PFERD

10

Cutting tools for stationary applications

Cutting tools for stationary applications
Table of contents

Cutting tools for stationary applications

- General information 3
- Material suitability overview 4
- Explanation of pictograms used 5
- Formulae for cut data calculation 5
- Explanation of item designation 6

Universal solid tungsten carbide end mills

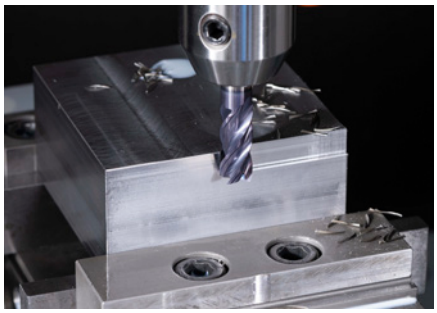
- Universal end mill with two blades UC2 9
- Universal end mill with three blades UC3 12
- Universal end mill with four blades UC4 15
- Universal end mill with six/eight blades UC6/8 18
- Universal deburring end mill UD 20
- Universal full radius end mill UB 23

MAYER SZERSZÁM

Cutting tools for stationary applications from PFERD

PFERD supplies cutting tools for all of the most common stationary applications.

PFERD solid carbide mills are suitable for a wide range of milling operations on lathes and milling machines, and in automated centres. The tools' optimum stock removal rate ensures high productivity.



Technical customer support

If you have any questions about optimizing your stock removal applications, our sales representatives and technical advisers will be happy to help or visit you. PFERD works alongside you to provide application engineering solutions for working with diverse materials.

Please do not hesitate to contact us for further information. You can find our worldwide sales office addresses at: **www.pferd.com.**

PFERD quality

PFERD solid carbide mills are made from tungsten carbide optimized for specific applications and with very low manufacturing tolerances, and achieve the very highest quality standards. The quality of PFERD tools has been certified according to ISO 9001.

Custom-made products

If you cannot find the solution for your particular application in our catalogue range, we are happy to produce milling tools to meet your wishes and requirements. Our sales representatives and technical advisers will be happy to assist you in analyzing your task.

Find your ideal tool solution in just three steps:

- **1. Process analysis**
  Make an appointment with our experienced sales representatives and technical advisers. You can find our worldwide sales office addresses at **www.pferd.com**.
- **2. Production**
  Our production teams subsequently create a technical drawing with which your made-to-order product will be produced.
- **3. Use**
  See the quality, performance and economic value of PFERD tools for yourself!

Resharpening

All PFERD cutting tools for stationary applications can be reground. Please contact us for further information.

MAYER SZERSZÁM

Cutting tools for stationary applications

Material suitability overview

Material group			Universal full radius end mill UB	Universal deburring end mill UD	Universal end mill with two blades UC2	Universal end mill with three blades UC3	Universal end mill with four blades UC4	Universal end mill with six/ eight blades UC6/8
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	●	●	●	●	●	●
M	Stainless steel	Ferritic and martensitic	●	●	●	●	○	●
		Austenitic	●	●	●	●	○	●
		High-temperature-resistant and ferritic-austenitic (duplex)	○	●	○	○	○	○
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	●	●	●	●	●	●
		Cast iron with nodular graphite (GJS, GGG)	●	●	●	●	●	●
N	Non-ferrous metals	Aluminium	○	●	○	○	○	○
		Copper, brass, bronze, red brass	●	●	○	○	○	○
S	Super and titanium alloys	Heat-resistant super alloys based on Fe, Ni and Co		○		○	○	●
		Pure titanium		○		○	○	●
		Titanium alloys		○		○	○	●
H	Hard steels and chilled castings	Heat-treated and hardened steels up to 50 HRC	●	○	○	○	○	○
		Hardened steels up to 58 HRC	○					
		Hardened steels over 58 HRC						
O	Other	Thermoplastics	○	○	○	○	○	○
		Duroplastics						
		GRP/CRP reinforced plastics, graphite						

● = highly suitable ○ = suitable

WATERSTEERSZÁM

Cutting tools for stationary applications
Explanation of pictograms used

Geometry – Type

- 45° corner chamfer
- Sharp
- Radius
- 60° conical shape
- 90° conical shape
- Full radius

Geometry – Number of blades

- Number of blades

Geometry – Torsion

- Torsion angle

Norm

- Company standard
- DIN 6527L

Shank type

- Smooth cylindrical shank HA in accordance with DIN 6535
- Weldon shank HB in accordance with DIN 6535 with lateral driving surface

Feed direction

- Feed xy
- Feed xy(z)
- Feed xyz

Unequal pitch

- Unequal cutting pitch

Applications

- Side milling
- Slot cutting
- Ramping
- Drilling
- Chamfering/deburring
- Profile milling
- Profile milling – use of shoulder
- Profile milling – use of tip

Formulae for cut data calculation

$$n = \frac{V_c \times 1.000}{DC \times \pi} \ min^{-1}$$

Rotational speed

$$V_c = \frac{DC \times \pi \times n}{1.000} \ m/min$$

Cutting speed

$$V_f = f_z \times ZEFP \times n \ \ mm/min$$

Feeding speed

Explanation of the abbreviations

- a_p = cutting depth
- a_e = contact width
- DC = milling cutter diameter in [mm]
- f_z = Feed per tooth in [mm/tooth]
- n = spindle rotational speed in [rev/min]
- V_c = Cutting speed in [m/min]
- V_f = Feeding speed in [mm/min]
- ZEFP = Effective no. of teeth

MAYER'S ZERSPANEN

Cutting tools for stationary applications
Explanation of item designation

SCM-UC4-M100C-M72HB AL40
① ② ③ ④ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑭

① Tool group
SCM = Solid carbide mill

② Product line
U = Universal Line

③ Shape
B = Full radius end mill (ball nose)
D = Deburring end mill (deburring/ chamfering)
C = Cylindrical end mill with centre cut

④ Number of cutting edges

⑤ Material group
ISO groups P, M, K, N, S, H.
Blank, unless specified.

⑥ Units
M = Metric

⑦ Cutting diameter
Metric: mm x 10
Example: D 10.5 mm = 105

⑧ Corner design
A = Angled
Example: A90°
C = Chamfer
R = radius with size
Example: R40 for 4.0 mm
S = Sharp

⑨ Cut length class

XS:	APMX 3 x DC
S:	APMX 1-2 x DC
M:	APMX 2-2.5 x DC
L:	APMX 2.5-3 x DC
XL:	APMX >3 x DC

⑩ Total length
Metric: total length LF in mm.
Not specified for deburring end mills.

⑪ Shank type
HA = Cylindrical
HB = Weldon shank (in accordance with DIN 6535)
Additional shank diameter for design with DC < 6 mm and DCON = 6 mm

⑫ *

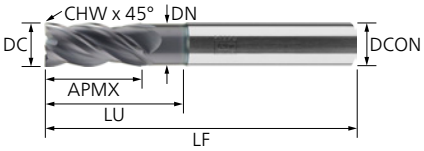
⑬ *

⑭ Blade material

*Optional

Explanation of short names in accordance with ISO 13399

APMX	= Maximum cutting depth
CHW	= Chamfer width
DC	= Cutting diameter
DCON	= Shank diameter
DN	= Neck diameter
KAPR	= Tool cutting edge angle
LF	= Total length
LU	= Working length
RE	= Corner radius
ZEFP	= No. of teeth



MAYER SZERSZÁM

Recommended cutting speeds [m/min]

Material group		Specification/ example material		Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC								
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]							
						4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	●	90	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			500 to 700 N/mm²	●	85	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			700 to 1,000 N/mm²	●	80	0.02	0.02	0.02	0.03	0.04	0.045	0.055	0.07
			1,000 to 1,400 N/mm²	●	70	0.02	0.02	0.02	0.03	0.04	0.045	0.055	0.07
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	●	55	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Austenitic	e.g. 1.4301,1.4571	●	55	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	45	0.018	0.018	0.02	0.025	0.03	0.04	0.05	0.065
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	80	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	65	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	135	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			Al > 10% Si	○	110	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Copper, brass, bronze and red brass		○	90	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co										
		Pure titanium											
		Titanium alloys											
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.02	0.02	0.02	0.03	0.04	0.055	0.06	0.07
			up to 58 HRC										
			> 58 HRC										
O	Other	Thermoplastics		○	90	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Duroplastics											
		GRP/CRP reinforced plastics, graphite											

● = highly suitable ○ = suitable

MATERIÓŁ PRZYKŁADOWY

Cutting tools for stationary applications

Universal end mill with two blades UC2

Recommended cutting speeds [m/min]

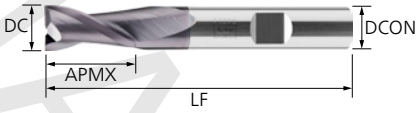
Material group			Specification/ example material	Suitability	Side milling a_p = 1 x DC; a_e = 0.1 x DC								
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]							
						4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	210	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			500 to 700 N/mm²	•	190	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			700 to 1,000 N/mm²	•	170	0.025	0.025	0.035	0.045	0.06	0.07	0.08	0.1
			1,000 to 1,400 N/mm²	•	150	0.025	0.025	0.035	0.045	0.06	0.07	0.08	0.1
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	•	120	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Austenitic	e.g. 1.4301,1.4571	•	120	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	90	0.025	0.025	0.033	0.038	0.045	0.06	0.08	0.1
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	180	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	140	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	250	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			Al > 10% Si	○	200	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Copper, brass, bronze and red brass		○	200	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co										
		Pure titanium											
		Titanium alloys											
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	75	0.025	0.025	0.035	0.045	0.06	0.07	0.08	0.1
			up to 58 HRC										
			> 58 HRC										
O	Other	Thermoplastics		○	200	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Duroplastics											
		GRP/CRP reinforced plastics, graphite											

• = highly suitable ○ = suitable

WALTER SZLÁM

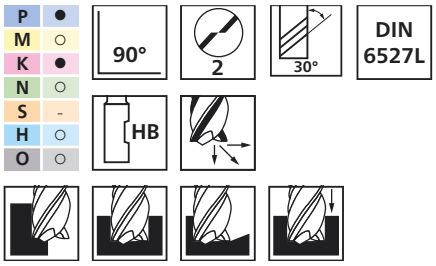
Universal solid tungsten carbide end mills

Universal end mill with two blades UC2



Sharp corner design

End mills for full slot milling, drill slot milling and for roughing with high contact widths. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.



Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Good chip removal due to very large chip space.

DC [mm]	DCON [mm]	APMX [mm]	LF [mm]	ZEFP		Item no.	Designation	Price/unit EUR
Long HB				HB				
4	6	8	57	2	1	23000124	SCM-UC2-M040S-S57HB6 AL40	-
5	6	10	57	2	1	23000125	SCM-UC2-M050S-S57HB6 AL40	-
6	6	10	57	2	1	23000126	SCM-UC2-M060S-S57HB AL40	-
8	8	16	63	2	1	23000127	SCM-UC2-M080S-S63HB AL40	-
10	10	19	72	2	1	23000128	SCM-UC2-M100S-S72HB AL40	-
12	12	22	83	2	1	23000129	SCM-UC2-M120S-S83HB AL40	-
16	16	26	92	2	1	23000130	SCM-UC2-M160S-S92HB AL40	-

MAYER SZERSZÁM

Cutting tools for stationary applications

Universal end mill with three blades UC3

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			500 to 700 N/mm²	•	120	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			700 to 1,000 N/mm²	•	100	0.01	0.016	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			1,000 to 1,400 N/mm²	•	80	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	•	45	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Austenitic	e.g. 1.4301,1.4571	•	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	40	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	100	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	200	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			Al > 10% Si	○	180	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Copper, brass, bronze and red brass		○	200	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	35	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Pure titanium		○	100	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Titanium alloys		○	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			up to 58 HRC											
			> 58 HRC											
O	Other	Thermoplastics		○	110	0.025	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

• = highly suitable ○ = suitable

WALTER OTTERSZÄN

Recommended cutting speeds [m/min]

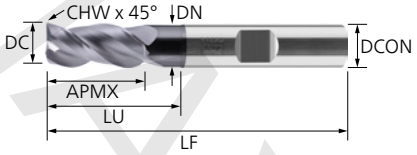
Material group			Specification/ example material	Suitability	Side milling a_p = 1 x DC; a_e = 0.4 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			500 to 700 N/mm²	•	160	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			700 to 1,000 N/mm²	•	150	0.01	0.016	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			1,000 to 1,400 N/mm²	•	110	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	•	70	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Austenitic	e.g. 1.4301,1.4571	•	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	60	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	140	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	250	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			Al > 10% Si	○	200	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Copper, brass, bronze and red brass		○	200	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	45	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Pure titanium		○	110	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Titanium alloys		○	60	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			up to 58 HRC											
			> 58 HRC											
O	Other	Thermoplastics		○	200	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

• = highly suitable ○ = suitable

MATERIÁL ZDARMA

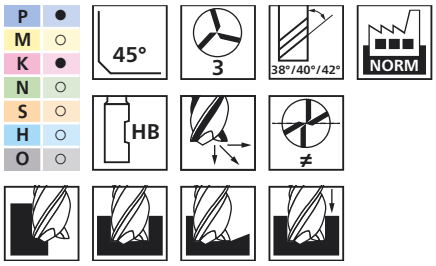
Universal solid tungsten carbide end mills

Universal end mill with three blades UC3



Chamfer corner design

End mills for full slot milling, drill slot milling and for a wide range of roughing tasks. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.



Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation	Price/ unit EUR
Long HB					HB						
3	6	2.8	8	57	11	0.1	3	1	23000131	SCM-UC3-M030C-M57HB6 AL40	-
4	6	3.7	11	57	16	0.1	3	1	23000132	SCM-UC3-M040C-M57HB6 AL40	-
5	6	4.7	13	57	18	0.15	3	1	23000133	SCM-UC3-M050C-M57HB6 AL40	-
6	6	5.6	13	57	18	0.2	3	1	23000134	SCM-UC3-M060C-M57HB AL40	-
8	8	7.5	19	63	26	0.2	3	1	23000135	SCM-UC3-M080C-M63HB AL40	-
10	10	9.5	22	72	32	0.2	3	1	23000136	SCM-UC3-M100C-M72HB AL40	-
12	12	11	26	83	36	0.3	3	1	23000137	SCM-UC3-M120C-M83HB AL40	-
16	16	15	32	92	42	0.3	3	1	23000138	SCM-UC3-M160C-M92HB AL40	-

MAYER SZERSZÁM

Recommended cutting speeds [m/min]

Material group		Specification/ example material		Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	135	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			500 to 700 N/mm²	•	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			700 to 1,000 N/mm²	•	110	0.01	0.016	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			1,000 to 1,400 N/mm²	•	80	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	○	70	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Austenitic	e.g. 1.4301,1.4571	○	60	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	100	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	200	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
			Al > 10% Si	○	180	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
		Copper, brass, bronze and red brass		○	200	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	35	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Pure titanium		○	100	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Titanium alloys		○	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			up to 58 HRC											
			> 58 HRC											
O	Other	Thermoplastics		○	180	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

• = highly suitable ○ = suitable

MATTER OF PERSZÁN

Cutting tools for stationary applications

Universal end mill with four blades UC4

Recommended cutting speeds [m/min]

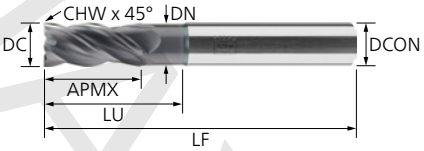
Material group			Specification/ example material	Suitability	Side milling a_p = 2 x DC; a_e = 0.4 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			500 to 700 N/mm²	•	160	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			700 to 1,000 N/mm²	•	150	0.01	0.016	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			1,000 to 1,400 N/mm²	•	110	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	○	85	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Austenitic	e.g. 1.4301,1.4571	○	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	65	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	140	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	230	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			Al > 10% Si	○	210	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Copper, brass, bronze and red brass		○	230	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	45	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Pure titanium		○	120	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Titanium alloys		○	70	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			up to 58 HRC											
			> 58 HRC											
O	Other	Thermoplastics		○	210	0.04	0.04	0.06	0.06	0.07	0.07	0.085	0.1	0.12
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

• = highly suitable ○ = suitable

WALTER POLSKA

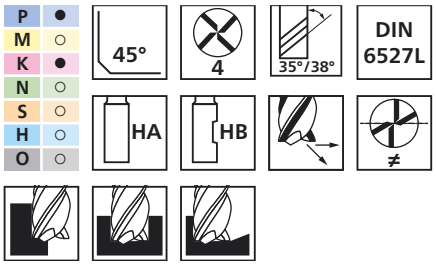
Universal solid tungsten carbide end mills

Universal end mill with four blades UC4



Chamfer corner design

End mills for various applications, from roughing through to finishing and ramping. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.



Special features:

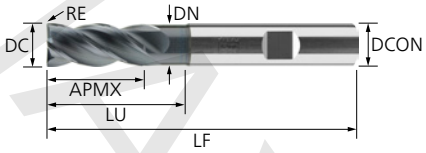
- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation	Price/ unit EUR
Long HA						HA					
3	6	2.8	8	57	18	0.13	4	1	23000148	SCM-UC4-M030C-M57HA6 AL40	-
4	6	3.6	11	57	21	0.13	4	1	23000149	SCM-UC4-M040C-M57HA6 AL40	-
5	6	4.6	13	57	21	0.2	4	1	23000150	SCM-UC4-M050C-M57HA6 AL40	-
6	6	5.5	13	57	21	0.2	4	1	23000151	SCM-UC4-M060C-M57HA AL40	-
8	8	7.5	19	63	27	0.2	4	1	23000152	SCM-UC4-M080C-M63HA AL40	-
10	10	9.5	22	72	32	0.2	4	1	23000153	SCM-UC4-M100C-M72HA AL40	-
12	12	11.5	26	83	38	0.3	4	1	23000154	SCM-UC4-M120C-M83HA AL40	-
16	16	15.5	32	92	44	0.3	4	1	23000155	SCM-UC4-M160C-M92HA AL40	-
20	20	19.5	38	104	54	0.4	4	1	23000156	SCM-UC4-M200C-M104HA AL40	-
Long HB						HB					
3	6	2.8	8	57	18	0.13	4	1	23000139	SCM-UC4-M030C-M57HB6 AL40	-
4	6	3.6	11	57	21	0.13	4	1	23000140	SCM-UC4-M040C-M57HB6 AL40	-
5	6	4.6	13	57	21	0.2	4	1	23000141	SCM-UC4-M050C-M57HB6 AL40	-
6	6	5.5	13	57	21	0.2	4	1	23000142	SCM-UC4-M060C-M57HB AL40	-
8	8	7.5	19	63	27	0.2	4	1	23000143	SCM-UC4-M080C-M63HB AL40	-
10	10	9.5	22	72	32	0.2	4	1	23000144	SCM-UC4-M100C-M72HB AL40	-
12	12	11.5	26	83	38	0.3	4	1	23000145	SCM-UC4-M120C-M83HB AL40	-
16	16	15.5	32	92	44	0.3	4	1	23000146	SCM-UC4-M160C-M92HB AL40	-
20	20	19.5	38	104	54	0.4	4	1	23000147	SCM-UC4-M200C-M104HB AL40	-

MAYER ERSZÁM

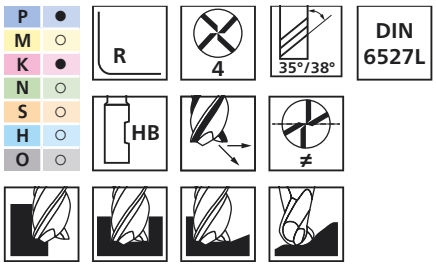
Universal solid tungsten carbide end mills

Universal end mill with four blades UC4



Radius corner design

End mills for various applications, from roughing through to finishing. The radius design is also suitable for free-form profile cutting. The solid tungsten carbide end mills can be used universally on a large number of materials.



Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation	Price/ unit EUR
Long HB						**HB**					
8	8	7.5	19	63	27	0.5	4	1	23000157	SCM-UC4-M080R05-M63HB AL40	-
						1	4	1	23000158	SCM-UC4-M080R10-M63HB AL40	-
						1.5	4	1	23000159	SCM-UC4-M080R15-M63HB AL40	-
						2	4	1	23000160	SCM-UC4-M080R20-M63HB AL40	-
10	10	9.5	22	72	32	0.5	4	1	23000161	SCM-UC4-M100R05-M72HB AL40	-
						1	4	1	23000162	SCM-UC4-M100R10-M72HB AL40	-
						1.5	4	1	23000163	SCM-UC4-M100R15-M72HB AL40	-
						2	4	1	23000164	SCM-UC4-M100R20-M72HB AL40	-
12	12	11.5	26	83	38	0.5	4	1	23000165	SCM-UC4-M120R05-M83HB AL40	-
						1	4	1	23000166	SCM-UC4-M120R10-M83HB AL40	-
						1.5	4	1	23000167	SCM-UC4-M120R15-M83HB AL40	-
						2	4	1	23000168	SCM-UC4-M120R20-M83HB AL40	-
16	16	15.5	32	92	44	1	4	1	23000169	SCM-UC4-M160R10-M92HB AL40	-
						1.5	4	1	23000170	SCM-UC4-M160R15-M92HB AL40	-
						2	4	1	23000171	SCM-UC4-M160R20-M92HB AL40	-
20	20	19.5	38	104	54	1	4	1	23000172	SCM-UC4-M200R10-M104HB AL40	-
						2	4	1	23000173	SCM-UC4-M200R20-M104HB AL40	-

WAYERSZÄN

Recommended cutting speeds [m/min]

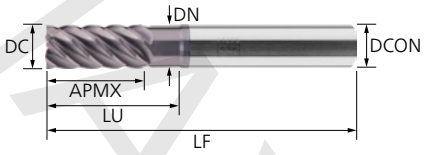
Material group			Specification/ example material	Suitability	Side milling a_p = 1.5 x DC; a_e = 0.05 x DC						
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]					
						6	8	10	12	16	20
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	200	0.035	0.04	0.055	0.065	0.08	0.1
			500 to 700 N/mm²	•	160	0.035	0.04	0.055	0.065	0.08	0.1
			700 to 1,000 N/mm²	•	120	0.035	0.04	0.055	0.065	0.08	0.1
			1,000 to 1,400 N/mm²	•	100	0.025	0.03	0.04	0.05	0.065	0.08
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	•	100	0.025	0.025	0.04	0.05	0.065	0.08
		Austenitic	e.g. 1.4301,1.4571	•	80	0.025	0.03	0.04	0.05	0.065	0.08
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	65	0.02	0.025	0.03	0.04	0.05	0.065
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	170	0.03	0.04	0.055	0.065	0.08	0.1
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	140	0.03	0.04	0.055	0.065	0.08	0.1
N	Non-ferrous metals	Aluminium	Al up to 10% Si								
			Al > 10% Si	○	300	0.03	0.04	0.055	0.065	0.08	0.1
		Copper, brass, bronze and red brass		○	340	0.03	0.04	0.055	0.065	0.08	0.1
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	•	40	0.02	0.025	0.03	0.035	0.045	0.065
		Pure titanium		•	80	0.02	0.025	0.03	0.035	0.045	0.065
		Titanium alloys		•	70	0.02	0.025	0.03	0.035	0.045	0.065
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.025	0.03	0.03	0.035	0.045	0.065
			up to 58 HRC								
			> 58 HRC								
O	Other	Thermoplastics		○	300	0.03	0.04	0.055	0.065	0.08	0.1
		Duroplastics									
		GRP/CRP reinforced plastics, graphite									

• = highly suitable ○ = suitable

MASTERSZÁM

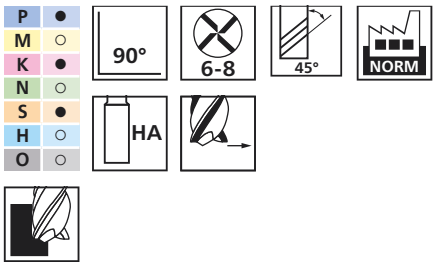
Universal solid tungsten carbide end mills

Universal end mill with six/eight blades UC6/8



Sharp corner design

End mills for finishing and for trimming of workpiece contours. The low tool deflection allows very precise working. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.



Special features:

- High surface quality.
- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.

DC [mm]	DCON [mm]	APMX [mm]	LF [mm]	ZEFP		Item no.	Designation	Price/unit EUR
Long HA				HA				
6	6	13	57	6	1	23000174	SCM-UC6-M060S-M57HA AL40	-
8	8	19	63	6	1	23000175	SCM-UC6-M080S-M63HA AL40	-
10	10	22	72	6	1	23000176	SCM-UC6-M100S-M72HA AL40	-
12	12	26	83	6	1	23000177	SCM-UC6-M120S-M83HA AL40	-
16	16	32	92	6	1	23000178	SCM-UC6-M160S-S92HA AL40	-
20	20	38	104	8	1	23000179	SCM-UC8-M200S-S104HA AL40	-

WAYERSZERSZÁM

Recommended cutting speeds [m/min]

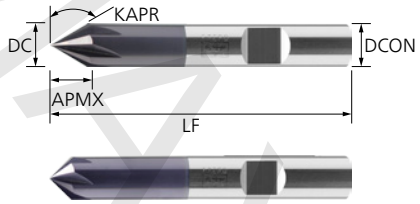
Material group			Specification/ example material	Suitability	Chamfering/deburring a_p = 0.2 x DC; a_e = 0.1 x DC				
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]			
						6	8	10	12
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	180	0.045	0.065	0.085	0.14
			500 to 700 N/mm²	•	160	0.045	0.065	0.085	0.14
			700 to 1,000 N/mm²	•	140	0.025	0.04	0.045	0.075
			1,000 to 1,400 N/mm²	•	120	0.025	0.04	0.045	0.075
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	•	100	0.025	0.04	0.045	0.075
		Austenitic	e.g. 1.4301,1.4571	•	75	0.025	0.04	0.045	0.075
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	•	60	0.025	0.04	0.045	0.075
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	180	0.045	0.065	0.085	0.14
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	140	0.025	0.04	0.045	0.075
N	Non-ferrous metals	Aluminium	Al up to 10% Si	•	300	0.045	0.065	0.085	0.14
			Al > 10% Si	•	260	0.045	0.065	0.085	0.14
		Copper, brass, bronze and red brass		•	300	0.045	0.065	0.085	0.14
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	50	0.025	0.04	0.045	0.075
		Pure titanium		○	140	0.025	0.04	0.045	0.075
		Titanium alloys		○	70	0.025	0.04	0.045	0.075
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	70	0.025	0.04	0.045	0.075
			up to 58 HRC						
			> 58 HRC						
O	Other	Thermoplastics		○	300	0.045	0.065	0.085	0.14
		Duroplastics							
		GRP/CRP reinforced plastics, graphite							

• = highly suitable ○ = suitable

MASTERSZÁM

Universal solid tungsten carbide end mills

Universal deburring end mill UD



Conical shape

End mills for deburring and chamfering. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.

P	●
M	●
K	●
N	●
S	○
H	○
O	○

60° | 90° | 4-6 | 0° | NORM | HB

Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.

DC [mm]	DCON [mm]	APMX [mm]	LF [mm]	KAPR	ZEFP		Item no.	Designation	Price/ unit EUR
60° HB					HB				
6	6	5.2	57	60	4	1	23000116	SCM-UD4-M060A60°-HB AL40	-
8	8	6.9	63	60	5	1	23000117	SCM-UD5-M080A60°-HB AL40	-
10	10	8.7	72	60	6	1	23000118	SCM-UD6-M100A60°-HB AL40	-
12	12	10.4	83	60	6	1	23000119	SCM-UD6-M120A60°-HB AL40	-
90° HB					HB				
6	6	3	57	45	4	1	23000120	SCM-UD4-M060A90°-HB AL40	-
8	8	4	63	45	5	1	23000121	SCM-UD5-M080A90°-HB AL40	-
10	10	5	72	45	6	1	23000122	SCM-UD6-M100A90°-HB AL40	-
12	12	6	83	45	6	1	23000123	SCM-UD6-M120A90°-HB AL40	-

WAYERSZERSZÁM

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Profile milling – use of tip a_p	a_e	Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm] 3	4	5	6	8	10	12	16
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	up to 0.1 x D	up to 0.3 x D	900	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			500 to 700 N/mm²	•	up to 0.1 x D	up to 0.3 x D	700	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			700 to 1,000 N/mm²	•	up to 0.1 x D	up to 0.3 x D	550	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			1,000 to 1,400 N/mm²	•	up to 0.06 x D	up to 0.3 x D	400	0.015	0.025	0.03	0.04	0.045	0.055	0.065	0.08
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	•	up to 0.06 x D	up to 0.3 x D	180	0.015	0.025	0.03	0.04	0.045	0.055	0.065	0.08
		Austenitic	e.g. 1.4301,1.4571	•	up to 0.06 x D	up to 0.3 x D	130	0.015	0.025	0.03	0.04	0.045	0.055	0.065	0.08
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	up to 0.06 x D	up to 0.3 x D	100	0.01	0.018	0.02	0.03	0.04	0.05	0.06	0.07
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	up to 0.1 x D	up to 0.3 x D	800	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	up to 0.1 x D	up to 0.3 x D	750	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	up to 0.1 x D	up to 0.3 x D	1,200	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			Al > 10% Si	•	up to 0.1 x D	up to 0.3 x D	850	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
		Copper, brass, bronze and red brass		•	up to 0.1 x D	up to 0.3 x D	1,100	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium													
		Titanium alloys													
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	•	up to 0.06 x D	up to 0.3 x D	200	0.01	0.018	0.02	0.03	0.04	0.05	0.06	0.07
			up to 58 HRC	○	up to 0.06 x D	up to 0.3 x D	150	0.01	0.018	0.02	0.03	0.04	0.05	0.06	0.07
			> 58 HRC												
O	Other	Thermoplastics		○	up to 0.1 x D	up to 0.3 x D	1,200	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

• = highly suitable ○ = suitable

MATERIAL PREVIEW

Cutting tools for stationary applications

Universal full radius end mill UB

Recommended cutting speeds [m/min]

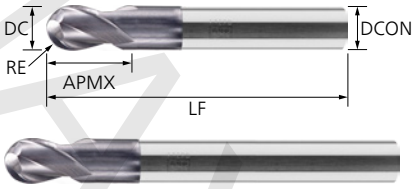
Material group			Specification/ example material	Suitability	Profile milling – use of shoulder									
					a_p	a_e	Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]						
								3	4	5	6	8	10	12	16
P	Steel	All types of steel and cast steel up to 1,400 N/mm²	up to 500 N/mm²	•	up to 0.1 x D	up to 0.45 x D	570	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			500 to 700 N/mm²	•	up to 0.1 x D	up to 0.45 x D	450	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			700 to 1,000 N/mm²	•	up to 0.1 x D	up to 0.45 x D	350	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			1,000 to 1,400 N/mm²	•	up to 0.1 x D	up to 0.45 x D	250	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105,1.4122	•	up to 0.1 x D	up to 0.45 x D	130	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
		Austenitic	e.g. 1.4301,1.4571	•	up to 0.1 x D	up to 0.45 x D	80	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362,1.4462	○	up to 0.1 x D	up to 0.45 x D	60	0.015	0.03	0.04	0.05	0.06	0.07	0.08	0.1
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	up to 0.1 x D	up to 0.45 x D	550	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	up to 0.1 x D	up to 0.45 x D	500	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	up to 0.1 x D	up to 0.45 x D	750	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			Al > 10% Si	•	up to 0.1 x D	up to 0.45 x D	600	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
		Copper, brass, bronze and red brass		•	up to 0.1 x D	up to 0.45 x D	700	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium													
		Titanium alloys													
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	•	up to 0.1 x D	up to 0.45 x D	150	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
			up to 58 HRC	○	up to 0.1 x D	up to 0.45 x D	110	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
			> 58 HRC												
O	Other	Thermoplastics		○	up to 0.1 x D	up to 0.45 x D	750	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

• = highly suitable ○ = suitable

WALTER SYSTEM

Universal solid tungsten carbide end mills

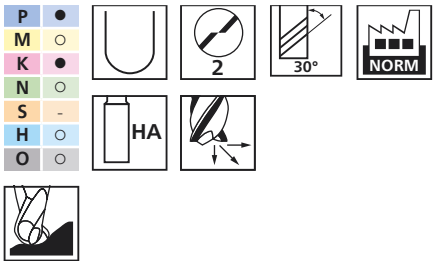
Universal full radius end mill UB



Full radius

End mills for free-form profile cutting. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.

P	●
M	○
K	●
N	○
S	-
H	○
O	○



Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.

D_c [mm]	DCON [mm]	APMX [mm]	LF [mm]	RE [mm]	ZEFP		Item no.	Designation	Price/ unit EUR
Long HA				HA					
3	6	5	54	1.5	2	1	23000100	SCM-UB2-M030R-S54HA6 AL40	-
4	6	8	54	2	2	1	23000101	SCM-UB2-M040R-S54HA6 AL40	-
5	6	9	54	2.5	2	1	23000102	SCM-UB2-M050R-S54HA6 AL40	-
6	6	10	54	3	2	1	23000103	SCM-UB2-M060R-S54HA AL40	-
8	8	12	58	4	2	1	23000104	SCM-UB2-M080R-S58HA AL40	-
10	10	14	66	5	2	1	23000105	SCM-UB2-M100R-S66HA AL40	-
12	12	16	73	6	2	1	23000106	SCM-UB2-M120R-S73HA AL40	-
16	16	22	82	8	2	1	23000107	SCM-UB2-M160R-S82HA AL40	-
Extra long HA				HA					
3	6	5	80	1.5	2	1	23000108	SCM-UB2-M030R-S80HA6 AL40	-
4	6	8	80	2	2	1	23000109	SCM-UB2-M040R-S80HA6 AL40	-
5	6	9	100	2.5	2	1	23000110	SCM-UB2-M050R-S100HA6 AL40	-
6	6	10	100	3	2	1	23000111	SCM-UB2-M060R-S100HA AL40	-
8	8	12	100	4	2	1	23000112	SCM-UB2-M080R-S100HA AL40	-
10	10	14	100	5	2	1	23000113	SCM-UB2-M100R-S100HA AL40	-
12	12	16	100	6	2	1	23000114	SCM-UB2-M120R-S100HA AL40	-
16	16	22	150	8	2	1	23000115	SCM-UB2-M160R-S150HA AL40	-

MAYER SZERSZÁM

New additions to the PFERD product range

Stay up to date and discover our new products digitally and online. Our new products have **blue** item numbers in the Tool Manual.

WERKZEUGE