

**Tungsten carbide burrs  
with TOUGH and TOUGH-S cuts**  
The stock removal experts for tough applications



**YOU KNOW HOW.  
WE KNOW WOW!**



Especially for foundries, dock-  
yards and steel constructions

**TRUST BLUE**

- Innovative, very robust high-performance cuts providing exceptional impact resistance
- Minimized damages such as tooth chipping/breakage and splintering
- Also useable in the low rotational speed range

# TC burrs with TOUGH and TOUGH-S cuts for tough applications

The TOUGH and TOUGH-S cuts have been specially designed for tough operating conditions in dockyards, foundries and steel construction. They are also ideal for use in all manufacturing sectors where, due to the difficult production environment, tooth breakages or other damage to conventional burrs is a frequent occurrence.

## Advantages:

- Innovative, special cuts providing exceptional impact resistance.
- Minimized tooth chipping/breakage, splintering and burr failures due to very robust, high-performance cuts.
- Can also be used at low rotational speeds.
- Due to their extreme impact resistance, they can perfectly be used as long-shank variants.

## Applications:

- High-impact applications when using shank extensions
- Applications with a high angle of surface contact
- Milling of narrow contours
- Applications where high rotational speeds are not available

## Materials that can be worked:

- Cast iron
- Steel
- Cast steel
- The TOUGH and TOUGH-S cuts can be used on materials up to 54 HRC. For harder materials, it is recommended to perform trials beforehand.

## Recommendations for use:

- For the cost-effective use of burrs, work with higher rotational/cutting speeds. Power recommendation for tool drives:
  - Shank diameter of 3 mm: 75 to 300 watts
  - Shank diameter of 6 mm: from 300 watts
- Please observe the rotational speed recommendations.

## Matching tool drives:

- Flexible shaft drive
- Straight grinder

## Sicherheitshinweise:



= Wear eye protection!



= Wear hearing protection!



Wearing protective gloves is recommended. Handle the tool drive with both hands.



Observe the recommended rotational speed, especially when using burrs with long shanks!

## TOUGH cut



Tungsten carbide burrs with the TOUGH cut are particularly aggressive and are characterized by high stock removal.

## TOUGH-S cut



Tungsten carbide burrs with the TOUGH-S cut are characterized by smooth milling and high stock removal.

## Recommended rotational speed range [RPM]

To determine the recommended cutting speed range [m/min], please proceed as follows:

- 1 Select the material group to be machined.
- 2 Select the cut.

- 3 Establish the cutting speed range.

To determine the recommended rotational speed range [RPM], please proceed as follows:

- 4 Select the required burr diameter.
- 5 The cutting speed range and the burr diameter determine the recommended rotational speed range.

1 Material group			Application	2 Cut	3 Cutting speed
Steel, cast steel	Steels up to 1,200 N/mm <sup>2</sup> (< 38 HRC)	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel, alloyed steels	Coarse stock removal with impact load	TOUGH	250–600 m/min
	Hardened, heat-treated steels over 1,200 N/mm <sup>2</sup> (> 38 HRC)	Tool steels, tempering steels, alloyed steels, cast steel		TOUGH-S	
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black cast iron EN-GJMB (GTS)	Coarse stock removal with impact load	TOUGH	250–350 m/min
				TOUGH-S	
				TOUGH	250–600 m/min
				TOUGH-S	

### Example:

TC burr, TOUGH cut, burr dia. of 12 mm. Coarse stock removal with impact load on steels up to 1,200 N/mm<sup>2</sup>. Cutting speed: 250–600 m/min  
**Rotational speed range: 7,000–16,000 RPM**

4 Burr dia. [mm]	5 Cutting speeds [m/min]		
	250	350	600
	Rotational speeds [RPM]		
8	10,000	14,000	24,000
10	8,000	11,000	19,000
12	7,000	9,000	16,000
16	5,000	7,000	12,000

# TC burrs with TOUGH and TOUGH-S cuts for tough applications

Tungsten carbide burrs with a long shank are ideal for cost-effectively machining small, hard-to-reach areas on components. Long-shank versions are available with the 3 PLUS, 5, STEEL and TOUGH cuts.

Tungsten carbide burrs with a long shank can be shortened if required. Tungsten carbide burrs with the designation **GL 75 mm** are made from solid tungsten carbide, which means they can only be shortened using diamond tools.  
**GL = total length (solid tungsten carbide)**  
**SL = shank length (long steel shank)**

## Safety note – maximum rotational speed [RPM] for burrs with long shanks

**When working with long-shank burrs, it is crucial that the burr is in contact with the workpiece (or inserted in the bore or slot to be machined) before the drive system is turned on. As a rule, the tool must remain in contact with the workpiece for as long as the machine is running.** Failure to observe this procedure may result in shank failure (bending) and hence an increased risk of accidents. If continuous contact between the tool and the workpiece is not guaranteed, the **③ maximum idling speeds stated in the table must not be exceeded.**

For safety reasons, the maximum application speeds **② with contact with the workpiece** require a reduction in the recommended speed of tungsten carbide burrs with standard shanks. The reduced speeds are stated in the table below.

**Example:**  
 TC burr, SL 150 mm,  
 3 PLUS cut,  
 burr dia. 12 mm.  
 Coarse stock removal on steels  
 up to 1,200 N/mm<sup>2</sup>.  
**Maximum application speed with contact  
 with the workpiece: 7,000 RPM**

① Burr dia. [mm]	③ Maximum idling speed [RPM] without contact with the workpiece		② Maximum application speed [RPM] with contact with the workpiece	
	Shank length [mm]			
	75	150	75	150
3	10,000	-	31,000	-
6	6,000	8,000	15,000	15,000
8	-	6,000	-	11,000
10	-	4,000	-	9,000
12	-	3,000	-	7,000

## Safety notes:

Not suitable for robotic or stationary applications. **Risk of bending.** Use only rigid clamping systems/drives.



= Observe the prescribed rotational speed!

To determine the recommended rotational speed range [RPM], please proceed as follows:

- ① Select the required burr diameter.
- ② For the maximum application speed [RPM] with contact with the workpiece, please refer to the right-hand side of the table.

## Extensions for drive spindles

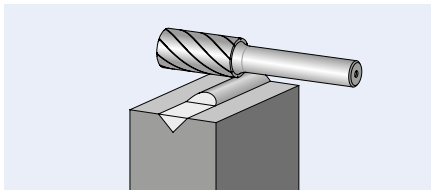
In some applications, drive spindle extensions are an economic alternative to customized burrs with long shanks. For more information please refer to our Tool Manual, catalogue section 9.



# TC burrs with TOUGH and TOUGH-S cuts for tough applications

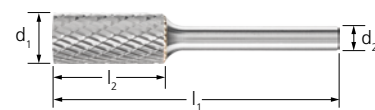
## Cylindrical shape ZYA without end cut




Cylindrical burr according to DIN 8032.



### Ordering notes:

- Please complete the description with the desired cut.



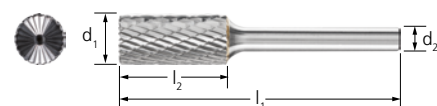
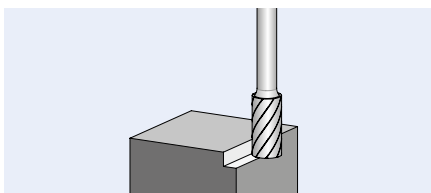
d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	Cut			Description
				TOUGH 	TOUGH-S 		
<b>EAN 4007220</b>							



### Shank dia. 6 mm

8	20	6	60	895504	-	1	ZYA 0820/6 ...
10	20	6	60	895658	-	1	ZYA 1020/6 ...
12	25	6	65	895665	895672	1	ZYA 1225/6 ...

## Cylindrical shape ZYAS with end cut

Cylindrical burr according to DIN 8032 with circumferential and end cut.



d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	Cut		Description
				TOUGH 		
<b>EAN 4007220</b>						

### Shank dia. 6 mm

8	20	6	60	769997	1	ZYAS 0820/6 TOUGH
10	20	6	60	770023	1	ZYAS 1020/6 TOUGH
12	25	6	65	869109	1	ZYAS 1225/6 TOUGH

### Shank dia. 8 mm

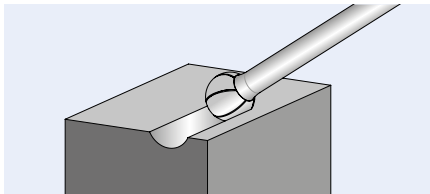
12	25	8	65	770054	1	ZYAS 1225/8 TOUGH
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


# TC burrs with TOUGH and TOUGH-S cuts for tough applications

## Ball shape KUD

Ball-shaped burr according to DIN 8032.



d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	Cut			Description
				TOUGH 	TOUGH-S 		
<b>EAN 4007220</b>							

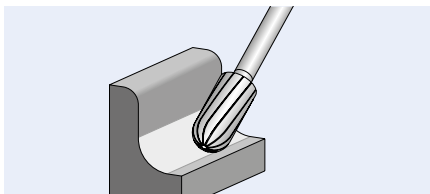
### Shank dia. 6 mm

8	7	6	47	955383	-	1	KUD 0807/6 TOUGH
12	10	6	51	770160	-	1	KUD 1210/6 TOUGH

## Cylindrical shape with radius end WRC

Cylindrical burr with radius end according to DIN 8032. Combination of cylindrical and ball-shaped geometries.

SL = shank length (long steel shank)



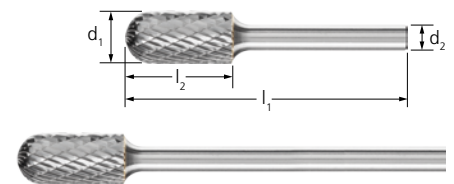
### Ordering notes:

- Please complete the description with the desired cut.

### Safety notes:



Please observe the reduced rotational speeds for long-shank burrs. They can be found on page 3.



d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	Cut			Description
				TOUGH 	TOUGH-S 		
<b>EAN 4007220</b>							

### Shank dia. 6 mm

8	20	6	60	770108	-	1	WRC 0820/6 ...
10	20	6	60	770115	-	1	WRC 1020/6 ...
12	25	6	65	770122	770139	1	WRC 1225/6 ...

### Long shank dia. of 6 mm, SL 150 mm

12	25	6	175	091043	-	1	WRC 1225/6 ... SL 150
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### Shank dia. 8 mm

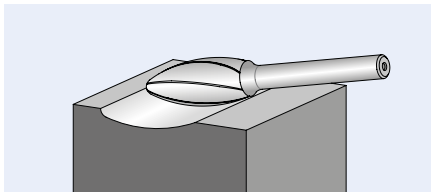
12	25	8	65	769881	-	1	WRC 1225/8 ...
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# TC burrs with TOUGH and TOUGH-S cuts for tough applications

## Flame shape B

Flame-shaped burr according to ISO 7755/8.



d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	r [mm]	Cut			Description
					TOUGH 			
					EAN 4007220			

### Shank dia. 6 mm

8	20	6	60	1.5	770061	1	B 0820/6 TOUGH
12	30	6	70	2.1	770085	1	B 1230/6 TOUGH

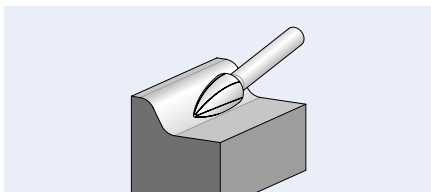
### Shank dia. 8 mm

12	30	8	70	2.1	770092	1	B 1230/8 TOUGH
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## Pointed tree shape SPG

Pointed tree-shaped burr according to DIN 8032, flattened tip.

SL = shank length (long steel shank)



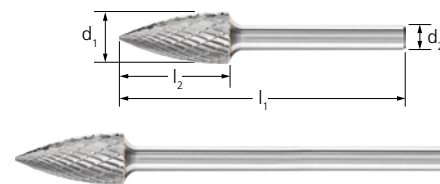
### Ordering notes:




- Please complete the description with the desired cut.

### Safety notes:



Please observe the reduced rotational speeds for long-shank burrs. They can be found on page 3.



d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	Cut			Description
				TOUGH 	TOUGH-S 		
				EAN 4007220			

### Shank dia. 6 mm

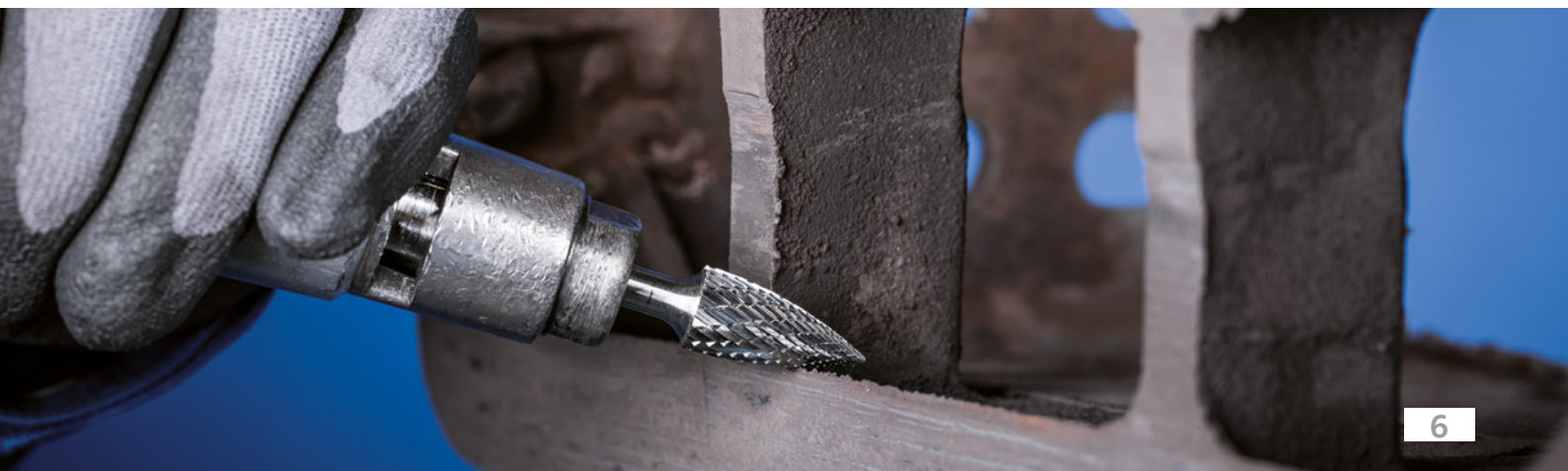
10	20	6	60	770252	770269	1	SPG 1020/6 ...
12	25	6	65	770276	-	1	SPG 1225/6 ...

### Long shank dia. of 6 mm, SL 150 mm

12	25	6	175	090930	-	1	SPG 1225/6 ... SL 150
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### Shank dia. 8 mm

12	25	8	65	770283	-	1	SPG 1225/8 ...
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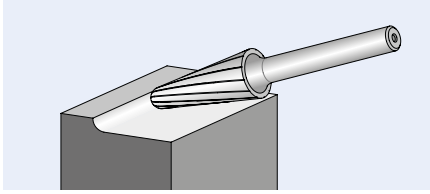


# TC burrs with TOUGH and TOUGH-S cuts for tough applications

## Conical shape with radius end KEL

Conical burr with radius end according to DIN 8032.

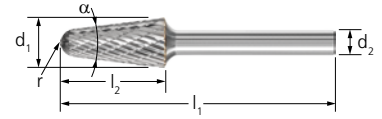
SL = shank length (long steel shank)






### Safety notes:



= Please observe the reduced rotational speeds for long-shank burrs. They can be found on page 3.

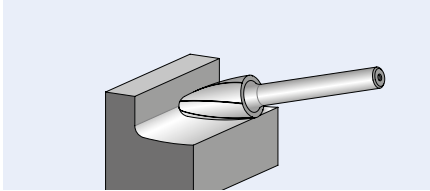


d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	α	r [mm]	Cut			Description
						TOUGH 	TOUGH-S 		
						EAN 4007220			
<b>Shank dia. 6 mm</b>									
12	25	6	65	14°	3.3	770320	-	1	KEL 1225/6 TOUGH
<b>Long shank dia. of 6 mm, SL 150 mm</b>									
12	25	6	175	14°	3.3	091166	-	1	KEL 1225/6 TOUGH SL 150
<b>Shank dia. 8 mm</b>									
12	25	8	65	14°	3.3	770337	-	1	KEL 1225/8 TOUGH

## Tree shape with radius end RBF

Tree-shaped burr with radius end according to DIN 8032.

SL = shank length (long steel shank)



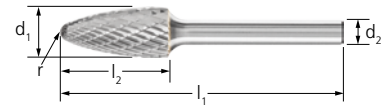
### Ordering notes:

- Please complete the description with the desired cut.

### Safety notes:



= Please observe the reduced rotational speeds for long-shank burrs. They can be found on page 3.

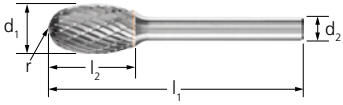
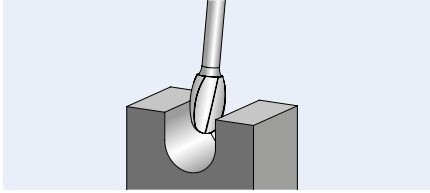




d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	r [mm]	Cut			Description
					TOUGH 	TOUGH-S 		
					EAN 4007220			
<b>Shank dia. 6 mm</b>								
8	20	6	60	1.2	770191	-	1	RBF 0820/6 ...
10	20	6	60	2.5	770207	-	1	RBF 1020/6 ...
12	25	6	65	2.5	770214	770238	1	RBF 1225/6 ...
16	25	6	65	4.9	869116	-	1	RBF 1625/6 ...
<b>Long shank dia. of 6 mm, SL 150 mm</b>								
12	25	6	175	2.5	090947	-	1	RBF 1225/6 ... SL 150
<b>Shank dia. 8 mm</b>								
12	25	8	65	2.5	770221	770245	1	RBF 1225/8 ...

# TC burrs with TOUGH and TOUGH-S cuts for tough applications

## Oval shape TRE

Oval burr according to DIN 8032.



d <sub>1</sub> [mm]	l <sub>2</sub> [mm]	d <sub>2</sub> [mm]	l <sub>1</sub> [mm]	r [mm]	Cut		Description
					TOUGH 		
					EAN 4007220		

### Shank dia. 6 mm

10	16	6	56	4.0	770344	1	TRE 1016/6 TOUGH
12	20	6	60	5.0	770351	1	TRE 1220/6 TOUGH



## Set 1712 TOUGH

Set 1712 TOUGH contains five tungsten carbide burrs for tough applications in the most common shapes and dimensions. The sturdy plastic box protects the tools from dirt and damage. The burrs are secured at the shanks, facilitating the selection and withdrawal of the tools. Five further unused slots are available for other burrs.

### Contents:

- 5 tungsten carbide burrs, shank diameter of 6 mm, TOUGH cut
- 1 piece each:
  - WRC 1225/6 TOUGH
  - SPG 1225/6 TOUGH
  - RBF 1225/6 TOUGH
  - KEL 1225/6 TOUGH
  - TRE 1220/6 TOUGH



Cut		Description
TOUGH 		
EAN 4007220		

### Shank dia. 6 mm

955635	1	1712 TOUGH
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