 V

Accessories	
10978735	Mitre stop (Jolly table)

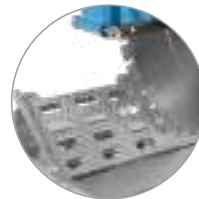
★★★
PREMIUM

Masonry saw TME1000

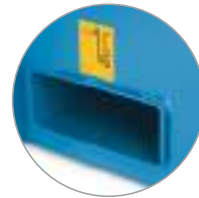
Cutting depth up to 380 mm



Large cutting depths to 380 mm possible (with saw blade Ø 1 000 mm)



Precise mitre cutting due to mitre stop



Fork lift guides for easy and secure transport

The TME1000 convinces through maximum stability and robustness. The precise stainless-steel saw table guide guarantees a clean cut. Construction-site suitable leading pulleys, forklift guides and a crane hook ensure trouble-free transport.

The intelligent blade guard construction enables quick and easy blade installation. Servicing requirements are reduced to a minimum due to low-maintenance saw blade drive via a transmission.

System & Accessories

Technical data

Saw blade	
Max. cutting depth	380 mm
Max. saw blade Ø	1 000 mm
Cutting length	660 mm
Saw blade speed	910 rpm
Saw blade holder Ø	60 mm
Carrier Ø	11.5 mm
Reference circle Ø	120 mm

Drive

Drive / motor	Electric
Output	7.5 kW
Standard voltage / frequency	400 V / 50 Hz
Engine cooling	Air cooling
Saw blade drive	Via gears

Design

Infinitely adjustable cutting depths
Angle cutting function (angle stop)
Mitre cutting function (optional mitre stop)
Transport hook and fork lift guides
Pull-out water tank
Electric water pump

Dimensions & Weight

Length	1 800 mm
Width	1 030 mm
Height	1 500 mm
Weight	324 kg

System & Accessories

Masonry saw TME1000	
10989800	Masonry saw TME1000 / 400 V

Accessories	
10978735	Mitre stop (Jolly table)





6.6 Floor saw blades **Floor sawing**



Floor saw blades

Decades of experience in the production and application of floor saws and machines give TYROLIT the edge in the marketplace. As a result, our products can be seen as innovative solutions for large-scale projects while remaining cost-effective for everyday construction site use.

TYROLIT floor saw blades are designed to work perfectly with TYROLIT Hydrostress machines as well as all common floor saws.

- + Exceptional and consistent cutting performance coupled with a long service life
- + Universal use
- + Innovative diamond segment design
- + Quiet when working on reinforced concrete
- + Clean cutting edges
- + Large product range: diameters from 300–1.200 mm in various segment widths

Application recommendation



Performance Level	Specification	Cured concrete	Asphalt	Pages
★★★ PREMIUM	FSC	●		506
	FSA		●	506

Information / Recommendations

- + Optimum application conditions / peripheral speed

Asphalt		55–60 m/s
Cured concrete	soft aggregates with little reinforcement	40–50 m/s
Cured concrete	hard aggregates	35–45 m/s
Green concrete		50–55 m/s
- + The safety and operating instructions sent with the machine must be observed at all times when using floor saws. The safety manual will be sent to you on request

Service

- + Bores and drive holes for special machines are available on request





Floor saw blade | Cured concrete
FSC



Machines up to 15 kW | soft to medium-hard aggregates. Details: Laser welded up to a diameter of 600 mm. Equipped with measuring bore for easy wear control of the segment height.

A 35–25.4 mm reduction bush is supplied for saw blades with a 35 mm bore.

	Shape	Type number	Dimension	Segment height	
		C7W	574854	350x3.2x25.4	12
			574855	400x3.2x25.4	12
			574856	450x3.6x25.4	12





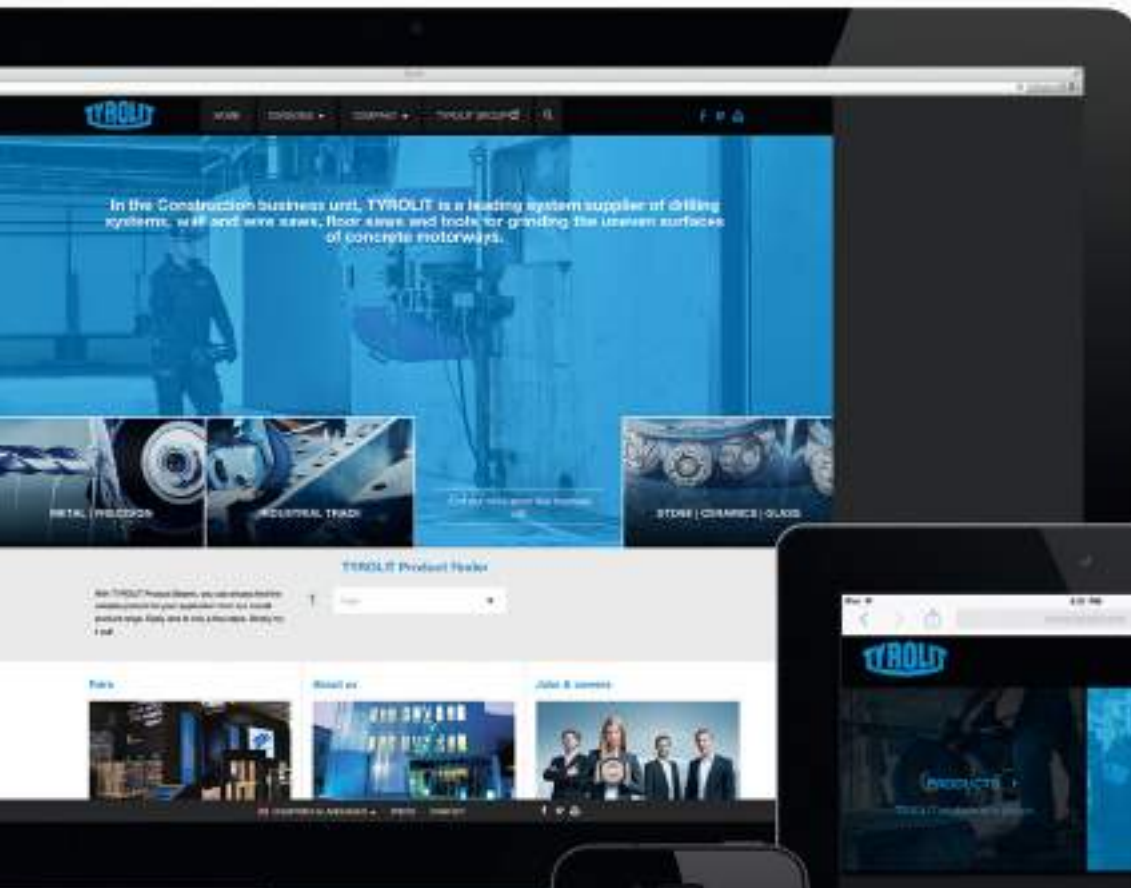
Floor saw blade | Asphalt
FSA



Machines up to 15 kW | soft to very hard aggregates. Details: Laser welded up to a diameter of 600 mm. With protective segments to guard against premature steel blade wear in the contact zone – (undercutting-effect) and

measuring bore for easy wear control of the segment height. A 35–25.4 mm reduction bush is supplied for saw blades with a 35 mm bore.

	Shape	Type number	Dimension	Segment height	
		C7SW	574844	350x3.2x25.4	9
			574845	400x3.2x25.4	9
			574846	450x3.6x25.4	9



www.tyrolit.com

★★★
PREMIUM

Floor saw FSG513

Cutting depth up to 170 mm



User-friendly cutting depth setting and convenient speed control



Optimised centre of gravity above the shaft



Universal field of application with left and right cutting function

Thanks to its extremely robust, high-quality chassis, the FSG513 is highly robust and flexible thanks to the left- and right-handed as well

as corner flush cutting functions. The reliable Honda petrol engine is equipped with a cyclone air filter.

System & Accessories

Saw blade

Saw blade	
Max. cutting depth	170 mm
Max. saw blade Ø	450 mm
Saw blade speed	2 600 rpm
Saw blade uptake Ø	25.4 mm
Carrier Ø	11.5 mm
Reference circle Ø	57.4 mm

Drive

Drive / motor	Petrol
Type	Honda
Power	8.2 kW / 11 HP
Fuel	Lead free
Fuel tank	6.1 l
Engine cooling	Air cooling
Feed	Manual
Blade drive	Via V-belt

Design

Manual, cutting depth adjustment via spindle
Cutting depth indicator
Tool cooling using water fork
Left and right hand cutting function
Flush corner cut function
25 l water tank

Dimensions & Weight

Length	1 136 mm
Width	578 mm
Height	1 016 mm
Weight	113 kg

System & Accessories

Floor saw FSG513	
10988800	Floor saw FSG513 incl. water tank kit





6.8 Diamond wet drill bits

Core drilling



Drill bits for wet drilling

Decades of experience in the production and application of core drill bits and core drill systems give TYROLIT the edge in the marketplace.

As a result, our products can be viewed as innovative solutions for large-scale projects while remaining cost-effective for everyday construc-

tion site use. Especially suitable for drilling reinforced or normal concrete. Can be operated on a drill rig or hand-held. TYROLIT core drill bits

are designed to work perfectly with TYROLIT Hydrostress machines.

TGD®-Technology

The TYROLIT GRAIN DISTRIBUTION achieves a constant and high cutting performance due to optimum diamond grain distribution.



TGD®
TYROLIT GRAIN
DISTRIBUTION

Speeds

Diameter	Speed	Drive power
Concrete (2-3 m/s)		
mm	min-1	kW
18	2.100-3.200	1
32	1.200-1.800	
42	900-1.400	
52	750-1.100	
62	620-950	2
72	550-800	
82	470-700	
102	370-550	3
122	310-470	
152	250-380	
162	240-350	4
182	210-320	
202	190-280	
250	150-230	
300	130-190	
400	100-140	
500	80-120	

Service

- + Products for concrete (asphalt, masonry, steel and special applications on request)
- + Mountings and connection threads available to comply with local standards and tailored to suit all types of motors (electric, hydraulic)
- + Perfect system solution in conjunction with TYROLIT Hydrostress drill motors and drill rigs
- + Extensive range of accessories available
- + Special dimensions and individual solutions available on request
- + We will be pleased to provide technical support and system solutions for special construction sites

Information / Recommendations

- + Highest levels of performance at peripheral speeds of 2-3 m/s on concrete (1.2-1.8 m/s on reinforced concrete, 3.2-3.8 m/s on very abrasive materials)
- + For core drills with a diameter of 450 mm or more, we recommend to use the drill flange GR-F. The core drill program with GR-F flange is available on request
- + The correct drill rig mounting is essential
- + The correct coolant quantity is also important for the optimum drilling performance ("milky" consistency of the water)
- + The machine safety and user instructions must be read and understood before starting work. The drilling safety manual will be sent to you on request

Diamond tool

Application recommendation TYROLIT wet drill bits

Material properties

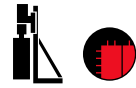
Quality line	Specification	Aggregates				Abrasiveness			Reinforcement		
		soft	medium	hard	very hard	low	medium	high	low	medium	high
★★ STANDARD	CDL	●	●	○		○	●	●	●	○	
	CDM	○	●	●	●		○	●	●	●	●
		Limestone Granite	Quartz Granite	Rhine gravel Danube gravel	Flint						

Machine power

Specification	Machine power			Speed		
	-2.4 kW	-3.5 kW	>3.5 kW	low	medium	high
CDL	●	●	○	○	●	●
CDM	○	●	●	●	●	○

Suitability

Optimal	●
Good	●
Acceptable	○
Not suitable	



Wet drill bits
CDL

Drill motors up to 3 kW | soft to medium-hard concrete aggregates. Details: Laser welded segments up to a diameter of 250 mm for maximum safety. Quality tools for everyday use. An impressive drilling speed-lifetime ratio. Universal use, lasting quality.



	Type number	Dimension	Segment height
HOHL3	475019	32x400xR½"	7
	475024	42x450xR½"	7
HOHL1D	34292638	52x450x1¼"	11.3
	34292640	62x450x1¼"	11.3
	34292816	72x450x1¼"	11.3
	34292820	82x450x1¼"	11.3
	34292821	92x450x1¼"	11.3
	34292823	102x450x1¼"	11.3
	34292824	107x450x1¼"	11.3
	34292826	112x450x1¼"	11.3
	34292827	122x450x1¼"	11.3
	34292828	127x450x1¼"	11.3
	34292829	132x450x1¼"	11.3
	34292830	142x450x1¼"	11.3
	34292831	152x450x1¼"	11.3
	34292832	162x450x1¼"	11.3
	34292833	182x450x1¼"	11.3
	34292834	202x450x1¼"	11.3
	34292835	250x450x1¼"	11.3



Wet drill bits
CDM

Drill motors up to 3 kW | soft to medium-hard concrete aggregates. Details: Laser welded segments up to a diameter of 250 mm for maximum safety. Quality tools for everyday use. An impressive drilling speed-lifetime ratio. Universal use, lasting quality.



	Type number	Dimension	Segment height
HOHL1D	34293083	52x450x1¼"	11,3
	34293087	62x450x1¼"	11,3
	34293089	72x450x1¼"	11,3
	34293111	82x450x1¼"	11,3
	34293115	92x450x1¼"	11,3
	34293116	102x450x1¼"	11,3
	34293120	107x450x1¼"	11,3

Diamond tool

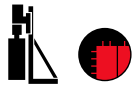
● = low

● = medium





Wet drill bits
CDM



		Type number	Dimension	Segment height
	HOHL1D	34293122	112x450x1¼"	11,3
		34293124	122x450x1¼"	11,3
		34293125	127x450x1¼"	11,3
		34293129	132x450x1¼"	11,3
		34293130	142x450x1¼"	11,3
		34293132	152x450x1¼"	11,3
		34293137	162x450x1¼"	11,3
		34293139	182x450x1¼"	11,3
		34293140	202x450x1¼"	11,3
		34293149	250x450x1¼"	11,3



Wet drill bits
B1



Drill motors up to 3 kW | soft to medium-hard concrete aggregates. Details: Laser welded segments up to a diameter of 250 mm for maximum safety. Quality tools for everyday use. An impressive drilling speed-lifetime ratio. Universal use, lasting quality.

		Type number	Dimension	Segment height
	HOHL1D	34239241	47x450x1¼"	11,3
		34239244	52x450x1¼"	11,3
		34239245	57x450x1¼"	11,3
		34206245	62x450x1¼"	11,3
		34206246	67x450x1¼"	11,3
		34239181	72x450x1¼"	11,3
		34206248	77x450x1¼"	11,3
		34206249	82x450x1¼"	11,3
		34239183	92x450x1¼"	11,3
		34203877	102x450x1¼"	11,3
		34206261	107x450x1¼"	11,3
		34206262	112x450x1¼"	11,3
		34206263	122x450x1¼"	11,3
		34239093	127x450x1¼"	11,3
		34206265	132x450x1¼"	11,3
		34239186	142x450x1¼"	11,3
		34239187	152x450x1¼"	11,3
		34206267	162x450x1¼"	11,3
		34239188	172x450x1¼"	11,3
		34206269	182x450x1¼"	11,3




● = low

● = medium

Diamond tool




		Type number	Dimension	Segment height
	HOHL1D	34239189	202x450x1¼"	11,3
		34240086	212x450x1¼"	11,3
		34240087	250x450x1¼"	11,3

Accessories wet drill bits

Sharpening plates



		Type number	Dimension
	SP1	484627	160x30x320
		484672	320x55x320





6.9 Diamond dry drill bits
Core drilling



Drill bits for dry drilling

Decades of experience in the production and application of core drill bits and core drill systems give TYROLIT the edge in the marketplace.

As a result, our products can be viewed as innovative solutions for large-scale projects while remaining cost-effective for everyday construc-

tion site use. Especially suitable for drilling reinforced or normal concrete. Can be operated on a drill rig or hand-held.

TYROLIT core drill bits are designed to work perfectly with TYROLIT Hydrostress machines.

Selecting the right dry drill bit

Plasterboard Cellular concrete Plastic tubes (PVC, PP, PE) Soft fire-resistant bricks Sandstone, porous natural stone Tiles Roof tiles Clinker Fine stoneware	Without hammer operation
Soft sand-lime brick Clay brick Lightweight concrete slabs Woodchip-concrete blocks and slabs Fireclay bricks	Hammer operation recommended (no percussion drills)
Concrete block Hard sand-lime brick Terrazzo Concrete Lightly reinforced concrete	Hammer operation required (no percussion drills)

Service

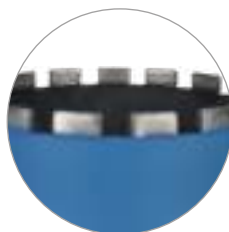
- + Whole product range ex stock
- + From a diameter of 91 mm onwards an additional distance washer is included for optional use of a vacuum-suction hood

Information / Recommendations

- + For use with drilling motors within the range of 1.000–2.000 W with or without soft impact
- + Do not use rotary percussion drills as it will destroy the tool
- + Observe the safety and user instructions shipped with the tool
- + On request these safety instructions may also be sent separately

TGD®-Technology

The TYROLIT GRAIN DISTRIBUTION achieves a constant and high cutting performance due to optimum diamond grain distribution.



TGD®
TYROLIT GRAIN
DISTRIBUTION


★★★
PREMIUM

Dry drill bits
DDL-HH | in TGD®-Technology



The newly developed PREMIUM*** dry drill bit for hand-guided drilling impresses in many respects. With TGD®-Technology (TYROLIT GRAIN DISTRIBUTION), a unique technology developed by TYROLIT for the

optimised distribution of grain.


		Type number	Dimension	Segment height
	HOHLT	34074200	52x250x1¼"	8
		34074212	62x250x1¼"	8
		34074213	68x250x1¼"	8
		34074214	82x250x1¼"	8
		34074215	92x250x1¼"	8
		34074216	102x250x1¼"	8
		34074217	107x250x1¼"	8
		34074218	112x250x1¼"	8
		34074219	122x250x1¼"	8
		34074220	127x250x1¼"	8
		34074221	132x250x1¼"	8
		34074223	142x250x1¼"	8
		34074224	152x250x1¼"	8
		34074225	161x250x1¼"	8

★★★
PREMIUM

Dry drill bits
DDE | in TGD®-Technology



Perfect tool for installing sockets and junction boxes as well as smaller breakthrough jobs.


		Type number	Dimension	Segment height
	HOHLT	34201286	68x70xM16	11.3
		34201288	82x70xM16	11.3

★★
STANDARD

Dry drill bits
DDL




Quality tool for daily use, impressive performance and lifetime.

		Type number	Dimension	Segment height
	HOHLT	899272	32x150xM16	6.5
		899271	42x150xM16	6.5
		252911	52x150xM16	6.5
		252912	56x150xM16	6.5



Diamond tool




		Type number	Dimension	Segment height
	HOHLT	252913	62x150xM16	6.5
		252914	68x150xM16	6.5
		252915	72x150xM16	6.5
		252916	82x150xM16	6.5
		252917	92x150xM16	6.5
		252918	102x150xM16	6.5
		252919	107x150xM16	6.5
		252920	117x150xM16	6.5
		252921	127x150xM16	6.5
		252923	162x150xM16	6.5
		252924	200x150xM16	6.5




**Dry drill bits
DDL**



Tool for installing sockets and junction boxes as well as smaller breakthrough jobs.

		Type number	Dimension	Segment height
	HOHLT	650292	68x70xM16	6.5
		650293	82x70xM16	6.5





6.10 Tile drills
Core drilling



Tile drills

DDT

+ Maximum drilling comfort thanks to optimised moistening of the diamonds with water and easy core removal.

+ Fast, accurate drilling no edge chipping.



+ **Universal use** for ceramic tiles, fine stoneware and marble slabs.

TYROLIT vacuum brazed diamond coring bit for all ceramic tiles, fine stoneware and marble slabs. Max-

imum drilling comfort, suitable for universal use with M14 connection for angle grinders, and adapter for

drilling machines. Suitable for dry and wet drilling. Perfect, chip-free drilling in tiled and sanitary areas.



Tile drills DDT



		Type number	Dimension	Segment height	
	HOHLT	34180136	5x35xHEX	4	
		69833	6x35xHEX	4	
		69848	8x35xHEX	4	
		69855	10x35xHEX	4	
		69856	12x35xHEX	4	
		69860	14x35xHEX	4	



Tile drills DDT





		Type number	Dimension	Segment height	
	HOHLT	69769	20x45xM14	4	
		34214903	25x45xM14	4	
		34214904	35x45xM14	4	
		69768	38x45xM14	4	







Diamond tool



		Type number	Dimension	Segment height	
	HOHLT	34214905	42x45xM14	4	
		69767	52x45xM14	4	
		69766	65x45xM14	4	
		51392	75x45xM14	4	


★★★ PREMIUM **Tile drills with paraffin DDT**



		Type number	Dimension	Segment height	
	HOHLT	34251679	6x35xM14	10	
		34251680	8x35xM14	10	
		34251711	10x35xM14	10	
		34251712	12x35xM14	10	
	HOHLT	34393075	5x67xHEX	10	
		34393071	6x67xHEX	10	
		34393072	8x80xHEX	10	
		34393073	10x80xHEX	10	
		34393074	12x80xHEX	10	
		34393076	14x80xHEX	10	


★★★ PREMIUM **Tile drill-set HEX 5-14 DDT**



	Type number	Content
	34215809	Tile drills Ø 5, 6, 8, 10, 12, 14 mm Allen key

★★★ PREMIUM **Tile drill-set HEX Ø 5-14 with paraffin DDT**



	Type number	Content
	34393131	Tile drills Ø 5, 6, 8, 10, 12, 14 mm Allen key

Diamond tool

★★★
PREMIUM

Tile drill-Kit HEX DDT



Type number

Content

34215843

Tile drills Ø 5, 6, 8, 10, 12, 14 mm

Water bottle 1 l (Type No. 34215846)

Drilling aid (Type No. 34215847)

Allen key

★★★
PREMIUM

Tile drill-set M14 Ø 20+ DDT



Type number

Content

HOHLT 34229331

Tile drills Ø 20, 25, 35, 38, 42, 52, 65, 75 mm

Adapter M14/HEX, M14/SDS

Allen key

Pilot drill 7x110

Open ended spanner SW19

★★★
PREMIUM

Tile drill-set M14 DDT



Type number

Content

34294535

Tile drills Ø 6, 8, 10, 12, 20, 25, 35 mm

Wrench

★★★
PREMIUM

Tile drill-set XL DDT



Type number

Content

34245899

Tile drills HEX wet Ø 5, 6, 8, 10, 12, 14 mm

Tile drills M14 dry Ø 20, 38, 52, 65, 75 mm

69774 SDS Adapter on request

69801 HEX Adapter on request

Center Drill Ø 7

Open-ended spanner SW 19

Hex key

34215846 1 l water bottle (hose included)

34215847 drilling aid

































6.11 Core drill systems


Core drilling

Selecting guide for core drill systems

	Power in kW	Application	Drill diameter range in mm m/s		Drill rig recommendation
 DME19DP	1.8	 	52	162	 DRU160
 DME22SU	2.2	  	20	180	 DRA150
 DME20PU	2.0	  	15	180	 DRU160
 DME20PW	2.0	 	15	180	 DRU160
 DRS162	2.5		40	160	Integriert
 DRS 250	2.5		40	250	Integriert
 DME24MW. DME24UW	2.2		40	250	  DRU250 DRA250

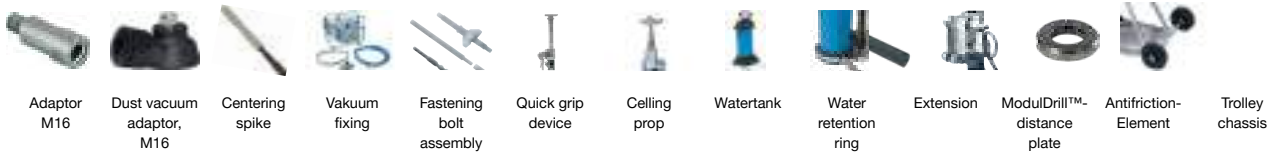
 wet

 dry

 also handheld

Diamond tool

Accessories



Adaptor M16	Dust vacuum adaptor, M16	Centering spike	Vakuu fixing	Fastening bolt assembly	Quick grip device	Ceiling prop	Watertank	Water retention ring	Extension	ModulDrill™-distance plate	Antifriction-Element	Trolley chassis
●	●	●	●	●								●
	●	●	●	●			●	●	●			
		●	●	●	●		●	●	●		●	
		●	●	●	●		●	●	●		●	
			●	●			●		●		●	
			●	●	●	●	●	●	●		●	●
				●	●	●	●	●	●		●	●

● available / suitable

Diamond tool

★★
STANDARD

Core drilling system DRS162

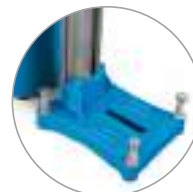
Core drilling up to Ø 162 mm



Powerful 2.5 kW Motor



One speed for drilling diameters up to 162 mm



Space-saving attachment facility via dowel foot

The DRS162 drill system is the ideal core drill entry model. The drill motor and drill rig complement each other perfectly and form a single unit. The preset speed and compact, light-weight construction guarantee easy

handling and user-friendliness. An integrated PRCD safety switch ensures maximum safety. Optional vacuum plate offers more flexibility in fixing the system.

System & Accessories

Technical data

Drill rig (integrated)	
Bore hole diameter	40–162 mm
Max. drill bit length	556 mm

Drill rig (integrated)	
Drill diameter range in concrete ca.	40–162 mm
Nominal power	2.5 kW
Nominal current	11.5 A
Nom. voltage / frequency standard	230 V / 50 Hz
Load speed	450 rpm
Cooling	Air cooling
Tool attachment external thread	1 ¼"
Tool attachment internal thread	½"
Operation	Drill rig operation
Application	Wet
Electronic overload cut-out	
Mechanical overload cut-out	
PRCD protection switch	

Design

Aluminium dowel foot	
Feed using hand crank	
Adjustable feet (M12)	
1 handle	
Motor fixed integrated	

Dimensions & Weight

Length	365 mm
Width	185 mm
Height	855 mm
Weight (drilling system)	15.5 kg

System & Accessories

Core drilling system DRS162	
10990700	Core drilling system DRS162 / 230 V (dowel feet)
10993966	Fastening bolt assembly

Accessories	
974270	Extraction device for core bits
977353	Extraction device for cores
10991465	Water tank 10 l
10993961	Vacuum plate complete
984035	Vacuum pump CV 45 l/min, 0.8 bar EU
975372	Vacuum pump CV 45 l/min, 0.8 bar CH
975381	Vacuum hose complete 3 m

★★
STANDARD

Core drilling system DRS250

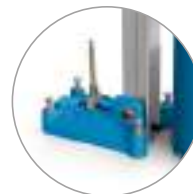
Core drilling up to Ø 250 mm



Drilling diameter up to 250 mm with 2-speed gearbox



Powerful 2.5 kW motor



Space-saving fixing option via dowel foot

The DRS250 drilling system combines simplicity with a large drill diameter range. The drill motor and drill rig complement each other and form a single unit. 2-speed oil bath gearbox insures perfect lubrication in all working positions, as well as optimal torque-to-speed ratio. Compact

and lightweight construction guarantees easy handling and user-friendliness. Mechanical overload clutch and integrated PRCD safety switch ensure maximum safety. Optional vacuum plate offers more flexibility in fixing the system.

System & Accessories

Technical data

Drill rig (integrated)	
Bore hole diameter	50 - 250 mm
Max. drill bit length	600 mm

Drill rig (integrated)	
Nominal power	2.5 kW
Nominal current	11.5 A
Nom. voltage / frequency	230 V / 50 - 60 Hz
Load speed	360 / 850 rpm
Cooling	Air cooling
Tool attachment	1 ¼"
Operation	Drill rig operation
Application	Wet
Mechanical overload cut-out	
PRCD protection switch	

Design

Aluminium dowel foot
Feed using hand crank
Adjustable feet (M12)
Carrying handle
Detachable motor

Dimensions & Weight

Length	295 mm
Width	195 mm
Height	1 069 mm
Weight (drilling system)	25.6 kg

System & Accessories

Core drilling system DRS250	
10999880	Core drilling system DRS250 / 230 V (dowel feet)
10993966	Fastening bolt assembly

Accessories	
974270	Extraction device for core bits
977353	Extraction device for cores
10991465	Water tank 10 l
975378	Vacuum plate complete
984035	Vacuum pump CV 45 l/min, 0.8 bar EU
975372	Vacuum pump CV 45 l/min, 0.8 bar CH
975381	Vacuum hose complete 3 m
11000617	Trolley chassis DRS250



Notes

Safety cutting and grinding	538
Safety brand TYROLIT	538
TYROLIT quality management system	538
Final inspection - checks at TYROLIT	538
Safety	539
Storage of grinding wheels	539
Checking of grinding wheels on delivery	539
Checking of grinding wheels prior to mounting	540
Clamping methods for grinding wheels	540
Test run prior to start-up	542
Eye protection and protective clothing	542
Summary	542
Safety information	542
Dos & don'ts	543
Table of recommended speeds	544
Safety diamond tool	545
Quick product search	551
Index	552
General	599
TYROLIT addresses	600

Safety cutting and grinding

Safetybrand TYROLIT

We strive to provide operators products with maximum safety. We achieve this through our work as the founder member of the “Organisation for the Safety of Abrasives (oSa)”, through close cooperation with the safety authorities and through practical communication with our operators across the globe.

aim of oSa®

The main aim of oSa® is defined in terms of absolute protection for the users of grinding tools, whereby members undertake to provide a consistently high level of quality, adopt a rigorous approach towards quality assurance and strive to develop new, improved standards of safety.



TYROLIT quality management system

The TYROLIT quality management system has been certified to ISO 9001:2015 for the entire production area by an external authorised body. The products are manufactured and tested in line with European safety standards:

- EN 12413 for grinding wheels made of bonded abrasives
- EN 13236 for grinding wheels made of diamond or boron nitride
- EN 13743 for special abrasives on an underlay such as vulcanised fibre grinding wheels, flap grinding wheels, flap discs and mounted points

On account of the fact that in the approval principles (EN-STANDARD) very high requirements are set on the grinding tools concerning defined technical grinding parameters, TYROLIT basically delivers all grinding tools corresponding to these principles. As a result we guarantee a constantly high safety level, also in countries without compulsory approvals.

Final inspection – checks at TYROLIT

TYROLIT carries out final inspections in accordance with EN safety standards. In addition, internal testing procedures are also used to determine efficiency and material properties.

Resin bonded products undergo a final inspection regarding a visual and identification test, a geometry, imbalance, bursting and side load test as well as a control grinding and cutting process.

Resin and ceramic bonded products undergo a final inspection regarding a visual and identification test, a geometry, imbalance, bursting and side load test as well as a test run, a sound test.

Safety

The following plays an equal part when it comes to safety when grinding: machine manufacturer, grinding wheel producer and user.

Grinding wheels are subject to a high load during the grinding process. This is why grinding machines, grinding bodies, handling and application must be optimally harmonised to ensure safe grinding. For the grinding machines, it is generally important to observe the machine conditions and the stipulation of the protection cover.

Whereas the manufacturer implements the safety measures in line with regulations in relation to the grinding machine and grinding wheels, the user is responsible for safety when grinding through use of the grinding machine for the intended purpose, as well as through correct handling and application of the grinding wheels.

The following must be observed:

- Checking of grinding bodies on delivery
- Handling and storage of grinding bodies
- Labelling, synchronisation with machine data
- Checking of grinding wheels prior to clamping
- Clamping methods for grinding wheels
- Test run of grinding bodies prior to start-up
- Eye protection and protective clothing (see also FEPA safety code)

Storage of the grinding wheels

Grinding wheels are to be stored in suitable racks or containers so that they are not damaged and so that it is easily possible to remove wheels without disturbing the storage setup. Older stock should be used first.

During storage, the following must be noted

Store the grinding wheels in a dry, rust-free condition and do not expose grinding wheels to large temperature fluctuations.

Storage for different types of grinding bodies

- Store cut-off wheels on a level underlay without intermediate layers and weigh them down with a steel or cast iron plate
- Store large straight grinding wheels in an upright position and make sure they cannot roll away
- Stack cylinder wheels, cylindrical grinding discs and grinding plates using soft intermediate layers
- Stack grinding discs, shape 11, in each case faces or bases together
- Store small grinding wheels in suitable containers

Checking of grinding wheels on delivery

Check packaging on delivery. If damage is visible on the packaging, the grinding wheel should be checked particularly thoroughly for any possible transport damage.

Identification of the grinding wheels

The purpose of the identification is to give people, in particular those who carry out the clamping of the grinding wheels, information for safe use and proper application.

Grinding wheels may only be used if they are identified with the following minimum information

- Manufacturer
- Dimensions of grinding wheel
- Material (at least the type of bond)
- Maximum permissible RPM of new grinding wheel and maximum operating speed in m/s

The user is obliged to match the machine speed to the maximum permissible speed given in the identification.

Checking of grinding wheels prior to clamping

Each time before clamping, the grinding wheels must be cleaned and checked for damage by means of visual inspection.

The sound test should be repeated. Damaged grinding wheels must not be mounted.

For the sound test, lightweight grinding wheels are pushed onto a mandrel or shaft, heavy grinding wheels are placed on a firm floor.

The grinding wheel is tapped with a non-metal object at several points.

An undamaged grinding wheel gives a clear ring, while a damaged one gives a dull or clanking sound.

All contact surfaces on grinding wheels, intermediate layers and wheel flanges must be level (flat) and be free from foreign bodies. Foreign particles between grinding wheels and wheel flanges create pressure points and stresses, which can lead to breakage of the grinding wheel.

Clamping methods for grinding wheels

Depending on the type of machine and grinding method, as well as the grinding wheel shape, a distinction can be made between the following clamping methods

- Mounting in the central bore using wheel flanges
- Mounting using embedded fixing elements
- Mounting using support plates
- Mounting using clamping head

Mounting in the central bore using wheel flanges

A distinction should be made between the following wheel flange types for central bores

- Recessed wheel flange
- Straight wheel flanges for portable grinding machines
- Special flanges
- Stepped flanges
- Locating flanges and tapered wheel flanges

The purpose of the wheel flanges is to transfer drive forces. They must therefore be in such a condition that there is no deformation of the wheel flange during clamping. The contact surfaces must be level (flat) and must not show any burring, and the run-out of the grinding wheel must be safeguarded.

Only wheel flanges that have the same external diameter and the same shape on the contact side may be used. They must be recessed so that only a ring-shaped area of the wheel flange is on the surface.

Clamping using embedded fixing elements

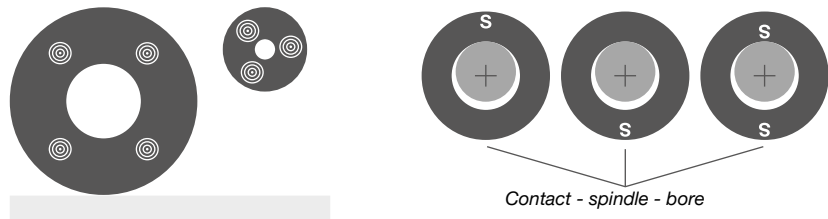
The grinding wheels are fixed using embedded fixing elements on the grinding machine. Examples of this are the clamping of cylindrical and taper cup wheels, or the fixing of mounted points with embedded steel shafts in collets on portable grinding machines.

Clamping of grinding wheels on support plates

The grinding wheels are either cemented or fixed with inserted nuts.

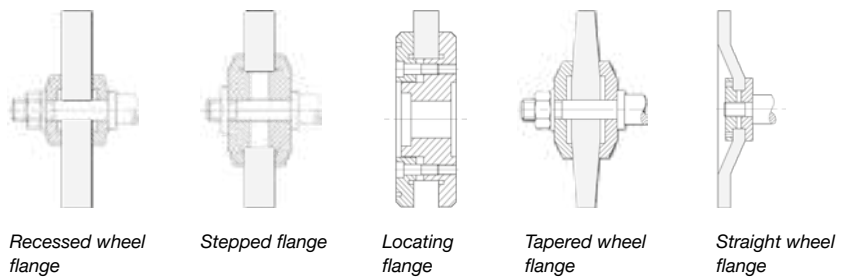
Clamping of grinding segments in clamping heads

Grinding segments are clamped to one grinding unit (segment head) in clamping heads. On the contact surfaces between the grinding segments and the clamping pieces, adhesive strips can be placed on the grinding segments to avoid stresses in the grinding segments.



⊙ Examples of tapping points during the sound test

Examples of identifying wheel orientation



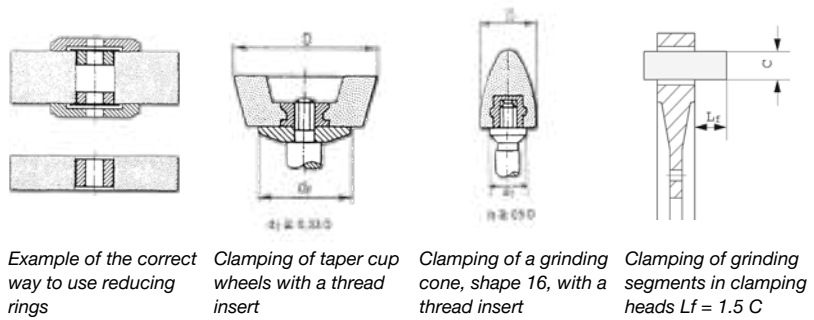
Recessed wheel flange

Stepped flange

Locating flange

Tapered wheel flange

Straight wheel flange



Example of the correct way to use reducing rings

Clamping of taper cup wheels with a thread insert

Clamping of a grinding cone, shape 16, with a thread insert

Clamping of grinding segments in clamping heads $L_f = 1.5 C$

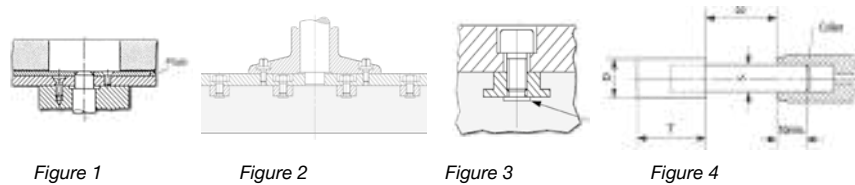


Figure 1

Figure 2

Figure 3

Figure 4

Fig. 1: Grinding wheel, cemented

Fig. 2: Grinding wheel with inserted nuts

Fig. 3: Correct bolt connection, bolt end must not touch the base of the grinding wheel

Fig. 4: Clamping of mounted points

Test run prior to start-up

Every grinding wheel without a diameter restriction must undergo a test run at maximum operating speed before being used for the first time and after every re-clamping.

The duration of a test run is one minute.

The test run may only be carried out once the danger zone has been secured and – where the grinding wheel must be used with the machine guard – this has been placed on it. The grinding wheel can only be used for the intended work once the test run has been passed without complaint.

Summary

The most important points for safe use of grinding wheels are summarised again below:

- Adjustment of the machine data to the identification data
- Checking of grinding wheels prior to mounting
- Mounting carried out by skilled people
- Checking of the functionality of the machine guard
- Test run of grinding wheels prior to grinding work
- Personal safety

Eye protection and protective clothing

All grinding tasks where people are at risk from flying particles off grinding wheels or workpieces must only be carried out using eye protection (safety glasses) and when necessary, other protective clothing (e.g. leather apron and leather gloves).

Safety information



Use gloves



Use dust mask



Wet grinding



Not permitted for side grinding



Use eye protection



Declaration of conformity, EN safety standard



Dry grinding



No freehand work



Use ear protection



Pay attention to the safety recommendations



Do not use damaged wheels



Free from Fe, S, Cl

Do's & don'ts

- ✓ Handle and store grinding tools carefully; use the oldest tools first.
- ✓ Prior to mounting or use, grinding wheels must be cleaned and undergo a visual check for cracks or possible damage.
- ✓ Ceramic bonded grinding tools must undergo a sound check before mounting.
- ✓ Make sure that the speed of the machine (RPM) does not exceed the maximum operating speed specified on the packaging or on the abrasive.
- ✓ Ensure that the bore of the grinding tool – with or without thread – fits the shaft of the machine perfectly; and that the wheel flanges are clean, flat, the same size and suitable for the grinding tool to be clamped.
- ✓ As intended or supplied, use the intermediate layers between the grinding wheel and wheel flanges.
- ✓ Only use machines with protection/guards and ensure their proper condition and fixture before the machine is switched on.
- ✓ After each mounting, carry out a test run for at least one minute at the operating speed and ensure machine guard is mounted correctly. In doing so, ensure that any fragments would not be able to hit you or someone else in the event of a possible breakage.
- ✓ Eye protection is always recommended for all grinding processes. For off-hand grinding, protective goggles or a safety mask is recommended.
- ✓ When working with cut-off or roughing wheels, ensure that the air supply and protective measures sufficiently correspond with the material to be processed. Suitable extraction systems should be fitted for all dry grinding processes.
- ✓ Only use machines that are also suitable for grinding tools with hub.
- ✓ Before stopping the machine, cut off the supply of cooling lubricant and remove the excess cooling lubricant from the grinding wheel.
- ✗ Do not use abrasives that are exposed to particularly humid/wet conditions or high temperatures prior to mounting.
- ✗ Never use abrasives that have been dropped, damaged or that look like they would not be fit for purpose.
- ✗ Never exceed the maximum permissible operating speed specified.
- ✗ Do not use wheel flanges with surfaces that are not free of foreign bodies (e. g. grinding swarf), flat or burr-free.
- ✗ Do not tighten the clamping device or wheel flange too much.
- ✗ Do not use recessed wheel flanges or flanges with recesses for grinding discs or cones.
- ✗ Never use force when clamping and do not make any changes to the grinding tool.
- ✗ Only use one-way adapters (hubs) once.
- ✗ Only switch on the machine when the protection cover is correctly and securely fixed (machine guards or covers should be set in such a way that they divert sparks and grinding particles away from the body).
- ✗ Only start the machine if there is no contact between the workpiece and the grinding tool.
- ✗ Never work with grinding tools without sufficient air supply (never without breathing apparatus and ear protection, particularly in enclosed spaces) and without personal safety equipment (see pictogram).
- ✗ Use a suitable grinding tool – an unsuitable product can create excessive grinding particles and dust.
- ✗ Avoid mechanical damage to the grinding wheel as a result of force effects, jolting or heating.
- ✗ Never use grinding machines in an improper condition or that contain faulty components.
- ✗ Do not use cut-off wheels for grinding work (do not exert a lateral load on any cut-off wheels of shape 41 or 42).
- ✗ Never mount more than one grinding tool on one shaft.
- ✗ Never use grinding tools after the indicated expiry date. This is expressed as a month and year (e.g. 04/2016) and is usually located on the metal ring around the bore on cut-off or roughing wheels. On other tool types (e.g. cup wheels), the expiry date may also be located on the label.

Speed recommendations

Rotational speeds and peripheral speeds depending on the external diameter $\varnothing=D$ of the grinding wheels.

Rotations n per minute min ⁻¹ depends on external diameter D of grinding wheel and the maximum operating speed V_s											
D in mm	Maximum operating speed V_s in m/s										
	16	20	25	32	35	40	50	63	80	100	125
3											
4	75 300	95 400									
5	61 100	76 300	95 400								
6	50 900	63 600	79 500								
8	38 100	47 700	59 600	76 300	83 500	95 400					
10	30 500	38 100	47 700	61 100	66 800	76 300	95 400				
13	23 500	29 300	36 700	47 000	51 400	58 700	73 400	92 500			
16	19 000	23 800	29 800	38 100	41 700	47 700	59 600	75 200	95 400		
20	15 200	19 000	23 800	30 500	33 400	38 100	47 700	60 100	76 300	95 400	
25	12 200	15 200	19 000	24 400	26 700	30 500	38 100	48 100	61 100	76 300	95 400
32	9 540	11 900	14 900	19 000	20 800	23 800	29 800	37 600	47 700	59 600	74 600
35	8 730	10 900	13 600	17 400	19 000	21 800	27 200	34 300	43 600	54 400	68 200
40	7 630	9 540	11 900	15 200	16 700	19 000	23 800	30 000	38 100	47 700	59 600
50	6 110	7 630	9 540	12 200	13 300	15 200	19 000	24 000	30 500	38 100	47 700
63	4 850	6 060	7 570	9 700	10 600	12 100	15 100	10 000	24 200	30 300	37 800
80	3 810	4 770	5 960	7 630	8 350	9 540	11 900	15 000	19 000	23 800	29 800
100	3 050	3 810	4 770	6 110	6 680	7 630	9 540	12 000	15 200	19 000	23 800
115	2 650	3 320	4 150	5 310	5 810	6 640	8 300	10 400	13 200	16 600	20 700
125	2 440	3 050	3 810	4 880	5 340	6 110	7 630	9 620	12 200	15 200	19 000
150	2 030	2 540	3 180	4 070	4 450	5 090	6 360	8 020	10 100	12 700	15 900
175	1 740	2 180	2 720	3 490	3 810	4 360	5 450	6 870	8 730	10 900	13 600
180	1 690	2 120	2 650	3 390	3 710	4 240	5 300	6 680	8 480	10 600	13 200
200	1 520	1 900	2 380	3 050	3 340	3 810	4 770	6 010	7 630	9 540	11 900
225	1 350	1 690	2 120	2 710	2 970	3 390	4 240	5 340	6 790	8 480	10 600
230	1 320	1 660	2 070	2 650	2 900	3 320	4 150	5 230	6 640	8 300	10 300
250	1 220	1 520	1 900	2 440	2 670	3 050	3 810	4 810	6 110	7 630	9 540
300	1 010	1 270	1 590	2 030	2 220	2 540	3 180	4 010	5 090	6 360	7 950
350	870	1 090	1 360	1 740	1 900	2 180	2 720	3 430	4 360	5 450	6 820
400	760	950	1 190	1 520	1 670	1 900	2 380	3 000	3 810	4 770	5 960
450	670	840	1 060	1 350	1 480	1 690	2 120	2 670	3 390	4 240	5 300
500	610	760	950	1 220	1 330	1 520	1 900	2 400	3 050	3 810	4 770
600	500	630	790	1 010	1 110	1 270	1 590	2 000	2 540	3 180	3 970
700	430	540	680	870	950	1 090	1 360	1 710	2 180	2 720	3 410
750	400	500	630	810	890	1 010	1 270	1 600	2 030	2 540	3 180
800	380	470	590	760	830	950	1 190	1 500	1 900	2 380	2 980
900	330	420	530	670	740	840	1 060	1 330	1 690	2 120	2 650
1 000	300	380	470	610	660	760	950	1 200	1 520	1 900	2 380
1 060	280	360	450	570	630	720	900	1 130	1 440	1 800	2 250
1 250	250	310	390	500	550	630	790	1 000	1 270	1 590	1 980
1 500	200	250	310	400	440	500	630	800	1 010	1 270	1 590



Safety diamond tool

Diamond tool

Recommended RPM

Revolutions per minute [RPM] depending on the external tool diameter [D] and the operating speed [V_s]							
D in mm	Recommended operating speed V_s in m/s						
	Drilling		Sawing			Dry-cutting	
	2	3	40	50	60	80	100
14	2 730	4 090					
16	2 390	3 580					
20	1 910	2 860					
25	1 530	2 290					
32	1 190	1 790					
42	910	1 360					
52	730	1 100					
62	620	920					
72	530	800					
82	470	700					
100	380	570	7 640	9 550	11 460	15 280	19 100
115	330	500	6 640	8 300	9 960	13 290	16 610
125	310	460	6 110	7 640	9 170	12 220	15 280
150	250	380	5 090	6 370	7 640	10 190	12 730
180	210	320	4 240	5 310	6 370	8 490	10 610
200	190	290	3 820	4 770	5 730	7 640	9 550
230	170	250	3 320	4 150	4 980	6 640	8 300
250	150	230	3 060	3 820	4 580	6 110	7 640
300	130	190	2 550	3 180	3 820	5 090	6 370
350	110	160	2 180	2 730	3 270	4 370	5 460
400	100	140	1 910	2 390	2 860	3 820	4 770
450	80	130	1 700	2 120	2 550	3 400	4 240
500	80	110	1 530	1 910	2 290		
600	60	100	1 270	1 590	1 910		
700	50	80	1 090	1 360	1 640		
800	50	70	950	1 190	1 430		
900	40	60	850	1 060	1 270		
1 000	40	60	760	950	1 150		
1 200	30	50	640	800	950		

Trouble-shooting

Wet core drill

1. Excessive wear of diamond segments

- Insufficient coolant supply. Adjust the water supply and/or check the water lines.
- The operating speed of the core drill is too low. Increase the RPM (see RPM recommendations).
- The engine power is too high. Match the motor power to the drilling diameter.
- The machine is vibrating. Fix the drill rig and/or check the general state of the machine (e.g. bearings and rollers).
- The selected core drill may not be suitable for the material being drilled, or the material is too abrasive. Use a harder specification (e.g. CDL - CDM).

2. Excessive wear of the steel tube

- The machine is vibrating. Fix the drill rig and/or check the general state of the machine (e.g. bearings and rollers).
- The core drill is warped / is not running true.
- The core drill is not fixed properly. Check if the core drill is aligned with the motor spindle.
- There are remains in the hole, which have not been removed by the coolant. Increase the coolant supply temporarily.
- You are drilling in loose material (e.g. gravel).

3. Broken segments

- In case of brazed segments, a short interruption of the cooling can lead to overheating and thus to a destruction of the soldered joint.
- The core drill has struck multiple times against reinforcements or fragments. Remove all loose steel and segment parts before introducing a new core drill.
- The core drill is cutting into loose reinforcement. Reduce the RPM when drilling reinforcements in order to avoid damage to the core drill.

4. Drill bit does not drill segments are overloaded

Flat segment surface, possible deformation of the segments, high number of pull-outs (>50 %), drill chatters.

- The operating speed is too low. Increase the RPM.
- The grinding pressure is too high. Reduce the pressure.
- The material may be too soft and abrasive for the used specification. Use a harder specification (e.g. CDL - CDM).

5. Drill bit does not drill segments are underchallenged

Smooth segment surface, polished diamonds (shining, no sharp edges)

- The diamond segments are smooth (polished).

Re-sharpen the drill bit by drilling into soft, abrasive material or use a TYROLIT sharpening plate.

The operating speed is too high. Reduce the RPM.

The grinding pressure is too low. Increase the pressure.

The engine power is too low. Match the motor power to the drilling diameter.

Excessive coolant supply, only clear water is coming out of the drill hole (no slurry). Reduce the coolant supply and check the consistency (should be milky/cloudy).

The material may be too hard for the used specification. Use a softer specification (e.g. CDL - CDM).

6. The core drill is jammed

Debris is blocked between the core and the tube wall (steel, pieces of material). Remove the drill rig and, using a wrench, turn the core drill alternately in both directions until it can be removed. Take the debris out of the drill hole before introducing a new core drill.

The drill rig was not fixed correctly and has moved during drilling. Drill rig and core drill are no longer aligned. Align and re-fix the drill rig.

Trouble-shooting Diamond saw blade

1. Excessive wear

The saw blade is not suitable for the material being cut. Use a harder specification.

Insufficient water supply. Adjust the water supply and/or check the water lines.

The blade is pounding, which accelerates the wearing. The reasons could be poor bearings, a worn spindle shaft or the use of a too hard specification for the material being cut. Check the state of the machine or use a softer specification.

The operating speed (RPM) is too low. Use the correct RPM for the diameter of the blade (see RPM recommendations).

2. Undercutting

Undercutting is a condition in which the steel center wears faster than the diamond segment, especially in the areas where the segment and core are joined. This is caused by highly abrasive material grinding against the blade during the sawing operation. Finally this can lead to segment loss.

Be sure to have sufficient water supply. Only with sufficient water the abrasive grinding slurry will be transported out of the contact zone and will thus reduce the undercutting effect.

Do not cut into the sub base of the pavement (lose gravel or sand). The loose material scrubs strongly on the body and tips it below the segments.

Caution! For safety reasons, do not use the saw blade any longer!

3. The blade does not cut

The saw blade is too hard for the material being cut. Check if the specification is appropriate. A glazed blade can be sharpened by cutting into soft, abrasive material.

The output power of the machine is insufficient to permit the blade to cut properly. Make sure that the specification is appropriate for the machine power and the material being cut. Repeatedly check the tension of the V-belt in order to guarantee an optimal transmission of power.

The speed is too high. To reduce the speed. Should the speed can not be changed can perform the cut in several deliveries.

The blade is not mounted correctly. Look for the correct one-direction of the saw (direction of rotation arrow).

4. Overheating

Overheating may lead to several problems like loss of core tension, cracks in the steel core and segment loss (in case of brazed segments). Overheating can be identified by a discoloration (blue and/or black oxidation) of the blade or the segments.

Make sure that wet-cutting saws have a sufficient water supply. Check the water lines and make sure flow is adequate on both sides of blade.

An excessive cutting pressure leads to overheating of dry-cutting tools. Use several passes of 2 to 5 cm deep for cutting solid

materials. On a regular basis, release the pressure on the diamond blade and allow it to rotate freely for cooling in the air. Do not use excessive pressure – the weight of the machine is sufficient.

5. Loss of blade segment

The machine was not held firmly or the material was not fixed, which caused the blade to twist or jam in the cut. Secure the material firmly while cutting and maintain a firm grip on the machine.

The blade is too hard for the material being cut which causes the blade to chatter. Use a softer specification.

The blade has been undercut. Make sure that there is sufficient water supply and do not cut into the base layer of the pavement (gravel).

In case of brazed segments, a short interruption of the cooling can lead to overheating and thus to a destruction of the soldered joint.

The saw has not been mounted correctly and starts to chatter.

Caution! For safety reasons, do not use the saw blade any longer!

6. Cracks in the segment

The saw blade is too hard for the material being cut; the saw blade starts to chatter during cutting. Use a softer specification.

Insufficient cooling supply (overheating). Adjust the water supply and/or check the water lines.

7. Cracks in the steel core

The saw blade is too hard for the material being cut. Use a softer specification.

Excessive cutting pressure. Extreme strain on the blade can create material fatigue, which can then lead to a fracture in the steel core.

The saw blade is chattering. Check the state of the machine (e.g. spindle and bearings) and the mounting of the saw blade.

The cut is not straight which results in friction and heat. Properly align the machine and do not exert excessive side pressure on the handles as a method of steering. Check the alignment of the drive shaft.

Caution! For safety reasons, do not use the saw blade any longer!

8. Uneven segment wear

Make sure that wet-cutting saws have a sufficient water supply. Check the water lines and make sure flow is adequate on both sides of blade.

The saw blade is irregularly worn due to defective bearings, a damaged blade bore or machine spindle. Exchange or repair the bearings and/or spindle. Ensure the engine runs smoothly and does not cause the blade to chatter on a regular cycle basis.

The cut is not straight which results in friction and heat. Properly align the machine and do not exert excessive side pressure on the handles as a method of steering. Check the alignment of the drive shaft.

9. Loss of tension

Blade has been overheated. Make sure that wet-cutting saws have sufficient water cooling.

The saw blade is too hard for this application. The reason for the loss of tension is a high lateral friction.

Check if the correct RPM has been chosen and if the proper flanges are being used.

Ensure that the saw blade has been fixed correctly on the spindle. Make sure that drive pins are used for all machines.

The cut is not straight which results in tension and heat. Properly align the machine and do not exert excessive side pressure on the handles as a method of steering. Check the alignment of the drive shaft.

In case of loss of tension send the saw blade back to the manufacturer for repair.

10. Damaged bore

The flanges or the spindle are worn out. Check the flanges and spindle for wearing and replace the worn parts.

The saw blade has not been mounted properly. Ensure that the blade is mounted on the proper diameter of spindle. Fix the wheel flanges properly (with a wrench, not by hand). Do not remove the drive pins, because they guarantee an optimal transmission of power.

Send the saw blade back to the manufacturer for repair.





Quick product search

Index-type numbers

Type No.	EAN product	EAN packaging	Page
108	9003170001083	9009010001084	115
109	9003170001090	9009010001091	115
113	9003170001137	9009010001138	115
118	9003170001182	9009010001183	115
121	9003170001212	9009010001213	115
128	9003170001281	9009010001282	115
130	9003170001304	9009010001305	115
131	9003170001311	9009010001312	115
138	9003170001380	9009010001381	115
139	9003170001397	9009010001398	115
153	9003170001533	9009010001534	453
169	9003170001694	9009010001695	114
174	9003170001748	9009010001749	115
190	9003170001908	9009010001909	115
191	9003170001915	9009010001916	115
456	9003170004565	9009010004566	400
457	9003170004572	9009010004573	400
461	9003170004619	9009010004610	401
462	9003170004626	9009010004627	401
469	9003170004695	9009010004696	400
479	9003170004794	9009010004795	400
481	9003170004817	9009010004818	400
485	9003170004855	9009010004856	401
486	9003170004862	9009010004863	401
501	9003170005012	9009010005013	397
504	9003170005043	9009010005044	397
505	9003170005050	9009010005051	397
510	9003170005104	9009010005105	397
511	9003170005111	9009010005112	397
512	9003170005128	9009010005129	397
516	9003170005166	9009010005167	397
518	9003170005180	9009010005181	397
519	9003170005197	9009010005198	397
523	9003170005234	9009010005235	397
525	9003170005258	9009010005259	397
531	9003170005319	9009010005310	397

Type No.	EAN product	EAN packaging	Page
533	9003170005333	9009010005334	397
534	9003170005340	9009010005341	397
536	9003170005364	9009010005365	397
540	9003170005401	9009010005402	397
542	9003170005425	9009010005426	397
547	9003170005470	9009010005471	396
548	9003170005487	9009010005488	396
549	9003170005494	9009010005495	396
550	9003170005500	9009010005501	396
551	9003170005517	9009010005518	396
552	9003170005524	9009010005525	396
554	9003170005548	9009010005549	396
555	9003170005555	9009010005556	396
556	9003170005562	9009010005563	396
557	9003170005579	9009010005570	396
558	9003170005586	9009010005587	396
559	9003170005593	9009010005594	396
560	9003170005609	9009010005600	396
561	9003170005616	9009010005617	396
562	9003170005623	9009010005624	396
563	9003170005630	9009010005631	396
564	9003170005647	9009010005648	396
566	9003170005661	9009010005662	396
576	9003170005760	9009010005761	400
577	9003170005777	9009010005778	400
578	9003170005784	9009010005785	400
579	9003170005791	9009010005792	400
583	9003170005838	9009010005839	400
584	9003170005845	9009010005846	400
586	9003170005869	9009010005860	400
587	9003170005876	9009010005877	400
603	9003170006033	9009010006034	398
607	9003170006071	9009010006072	398
610	9003170006101	9009010006102	398
614	9003170006149	9009010006140	398
616	9003170006163	9009010006164	398

Type No.	EAN product	EAN packaging	Page
629	9003170006293	9009010006294	398
632	9003170006323	9009010006324	398
633	9003170006330	9009010006331	398
637	9003170006378	9009010006379	398
640	9003170006408	9009010006409	399
642	9003170006422	9009010006423	399
644	9003170006446	9009010006447	399
645	9003170006453	9009010006454	399
656	9003170006569	9009010006560	398
657	9003170006576	9009010006577	398
660	9003170006606	9009010006607	398
664	9003170006644	9009010006645	398
666	9003170006668	9009010006669	398
671	9003170006712	9009010006713	398
674	9003170006743	9009010006744	398
691	9003170006910	9009010006911	398
693	9003170006934	9009010006935	398
696	9003170006965	9009010006966	398
698	9003170006989	9009010006980	398
728	9003170007283	9009010007284	396
729	9003170007290	9009010007291	396
732	9003170007320	9009010007321	396
733	9003170007337	9009010007338	396
738	9003170007382	9009010007383	397
739	9003170007399	9009010007390	397
741	9003170007412	9009010007413	397
742	9003170007429	9009010007420	397
746	9003170007467	9009010007468	397
747	9003170007474	9009010007475	396
749	9003170007498	9009010007499	396
752	9003170007528	9009010007529	396
754	9003170007542	9009010007543	397
758	9003170007580	9009010007581	397
760	9003170007603	9009010007604	397
761	9003170007610	9009010007611	397
763	9003170007634	9009010007635	397
767	9003170007672	9009010007673	397
768	9003170007689	9009010007680	397
769	9003170007696	9009010007697	397
892	9003170008921	9009010008922	115

Type No.	EAN product	EAN packaging	Page
917	9003170009171	9009010009172	115
921	9003170009218	9009010009219	115
923	9003170009232	9009010009233	117
925	9003170009256	9009010009257	117
929	9003170009294	9009010009295	117
1175	9003170011754	9009010011755	115
1197	9003170011976	9009010011977	63
1211	9003170012119	9009010012110	63
1254	9003170012546	9009010012547	63
1421	9003170014212	9009010014213	79
1649	9003170016490	9009010016491	61
1870	9003170018708	9009010018709	403
1872	9003170018722	9009010018723	403
1873	9003170018739	9009010018730	403
1874	9003170018746	9009010018747	403
2010	9003170020107	9009010020108	113
2017	9003170020176	9009010020177	113
2020	9003170020206	9009010020207	117
2026	9003170020268	9009010020269	113
2027	9003170020275	9009010020276	113
2030	9003170020305	9009010020306	117
2031	9003170020312	9009010020313	113
2039	9003170020398	9009010020399	113
2046	9003170020466	9009010020467	113
2048	9003170020480	9009010020481	113
2055	9003170020558	9009010020559	113
2058	9003170020589	9009010020580	113
2062	9003170020626	9009010020627	113
2072	9003170020725	9009010020726	113
2081	9003170020817	9009010020818	113
2090	9003170020909	9009010020900	113
2111	9003170021111	9009010021112	112
2125	9003170021258	9009010021259	114
2133	9003170021333	9009010021334	114
2134	9003170021340	9009010021341	114
2145	9003170021456	9009010021457	114
2148	9003170021487	9009010021488	114
2155	9003170021555	9009010021556	117
2163	9003170021630	9009010021631	114
2165	9003170021654	9009010021655	114

Type No.	EAN product	EAN packaging	Page
2189	9003170021890	9009010021891	114
2201	9003170022019	9009010022010	114
2202	9003170022026	9009010022027	114
2209	9003170022095	9009010022096	114
2211	9003170022118	9009010022119	112
2221	9003170022217	9009010022218	117
2224	9003170022248	9009010022249	117
2238	9003170022385	9009010022386	114
2248	9003170022484	9009010022485	114
2249	9003170022491	9009010022492	112
2256	9003170022569	9009010022560	114
2258	9003170022583	9009010022584	112
2284	9003170022842	9009010022843	112
2529	9003170025294	9009010025295	412
2536	9003170025362		410
2540	9003170025409	9009010025400	418
2658	9003170026581		412
2661	9003170026611	9009010026612	419
2680	9003170026802		412
2693	9003170026932	9009010026933	408
2697	9003170026970		410
2699	9003170026994	9009010026995	410
2751	9003170027519		412
2753	9003170027533		412
2758	9003170027588		408
2762	9003170027625		410
2905	9003170029056		412
2916	9003170029162		410
2956	9003170029568	9009010029569	412
2962	9003170029629	9009010029620	408
2973	9003170029735	9009010029736	410
3020	9003170030205		410
3070	9003170030700	9009010030701	425
3077	9003170030779	9009010030770	425
3085	9003170030854	9009010030855	424
3091	9003170030915	9009010030916	424
3092	9003170030922	9009010030923	424
3132	9003170031325		412
3135	9003170031356		412
3142	9003170031424		410

Type No.	EAN product	EAN packaging	Page
3144	9003170031448		411
3145	9003170031455		410
3186	9003170031868		412
3206	9003170032063		412
3208	9003170032087		413
3210	9003170032100		412
3217	9003170032179		408
3220	9003170032209		410
3222	9003170032223		411
3424	9003170034241	9009010034242	425
3474	9003170034746		408
3538	9003170035385		408
3545	9003170035453		410
4917	9003170049177	9009010049178	434
4924	9003170049245	9009010049246	434
5028	9003170050289	9009010050280	438
5270	9003170052702	9009010052703	77
5287	9003170052870	9009010052871	77
5289	9003170052894	9009010052895	84
5293	9003170052931	9009010052932	79
5295	9003170052955	9009010052956	84
5308	9003170053082	9009010053083	77
5313	9003170053136	9009010053137	79
5316	9003170053167	9009010053168	84
5330	9003170053303	9009010053304	79
5349	9003170053495	9009010053496	77
5365	9003170053655	9009010053656	85
5382	9003170053822	9009010053823	79
5406	9003170054065	9009010054066	77
5412	9003170054126	9009010054127	79
5416	9003170054164	9009010054165	85
5428	9003170054287	9009010054288	79
5485	9003170054850	9009010054851	36
5843	9003170058438	9009010058439	434
5886	9003170058865	9009010058866	433
5887	9003170058872	9009010058873	433
5889	9003170058896	9009010058897	433
6207	9003170062077	9009010062078	115
6216	9003170062169	9009010062160	453
6309	9003170063098	9009010063099	400

Type No.	EAN product	EAN packaging	Page
6310	9003170063104	9009010063105	400
6313	9003170063135	9009010063136	398
6314	9003170063142	9009010063143	399
6315	9003170063159	9009010063150	399
6316	9003170063166	9009010063167	399
6317	9003170063173	9009010063174	399
6318	9003170063180	9009010063181	399
6321	9003170063210	9009010063211	399
6322	9003170063227	9009010063228	399
6324	9003170063241	9009010063242	399
6335	9003170063357	9009010063358	402
6341	9003170063418	9009010063419	397
6400	9003170064002	9009010064003	114
6401	9003170064019	9009010064010	114
6402	9003170064026	9009010064027	114
6404	9003170064040	9009010064041	115
6405	9003170064057	9009010064058	115
6660	9003170066600	9009010066601	115
6661	9003170066617	9009010066618	115
6710	9003170067102	9009010067103	64
6718	9003170067188	9009010067189	64
6879	9003170068796	9009010068797	113
6884	9003170068840	9009010068841	117
6886	9003170068864	9009010068865	117
6896	9003170068963	9009010068964	113
6898	9003170068987	9009010068988	113
6899	9003170068994	9009010068995	113
6920	9003170069205	9009010069206	114
6928	9003170069281	9009010069282	114
6932	9003170069328	9009010069329	114
6957	9003170069571	9009010069572	328
6958	9003170069588	9009010069589	328
6959	9003170069595	9009010069596	114
6960	9003170069601	9009010069602	328
6961	9003170069618	9009010069619	114
6964	9003170069649	9009010069640	328
6968	9003170069687	9009010069688	328
6969	9003170069694	9009010069695	328
6974	9003170069748	9009010069749	114
6979	9003170069793	9009010069794	328

Type No.	EAN product	EAN packaging	Page
6991	9003170069915	9009010069916	328
6993	9003170069939	9009010069930	328
7007	9003170070072	9009010070073	328
7008	9003170070089	9009010070080	328
7030	9003170070300	9009010070301	328
7035	9003170070355	9009010070356	451
7055	9003170070553	9009010070554	328
7058	9003170070584	9009010070585	328
7070	9003170070706	9009010070707	328
7072	9003170070720	9009010070721	328
7086	9003170070867	9009010070868	328
7087	9003170070874	9009010070875	328
7093	9003170070935	9009010070936	328
7100	9003170071000	9009010071001	328
7133	9003170071338	9009010071339	418
7186	9003170071864	9009010071865	419
7203	9003170072038	9009010072039	419
7204	9003170072045	9009010072046	418
7205	9003170072052		408
7210	9003170072106		411
7318	9003170073189	9009010073180	425
7328	9003170073288	9009010073289	425
7348	9003170073486		412
7362	9003170073622	9009010073623	419
7374	9003170073745		411
8641	9003170086417	9009010086418	433
8804	9003170088046	9009010088047	400
8807	9003170088077	9009010088078	397
8808	9003170088084	9009010088085	397
8833	9003170088336	9009010088337	63
9009	9003170090094	9009010090095	453
9017	9003170090179	9009010090170	400
9293	9003170092937	9009010092938	424
9398	9003170093989	9009010093980	434
9572	9003170095723		408
9627	9003170096270	9009010096271	433
9651	9003170096515	9009010096516	412
9652	9003170096522		412
9653	9003170096539	9009010096530	412
9833	9003170098335	9009010098336	434

Type No.	EAN product	EAN packaging	Page
10016	9003170100168	9009010100169	418
10265	9003170102650	9009010102651	424
11182	9003170111829		413
11362	9003170113625	9009010113626	113
11480	9003170114806	9009010114807	115
11481	9003170114813	9009010114814	114
12836	9003170128360	9009010128361	114
12970	9003170129701	9009010129702	64
13529	9003170135290	9009010135291	117
13695	9003170136952	9009010136953	63
14364	9003170143646	9009010143647	113
15321	9003170153218	9009010153219	455
15383	9003170153836	9009010153837	114
15685	9003170156851	9009010156852	63
15839	9003170158398		408
15842	9003170158428		408
15885	9003170158855	9009010158856	400
16022	9003170160223	9009010160224	410
16422	9003170164221	9009010164222	150
16425	9003170164252	9009010164253	150
16577	9003170165778		409
16615	9003170166157		411
16746	9003170167468	9009010167469	159
17256	9003170172561		425
18825	9003170188258	9009010188259	424
19012	9003170190121	9009010190122	157
19040	9003170190404	9009010190405	433
19117	9003170191173	9009010191174	425
19435	9003170194358	9009010194359	419
19659	9003170196598	9009010196599	434
20020	9003170200202	9009010200203	115
20023	9003170200233	9009010200234	114
20031	9003170200318	9009010200319	115
20037	9003170200370	9009010200371	115
20047	9003170200479	9009010200470	115
20311	9003170203111	9009010203112	400
20313	9003170203135	9009010203136	400
20332	9003170203326	9009010203327	400
20450	9003170204507		402
20487	9003170204873	9009010204874	128

Type No.	EAN product	EAN packaging	Page
20555	9003170205559	9009010205550	128
20557	9003170205573	9009010205574	128
20565	9003170205658	9009010205659	128
20587	9003170205870	9009010205871	128
20590	9003170205900	9009010205901	128
20781	9003170207812	9009010207813	311
20793	9003170207935	9009010207936	311
20794	9003170207942	9009010207943	311
20796	9003170207966	9009010207967	311
20797	9003170207973	9009010207974	311
20798	9003170207980	9009010207981	312
20799	9003170207997	9009010207998	312
20801	9003170208017	9009010208018	312
20803	9003170208031	9009010208032	312
20805	9003170208055	9009010208056	312
20806	9003170208062	9009010208063	312
20807	9003170208079	9009010208070	312
20811	9003170208116	9009010208117	312
20813	9003170208130	9009010208131	312
20816	9003170208161	9009010208162	312
20817	9003170208178	9009010208179	312
20819	9003170208192	9009010208193	312
20821	9003170208215	9009010208216	312
20822	9003170208222	9009010208223	312
20824	9003170208246	9009010208247	312
20832	9003170208321	9009010208322	320
20833	9003170208338	9009010208339	320
20834	9003170208345	9009010208346	320
20835	9003170208352	9009010208353	320
20836	9003170208369	9009010208360	320
20842	9003170208420	9009010208421	320
20844	9003170208444	9009010208445	320
20851	9003170208512	9009010208513	320
20860	9003170208604	9009010208605	320
20868	9003170208680	9009010208681	320
21094	9003170210942	9009010210943	112
21125	9003170211253	9009010211254	112
21137	9003170211376	9009010211377	112
21160	9003170211604	9009010211605	112
21166	9003170211666	9009010211667	112

Type No.	EAN product	EAN packaging	Page
21192	9003170211925	9009010211926	112
21202	9003170212021	9009010212022	112
21232	9003170212328	9009010212329	112
21233	9003170212335	9009010212336	112
21239	9003170212397	9009010212398	112
21262	9003170212625	9009010212626	250
21381	9003170213813	9009010213814	219
22257	9003170222570	9009010222571	419
22373	9003170223737	9009010223738	481
22377	9003170223775	9009010223776	481
22411	9003170224116	9009010224117	419
23469	9003170234696	9009010234697	161
23470	9003170234702	9009010234703	161
23471	9003170234719	9009010234710	161
23472	9003170234726	9009010234727	165
23473	9003170234733	9009010234734	165
23474	9003170234740	9009010234741	165
23509	9003170235099	9009010235090	99
23525	9003170235259	9009010235250	98
24299	9003170242998	9009010242999	435
25590	9003170255905	9009010255906	63
28162	9003170281621	9009010281622	438
28375	9003170283755		77
28465	9003170284653	9009010284654	400
28466	9003170284660	9009010284661	400
28467	9003170284677	9009010284678	401
28549	9003170285490	9009010285491	425
28584	9003170285841		413
28692	9003170286923	9009010286924	61
28869	9003170288699	9009010288690	401
29382	9003170293822	9009010293823	401
30741	9003170307413	9009010307414	36
30806	9003170308069		428
30840	9003170308403		411
31009	9003170310093	9009010310094	434
31675	9003170316750	9009010316751	434
31694	9003170316941		408
32141	9003170321419	9009010321410	36
32142	9003170321426	9009010321427	36
32765	9003170327657	9009010327658	419

Type No.	EAN product	EAN packaging	Page
32981	9003170329811		409
33199	9003170331999	9009010331990	93
33249	9003170332491	9009010332492	425
33435	9003170334358		410
33531	9003170335317	9009010335318	455
34924	9003170349246	9009010349247	433
34937	9003170349376	9009010349377	390
34983	9003170349833		408
35677	9003170356770	9009010356771	402
35937	9003170359375	9009010359376	32
35944	9003170359443	9009010359444	32
35946	9003170359467	9009010359468	32
35950	9003170359504	9009010359505	32
36890	9003170368902		373
36918	9003170369183		373
38012	9003170380126	9009010380127	438
39110	9003170391108	9009010391109	63
39128	9003170391283	9009010391284	114
39321	9003170393218	9009010393219	36
39540	9003170395403		410
39624	9003170396240	9009010396241	35
39867	9003170398671		362
39869	9003170398695		362
41489	9003170414890	9009010414891	32
41491	9003170414913	9009010414914	32
41492	9003170414920	9009010414921	32
41493	9003170414937	9009010414938	32
41494	9003170414944	9009010414945	32
41495	9003170414951	9009010414952	32
41499	9003170414999	9009010414990	32
41501	9003170415019	9009010415010	32
41504	9003170415040	9009010415041	32
41505	9003170415057	9009010415058	32
41506	9003170415064	9009010415065	32
41507	9003170415071	9009010415072	32
41508	9003170415088	9009010415089	32
41509	9003170415095	9009010415096	32
41511	9003170415118	9009010415119	32
42808	9003170428088	9009010428089	63
42809	9003170428095	9009010428096	64

Type No.	EAN product	EAN packaging	Page
43017	9003170430173	9009010430174	390
43311	9003170433112	9009010433113	453
43485	9003170434850	9009010434851	484
43490	9003170434904	9009010434905	484
45421	9003170454216	9009010454217	115
45422	9003170454223	9009010454224	115
46586	9003170465861	9009010465862	85
46633	9003170466332	9009010466333	63
47005	9003170470056		425
47009	9003170470094		425
49273	9003170492737	9009010492738	433
49680	9003170496803		412
49856	9003170498562	9009010498563	276
50184	9003170501842		410
50801	9003170508018	9009010508019	206
50845	9003170508452	9009010508453	424
51392	9003170513920	9009010513921	524
51494	9003170514941	9009010514942	424
52223	9003170522236		408
52433	9003170524339	9009010524330	251
52679	9003170526791	9009010526792	157
54119	9003170541190		434
54820	9003170548205	9009010548206	433
55375	9003170553759	9009010553750	424
56155	9003170561556		412
56895	9003170568951	9009010568952	99
57004	9003170570046	9009010570047	93
57005	9003170570053	9009010570054	93
57006	9003170570060	9009010570061	93
58157	9003170581578	9009010581579	61
58158	9003170581585	9009010581586	63
58293	9003170582933	9009010582934	157
58964	9003170589642		412
59543	9003170595438	9009010595439	481
59545	9003170595452	9009010595453	481
59580	9003170595803	9009010595804	481
59861	9003170598613		413
60159	9003170601597	9009010601598	336
60170	9003170601702	9009010601703	336
60184	9003170601849	9009010601840	336

Type No.	EAN product	EAN packaging	Page
60185	9003170601856	9009010601857	336
60337	9003170603379	9009010603370	336
60351	9003170603515	9009010603516	336
60352	9003170603522	9009010603523	336
60354	9003170603546	9009010603547	336
60572	9003170605724	9009010605725	64
62144	9003170621441	9009010621442	336
62153	9003170621533	9009010621534	336
62154	9003170621540	9009010621541	336
62155	9003170621557	9009010621558	336
62178	9003170621786	9009010621787	336
62180	9003170621809	9009010621800	342
62181	9003170621816	9009010621817	342
62190	9003170621908	9009010621909	342
62194	9003170621946	9009010621947	342
62197	9003170621977	9009010621978	342
62202	9003170622028	9009010622029	342
62212	9003170622127	9009010622128	342
62239	9003170622394	9009010622395	342
62353	9003170623537	9009010623538	342
62384	9003170623841	9009010623842	342
62409	9003170624091	9009010624092	342
62416	9003170624169	9009010624160	342
62419	9003170624190	9009010624191	342
62434	9003170624343	9009010624344	342
62436	9003170624367	9009010624368	342
62437	9003170624374	9009010624375	342
62448	9003170624480	9009010624481	342
62453	9003170624534	9009010624535	342
62471	9003170624718	9009010624719	342
62518	9003170625180	9009010625181	342
62548	9003170625487	9009010625488	342
62694	9003170626941	9009010626942	115
62874	9003170628747	9009010628748	64
63195	9003170631952	9009010631953	434
66490	9003170664905	9009010664906	60
66491	9003170664912	9009010664913	60
66493	9003170664936	9009010664937	60
68134	9003170681346	9009010681347	408
68340	9003170683401		411

Type No.	EAN product	EAN packaging	Page
69502	9003170695022	9009010695023	436
69766	9003170697668	9009010697669	524
69767	9003170697675	9009010697676	524
69768	9003170697682	9009010697683	524
69769	9003170697699	9009010697690	524
69833	9003170698337	9009010698338	524
69848	9003170698481	9009010698482	524
69855	9003170698559	9009010698550	524
69856	9003170698566	9009010698567	524
69860	9003170698603	9009010698604	524
70128	9003170701280	9009010701281	434
71212	9003170712125	9009010712126	419
72045	9003170720458		413
73667	9003170736671		411
74492	9003170744928	9009010744929	455
74493	9003170744935	9009010744936	455
74497	9003170744973	9009010744974	455
74499	9003170744997	9009010744998	116
75020	9003170750202	9009010750203	50
75079	9003170750790		412
75193	9003170751933	9009010751934	196
75306	9003170753067	9009010753068	63
75647	9003170756471	9009010756472	115
75669	9003170756693		442
75803	9003170758031	9009010758032	434
75915	9003170759151	9009010759152	455
75934	9003170759342	9009010759343	53
75935	9003170759359	9009010759350	53
75936	9003170759366	9009010759367	53
75937	9003170759373	9009010759374	53
75938	9003170759380	9009010759381	53
76253	9003170762533		172
76618	9003170766180	9009010766181	172
76628	9003170766289	9009010766280	172
76648	9003170766487	9009010766488	172
77824	9003170778244	9009010778245	434
78379	9003170783798	9009010783799	410
78847	9003170788472	9009010788473	434
79292	9003170792929	9009010792920	172
79664	9003170796644	9009010796645	401

Type No.	EAN product	EAN packaging	Page
79957	9003170799577	9009010799578	63
80653	9003170806534	9009010806535	486
82078	9003170820783	9009010820784	277
82079	9003170820790	9009010820791	277
82646	9003170826464	9009010826465	36
83585	9003170835855	9009010835856	99
84809	9003170848091		434
86734	9003170867344	9009010867345	
87910	9003170879101	9009010879102	279
88905	9003170889056	9009010889057	113
89383	9003170893831	9009010893832	99
89504	9003170895040	9009010895041	115
91441	9003170914413	9009010914414	434
91963	9003170919630	9009010919631	403
94134	9003170941341	9009010941342	337
94204	9003170942041	9009010942042	337
94210	9003170942102	9009010942103	337
94223	9003170942232	9009010942233	337
94234	9003170942348	9009010942349	337
94237	9003170942379	9009010942370	337
95717	9003170957175	9009010957176	403
96205	9003170962056	9009010962057	64
96821	9003170968218	9009010968219	451
97785	9003170977852	9009010977853	115
99864	9003170998642		410
100660	9003171006605	9009011006606	65
100758	9003171007589	9009011007580	113
101000	9003171010008	9009011010009	65
101508	9003171015089	9009011015080	114
102804	9003171028041		428
102813	9003171028133	9009011028134	38
102814	9003171028140	9009011028141	61
102831	9003171028317	9009011028318	61
102850	9003171028508	9009011028509	61
102859	9003171028591	9009011028592	61
102902	9003171029024	9009011029025	438
103283	9003171032833	9009011032834	472
103394	9003171033946	9009011033947	114
103622	9003171036220	9009011036221	401
103851	9003171038514		412

Type No.	EAN product	EAN packaging	Page
103872	9003171038729		411
104376	9003171043761	9009011043762	438
104604	9003171046045	9009011046046	112
104894	9003171048940	9009011048941	115
104962	9003171049626	9009011049627	111
104968	9003171049688	9009011049689	111
105009	9003171050097	9009011050098	114
105367	9003171053678	9009011053679	112
106372	9003171063721	9009011063722	115
107050	9003171070507	9009011070508	425
108261	9003171082616	9009011082617	112
108262	9003171082623	9009011082624	112
108479	9003171084795	9009011084796	435
109381	9003171093810		172
110032	9003171100327		408
110554	9003171105544	9009011105545	425
111434	9003171114348	9009011114349	414
111436	9003171114362	9009011114363	414
111567	9003171115673	9009011115674	260
111570	9003171115703	9009011115704	260
111577	9003171115772	9009011115773	260
111584	9003171115840	9009011115841	260
111585	9003171115857	9009011115858	260
111611	9003171116113	9009011116114	260
111631	9003171116311	9009011116312	260
111799	9003171117998	9009011117999	411
112055	9003171120554		455
112204	9003171122046	9009011122047	261
112205	9003171122053	9009011122054	261
112242	9003171122428	9009011122429	261
112254	9003171122541	9009011122542	261
112273	9003171122732	9009011122733	261
112283	9003171122831	9009011122832	261
112298	9003171122985	9009011122986	261
112398	9003171123982	9009011123983	258
112401	9003171124019	9009011124010	258
112406	9003171124064	9009011124065	258
112411	9003171124118	9009011124119	258
112413	9003171124132	9009011124133	258
112418	9003171124187	9009011124188	258

Type No.	EAN product	EAN packaging	Page
112432	9003171124323	9009011124324	258
112438	9003171124385	9009011124386	258
112447	9003171124477	9009011124478	258
112449	9003171124491	9009011124492	258
112452	9003171124521	9009011124522	258
112469	9003171124699	9009011124690	259
112471	9003171124712	9009011124713	259
112486	9003171124866	9009011124867	259
112493	9003171124934	9009011124935	259
112494	9003171124941	9009011124942	259
112510	9003171125108	9009011125109	259
112527	9003171125276	9009011125277	259
112532	9003171125320	9009011125321	259
112542	9003171125429	9009011125420	113
112543	9003171125436	9009011125437	262
112546	9003171125467	9009011125468	262
112550	9003171125504	9009011125505	262
112551	9003171125511	9009011125512	262
112581	9003171125818	9009011125819	262
112588	9003171125887	9009011125888	262
112589	9003171125894	9009011125895	262
112590	9003171125900	9009011125901	262
112591	9003171125917	9009011125918	262
112592	9003171125924	9009011125925	262
112593	9003171125931	9009011125932	262
112599	9003171125993	9009011125994	262
112602	9003171126020	9009011126021	264
112603	9003171126037	9009011126038	264
112917	9003171129175	9009011129176	260
112918	9003171129182	9009011129183	260
112923	9003171129236	9009011129237	260
112924	9003171129243	9009011129244	260
112928	9003171129281	9009011129282	260
112934	9003171129342	9009011129343	260
112935	9003171129359	9009011129350	260
112937	9003171129373	9009011129374	260
112947	9003171129472	9009011129473	260
112948	9003171129489	9009011129480	260
112950	9003171129502	9009011129503	260
112988	9003171129885	9009011129886	260

Type No.	EAN product	EAN packaging	Page
113007	9003171130072	9009011130073	260
113023	9003171130232	9009011130233	260
113026	9003171130263	9009011130264	260
113031	9003171130317	9009011130318	260
113057	9003171130577	9009011130578	260
113059	9003171130591	9009011130592	260
113299	9003171132991	9009011132992	117
116061	9003171160611	9009011160612	257
116065	9003171160659	9009011160650	257
116097	9003171160970	9009011160971	257
116111	9003171161113	9009011161114	257
116115	9003171161151	9009011161152	257
116127	9003171161274	9009011161275	257
116143	9003171161434	9009011161435	257
116152	9003171161526	9009011161527	257
116708	9003171167085		408
116725	9003171167252	9009011167253	113
116973	9003171169737	9009011169738	114
117064	9003171170641	9009011170642	81
117065	9003171170658	9009011170659	81
117068	9003171170689	9009011170680	81
117070	9003171170702	9009011170703	81
117071	9003171170719	9009011170710	81
117072	9003171170726	9009011170727	81
117073	9003171170733	9009011170734	81
117074	9003171170740	9009011170741	81
117871	9003171178715		455
119325	9003171193251	9009011193252	437
119395	9003171193954	9009011193955	65
120033	9003171200331	9009011200332	113
120653	9003171206531	9009011206532	313
120667	9003171206678	9009011206679	313
120671	9003171206715	9009011206716	313
120674	9003171206746	9009011206747	313
120676	9003171206760	9009011206761	313
120682	9003171206821	9009011206822	313
120688	9003171206883	9009011206884	313
120689	9003171206890	9009011206891	313
120693	9003171206937	9009011206938	313
120694	9003171206944	9009011206945	313

Type No.	EAN product	EAN packaging	Page
120700	9003171207002	9009011207003	313
120716	9003171207163	9009011207164	313
120769	9003171207699	9009011207690	321
120770	9003171207705	9009011207706	321
120772	9003171207729	9009011207720	321
120774	9003171207743	9009011207744	321
120777	9003171207774	9009011207775	321
120779	9003171207798	9009011207799	321
120781	9003171207811	9009011207812	321
120787	9003171207873	9009011207874	321
121878	9003171218787	9009011218788	25
122868	9003171228687	9009011228688	114
122989	9003171229899	9009011229890	434
122996	9003171229967		411
122997	9003171229974		411
123222	9003171232226	9009011232227	424
123633	9003171236330	9009011236331	412
123644	9003171236446	9009011236447	112
123696	9003171236965	9009011236966	112
123716	9003171237160		427
126245	9003171262452	9009011262453	434
126460	9003171264609	9009011264600	112
126665	9003171266658		410
126781	9003171267815		455
127356	9003171273564	9009011273565	390
127554	9003171275544		411
127775	9003171277753	9009011277754	115
128345	9003171283457	9009011283458	171
129260	9003171292602	9009011292603	112
129550	9003171295504		410
130009	9003171300093	9009011300094	114
131231	9003171312317	9009011312318	114
131779	9003171317794	9009011317795	265
131783	9003171317831	9009011317832	265
131784	9003171317848	9009011317849	265
131786	9003171317862	9009011317863	265
131991	9003171319910	9009011319911	433
135853	9003171358537	9009011358538	115
136087	9003171360875	9009011360876	281
136090	9003171360905	9009011360906	281

Type No.	EAN product	EAN packaging	Page
136161	9003171361612	9009011361613	281
136164	9003171361643	9009011361644	281
136168	9003171361681	9009011361682	282
136173	9003171361735	9009011361736	282
136193	9003171361933	9009011361934	282
136535	9003171365351		403
136777	9003171367775	9009011367776	58
139155	9003171391558		435
139648	9003171396485	9009011396486	206
139651	9003171396515	9009011396516	206
139653	9003171396539	9009011396530	206
140022	9003171400229	9009011400220	58
141512	9003171415124	9009011415125	50
146601	9003171466010	9009011466011	115
146630	9003171466300		411
146640	9003171466409	9009011466400	402
146644	9003171466447		413
146906	9003171469066		413
146910	9003171469103		409
146965	9003171469653		409
147574	9003171475746		409
147600	9003171476002		409
147601	9003171476019		409
147614	9003171476149		410
147626	9003171476262		409
147652	9003171476521		409
147656	9003171476569		409
147698	9003171476989		409
147701	9003171477016		409
148132	9003171481327	9009011481328	65
148517	9003171485172	9009011485173	115
148718	9003171487183	9009011487184	281
148722	9003171487220	9009011487221	282
150085	9003171500851	9009011500852	114
150402	9003171504026		426
150403	9003171504033		426
150465	9003171504651	9009011504652	225
150467	9003171504675	9009011504676	225
150468	9003171504682	9009011504683	225
150469	9003171504699	9009011504690	225

Type No.	EAN product	EAN packaging	Page
150473	9003171504736	9009011504737	225
151301	9003171513011	9009011513012	58
154428	9003171544282		412
154544	9003171545449	9009011545440	88
154545	9003171545456	9009011545457	88
157800	9003171578003	9009011578004	65
159000	9003171590005		425
160229	9003171602296	9009011602297	200
160230	9003171602302	9009011602303	200
160235	9003171602357	9009011602358	200
160240	9003171602401	9009011602402	200
160242	9003171602425	9009011602426	200
160244	9003171602449	9009011602440	200
160245	9003171602456	9009011602457	200
160246	9003171602463	9009011602464	200
160247	9003171602470	9009011602471	200
160249	9003171602494	9009011602495	201
160251	9003171602517	9009011602518	201
160252	9003171602524	9009011602525	201
160254	9003171602548	9009011602549	201
160255	9003171602555	9009011602556	201
160256	9003171602562	9009011602563	201
161678	9003171616781	9009011616782	426
164485	9003171644852	9009011644853	64
165940	9003171659405	9009011659406	62
167205	9003171672053	9009011672054	62
167207	9003171672077	9009011672078	62
167215	9003171672152	9009011672153	62
167226	9003171672268	9009011672269	62
167333	9003171673333	9009011673334	62
167334	9003171673340	9009011673341	62
167339	9003171673395	9009011673396	62
169096	9003171690965	9009011690966	113
169543	9003171695434	9009011695435	112
170599	9003171705997	9009011705998	93
172352	9003171723526	9009011723527	426
175220	9003171752205	9009011752206	402
179959	9003171799590		426
184247	9003171842470		411
185988	9003171859881	9009011859882	399

Type No.	EAN product	EAN packaging	Page
186109	9003171861099	9009011861090	399
186445	9003171864458	9009011864459	434
194540	9003171945409	9009011945400	438
195112	9003171951127	9009011951128	454
196324	9003171963243	9009011963244	58
199657	9003171996579	9009011996570	176
199678	9003171996784	9009011996785	179
199682	9003171996821	9009011996822	177
199689	9003171996890	9009011996891	178
202159	9003172021591	9009012021592	63
203176	9003172031767	9009012031768	434
205056	9003172050560	9009012050561	219
205058	9003172050584	9009012050585	219
205060	9003172050607	9009012050608	219
205822	9003172058221	9009012058222	64
210314	9003172103143		434
216789	9003172167893	9009012167894	434
220394	9003172203942	9009012203943	64
222042	9003172220420	9009012220421	37
222043	9003172220437	9009012220438	89
222044	9003172220444	9009012220445	31
222045	9003172220451	9009012220452	51
222858	9003172228587	9009012228588	79
222860	9003172228600	9009012228601	79
222861	9003172228617	9009012228618	79
222863	9003172228631	9009012228632	80
222865	9003172228655	9009012228656	80
222868	9003172228686	9009012228687	80
222870	9003172228709	9009012228700	80
222873	9003172228730	9009012228731	89
222889	9003172228891	9009012228892	89
222898	9003172228983	9009012228984	89
222997	9003172229973	9009012229974	30
222998	9003172229980	9009012229981	30
222999	9003172229997	9009012229998	30
223000	9003172230009	9009012230000	30
223002	9003172230023	9009012230024	30
223012	9003172230122	9009012230123	37
223015	9003172230153	9009012230154	37
223019	9003172230191	9009012230192	37

Type No.	EAN product	EAN packaging	Page
223021	9003172230214	9009012230215	31
223022	9003172230221	9009012230222	31
223023	9003172230238	9009012230239	31
223025	9003172230252	9009012230253	37
223027	9003172230276	9009012230277	37
223029	9003172230290	9009012230291	37
223031	9003172230313	9009012230314	37
223032	9003172230320	9009012230321	59
223033	9003172230337	9009012230338	59
223035	9003172230351	9009012230352	51
223037	9003172230375	9009012230376	51
223039	9003172230399	9009012230390	51
223040	9003172230405	9009012230406	51
223042	9003172230429	9009012230420	51
223043	9003172230436	9009012230437	51
223129	9003172231297	9009012231298	54
223132	9003172231327	9009012231328	54
223134	9003172231341		54
223136	9003172231365	9009012231366	54
226295	9003172262956		425
226679	9003172266794		426
226680	9003172266800		426
227165	9003172271651	9009012271652	63
227435	9003172274355	9009012274356	171
227450	9003172274508	9009012274509	113
230691	9003172306919	9009012306910	64
232811	9003172328119		389
233756	9003172337562	9009012337563	86
233757	9003172337579	9009012337570	86
233759	9003172337593	9009012337594	86
233760	9003172337609	9009012337600	86
233762	9003172337623	9009012337624	86
233765	9003172337654	9009012337655	86
233768	9003172337685	9009012337686	86
233771	9003172337715	9009012337716	86
233773	9003172337739	9009012337730	86
233774	9003172337746	9009012337747	86
233776	9003172337760	9009012337761	86
233777	9003172337777	9009012337778	86
233778	9003172337784	9009012337785	86

Type No.	EAN product	EAN packaging	Page
234387	9003172343877		388
234390	9003172343907		388
236318	9003172363189	9009012363180	89
236319	9003172363196	9009012363197	89
236320	9003172363202	9009012363203	89
237227	9003172372273		426
239448	9003172394480	9009012394481	282
241413	9003172414133	9009012414134	98
241857	9003172418575		426
243069	9003172430690	9009012430691	206
243071	9003172430713	9009012430714	206
244477	9003172444772		427
246982	9003172469829	9009012469820	256
246984	9003172469843	9009012469844	256
246985	9003172469850	9009012469851	256
246986	9003172469867	9009012469868	256
246987	9003172469874	9009012469875	207
246988	9003172469881	9009012469882	207
246990	9003172469904	9009012469905	207
246994	9003172469942	9009012469943	207
246995	9003172469959	9009012469950	207
246996	9003172469966	9009012469967	207
246998	9003172469980	9009012469981	207
247001	9003172470016		207
247165	9003172471655	9009012471656	207
247175	9003172471754	9009012471755	207
247366	9003172473666	9009012473667	207
250165	9003172501659	9009012501650	30
250169	9003172501697	9009012501698	30
250491	9003172504919		451
251584	9003172515847	9009012515848	455
252911	9003172529110	9009012529111	520
252912	9003172529127	9009012529128	520
252913	9003172529134	9009012529135	521
252914	9003172529141	9009012529142	521
252915	9003172529158	9009012529159	521
252916	9003172529165	9009012529166	521
252917	9003172529172	9009012529173	521
252918	9003172529189	9009012529180	521
252919	9003172529196	9009012529197	521

Type No.	EAN product	EAN packaging	Page
252920	9003172529202	9009012529203	521
252921	9003172529219	9009012529210	521
252923	9003172529233	9009012529234	521
252924	9003172529240	9009012529241	521
255451	9003172554518	9009012554519	50
255835	9003172558356	9009012558357	438
261732	9003172617329		172
263249	9003172632490	9009012632491	282
263506	9003172635064		412
272894	9003172728940	9009012728941	58
275634	9003172756349	9009012756340	99
278979	9003172789798	9009012789799	65
281719	9003172817194	9009012817195	410
282079	9003172820798	9009012820799	63
282085	9003172820859	9009012820850	63
282110	9003172821108	9009012821109	63
282111	9003172821115	9009012821116	63
282113	9003172821139	9009012821130	63
282114	9003172821146	9009012821147	64
282149	9003172821498	9009012821499	32
282150	9003172821504	9009012821505	32
289327	9003172893273	9009012893274	256
289329	9003172893297	9009012893298	256
289330	9003172893303	9009012893304	256
291120	9003172911205	9009012911206	424
291587	9003172915876	9009012915877	32
291588	9003172915883	9009012915884	32
291948	9003172919485	9009012919486	31
293641	9003172936413	9009012936414	251
293643	9003172936437	9009012936438	251
293644	9003172936444	9009012936445	251
293645	9003172936451	9009012936452	251
293737	9003172937373	9009012937374	251
293738	9003172937380	9009012937381	251
293739	9003172937397	9009012937398	251
293740	9003172937403		252
293790	9003172937908	9009012937909	251
299269	9003172992693	9009012992694	44
299270	9003172992709	9009012992700	45
307876	9003173078761	9009013078762	50

Type No.	EAN product	EAN packaging	Page
309469	9003173094693	9009013094694	58
309471	9003173094716	9009013094717	61
310183	9003173101834	9009013101835	98
310184	9003173101841	9009013101842	98
310303	9003173103036	9009013103037	149
310305	9003173103050	9009013103051	150
310504	9003173105047	9009013105048	112
310980	9003173109809	9009013109800	99
310992	9003173109922	9009013109923	100
310993	9003173109939	9009013109930	100
310994	9003173109946	9009013109947	100
310995	9003173109953	9009013109954	100
310997	9003173109977	9009013109978	98
311096	9003173110966	9009013110967	98
313127	9003173131275	9009013131276	452
313466	9003173134665	9009013134666	452
313636	9003173136362		426
314463	9003173144633	9009013144634	99
315877	9003173158777	9009013158778	452
316272	9003173162729	9009013162720	452
316286	9003173162866	9009013162867	452
317307	9003173173077	9009013173078	99
318070	9003173180709	9009013180700	99
320074	9003173200742	9009013200743	100
320075	9003173200759	9009013200750	100
320369	9003173203699	9009013203690	419
321211	9003173212110	9009013212111	100
321395	9003173213957	9009013213958	98
323970	9003173239704	9009013239705	44
323976	9003173239766	9009013239767	44
323978	9003173239780	9009013239781	44
324303	9003173243039	9009013243030	45
324402	9003173244029	9009013244020	44
324404	9003173244043	9009013244044	44
325212	9003173252123	9009013252124	44
325219	9003173252192	9009013252193	45
325222	9003173252222	9009013252223	45
325224	9003173252246	9009013252247	45
325228	9003173252284	9009013252285	45
326214	9003173262146	9009013262147	100

Type No.	EAN product	EAN packaging	Page
330772	9003173307724	9009013307725	115
331500	9003173315002	9009013315003	434
331997	9003173319970	9009013319971	452
333180	9003173331804		412
335803	9003173358030		438
336499	9003173364994	9009013364995	100
337051	9003173370513	9009013370514	436
338237	9003173382370	9009013382371	434
342583	9003173425831	9009013425832	99
348387	9003173483879	9009013483870	475
351386	9003173513866	9009013513867	98
351767	9003173517673	9009013517674	454
355251	9003173552513	9009013552514	53
357223	9003173572238		443
362775	9003173627754	9009013627755	402
363249	9003173632499	9009013632490	452
363478	9003173634783	9009013634784	50
364685	9003173646854	9009013646855	434
365824	9003173658246	9009013658247	434
366888	9003173668887	9009013668888	36
367377	9003173673775	9009013673776	75
367545	9003173675458	9009013675459	84
367546	9003173675465	9009013675466	89
367548	9003173675489	9009013675480	84
367549	9003173675496	9009013675497	89
367550	9003173675502	9009013675503	84
367551	9003173675519	9009013675510	84
367552	9003173675526	9009013675527	89
367553	9003173675533	9009013675534	84
367554	9003173675540	9009013675541	84
367556	9003173675564	9009013675565	84
367557	9003173675571	9009013675572	89
367565	9003173675656	9009013675657	22
367566	9003173675663	9009013675664	37
367569	9003173675694	9009013675695	22
367572	9003173675724	9009013675725	37
367574	9003173675748	9009013675749	22
367575	9003173675755	9009013675756	33
367577	9003173675779	9009013675770	34
367578	9003173675786	9009013675787	22

Type No.	EAN product	EAN packaging	Page
367580	9003173675809	9009013675800	37
367582	9003173675823	9009013675824	34
367583	9003173675830	9009013675831	22
367585	9003173675854	9009013675855	37
367771	9003173677711	9009013677712	75
367772	9003173677728	9009013677729	75
367773	9003173677735	9009013677736	75
367775	9003173677759	9009013677750	75
367776	9003173677766	9009013677767	33
367777	9003173677773	9009013677774	34
367781	9003173677810	9009013677811	22
367782	9003173677827	9009013677828	37
367783	9003173677834	9009013677835	34
367785	9003173677858	9009013677859	22
367786	9003173677865	9009013677866	22
367787	9003173677872	9009013677873	37
367788	9003173677889	9009013677880	34
367789	9003173677896	9009013677897	22
367791	9003173677919	9009013677910	34
367800	9003173678008	9009013678009	22
367801	9003173678015	9009013678016	37
367802	9003173678022	9009013678023	34
367803	9003173678039	9009013678030	22
367804	9003173678046	9009013678047	37
372339	9003173723395	9009013723396	281
373520	9003173735206	9009013735207	64
377415	9003173774151	9009013774152	410
377664	9003173776643	9009013776644	98
384753	9003173847534	9009013847535	50
384754	9003173847541	9009013847542	50
384755	9003173847558	9009013847559	50
384756	9003173847565	9009013847566	50
384757	9003173847572	9009013847573	50
384758	9003173847589	9009013847580	50
384759	9003173847596	9009013847597	54
384764	9003173847640	9009013847641	54
386002	9003173860021	9009013860022	50
388126	9003173881262	9009013881263	281
390531	9003173905319	9009013905310	59
390532	9003173905326	9009013905327	59

Type No.	EAN product	EAN packaging	Page
390970	9003173909706		443
391718	9003173917183	9009013917184	455
395773	9003173957738	9009013957739	455
396678	9003173966785	9009013966786	58
407610	9003174076100		411
408229	9003174082293	9009014082294	58
408496	9003174084969	9009014084960	33
413027	9003174130277		451
413774	9003174137740		411
416671	9003174166719		438
422374	9003174223740	9009014223741	61
424846	9003174248460	9009014248461	100
433020	9003174330202	9009014330203	278
433039	9003174330394	9009014330395	278
436472	9003174364726	9009014364727	
437634	9003174376347	9009014376348	425
438088	9003174380887	9009014380888	434
439059	9003174390596	9009014390597	104
439061	9003174390619	9009014390610	104
441033	9003174410331	9009014410332	117
441203	9003174412038	9009014412039	104
441204	9003174412045	9009014412046	104
441206	9003174412069	9009014412060	104
441207	9003174412076	9009014412077	104
441219	9003174412199	9009014412190	104
441223	9003174412236	9009014412237	104
441224	9003174412243	9009014412244	104
441226	9003174412267	9009014412268	104
441231	9003174412311	9009014412312	104
441233	9003174412335	9009014412336	104
441241	9003174412410	9009014412411	104
441243	9003174412434	9009014412435	104
441245	9003174412458	9009014412459	104
441247	9003174412472	9009014412473	105
441248	9003174412489	9009014412480	105
441250	9003174412502	9009014412503	105
441302	9003174413028		425
441353	9003174413530	9009014413531	105
443944	9003174439448	9009014439449	451
446432	9003174464327		452

Type No.	EAN product	EAN packaging	Page
446453	9003174464532		452
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448603	9003174486039	9009014486030	424
449559	9003174495598		410
450328	9003174503286		413
451151	9003174511519	9009014511510	434
454393	9003174543930	9009014543931	206
454396	9003174543961	9009014543962	206
455124	9003174551249	9009014551240	424
455303	9003174553038	9009014553039	206
455312	9003174553120	9009014553121	206
455314	9003174553144	9009014553145	206
457370	9003174573708	9009014573709	281
458028	9003174580287	9009014580288	201
458029	9003174580294	9009014580295	201
458030	9003174580300	9009014580301	201
458031	9003174580317	9009014580318	201
458033	9003174580331	9009014580332	201
458034	9003174580348	9009014580349	201
458587	9003174585879	9009014585870	206
460744	9003174607441	9009014607442	60
460976	9003174609766	9009014609767	455
461239	9003174612391	9009014612392	425
464290	9003174642909	9009014642900	455
464537	9003174645375	9009014645376	466
464539	9003174645399	9009014645390	466
464540	9003174645405	9009014645406	466
464543	9003174645436	9009014645437	466
464544	9003174645443	9009014645444	466
464545	9003174645450	9009014645451	482
464546	9003174645467	9009014645468	482
464549	9003174645498	9009014645499	482
464551	9003174645511	9009014645512	482
464552	9003174645528	9009014645529	482
464553	9003174645535	9009014645536	482
464555	9003174645559	9009014645550	482
464556	9003174645566	9009014645567	482
464698	9003174646983	9009014646984	470
464853	9003174648536	9009014648537	482
464854	9003174648543	9009014648544	482

Type No.	EAN product	EAN packaging	Page
464855	9003174648550	9009014648551	482
464858	9003174648581	9009014648582	482
464859	9003174648598	9009014648599	482
465489	9003174654896	9009014654897	468
465492	9003174654926	9009014654927	468
465667	9003174656678	9009014656679	482
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466083	9003174660835	9009014660836	467
466084	9003174660842	9009014660843	467
466086	9003174660866	9009014660867	467
466087	9003174660873	9009014660874	467
466090	9003174660903	9009014660904	467
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466094	9003174660941	9009014660942	483
466095	9003174660958	9009014660959	483
466096	9003174660965	9009014660966	483
466098	9003174660989	9009014660980	483
466099	9003174660996	9009014660997	483
466744	9003174667445	9009014667446	81
466749	9003174667490	9009014667491	81
466754	9003174667544	9009014667545	81
466762	9003174667629	9009014667620	81
467266	9003174672661	9009014672662	467
467267	9003174672678	9009014672679	467
467268	9003174672685	9009014672686	467
467271	9003174672715	9009014672716	467
467273	9003174672739	9009014672730	467
467276	9003174672760	9009014672761	467
467280	9003174672807	9009014672808	483
467281	9003174672814	9009014672815	483
467282	9003174672821	9009014672822	483
467285	9003174672852	9009014672853	483
467288	9003174672883	9009014672884	483
467289	9003174672890	9009014672891	483
467414	9003174674146	9009014674147	467
467416	9003174674160	9009014674161	467
467428	9003174674283	9009014674284	467
467430	9003174674306	9009014674307	467
467431	9003174674313	9009014674314	467
467433	9003174674337	9009014674338	482

Type No.	EAN product	EAN packaging	Page
467434	9003174674344	9009014674345	482
467435	9003174674351	9009014674352	482
467436	9003174674368	9009014674369	482
467439	9003174674399	9009014674390	482
467443	9003174674436	9009014674437	467
467444	9003174674443	9009014674444	467
467445	9003174674450	9009014674451	467
467446	9003174674467	9009014674468	467
467448	9003174674481	9009014674482	467
468751	9003174687511	9009014687512	384
469619	9003174696193		384
471114	9003174711148		410
474524	9003174745242	9009014745243	82
474526	9003174745266	9009014745267	82
474527	9003174745273	9009014745274	87
474531	9003174745310	9009014745311	87
474532	9003174745327	9009014745328	87
474533	9003174745334	9009014745335	87
474534	9003174745341	9009014745342	87
474535	9003174745358	9009014745359	87
474743	9003174747437	9009014747438	466
474746	9003174747468	9009014747469	466
474751	9003174747512	9009014747513	466
474752	9003174747529	9009014747520	466
474753	9003174747536	9009014747537	466
474771	9003174747710	9009014747711	466
474775	9003174747758	9009014747759	468
474780	9003174747802	9009014747803	468
475019	9003174750192	9009014750193	513
475024	9003174750246	9009014750247	513
475790	9003174757900	9009014757901	470
475793	9003174757931	9009014757932	470
475797	9003174757979	9009014757970	470
475800	9003174758006	9009014758007	470
475960	9003174759607	9009014759608	452
475975	9003174759751	9009014759752	471
475978	9003174759782	9009014759783	471
475980	9003174759805	9009014759806	471
475983	9003174759836	9009014759837	471
475986	9003174759867	9009014759868	471

Type No.	EAN product	EAN packaging	Page
476545	9003174765455		426
477254	9003174772545	9009014772546	454
477283	9003174772835	9009014772836	403
477289	9003174772897	9009014772898	403
477342	9003174773429	9009014773420	391
477346	9003174773467	9009014773468	391
477349	9003174773498	9009014773499	391
477409	9003174774099	9009014774090	391
477412	9003174774129	9009014774120	391
477413	9003174774136	9009014774137	391
477422	9003174774228		403
477430	9003174774303	9009014774304	403
477724	9003174777243	9009014777244	454
477726	9003174777267	9009014777268	454
477755	9003174777557	9009014777558	453
477760	9003174777601	9009014777602	453
477837	9003174778370	9009014778371	452
484627	9003174846277	9009014846278	515
484672	9003174846727	9009014846728	515
490222	9003174902225	9009014902226	424
493199	9003174931997	9009014931998	63
494333	9003174943334	9009014943335	475
494339	9003174943396	9009014943397	475
494342	9003174943426	9009014943427	476
494349	9003174943495	9009014943496	475
494361	9003174943617	9009014943618	475
494365	9003174943655	9009014943656	476
494391	9003174943914	9009014943915	476
494394	9003174943945	9009014943946	475
494701	9003174947011	9009014947012	64
494985	9003174949855		442
495044	9003174950448		443
498229	9003174982296	9009014982297	434
501861	9003175018611	9009015018612	403
502437	9003175024377	9009015024378	403
502457	9003175024575	9009015024576	403
514338	9003175143382	9009015143383	58
514745	9003175147458	9009015147459	50
515988	9003175159888	9009015159889	83
515989	9003175159895	9009015159896	83

Type No.	EAN product	EAN packaging	Page
516594	9003175165940	9009015165941	408
519212	9003175192120	9009015192121	204
519213	9003175192137	9009015192138	204
519214	9003175192144	9009015192145	204
519215	9003175192151	9009015192152	204
519232	9003175192328	9009015192329	60
525355	9003175253555	9009015253556	36
525686	9003175256860	9009015256861	425
527875	9003175278756		426
529392	9003175293926	9009015293927	63
529399	9003175293995	9009015293996	483
529401	9003175294015	9009015294016	483
532510	9003175325108		443
532514	9003175325146		443
532540	9003175325405		443
534539	9003175345397	9009015345398	410
537021	9003175370214	9009015370215	206
537084	9003175370849	9009015370840	206
537089	9003175370894	9009015370895	206
537093	9003175370931	9009015370932	206
537095	9003175370955	9009015370956	206
537097	9003175370979	9009015370970	206
537110	9003175371105	9009015371106	206
537111	9003175371112	9009015371113	206
537112	9003175371129	9009015371120	206
537113	9003175371136	9009015371137	206
537114	9003175371143	9009015371144	206
537115	9003175371150	9009015371151	206
538503	9003175385034	9009015385035	60
540688	9003175406883	9009015406884	201
540689	9003175406890	9009015406891	201
543615	9003175436156		410
548169	9003175481699	9009015481690	114
548815	9003175488155		408
549002	9003175490028	9009015490029	64
551616	9003175516162	9009015516163	60
553403	9003175534036	9009015534037	99
559743	9003175597437	9009015597438	60
567352	9003175673520	9009015673521	88
567353	9003175673537	9009015673538	88

Type No.	EAN product	EAN packaging	Page
568265	9003175682652	9009015682653	433
570473	8032973219075	9009015704737	281
570485	8032973219112	9009015704850	281
572473	9003175724734	9009015724735	206
574844	9003175748440	9009015748441	504
574845	9003175748457	9009015748458	504
574846	9003175748464	9009015748465	504
574854	9003175748549	9009015748540	504
574855	9003175748556	9009015748557	504
574856	9003175748563	9009015748564	504
575635	9003175756353	9009015756354	206
576049	9003175760497	9009015760498	85
576050	9003175760503	9009015760504	85
577953	9003175779536		455
580650	9003175806508	9009015806509	206
587026	9003175870264		434
591103	9003175911035	9009015911036	63
591104	9003175911042	9009015911043	63
594360	9003175943609	9009015943600	63
594362	9003175943623	9009015943624	63
596597	9003175965977		412
596848	9003175968480	9009015968481	62
597041	9003175970414	9009015970415	62
597383	9003175973835	9009015973836	62
598008	9003175980086	9009015980087	468
598010	9003175980109	9009015980100	468
598011	9003175980116	9009015980117	468
599666	9003175996667	9009015996668	64
600134	9003176001346		408
603284	9003176032845	9009016032846	65
603818	9003176038182	9009016038183	149
608080	9003176080808	9009016080809	424
611499	9003176114992	9009016114993	452
614644	9003176146443	9009016146444	39
615549	9003176155490	9009016155491	58
617388	9003176173883	9009016173884	436
619701	9003176197018		451
619872	9003176198725		428
620118	9003176201180	9009016201181	362
620464	9003176204648	9009016204649	437

Notes

Type No.	EAN product	EAN packaging	Page
630537	9003176305376	9009016305377	58
631057	9003176310578	9009016310579	434
633286	9003176332860	9009016332861	58
635268	9003176352684	9009016352685	38
636398	9003176363987	9009016363988	436
636658	9003176366582	9009016366583	436
636789	9003176367893	9009016367894	84
637066	9003176370664	9009016370665	20
637067	9003176370671	9009016370672	21
637068	9003176370688	9009016370689	21
637069	9003176370695	9009016370696	21
637070	9003176370701	9009016370702	21
637071	9003176370718	9009016370719	21
637072	9003176370725	9009016370726	21
637073	9003176370732	9009016370733	21
637074	9003176370749	9009016370740	21
638253	9003176382537		172
639076	9003176390761	9009016390762	58
639558	9003176395582	9009016395583	470
639559	9003176395599	9009016395590	470
639560	9003176395605	9009016395606	470
639566	9003176395667	9009016395668	491
639568	9003176395681	9009016395682	491
639569	9003176395698	9009016395699	491
639570	9003176395704	9009016395705	491
639571	9003176395711	9009016395712	491
639634	9003176396343	9009016396344	470
639635	9003176396350	9009016396351	470
640777	9003176407773	9009016407774	436
640978	9003176409784		438
641839	9003176418397	9009016418398	437
641854	9003176418540	9009016418541	436
642626	9003176426262	9009016426263	196
642627	9003176426279	9009016426270	196
642628	9003176426286	9009016426287	196
643371	9003176433710	9009016433711	58
643803	9003176438036	9009016438037	204
643805	9003176438050	9009016438051	204
643807	9003176438074	9009016438075	204
643823	9003176438234	9009016438235	205

Type No.	EAN product	EAN packaging	Page
645130	9003176451301	9009016451302	212
645132	9003176451325	9009016451326	212
645135	9003176451356	9009016451357	212
645137	9003176451370	9009016451371	212
645145	9003176451455	9009016451456	205
647259	9003176472597	9009016472598	58
647260	9003176472603		58
647377	9003176473778	9009016473779	60
647389	9003176473891	9009016473892	60
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647550	9003176475505	9009016475506	85
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662791	9003176627911	9009016627912	471
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664185	9003176641856		412
664256	9003176642563	9009016642564	408
664261	9003176642617		408
664536	9003176645366		373
664621	9003176646219		384
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664684	9003176646844		389
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664744	9003176647445		389
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664749	9003176647490		389
664757	9003176647575		389

Type No.	EAN product	EAN packaging	Page
664761	9003176647612		389
664764	9003176647643		389
664766	9003176647667		389
664777	9003176647773		388
664780	9003176647803		388
664793	9003176647933		388
664794	9003176647940		388
664796	9003176647964		388
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666276	9003176662769	9009016662760	256
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666288	9003176662882	9009016662883	436
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667841	9003176678418		414
667995	9003176679958	9009016679959	65
668630	9003176686307	9009016686308	196
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668632	9003176686321	9009016686322	196
668633	9003176686338	9009016686339	196
668634	9003176686345	9009016686346	196
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668637	9003176686376	9009016686377	196
668638	9003176686383	9009016686384	196
668640	9003176686406	9009016686407	196
668641	9003176686413	9009016686414	196
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668679	9003176686796	9009016686797	196
668681	9003176686819	9009016686810	196
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Type No.	EAN product	EAN packaging	Page
668687	9003176686871	9009016686872	205
668691	9003176686918	9009016686919	205
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668696	9003176686963	9009016686964	205
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668698	9003176686987	9009016686988	205
669109	9003176691097		418
669110	9003176691103		418
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671093	9003176710934	9009016710935	51
671108	9003176711085	9009016711086	51
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675283	9003176752835	9009016752836	63
675309	9003176753092	9009016753093	438
675318	9003176753184	9009016753185	438
676423	9003176764234	9009016764235	51
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676589	9003176765897	9009016765898	438
676791	9003176767914	9009016767915	470
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679662	9003176796624	9009016796625	256
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680115	9003176801151		444
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680389	9003176803896	9009016803897	199

Type No.	EAN product	EAN packaging	Page
680390	9003176803902	9009016803903	199
682101	9003176821012	9009016821013	111
682103	9003176821036	9009016821037	111
682104	9003176821043	9009016821044	111
682105	9003176821050	9009016821051	111
682106	9003176821067	9009016821068	111
682107	9003176821074	9009016821075	111
682110	9003176821104	9009016821105	111
682111	9003176821111	9009016821112	111
682112	9003176821128	9009016821129	111
688752	9003176887520		380
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690785	9003176907853		362
696324	9003176963248	9009016963249	438
699330	9003176993306	9009016993307	44
699984	9003176999841	9009016999842	196
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701515	9003177015151	9009017015152	85
701518	9003177015182	9009017015183	85
701934	9003177019340	9009017019341	491
703242	9003177032424	9009017032425	436
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705844	9003177058448	9009017058449	310

Type No.	EAN product	EAN packaging	Page
705845	9003177058455	9009017058456	310
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705898	9003177058981	9009017058982	311

Type No.	EAN product	EAN packaging	Page
705945	9003177059452	9009017059453	308
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Type No.	EAN product	EAN packaging	Page
706024	9003177060243	9009017060244	225
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Type No.	EAN product	EAN packaging	Page
706111	9003177061110	9009017061111	224
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Type No.	EAN product	EAN packaging	Page
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Type No.	EAN product	EAN packaging	Page
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Type No.	EAN product	EAN packaging	Page
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706557	9003177065576	9009017065577	271
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706573	9003177065736	9009017065737	271
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707011	9003177070112	9009017070113	213
707012	9003177070129	9009017070120	213
707013	9003177070136	9009017070137	213
707014	9003177070143	9009017070144	213
707015	9003177070150	9009017070151	213

Type No.	EAN product	EAN packaging	Page
707016	9003177070167	9009017070168	213
707017	9003177070174	9009017070175	213
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707153	9003177071539	9009017071530	213
707155	9003177071553	9009017071554	213
707156	9003177071560	9009017071561	213
707158	9003177071584	9009017071585	213
707159	9003177071591	9009017071592	213
707160	9003177071607	9009017071608	213
707161	9003177071614	9009017071615	213
707163	9003177071638	9009017071639	213
707365	9003177073656	9009017073657	469
709899	9003177098994	9009017098995	384
709989	9003177099892	9009017099893	227
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709992	9003177099922	9009017099923	227
709993	9003177099939	9009017099930	227
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709997	9003177099977	9009017099978	227
709998	9003177099984	9009017099985	227
709999	9003177099991	9009017099992	227
710002	9003177100024	9009017100025	227
710005	9003177100055	9009017100056	227
710006	9003177100062	9009017100063	228
710007	9003177100079	9009017100070	228
710008	9003177100086	9009017100087	332
710009	9003177100093	9009017100094	332
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710012	9003177100123	9009017100124	271
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710023	9003177100239	9009017100230	271
710025	9003177100253	9009017100254	271
710026	9003177100260	9009017100261	271

Type No.	EAN product	EAN packaging	Page
712259	9003177122590	9009017122591	218
712268	9003177122682	9009017122683	218
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718361	9003177183614	9009017183615	408
719797	9003177197970	9009017197971	212
719798	9003177197987	9009017197988	212
719799	9003177197994	9009017197995	212
719800	9003177198007	9009017198008	212
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719906	9003177199066	9009017199067	424
719918	9003177199189	9009017199180	426
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723117	9003177231179	9009017231170	410
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724257	9003177242571	9009017242572	318
724264	9003177242649	9009017242640	318
724267	9003177242670	9009017242671	318
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724271	9003177242717	9009017242718	318
724272	9003177242724	9009017242725	318
724273	9003177242731	9009017242732	319
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724276	9003177242762	9009017242763	319
724281	9003177242816	9009017242817	319
724283	9003177242830	9009017242831	319
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736088	9003177360886	9009017360887	481
736095	9003177360954	9009017360955	484

Type No.	EAN product	EAN packaging	Page
736102	9003177361029	9009017361020	481
736105	9003177361050	9009017361051	484
736309	9003177363092	9009017363093	486
736311	9003177363115	9009017363116	486
736313	9003177363139	9009017363130	486
737812	9003177378126	9009017378127	408
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742153	9003177421532	9009017421533	248
742154	9003177421549	9009017421540	248
742155	9003177421556	9009017421557	248
742157	9003177421570	9009017421571	248
742158	9003177421587	9009017421588	248
742167	9003177421679	9009017421670	202
742168	9003177421686	9009017421687	202
742375	9003177423758	9009017423759	249
742378	9003177423789	9009017423780	249
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743944	9003177439445	9009017439446	30
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747519	9003177475191		389
747522	9003177475221		389

Type No.	EAN product	EAN packaging	Page
747530	9003177475306		389
757089	9003177570896	9009017570897	30
762445	9003177624452	9009017624453	424
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766062	9003177660627	9009017660628	126
766068	9003177660689	9009017660680	126
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766100	9003177661006	9009017661007	128
766108	9003177661082	9009017661083	128
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766112	9003177661129	9009017661120	128
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766116	9003177661167	9009017661168	128
766117	9003177661174	9009017661175	128
766119	9003177661198	9009017661199	128
766121	9003177661211	9009017661212	128
766126	9003177661266	9009017661267	127
766127	9003177661273	9009017661274	127
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766133	9003177661334	9009017661335	127
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766145	9003177661457	9009017661458	127
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766160	9003177661600	9009017661601	127
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766934	9003177669347	9009017669348	126

Type No.	EAN product	EAN packaging	Page
766935	9003177669354	9009017669355	130
766936	9003177669361	9009017669362	126
766937	9003177669378	9009017669379	127
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768712	9003177687129	9009017687120	128
768715	9003177687150	9009017687151	130
768717	9003177687174	9009017687175	130
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768835	9003177688355	9009017688356	126
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768894	9003177688942	9009017688943	126

Type No.	EAN product	EAN packaging	Page
768896	9003177688966	9009017688967	130
768898	9003177688980	9009017688981	126
768913	9003177689130	9009017689131	127
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769683	9003177696831	9009017696832	126
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775476	9003177754760		428
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779428	9003177794285	9009017794286	58
779789	9003177797897	9009017797898	438
780938	9003177809385	9009017809386	58
781702	9003177817021		408
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788700	9003177887000	9009017887001	64
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801354	9003178013545	9009018013546	126
801355	9003178013552	9009018013553	126
801365	9003178013651	9009018013652	127
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801531	9003178015310	9009018015311	128
802276	9003178022769	9009018022760	419

Type No.	EAN product	EAN packaging	Page
803404	9003178034045	9009018034046	45
803833	9003178038333	9009018038334	112
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804986	9003178049865	9009018049866	426
804993	9003178049933	9009018049934	425
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805008	9003178050083	9009018050084	426
805015	9003178050151	9009018050152	426
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805018	9003178050182	9009018050183	426
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816833	9003178168337	9009018168338	276
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816855	9003178168559	9009018168550	277
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816915	9003178169150	9009018169151	277
816916	9003178169167	9009018169168	277
816918	9003178169181	9009018169182	277

Type No.	EAN product	EAN packaging	Page
816919	9003178169198	9009018169199	277
816920	9003178169204	9009018169205	277
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816985	9003178169853	9009018169854	279

Type No.	EAN product	EAN packaging	Page
816986	9003178169860	9009018169861	279
816987	9003178169877	9009018169878	279
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822725	9003178227256	9009018227257	129
822728	9003178227287	9009018227288	131
822766	9003178227669		172
822767	9003178227676		172
822769	9003178227690		172
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828013	9003178280138	9009018280139	475
828192	9003178281920	9009018281921	114
829026	9003178290267	9009018290268	149
829292	9003178292926	9009018292927	142
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845593	9003178455932	9009018455933	455

Type No.	EAN product	EAN packaging	Page
845594	9003178455949	9009018455940	455
845595	9003178455956	9009018455957	455
846344	9003178463449	9009018463440	205
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847923	9003178479235	9009018479236	207
847924	9003178479242	9009018479243	207
847925	9003178479259	9009018479250	207
847926	9003178479266	9009018479267	207
847927	9003178479273	9009018479274	207
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853704	9003178537041	9009018537042	453
855818	9003178558183	9009018558184	38
856232	9003178562326		452
861009	9003178610096		412
863284	9003178632845	9009018632846	64
867598	9003178675989		411
867603	9003178676030		425
872338	9003178723383	9009018723384	25
872339	9003178723390	9009018723391	25
872340	9003178723406	9009018723407	25
872341	9003178723413	9009018723414	25
872342	9003178723420	9009018723421	25
872343	9003178723437	9009018723438	25
872344	9003178723444	9009018723445	25
872346	9003178723468	9009018723469	25
872347	9003178723475	9009018723476	25
872348	9003178723482	9009018723483	25
872350	9003178723505	9009018723506	25
872351	9003178723512	9009018723513	25
872352	9003178723529	9009018723520	25
872497	9003178724977		412
876591	9003178765918		380
876610	9003178766106		380
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876618	9003178766182		380
876619	9003178766199		380

Type No.	EAN product	EAN packaging	Page
879608	9003178796080		412
886353	9003178863539	9009018863530	196
886805	9003178868053	9009018868054	276
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890655	9003178906557	9009018906558	159
890658	9003178906588	9009018906589	159
890707	9003178907073	9009018907074	158
890709	9003178907097	9009018907098	158
890717	9003178907172	9009018907173	159
890719	9003178907196	9009018907197	157
890721	9003178907219	9009018907210	157
890722	9003178907226	9009018907227	157
890723	9003178907233	9009018907234	157
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890756	9003178907561	9009018907562	160
890757	9003178907578	9009018907579	161
890758	9003178907585	9009018907586	161
890761	9003178907615	9009018907616	161
890762	9003178907622	9009018907623	161
890763	9003178907639	9009018907630	160
890764	9003178907646	9009018907647	160
890771	9003178907714	9009018907715	161
890772	9003178907721	9009018907722	161
890774	9003178907745	9009018907746	160
890776	9003178907769	9009018907760	160
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890814	9003178908148	9009018908149	163
890815	9003178908155	9009018908156	163
890817	9003178908179	9009018908170	163
890819	9003178908193	9009018908194	163
890820	9003178908209	9009018908200	163
890821	9003178908216	9009018908217	163

Type No.	EAN product	EAN packaging	Page
890822	9003178908223	9009018908224	164
890823	9003178908230	9009018908231	164
890827	9003178908278	9009018908279	164
890828	9003178908285	9009018908286	164
890831	9003178908315	9009018908316	164
890832	9003178908322	9009018908323	164
890835	9003178908353	9009018908354	164
890840	9003178908407	9009018908408	162
890841	9003178908414	9009018908415	162
890843	9003178908438	9009018908439	162
890844	9003178908445	9009018908446	162
890845	9003178908452	9009018908453	162
890846	9003178908469	9009018908460	162
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890849	9003178908490	9009018908491	162
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890866	9003178908667	9009018908668	142
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894770	9003178947703	9009018947704	170
895498	9003178954985	9009018954986	176
895521	9003178955210	9009018955211	164
895576	9003178955760	9009018955761	176
895577	9003178955777	9009018955778	176
895578	9003178955784	9009018955785	176
895579	9003178955791	9009018955792	176
895580	9003178955807	9009018955808	176
895581	9003178955814	9009018955815	177
895669	9003178956699	9009018956690	98
895670	9003178956705	9009018956706	100

Type No.	EAN product	EAN packaging	Page
895671	9003178956712	9009018956713	100
895676	9003178956767	9009018956767	100
895677	9003178956774	9009018956774	100
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895679	9003178956798	9009018956799	100
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896111	9003178961112	9009018961113	170
896113	9003178961136	9009018961137	171
896115	9003178961150	9009018961151	170
896116	9003178961167	9009018961168	171
896119	9003178961198	9009018961199	171
896121	9003178961211	9009018961212	170
896122	9003178961228	9009018961229	171
896123	9003178961235	9009018961236	170
896124	9003178961242	9009018961243	171
896157	9003178961570	9009018961571	142
896158	9003178961587	9009018961588	142
896160	9003178961600	9009018961601	142
896161	9003178961617	9009018961618	142
896164	9003178961648	9009018961649	142
896165	9003178961655	9009018961656	142
896167	9003178961679	9009018961670	145
896170	9003178961709	9009018961700	145
896174	9003178961747	9009018961748	145
896207	9003178962072	9009018962073	176
896209	9003178962096	9009018962097	176
896217	9003178962171	9009018962172	177
896219	9003178962195	9009018962196	177
896220	9003178962201	9009018962202	177
896223	9003178962232	9009018962233	179
896224	9003178962249	9009018962240	179
896238	9003178962386	9009018962387	170
896239	9003178962393	9009018962394	170
896241	9003178962416	9009018962417	170
896243	9003178962430	9009018962431	170
896244	9003178962447	9009018962448	170
896245	9003178962454	9009018962455	170
896246	9003178962461	9009018962462	170
896247	9003178962478	9009018962479	170

Type No.	EAN product	EAN packaging	Page
896250	9003178962508	9009018962509	142
896260	9003178962607	9009018962608	149
896289	9003178962898	9009018962899	142
896290	9003178962904	9009018962905	142
896291	9003178962911	9009018962912	142
896294	9003178962942	9009018962943	147
896379	9003178963796	9009018963797	196
896943	9003178969439	9009018969430	145
897078	9003178970787	9009018970788	277
897357	9003178973573	9009018973574	158
898014	9003178980144	9009018980145	231
898017	9003178980175	9009018980176	231
898018	9003178980182	9009018980183	231
898044	9003178980441	9009018980442	293
898048	9003178980489	9009018980480	293
898051	9003178980519	9009018980510	293
899271	9003178992710	9009018992711	520
899272	9003178992727	9009018992728	520
899851	9003178998514	9009018998515	178
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901254	9003179012547	9009019012548	425
901256	9003179012561	9009019012562	425
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902732	9003179027329	9009019027320	126
902737	9003179027374	9009019027375	127
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903340	9003179033405	9009019033406	158
903343	9003179033436	9009019033437	159
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903359	9003179033597	9009019033598	160
903406	9003179034068	9009019034069	149
903429	9003179034297	9009019034298	157
903430	9003179034303	9009019034304	157
903431	9003179034310	9009019034311	157
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903434	9003179034341	9009019034342	180
903435	9003179034358	9009019034359	180
903877	9003179038776	9009019038777	161

Type No.	EAN product	EAN packaging	Page
905335	9003179053359	9009019053350	293
905336	9003179053366	9009019053367	289
905337	9003179053373	9009019053374	293
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908221	9003179082212	9009019082213	94
908223	9003179082236	9009019082237	94
908224	9003179082243	9009019082244	94
908225	9003179082250	9009019082251	93
908226	9003179082267	9009019082268	93
908227	9003179082274	9009019082275	93
908229	9003179082298	9009019082299	93
908230	9003179082304	9009019082305	93
908231	9003179082311	9009019082312	93
908233	9003179082335	9009019082336	94
908264	9003179082649	9009019082640	165
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908710	9003179087101	9009019087102	281
908711	9003179087118	9009019087119	281
908712	9003179087125	9009019087126	281
908715	9003179087156	9009019087157	281
908717	9003179087170	9009019087171	281
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908779	9003179087798	9009019087799	281
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908784	9003179087842	9009019087843	281
908794	9003179087941	9009019087942	281
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908821	9003179088214	9009019088215	282
908823	9003179088238	9009019088239	282
908825	9003179088252	9009019088253	282
908826	9003179088269	9009019088260	282
908854	9003179088542	9009019088543	281
908862	9003179088627	9009019088628	281
908871	9003179088719	9009019088710	282
908872	9003179088726	9009019088727	282
909368	9003179093683	9009019093684	278
909383	9003179093836	9009019093837	276
909385	9003179093850	9009019093851	276
909390	9003179093904	9009019093905	277

Type No.	EAN product	EAN packaging	Page
909393	9003179093935	9009019093936	277
909397	9003179093973	9009019093974	277
909398	9003179093980	9009019093981	277
910572	9003179105720	9009019105721	278
910574	9003179105744	9009019105745	277
910707	9003179107076	9009019107077	278
910720	9003179107205	9009019107206	279
910722	9003179107229		278
910766	9003179107663	9009019107664	127
910853	9003179108530	9009019108531	282
910864	9003179108646	9009019108647	282
910890	9003179108905	9009019108906	282
910902	9003179109025	9009019109026	282
911408	9003179114081	9009019114082	172
913338	9003179133389	9009019133380	85
915573	9003179155732	9009019155733	279
916720	9003179167209	9009019167200	171
917186	9003179171862	9009019171863	164
917189	9003179171893	9009019171894	164
917288	9003179172883		428
918448	9003179184480		410
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922857	9003179228573		425
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927369	9003179273696	9009019273697	170
929017	9003179290174	9009019290175	86
929018	9003179290181	9009019290182	86
929019	9003179290198	9009019290199	86
929020	9003179290204	9009019290205	86
929887	9003179298873	9009019298874	38
929889	9003179298897	9009019298898	38
932780	9003179327801	9009019327802	455
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938642	9003179386426	9009019386427	149
938646	9003179386464	9009019386465	149
938680	9003179386808	9009019386809	149

Type No.	EAN product	EAN packaging	Page
939107	9003179391079	9009019391070	277
939696	9003179396968	9009019396969	171
939968	9003179399686	9009019399687	157
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946904	9003179469044		425
947205	9003179472051	9009019472052	149
948218	9003179482180	9009019482181	94
959241	9003179592414	9009019592415	277
960324	9003179603240	9009019603241	149
974270	9003179742703	9009019742704	535
975372	9003179753723	9009019753724	535
975381	9003179753815	9009019753816	535
977353	9003179773530	9009019773531	535
984035	9003179840355	9009019840356	535
10978735	9003172027364	9009012009040	496
10988800	9003172006741	9009012014068	507
10989100	9003172479675	9009012087055	492
10989500	9003172001173	9009012014105	492
10989600	9003172001180	9009012014075	496
10989800	9003172001197	9009012014082	498
10990700	9003172360379	9009012017588	532
10991465	9003170029223	9009012014198	535
10993966	9003172027319	9009012008951	535
10995459	9003172020587	9009012014129	492
10995489	9003172020570	9009012014099	492
10998400	9003173020791		494
10999880	9003173019580	9009012026375	535
11000464	9003173019740	9009012026399	535
34022392	9003170010542	9009010010857	128
34022430	9003170010580	9009010010864	129
34022958	9003170010528	9009010010840	28
34022959	9003170010382	9009010010826	28
34023778	9003170013000	9009010014848	141
34023780	9003170013048	9009010014855	141
34023812	9003170013062	9009010014886	144
34023813	9003170013208	9009010014893	144
34023817	9003170013215	9009010014909	
34023818	9003170013246	9009010014923	148
34023819	9003170013253	9009010014930	146
34023822	9003170014434	9009010042124	148

Type No.	EAN product	EAN packaging	Page
34023823	9003170013260	9009010014978	141
34023824	9003170013352	9009010015241	141
34023825	9003170013369	9009010015265	144
34023827	9003170013413	9009010015340	141
34023828	9003170013437	9009010015401	141
34023829	9003170013444	9009010015425	144
34024028	9003170010603		343
34036456	9003170067386	9009010016194	327
34036457	9003170072342	9009010016217	327
34036458	9003170075053	9009010016255	327
34036459	9003170097864	9009010016293	327
34036460	9003170104463	9009010016309	327
34036501	9003170108188	9009010016316	327
34036502	9003170119009	9009010016323	327
34036503	9003170119603	9009010016347	327
34036504	9003170170123	9009010016422	327
34036505	9003170211536	9009010016460	327
34038259	9003170022194	9009010024595	161
34039198	9003172004563	9009011226097	444
34039199	9003172004617	9009011226103	444
34042515	9003170022910	9009010042131	145
34042520	9003170022958	9009010042209	147
34042522	9003170022965	9009010042216	149
34042526	9003170022996	9009010042254	150
34042527	9003170023016	9009010042261	150
34042528	9003170023023	9009010042285	150
34042756	9003170019132	9009010021075	29
34042757	9003170019156	9009010021082	29
34042874	9003170019293	9009010021099	81
34042875	9003170019330	9009010021105	81
34043171	9003170022286	9009010024649	160
34043172	9003170022293	9009010024694	161
34043177	9003170022392	9009010024748	162
34043178	9003170022897	9009010024779	162
34043179	9003170022415	9009010024793	157
34043471	9003170019378	9009010021853	204
34043472	9003170019385	9009010021884	204
34043473	9003170019408	9009010021907	204
34043474	9003170019422	9009010021921	204
34043475	9003170019491	9009010021938	204

Type No.	EAN product	EAN packaging	Page
34043476	9003170019514	9009010021945	204
34043477	9003170019521	9009010021952	204
34043478	9003170019545	9009010021969	204
34043479	9003170019552	9009010021976	204
34043480	9003170019569	9009010021983	204
34043481	9003170019651	9009010021990	204
34043482	9003170019705	9009010022003	204
34043514	9003170019736	9009010022058	211
34043515	9003170019750	9009010022065	211
34043516	9003170019767	9009010022072	211
34043517	9003170019774	9009010022089	211
34043542	9003170022538	9009010024908	157
34043543	9003170022545	9009010024915	157
34043544	9003170022576	9009010024922	157
34043545	9003170022866	9009010024946	157
34043546	9003170022620	9009010024960	162
34043547	9003170022637	9009010025004	159
34043549	9003170022705	9009010025059	159
34043552	9003170022729	9009010025073	159
34043572	9003170022903	9009010025448	165
34043577	9003170023061	9009010042322	171
34043578	9003170023108	9009010042339	171
34044248	9003172004631	9009011229227	444
34045604	9003172005485		451
34046119	9003170020282	9009010022409	77
34046120	9003170020299	9009010022416	77
34046131	9003170020367	9009010022423	77
34046132	9003170020374	9009010022430	77
34046133	9003170020381	9009010022447	77
34046134	9003170020404	9009010022461	77
34046135	9003170020411	9009010022539	77
34046136	9003170020442	9009010022546	77
34046758	9003170045469		409
34046759	9003170045612		409
34046763	9003170045728		409
34046764	9003170045759		409
34046765	9003170045773		409
34046770	9003170045810		409
34046772	9003170045827		409
34046781	9003170045926		409

Type No.	EAN product	EAN packaging	Page
34046785	9003170045940		409
34046786	9003170045988		410
34046788	9003170046015		410
34046791	9003170046053		410
34046794	9003170046077		411
34047715	9003170031646	9009010022942	236
34047720	9003170031660	9009010022966	236
34047722	9003170031677	9009010022973	237
34047727	9003170031721	9009010022997	237
34047732	9003170031745	9009010023024	237
34047733	9003170031752	9009010023031	237
34047734	9003170031769	9009010023048	237
34047735	9003170031783	9009010023062	237
34047736	9003170031806	9009010023109	237
34047755	9003170031813	9009010023123	237
34047757	9003170031820	9009010023130	237
34048027	9003170028196		433
34048152	9003170028172		433
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34050358	9003170031318	9009010023840	238
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34050509	9003170031493	9009010023932	238
34050524	9003170031523	9009010023956	238
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34053447	9003170031844	9009010026742	281
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34054652	9003170031967	9009010026797	282
34054655	9003170032001	9009010026865	282
34054658	9003170032032	9009010026872	282
34054660	9003170023658	9009010025677	279

Type No.	EAN product	EAN packaging	Page
34054737	9003170023665	9009010025684	279
34054738	9003170023689	9009010025714	279
34054751	9003170023702	9009010025769	279
34054753	9003170023719	9009010025776	279
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34057521	9003172005935	9009010027237	214
34057995	9003170028387	9009010029491	454
34061912	9003170026314	9009010028050	312
34061913	9003170026321	9009010028067	312
34061919	9003170026383	9009010028074	312
34061934	9003170026390	9009010028111	312

Type No.	EAN product	EAN packaging	Page
34061938	9003170026413	9009010028142	312
34061939	9003170026420	9009010028166	312
34061951	9003170026437	9009010028173	312
34061953	9003170026444	9009010028197	312
34061954	9003170026451	9009010028203	312
34061960	9003170026468	9009010028210	312
34062015	9003170026505	9009010028227	312
34062021	9003170026543	9009010028234	312
34062022	9003170026604	9009010028241	312
34062023	9003170026680	9009010028258	312
34062024	9003170026697	9009010028265	312
34062025	9003170026734	9009010028272	312
34062026	9003170026741	9009010028302	312
34062027	9003170026772	9009010028333	312
34063266	9003170027779	9009010029026	327
34063267	9003170027793	9009010029033	327
34063292	9003170027823	9009010029071	327
34063294	9003170036030	9009010029194	327
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34063298	9003170027854	9009010029231	327
34063299	9003170027861	9009010029248	327
34063300	9003170027885	9009010029255	327
34063301	9003170027922	9009010029279	327
34063303	9003170027939	9009010029293	327
34063388	9003170026796	9009010028340	195
34063389	9003170026864	9009010028357	195
34063390	9003170026871	9009010028388	195
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34063398	9003170027106	9009010028524	195
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34063402	9003170027182	9009010028609	195
34063403	9003170027212	9009010028647	195
34064598	9003170045438		265
34072695	9003170029704	9009010030329	262
34072696	9003170029742	9009010030343	262
34072700	9003170029759	9009010030350	262

Type No.	EAN product	EAN packaging	Page
34072701	9003170029766	9009010030367	262
34074200	9003172027012	9009012008425	520
34074212	9003172018768	9009012012309	520
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34074214	9003172027036	9009012008456	520
34074215	9003172027043	9009012008463	520
34074216	9003172027050	9009012008470	520
34074217	9003172027067	9009012008494	520
34074218	9003172017532	9009012012316	520
34074219	9003172027074	9009012008500	520
34074220	9003172027081	9009012008517	520
34074221	9003172027098	9009012008531	520
34074223	9003172027104	9009012008548	520
34074224	9003172027111	9009012008555	520
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34077301	9003170773010	9009010031050	338
34097755	9003170048323	9009012012699	491
34162979	9003170033473	9009010031906	221
34162980	9003170033480	9009010031944	221
34162981	9003170033497	9009010031968	221
34162982	9003170033503	9009010032002	221
34162983	9003170033527	9009010032033	221
34162985	9003170033534	9009010032040	221
34162987	9003170033541	9009010032057	221
34162988	9003170033558	9009010032132	222
34162989	9003170033572	9009010032156	222
34162990	9003170033602	9009010032217	222
34163011	9003170033619	9009010032262	222
34163012	9003170033633	9009010032279	222
34163013	9003170033640	9009010032286	222
34163014	9003170033701	9009010032323	222
34163015	9003170033725	9009010032347	222
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34163021	9003170033763	9009010032422	222
34163022	9003170033855	9009010032446	222
34163024	9003170033862	9009010032460	222
34163025	9003170033947	9009010032477	222
34163026	9003170033985	9009010032507	222
34163206	9003170042147		451
34163888	9003170034081	9009010032514	222

Type No.	EAN product	EAN packaging	Page
34163889	9003170034111	9009010032521	222
34163890	9003170034128	9009010032569	222
34163902	9003170034159	9009010032576	222
34163903	9003170034180	9009010032613	222
34163905	9003170034227	9009010032637	222
34163906	9003170034272	9009010032705	222
34163908	9003170034326	9009010032712	222
34163910	9003170034333	9009010032774	222
34163911	9003170034340	9009010032781	222
34163912	9003170034395	9009010032835	222
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34163917	9003170034470	9009010032996	222
34163955	9003170034906	9009010033443	223
34163957	9003170034920	9009010033450	223
34163958	9003170034975	9009010033467	223
34163959	9003170034982	9009010033474	224
34163992	9003170034487	9009010033009	224
34163993	9003170034500	9009010033054	224
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34164019	9003170034814	9009010033290	224
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34164031	9003170034890	9009010033344	224
34165304	9003170046817		412
34165307	9003170046824		412

Type No.	EAN product	EAN packaging	Page
34165680	9003170039475	9009010035782	211
34165681	9003170039529	9009010035805	211
34166162	9003170039567	9009010035874	211
34166163	9003170039598	9009010035898	211
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34166166	9003170039680	9009010035980	211
34166167	9003170039727	9009010036000	211
34166168	9003170039819	9009010036031	211
34166172	9003170039918	9009010036154	211
34166173	9003170039932	9009010036185	211
34166174	9003170040006	9009010036192	211
34166175	9003170040020	9009010036208	211
34166176	9003170040037	9009010036215	211
34166177	9003170040044	9009010036222	211
34166178	9003170040051	9009010036239	211
34166179	9003170040129	9009010036246	211
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34166181	9003170040204	9009010036277	211
34166182	9003170040228	9009010036284	211
34166184	9003170040280	9009010036307	211
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34166362	9003170036191	9009010034471	200
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34166860	9003170036467	9009010034730	212
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34168479	9003170038744	9009010035591	301
34168480	9003170038799	9009010035607	301
34168481	9003170038812	9009010035614	301

Type No.	EAN product	EAN packaging	Page
34168482	9003170038836	9009010035621	301
34168483	9003170038843	9009010035645	301
34168634	9003170042079		486
34168635	9003172018553		486
34171018	9003171453997	9009012013573	490
34171019	9003171887266	9009012013580	490
34171020	9003171886764	9009012013603	490
34171031	9003172004020	9009012013610	490
34172978	9003172005331		452
34172980	9003172005348		452
34173161	9003172005355		452
34176633	9003170043335	9009010037649	79
34177464	9003170043427	9009010037755	332
34180136	9003170047371	9009012012347	524
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34180268	9003171887204	9009012012972	490
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34180291	9003172000145	9009012012996	490
34180292	9003172000091	9009012012705	491
34180293	9003171275841	9009012012712	490
34180294	9003171390261	9009012012736	490
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34189555	9003170303859	9009010042629	287
34189556	9003170308373	9009010042636	287
34189557	9003170325851	9009010042650	287
34189994	9003170325868	9009010042681	287
34189995	9003170339193	9009010042735	287
34189996	9003170385374	9009010042773	287
34189997	9003170395465	9009010042834	287
34189999	9003170396172	9009010042858	287
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34190107	9003170239585	9009010042391	264
34190108	9003170241564	9009010042414	264

Type No.	EAN product	EAN packaging	Page	Type No.	EAN product	EAN packaging	Page
34190110	9003170242103	9009010042421	264	34190305	9003170599405	9009010043633	349
34190122	9003170434614	9009010043039	243	34190306	9003170602037	9009010043688	349
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34190135	9003170268301	9009010042452	264	34200287	9003171509342	9009010044463	349
34190137	9003170272339	9009010042469	264	34200379	9003171515299	9009010044487	349
34190138	9003170273015	9009010042476	264	34200380	9003171515398	9009010044500	349
34190139	9003170278133	9009010042483	264	34200559	9003171519150	9009010044548	349
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34190239	9003170520195	9009010043268	287	34200624	9003171658163	9009010044739	350
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34190276	9003170539852	9009010043336	243	34200628	9003171717174	9009010044777	350
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34190291	9003170543118	9009010043404	287	34200688	9003171844719	9009010044838	288
34190292	9003170554060	9009010043428	349	34200689	9003171865479	9009010044845	288
34190293	9003170554589	9009010043442	287	34200690	9003171886368	9009010044869	288
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34190297	9003170561754	9009010043497	287	34200718	9003171886535	9009010044920	350
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34190304	9003170588812	9009010043602	349	34201558	9003171892253	9009010045156	264

Type No.	EAN product	EAN packaging	Page
34201993	9003172005812	9009010045170	286
34201994	9003172005829	9009010045187	286
34201995	9003172005836	9009010045194	286
34201996	9003172005843	9009010045347	286
34201998	9003172005867	9009010045460	287
34202534	9003172000046	9009010045774	52
34202550	9003172000077	9009010045811	52
34202561	9003172000084	9009010045828	52
34202827	9003172014111	9009012024852	151
34202829	9003172014128	9009012024869	152
34203491	9003172000169	9009010045989	177
34203494	9003172000176	9009010046016	181
34203496	9003172000183	9009010046030	181
34203497	9003172000190	9009010046054	181
34203498	9003172000206	9009010046078	182
34203500	9003172000213	9009010046108	182
34203514	9003172000220	9009010046405	182
34203516	9003172000237	9009010046566	183
34203518	9003172000244	9009010046610	183
34203520	9003172000251	9009010046757	183
34203522	9003172000268	9009010046818	183
34203524	9003172000275	9009010046825	183
34203527	9003172000282	9009010046832	183
34203529	9003172000299	9009010046863	183
34203530	9003172000305	9009010046870	183
34203541	9003172000312	9009010046887	183
34203542	9003172000329	9009010046917	183
34203543	9003172000336	9009010046924	183
34203544	9003172000343	9009010046931	183
34203556	9003172000350	9009010047051	184
34203557	9003172000367	9009010047280	184
34203571	9003172000374	9009010047297	184
34203572	9003172000398	9009010047303	184
34203573	9003172000404	9009010047334	184
34203575	9003172000411	9009010047358	184
34203595	9003172000428	9009010047372	184
34203596	9003172000435	9009010047396	184
34203597	9003172000442	9009010047426	184
34203598	9003172000459	9009010047457	184
34203600	9003172000466	9009010047471	185

Type No.	EAN product	EAN packaging	Page
34203601	9003172000480	9009010047488	185
34203602	9003172000497	9009010047495	185
34203603	9003172000503	9009010047594	185
34203604	9003172000527	9009010047624	185
34203605	9003172000534	9009010047716	185
34203606	9003172000541	9009010047761	185
34203607	9003172000558	9009010047785	185
34203608	9003172000565	9009010047792	185
34203877	9003172009018	9009012011609	514
34204206	9003172000800	9009010047846	287
34206204	9003172001647	9009010049451	300
34206205	9003172001616	9009010049468	300
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34206231	9003172001654	9009010049482	264
34206232	9003172001661	9009010049499	264
34206234	9003172001678	9009010049536	293
34206235	9003172001685	9009010049567	293
34206236	9003172001692	9009010049581	231
34206237	9003172001708	9009010049598	231
34206238	9003172001715	9009010049604	231
34206245	9003172015026	9009012011616	514
34206246	9003172021232	9009012011623	514
34206248	9003172018874	9009012011630	514
34206249	9003172009087	9009012011647	514
34206261	9003172020181	9009012011654	514
34206262	9003172020419	9009012011661	514
34206263	9003172021270	9009012012033	514
34206265	9003172022109	9009012012040	514
34206267	9003172021287	9009012012057	514
34206269	9003172021294	9009012012064	514
34206408	9003172001739	9009010049611	201
34206409	9003172001746	9009010049628	201
34206840	9003172002910	9009010561700	197
34206851	9003172002927	9009010561755	197
34206854	9003172002934	9009010561762	197
34206857	9003172003337	9009010561793	197
34206858	9003172003344	9009010561823	197
34206860	9003172003351	9009010563636	197
34206891	9003172002989	9009010564763	197
34206892	9003172002996	9009010588813	197

Type No.	EAN product	EAN packaging	Page
34207216	9003172003139	9009010755031	197
34207217	9003172003146	9009010756038	197
34207231	9003172003153	9009010762152	197
34207233	9003172003160	9009010777545	197
34207235	9003172003177	9009010786608	197
34207236	9003172003184	9009010792579	197
34207237	9003172003191	9009010800410	197
34207238	9003172003207	9009010818507	197
34213557	9003172013640	9009012002850	124
34213558	9003172013657	9009012002867	124
34213559	9003172013664	9009012002874	124
34213560	9003172013671	9009012002898	124
34213581	9003172013688	9009012002904	124
34213583	9003172013695	9009012002911	124
34213584	9003172012094	9009012002928	124
34213585	9003172012100	9009012002935	124
34213588	9003172013725	9009012002942	124
34213589	9003172013732	9009012002966	124
34213590	9003172012117	9009012002973	124
34213601	9003172012131	9009012002980	124
34213606	9003172013893	9009012002997	125
34213607	9003172013909	9009012003000	125
34213608	9003172013763	9009012003017	125
34213609	9003172013923	9009012003031	125
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34213621	9003172013947	9009012003055	125
34213622	9003172013954	9009012003062	125
34213623	9003172013961	9009012003079	125
34213624	9003172013978	9009012003086	125
34213625	9003172013985	9009012003093	125
34213626	9003172013992	9009012003109	125
34213627	9003172014005	9009012003116	125
34214172	9003172005003	9009011470131	288
34214174	9003172005010	9009011480475	351
34214177	9003172005027	9009011480604	265
34214903	9003172006680	9009011889827	524
34214904	9003172006697	9009011891738	524
34214905	9003172006703	9009011891981	524
34215809	9003172005645	9009011489713	525
34215843	9003172005652	9009011489775	526

Type No.	EAN product	EAN packaging	Page
34218343	9003172463230	9009012020052	301
34218356	9003172463247	9009012020069	301
34218744	9003172027975	9009012079975	490
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34221325	9003172011783	9009012012767	491
34221327	9003172012001	9009012012774	491
34221594	9003172463339	9009012020076	301
34228075	9003172009506	9009012000276	466
34228323	9003172464046	9009012020083	301
34229331	9003172009575	9009012000290	525
34230261	9003172010557	9009012001150	329
34230417	9003172009759	9009012000368	329
34230419	9003172009766	9009012000375	329
34230420	9003172009773	9009012000399	329
34230422	9003172009780	9009012000405	329
34230446	9003172009797	9009012000412	329
34230447	9003172009803	9009012000429	329
34230449	9003172009810	9009012000436	329
34230450	9003172010410	9009012000443	330
34230452	9003172009834	9009012000450	330
34230453	9003172009841	9009012000467	330
34230486	9003172009858	9009012000481	330
34230487	9003172010427	9009012000498	330
34230488	9003172009896	9009012000504	330
34230490	9003172009902	9009012000528	330
34230531	9003172009919	9009012000535	330
34230532	9003172009933	9009012000542	330
34230533	9003172010434	9009012000559	330
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34230535	9003172010441	9009012000580	330
34230591	9003172009971	9009012000597	330
34230592	9003172010465	9009012000610	330
34230593	9003172009995	9009012000627	330
34230595	9003172010007	9009012000634	330
34230597	9003172010021	9009012000641	330
34230598	9003172010038	9009012000658	330
34230599	9003172010045	9009012000665	330
34230600	9003172010052	9009012000689	330
34230601	9003172010069	9009012000696	330
34230605	9003172010076	9009012000702	330

Type No.	EAN product	EAN packaging	Page
34230606	9003172010472	9009012000719	330
34230607	9003172010090	9009012000726	330
34230608	9003172010106	9009012000733	330
34230609	9003172010113	9009012000757	330
34230610	9003172010489	9009012000771	330
34230612	9003172010137	9009012000788	330
34230613	9003172010144	9009012000795	330
34230614	9003172010151	9009012000801	330
34230615	9003172010168	9009012000818	330
34230616	9003172010175	9009012000832	330
34230618	9003172010564	9009012001167	309
34230619	9003172010571	9009012001174	309
34230620	9003172010588	9009012001181	309
34230631	9003172010595	9009012001198	309
34230632	9003172010618	9009012001204	309
34230633	9003172010632	9009012001228	309
34230634	9003172010670	9009012001235	309
34230635	9003172010694	9009012001242	309
34230636	9003172010700	9009012001259	309
34230637	9003172010717	9009012001273	309
34230638	9003172010892	9009012001280	309
34230639	9003172010731	9009012001297	309
34230640	9003172010748	9009012001303	309
34230641	9003172010755	9009012001310	309
34230642	9003172010762	9009012001334	309
34230643	9003172010786	9009012001341	309
34230644	9003172010809	9009012001365	319
34230677	9003172010816	9009012001372	319
34230678	9003172010823	9009012001426	319
34230679	9003172010908	9009012001433	319
34230680	9003172010854	9009012001440	319
34230701	9003172010861	9009012001457	319
34230702	9003172010878	9009012001464	319
34230703	9003172010885	9009012001471	319
34230705	9003172010496	9009012000856	331
34230706	9003172010502	9009012000863	331
34230707	9003172010205	9009012000870	331
34230708	9003172010212	9009012000887	331
34230709	9003172010229	9009012000894	331
34230710	9003172010236	9009012000900	331

Type No.	EAN product	EAN packaging	Page
34230711	9003172010243	9009012000917	331
34230712	9003172010250	9009012000924	331
34230713	9003172010519	9009012000931	331
34230714	9003172010274	9009012000948	332
34230715	9003172010281	9009012000955	332
34230716	9003172010298	9009012000986	332
34230717	9003172010304	9009012000993	332
34230718	9003172010526	9009012001006	332
34230719	9003172010328	9009012001013	332
34230720	9003172010335	9009012001037	332
34230721	9003172010342	9009012001044	332
34230722	9003172010359	9009012001051	332
34230723	9003172010533	9009012001068	332
34230724	9003172010373	9009012001082	332
34230725	9003172010380	9009012001099	332
34230726	9003172010397	9009012001105	332
34231862	9003172010946	9009012001488	309
34231863	9003172010953	9009012001495	309
34231864	9003172010960	9009012001501	309
34231865	9003172010977	9009012001518	309
34231866	9003172010984	9009012001532	309
34231867	9003172011011	9009012001556	309
34231868	9003172011028	9009012001563	309
34231869	9003172011042	9009012001570	309
34231870	9003172011059	9009012001587	309
34231871	9003172011165	9009012001594	309
34231872	9003172011080	9009012001600	309
34231873	9003172011097	9009012001617	309
34231874	9003172011110	9009012001624	309
34231875	9003172011172	9009012001631	309
34231876	9003172011134	9009012001648	309
34231877	9003172011158	9009012001655	309
34237091	9003172018560		486
34237092	9003172018577		486
34239093	9003172018775	9009012012248	514
34239181	9003172021225	9009012011883	514
34239183	9003172021256	9009012011890	514
34239186	9003172026732	9009012008142	514
34239187	9003172018867	9009012012286	514
34239188	9003172026756	9009012008166	514

Type No.	EAN product	EAN packaging	Page
34239189	9003172020433	9009012012293	515
34239191	9003172013435	9009012002720	198
34239192	9003172013459	9009012002737	198
34239193	9003172013466	9009012002744	198
34239194	9003172013473	9009012002751	198
34239195	9003172013565	9009012002768	198
34239196	9003172013497	9009012002782	198
34239197	9003172013503	9009012002799	198
34239198	9003172013510	9009012002805	198
34239199	9003172013527	9009012002812	198
34239200	9003172013534	9009012002829	198
34239221	9003172013541	9009012002836	198
34239222	9003172013558	9009012002843	198
34239241	9003172021249	9009012011920	514
34239244	9003172018898	9009012011937	514
34239245	9003172021218	9009012011944	514
34240086	9003172026992	9009012008401	515
34240087	9003172027005	9009012008418	515
34241344	9003172012636	9009012002362	26
34241345	9003172012643	9009012002379	26
34244233	9003172014173		349
34244235	9003172014180		349
34245899	9003172016986	9009012004250	526
34247005	9003172015941	9009012003710	476
34247126	9003172015958	9009012003727	476
34247127	9003172015965	9009012003734	476
34247128	9003172016177	9009012003741	476
34247129	9003172015989	9009012003758	476
34247130	9003172016191	9009012003772	476
34247151	9003172016207	9009012003789	476
34247152	9003172016214	9009012003796	476
34247153	9003172016221	9009012003802	477
34247154	9003172016030	9009012003819	477
34247155	9003172016238	9009012003826	477
34247156	9003172016245	9009012003833	477
34247157	9003172016252	9009012003840	477
34247158	9003172016269	9009012003857	477
34247159	9003172016276	9009012003864	477
34247160	9003172016092	9009012003871	477
34247161	9003172016306	9009012003888	477

Type No.	EAN product	EAN packaging	Page
34247162	9003172016139	9009012003895	477
34247164	9003172016146	9009012003901	477
34247165	9003172016160	9009012003918	477
34251679	9003172016580	9009012003949	525
34251680	9003172016597	9009012003956	525
34251711	9003172016603	9009012003963	525
34251712	9003172016627	9009012003970	525
34256157	9003172017129	9009012004311	26
34256266	9003172017136	9009012004328	27
34256268	9003172017150	9009012004335	27
34256270	9003172017334	9009012004465	27
34256271	9003172017341	9009012004472	27
34256272	9003172017082	9009012004281	26
34256273	9003172017099	9009012004298	27
34256274	9003172017112	9009012004304	27
34256275	9003172017242	9009012004342	27
34256276	9003172017259	9009012004359	27
34256281	9003172017204	9009012004373	27
34257184	9003172027685	9009012009453	79
34257187	9003172027722	9009012009460	79
34257201	9003172027739	9009012009477	80
34257206	9003172027715	9009012009484	80
34257307	9003172017457	9009012004564	243
34257324	9003172017488		349
34257640	9003172070223	9009012004649	287
34270968	9003172513751	9009012005936	289
34275595	9003172021379		143
34275596	9003172021386		143
34275599	9003172021393		143
34275869	9003172021409		143
34275870	9003172021423		143
34275961	9003172021430		143
34275965	9003172021447		143
34275966	9003172021454		143
34275967	9003172021461		143
34275969	9003172021331		150
34276001	9003172021348		150
34276002	9003172021355		150
34276003	9003172021362		150
34276004	9003172021478		147

Type No.	EAN product	EAN packaging	Page
34276005	9003172021492		147
34276006	9003172021508		147
34276007	9003172021515		147
34276008	9003172021522		163
34276009	9003172021539		158
34276010	9003172021546		160
34276011	9003172021553		163
34276012	9003172021584		158
34276013	9003172021614		160
34276014	9003172021645		164
34276015	9003172021669		158
34276016	9003172021676		163
34277672	9003172021690	9009012079777	491
34286491	9009012006599	9009012006599	226
34286492	9009012006605	9009012006605	226
34286493	9009012006612	9009012006612	226
34286494	9009012006629	9009012006629	226
34286495	9009012006636	9009012006636	226
34286497	9009012006643	9009012006643	226
34286498	9009012006650	9009012006650	226
34286499	9009012006667	9009012006667	226
34286500	9009012006674	9009012006674	226
34286501	9009012006681	9009012006681	226
34286502	9009012006698	9009012006698	226
34286503	9009012006704	9009012006704	226
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34286512	9009012006780	9009012006780	226
34286513	9009012006797	9009012006797	226
34286703	9009012006803	9009012006803	226
34286705	9009012006810	9009012006810	226
34286706	9009012006827	9009012006827	226
34287483	9003172027968		413
34287486	9003172028019		413
34287490	9003172027784		413

Type No.	EAN product	EAN packaging	Page
34292638	9003172029252	9009012010138	513
34292640	9003172029269	9009012010145	513
34292816	9003172029276	9009012010152	513
34292820	9003172029283	9009012010169	513
34292821	9003172029290	9009012010176	513
34292823	9003172029306	9009012010183	513
34292824	9003172029313	9009012010190	513
34292826	9003172029320	9009012010206	513
34292827	9003172029375	9009012010282	513
34292828	9003172029382	9009012010299	513
34292829	9003172029399	9009012010305	513
34292830	9003172029405	9009012010312	513
34292831	9003172029412	9009012010329	513
34292832	9003172029627	9009012010404	513
34292833	9003172029634	9009012010411	513
34292834	9003172029641	9009012010428	513
34292835	9003172029658	9009012010435	513
34293083	9003172458809	9009012019605	513
34293084	9003172549910	9009012436891	513
34293087	9003172437316	9009012019612	513
34293089	9003172437330	9009012019629	513
34293090	9003172455709	9009012436969	513
34293111	9003172455716	9009012019636	513
34293113	9003172549934	9009012436990	513
34293115	9003172455686	9009012019650	513
34293116	9003172447872	9009012019667	513
34293118	9003172549941	9009012437317	513
34293120	9003172449418	9009012019674	513
34293122	9003172438610	9009012019681	514
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34293124	9003172449449	9009012019698	514
34293125	9003172447490	9009012019704	514
34293129	9003172458380	9009012025095	514
34293130	9003172549965	9009013017037	514
34293131	9003172549972	9009013017051	514
34293132	9003172455662	9009012019728	514
34293134	9003172549989	9009013017068	514
34293137	9003172455655	9009012019735	514
34293138	9003172550039	9009013017075	514
34293139	9003172455679	9009012019742	514

Type No.	EAN product	EAN packaging	Page
34293140	9003172451060	9009012019766	514
34293142	9003172549996	9009013017082	514
34293146	9003172550008	9009013017099	514
34293148	9003172550015	9009013017105	514
34293149	9003172458823	9009012019773	514
34293150	9003172550022	9009013017112	514
34294535	9003172027906	9009012009491	526
34299305	9003172465135	9009012009507	236
34299306	9003172465166	9009012009514	236
34299307	9003172465388	9009012009521	237
34299308	9003172466996	9009012009538	237
34300411	9003172028040	9009012009590	94
34300412	9003172028057	9009012009606	94
34300413	9003172028064	9009012009613	94
34300416	9003172028071	9009012009620	94
34305288	9003172074207	9009012021691	491
34307835	9003172074290	9009012011302	80
34313968	9003172213996		151
34313969	9003172214030		151
34315841	9003172241791	9009012015102	211
34315842	9003172242224	9009012015119	211
34315843	9003172242262	9009012015126	211
34315845	9003172242484	9009012015133	211
34315846	9003172243139	9009012015140	211
34315847	9003172243245	9009012015157	211
34318364	9003172292441	9009012016376	208
34318365	9003172292625	9009012016383	208
34318366	9003172309330	9009012016390	208
34318368	9003172309781	9009012016406	208
34318369	9003172309811	9009012016413	208
34318370	9003172309828	9009012016420	208
34318391	9003172310282	9009012016437	208
34318392	9003172310947	9009012016444	208
34318393	9003172295923	9009012016451	208
34318394	9003172311692	9009012016468	208
34318395	9003172297057	9009012016475	208
34318396	9003172311876	9009012016482	208
34318398	9003172311951	9009012016499	208
34318400	9003172313078	9009012016505	208
34318533	9003172299617	9009012016512	208

Type No.	EAN product	EAN packaging	Page
34318534	9003172299624	9009012016536	208
34318535	9003172286297	9009012016239	208
34318536	9003172290638	9009012016246	208
34318537	9003172286495	9009012016253	208
34318538	9003172288079	9009012016260	208
34318539	9003172290645	9009012016277	208
34318551	9003172290683	9009012016307	208
34318552	9003172290195	9009012016314	208
34318553	9003172290690	9009012016321	208
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Type No.	EAN product	EAN packaging	Page
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Type No.	EAN product	EAN packaging	Page
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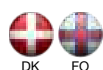


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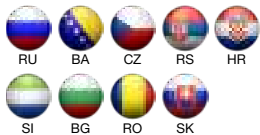
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






























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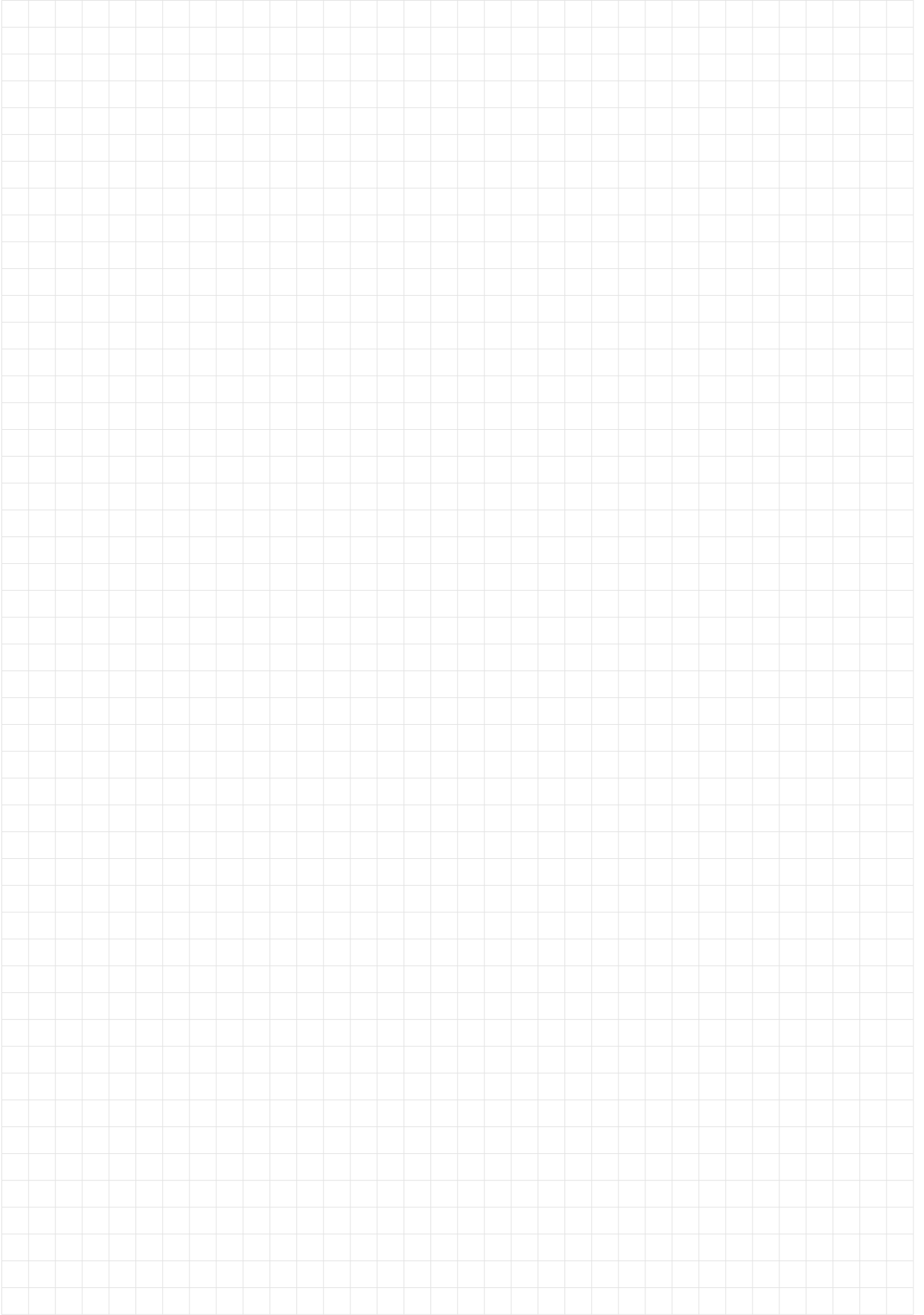
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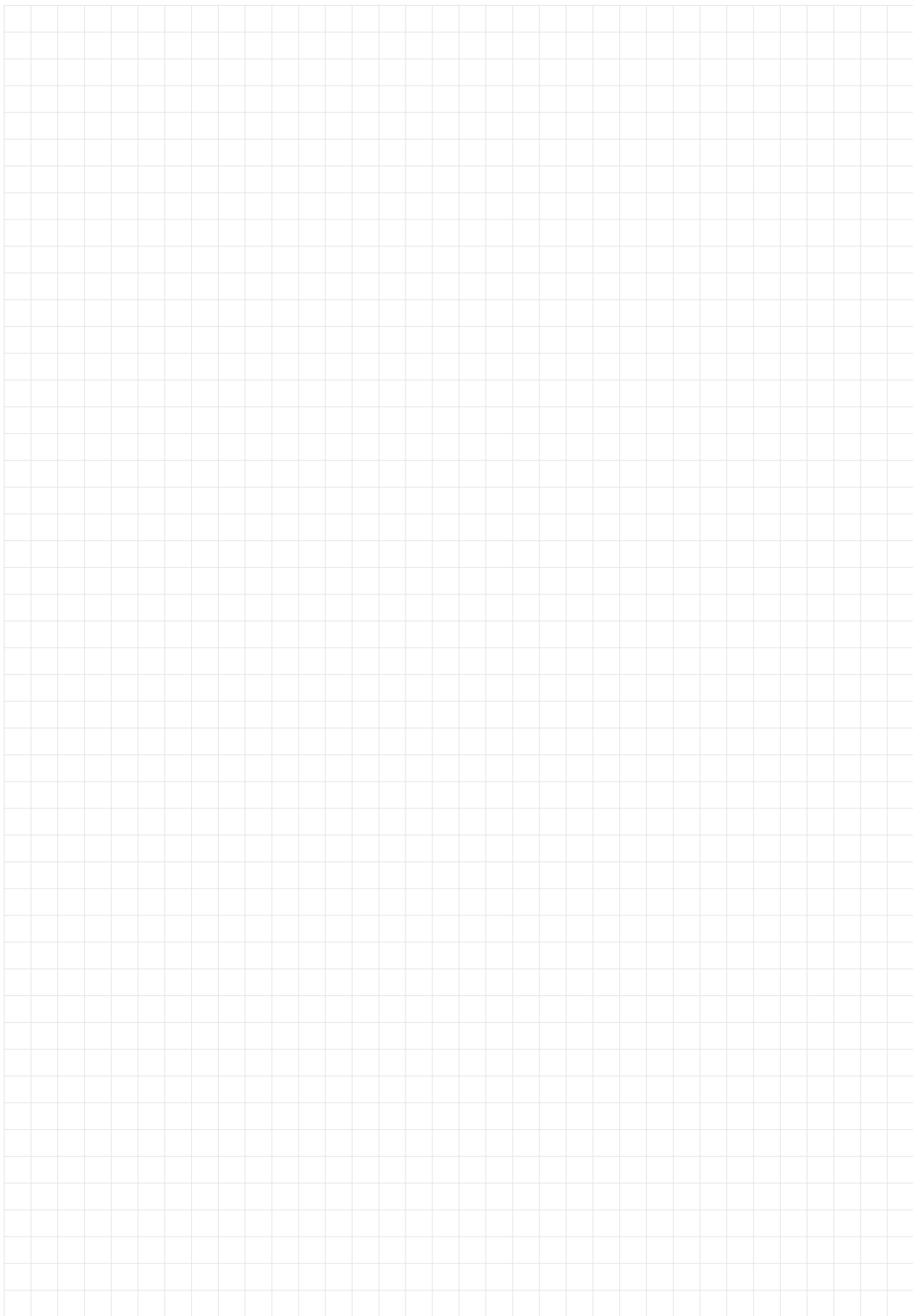


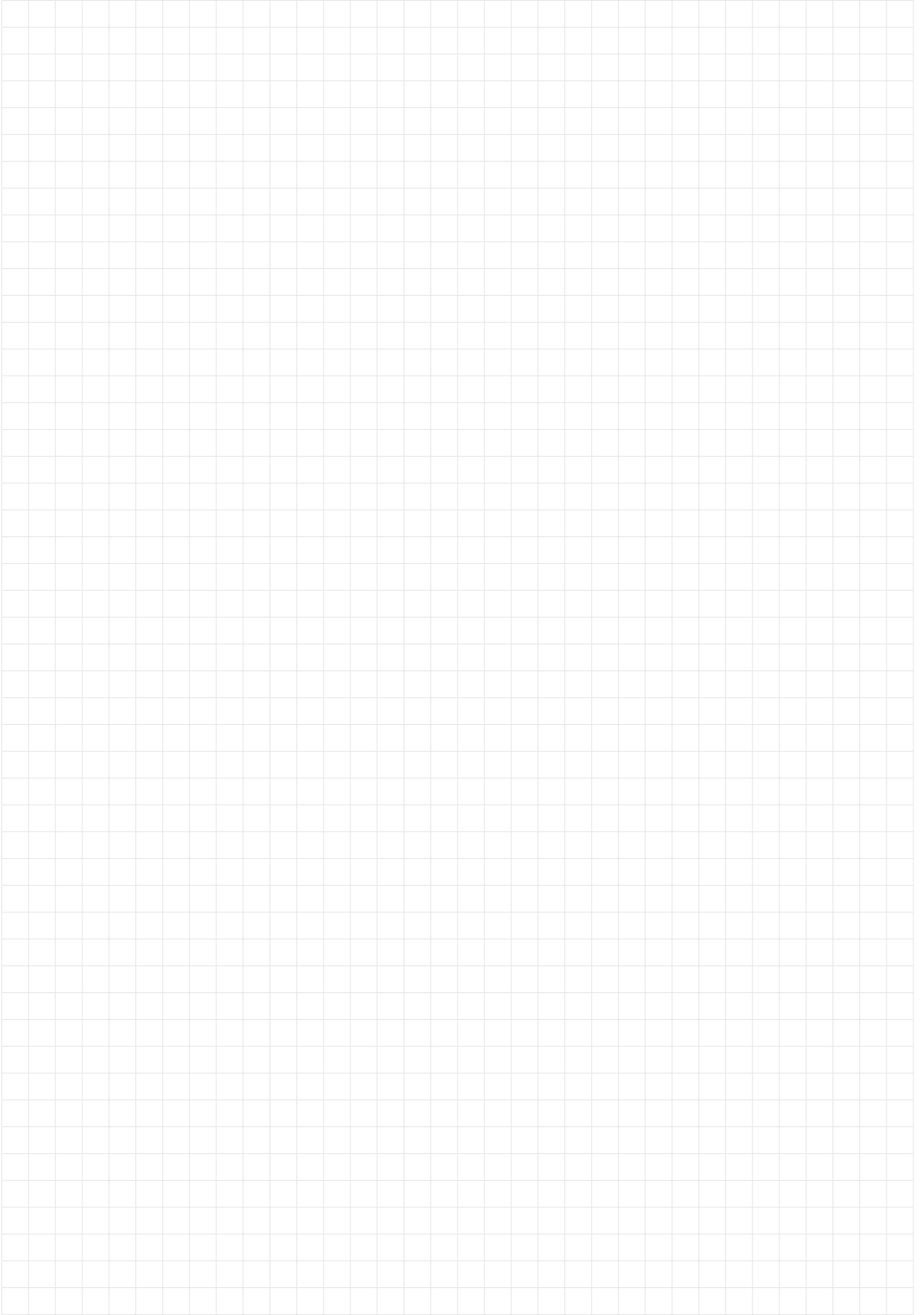
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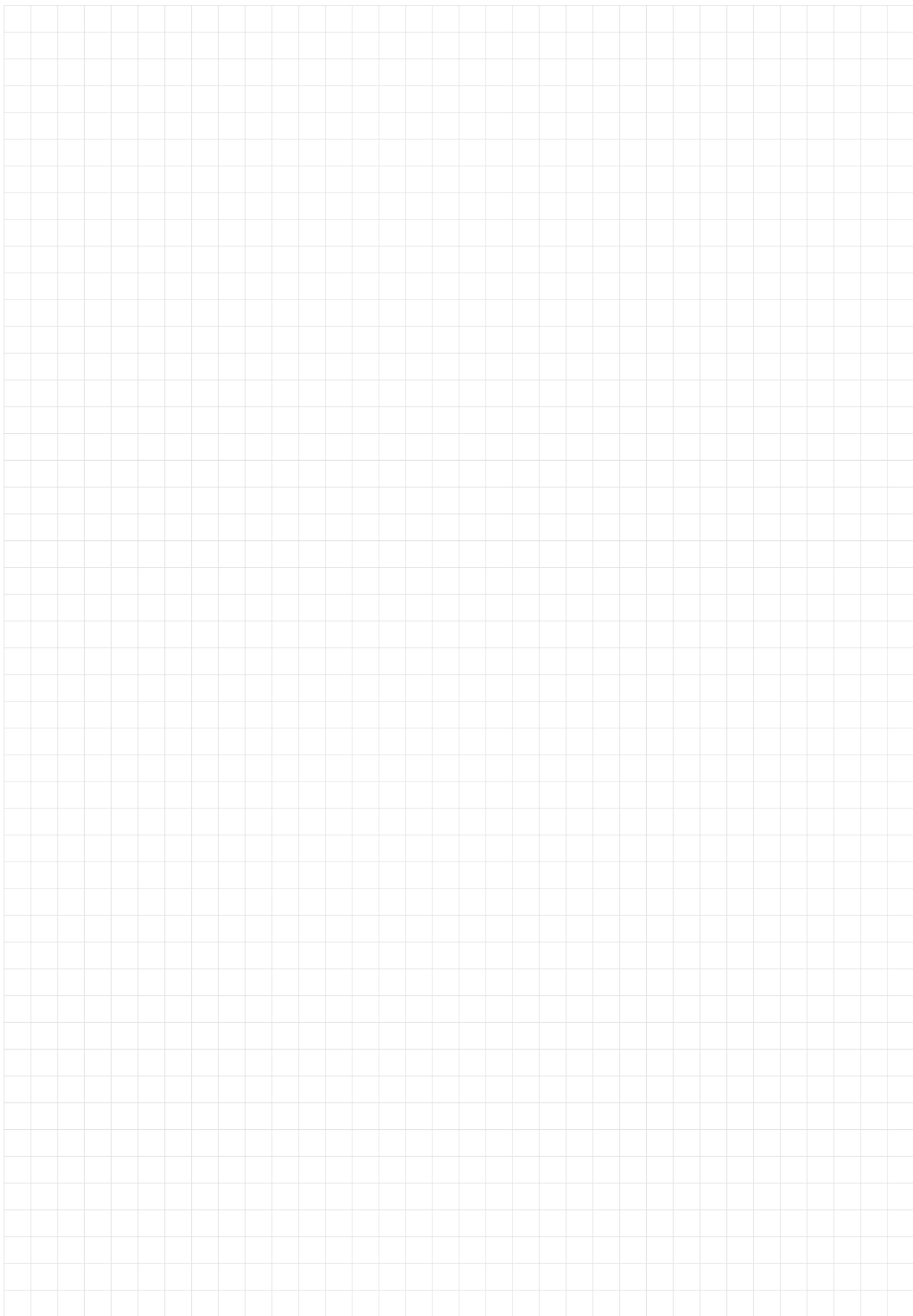
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