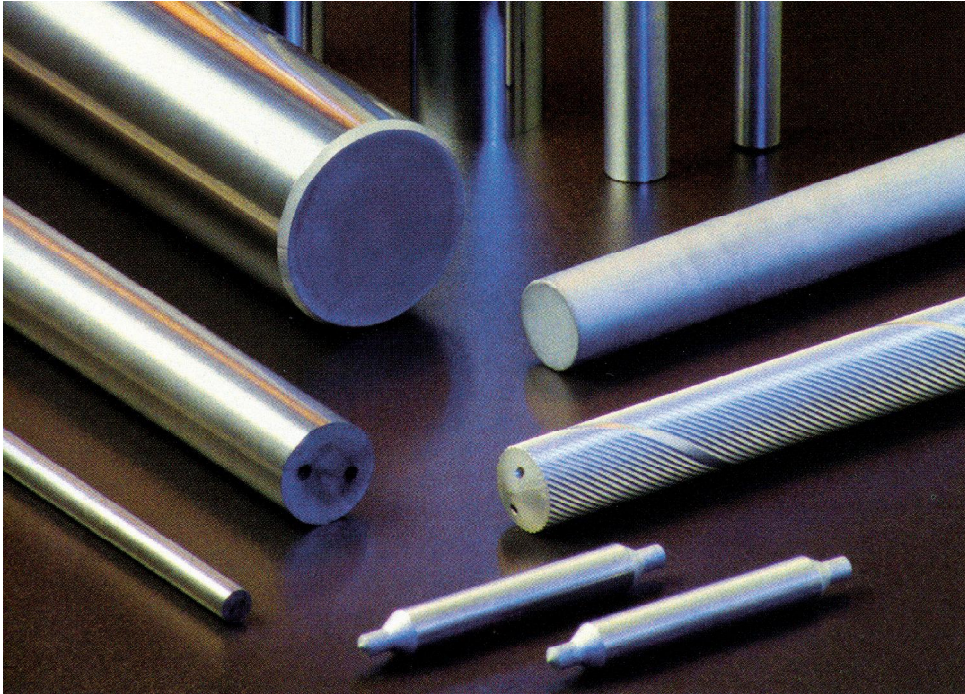


Engineering Your
Competitive Edge



Carbide Rods

Solutions for rotating tools





Carbide Rods

Carbide Rods for drills and end-mills

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All above listed rods are also available upon request in special dimensions, inch sizes as well as in other grades.



Classification of WC-Co-Grades

Grain size	German designation	English designation
< 0,2 µm	Nano	Nano
0,2 - 0,5 µm	Ultrafein	Ultrafine
0,5 - 0,8 µm	Feinst	Submicron
0,8 - 1,3 µm	Fein	Fine
1,3 - 2,5 µm	Mittel	Medium
2,5 - 6,0 µm	Grob	Coarse
> 6,0 µm	Extragrob	Extracoarse



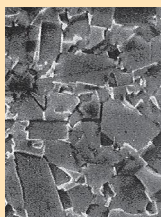


Carbide Rods

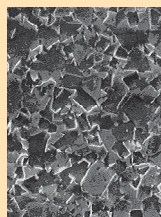
Properties of WC-Co fine and ultrafine grades

DESCRIPTION	THA-U	THM-F	KF1	KMS
Application range (ISO 513)	K 25	K 10	K 10	K 30
Composition (Weight %)				
TiC/N				
Co, Ni, Mo				
WC	86,7	91,8	94	89,3
TA (NB) C				
Additional carbides	1,3	1,7	0	0,7
Co	12	6,5	6	10
Density (ISO 3369) gr/mm ³	14,1	14,8	14,9	14,4
Vickers hardness HV 30 (ISO 3878)	1650	1780	1740	1550
Compressive Strength (ISO 4506) N/mm ²	6500	6000	6000	5500
Transverse rupture strength (ISO 3327) N/mm ²	4200	3000	3000	3600
Average Grain size µm	Ultrafine	Submicron	Submicron	Submicron

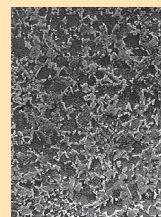
REM-structure photos of WC-Co grades with different grain sizes



Fine



Submicron



Ultrafine



Carbide Rods

Manufacturing tolerance

Tolerance in diameter

1,2 - 5,7 mm + 0,20 mm

6,2 - 9,7 mm + 0,25 mm

10,2 - 14,7 mm + 0,30 mm

15,2 - 25,2 mm + 0,40 mm

26,3 - 31,3 mm + 0,50 mm

32,3 mm + 0,60 mm

Tolerance in length + 10 mm

Rods without coolant channel, unground

Ø [mm]	Length [mm]	Grade	Concentricity [mm]	Material N°	Availability
1,20	325	KMS	0,34	3348373	●
1,70	325	KMS	0,34	3348374	▲
2,20	325	KMS	0,34	2885127	●
2,70	325	KMS	0,34	2885129	●
3,25	325	KMS	0,34	2885130	●
3,70	325	KMS	0,34	2885131	●
4,20	325	KMS	0,34	2885132	●
4,70	325	KMS	0,34	2885224	●
5,20	325	KMS	0,34	2885225	●
5,70	325	KMS	0,34	2885227	●
6,20	325	KMS	0,34	2963243	●
6,70	325	KMS	0,34	3346881	▲
7,20	325	KMS	0,34	3346882	●
7,70	325	KMS	0,34	3346884	▲
8,20	325	KMS	0,34	3346885	●
8,70	325	KMS	0,34	3364441	▲
9,20	325	KMS	0,34	3364442	●
9,70	325	KMS	0,34	3364443	▲
10,20	325	KMS	0,34	3363970	●
10,70	325	KMS	0,34	3475485	▲
11,20	325	KMS	0,34	3475486	▲
11,70	325	KMS	0,34	3475487	▲
12,20	325	KMS	0,34	3475488	●
12,70	325	KMS	0,34	3475489	▲
13,20	325	KMS	0,34	3475490	▲
13,70	325	KMS	0,34	3475492	▲
14,20	325	KMS	0,34	3475493	●
14,70	325	KMS	0,34	3475494	▲
15,20	325	KMS	0,34	3475495	▲
15,70	325	KMS	0,34	3475496	●
16,20	325	KMS	0,34	3475497	▲
16,70	325	KMS	0,34	3475498	●
17,20	325	KMS	0,34	3475499	●
17,70	325	KMS	0,34	3475500	▲
18,20	325	KMS	0,34	3475501	●
18,70	325	KMS	0,34	3475502	▲
19,20	325	KMS	0,34	3475523	●
19,70	325	KMS	0,34	3475525	▲
20,20	325	KMS	0,34	3363307	●
21,20	325	KMS	0,34	3363308	▲
22,20	325	KMS	0,34	3363309	●
23,20	325	KMS	0,34	3363313	●
24,20	325	KMS	0,34	3363314	●
25,20	325	KMS	0,34	3363315	●
26,30	325	KMS	0,34	3363064	●
27,30	325	KMS	0,34	3363068	●
28,30	325	KMS	0,34	3363071	●
29,30	325	KMS	0,34	3363072	●
30,30	325	KMS	0,34	3363153	●
31,30	325	KMS	0,34	3363154	●
32,30	325	KMS	0,34	3363155	●

● On stock

▲ Limited stock, upon request.

Other grades and dimensions upon request.





Carbide Rods

Rods without coolant channel, unground

Ø [mm]	Länge +10 [mm]	Grade	Concentricity [mm]	Material N°	Availability
1,20	325	THM-F	0,34	3492264	●
1,70	325	THM-F	0,34	3492265	▲
2,20	325	THM-F	0,34	3492266	●
2,70	325	THM-F	0,34	3492267	●
3,25	325	THM-F	0,34	3492268	●
3,70	325	THM-F	0,34	3492270	●
4,20	325	THM-F	0,34	3492271	●
4,70	325	THM-F	0,34	3492272	●
5,20	325	THM-F	0,34	3492313	●
5,70	325	THM-F	0,34	3492314	●
6,20	325	THM-F	0,34	3492315	●
6,70	325	THM-F	0,34	3492316	▲
7,20	325	THM-F	0,34	3492317	●
7,70	325	THM-F	0,34	3492318	▲
8,20	325	THM-F	0,34	3492319	●
8,70	325	THM-F	0,34	3492320	▲
9,20	325	THM-F	0,34	3492321	●
9,70	325	THM-F	0,34	3492322	▲
10,20	325	THM-F	0,34	3492353	●
10,70	325	THM-F	0,34	3492354	▲
11,20	325	THM-F	0,34	3492529	●
11,70	325	THM-F	0,34	3492530	▲
12,20	325	THM-F	0,34	3492531	●
12,70	325	THM-F	0,34	3492532	▲
13,20	325	THM-F	0,34	3492653	●
13,70	325	THM-F	0,34	3492654	▲
14,20	325	THM-F	0,34	3492655	●
14,70	325	THM-F	0,34	3492656	▲
15,20	325	THM-F	0,34	3492657	●
16,20	325	THM-F	0,34	3492658	●
17,20	325	THM-F	0,34	3492660	●
18,20	325	THM-F	0,34	3492662	●
19,20	325	THM-F	0,34	3492674	●
20,20	325	THM-F	0,34	3492675	●
21,20	325	THM-F	0,34	3492676	●
22,20	325	THM-F	0,34	3492677	▲
23,20	325	THM-F	0,34	3492678	●
24,20	325	THM-F	0,34	3492681	▲
25,20	325	THM-F	0,34	3492682	▲
26,30	325	THM-F	0,34	3492723	●
27,30	325	THM-F	0,34	3492725	▲
28,30	325	THM-F	0,34	3492726	●
29,30	325	THM-F	0,34	3492727	▲
30,30	325	THM-F	0,34	3492728	●
31,30	325	THM-F	0,34	3492729	▲
32,30	325	THM-F	0,34	3492730	●

Manufacturing tolerance

Tolerance in diameter

1,2 - 5,7 mm	+ 0,20 mm
6,2 - 9,7 mm	+ 0,25 mm
10,2 - 14,7 mm	+ 0,30 mm
15,2 - 25,2 mm	+ 0,40 mm
26,3 - 31,3 mm	+ 0,50 mm
32,3 mm	+ 0,60 mm

Tolerance in length + 10 mm

● On stock

▲ Limited stock, upon request.

Other grades and dimensions upon request.





Carbide Rods

Manufacturing tolerance

Tolerance in diameter h6

Tolerance in length + 10 mm

Surface finish 0,05

Rods without coolant channel, h6 ground

Ø [mm]	Length [mm]	Grade	Concentricity [mm]	Material N°	Availability
3,0	325	KMS	0,20	3492853	●
3,5	325	KMS	0,20	3492856	▲
4,0	325	KMS	0,20	3492862	●
4,5	325	KMS	0,20	3492887	●
5,0	325	KMS	0,20	3492888	●
6,0	325	KMS	0,15	3492890	●
7,0	325	KMS	0,15	3492891	●
8,0	325	KMS	0,15	3492892	●
9,0	325	KMS	0,15	3493060	●
10,0	325	KMS	0,15	3493061	●
11,0	325	KMS	0,15	3493283	●
12,0	325	KMS	0,15	3493284	●
13,0	325	KMS	0,15	3493285	●
14,0	325	KMS	0,15	3493286	●
15,0	325	KMS	0,15	3493287	●
16,0	325	KMS	0,15	3493288	●
17,0	325	KMS	0,15	3493289	●
18,0	325	KMS	0,15	3493290	●
19,0	325	KMS	0,15	3493291	●
20,0	325	KMS	0,15	3493133	●
21,0	325	KMS	0,15	3493134	●
22,0	325	KMS	0,15	3493127	●
23,0	325	KMS	0,15	3493128	▲
24,0	325	KMS	0,15	3493129	●
25,0	325	KMS	0,15	3493130	●
26,0	325	KMS	0,15	3493132	●
27,0	325	KMS	0,15	3493144	▲
28,0	325	KMS	0,15	3493146	●
29,0	325	KMS	0,15	3493148	●
30,0	325	KMS	0,15	3493149	●
32,0	325	KMS	0,15	3493150	●

● On stock

▲ Limited stock, upon request.

Other grades and dimensions upon request.





Carbide Rods

Rods, h6 ground, in fixed length for end mills according to DIN 6527 / 6528

Ø [mm]	Length [mm]	Chamfer [mm]	Grade	Material N°	Availability
3,0	39,0	0,3 x 20°	KMS	3493326	●
4,0	51,0	0,4 x 20°	KMS	3493328	●
5,0	51,0	0,4 x 20°	KMS	3493329	●
6,0	51,0	0,4 x 20°	KMS	3493330	●
6,0	55,0	0,4 x 20°	KMS	3494855	●
6,0	58,0	0,4 x 20°	KMS	3494856	●
8,0	59,0	0,6 x 20°	KMS	3494858	●
8,0	64,0	0,6 x 20°	KMS	3494859	●
9,0	68,0	0,6 x 20°	KMS	3494862	●
10,0	67,0	0,6 x 20°	KMS	3494864	●
10,0	73,0	0,8 x 20°	KMS	3494868	●
12,0	76,0	0,8 x 20°	KMS	3494869	●
12,0	84,0	0,8 x 20°	KMS	3494871	●
14,0	76,0	0,8 x 20°	KMS	3494872	●
14,0	84,0	0,8 x 20°	KMS	3494873	●
16,0	83,0	0,8 x 20°	KMS	3494874	●
16,0	93,0	0,8 x 20°	KMS	3494875	●
18,0	85,0	1,0 x 20°	KMS	3494876	●
18,0	93,0	1,0 x 20°	KMS	3494877	●
20,0	105,0	1,0 x 20°	KMS	3494879	●

Manufacturing tolerance

Tolerance in diameter h6

Tolerance in length

3 - 8 mm + 0,6 mm

9 - 10 mm + 0,8 mm

10 - 18 mm + 0,9 mm

20 mm + 1 mm

Surface finish 0,05



● On stock

▲ Limited stock, upon request.

Other grades and dimensions upon request.





Carbide Rods

Manufacturing tolerance

Tolerance in diameter h5

Tolerance in length + 1 mm

Surface finish 0,05

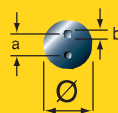
Rods, h5 ground, in fixed length for end mills according to DIN 6527 / 6528

Ø [mm]	Length [mm]	Chamfer [mm]	Grade	Material N°	Availability
3,0	100,0	0,3 x 20°	KMS	3493219	●
4,0	100,0	0,4 x 20°	KMS	3493220	▲
5,0	100,0	0,4 x 20°	KMS	3493292	●
6,0	100,0	0,4 x 20°	KMS	3493296	●
8,0	100,0	0,6 x 20°	KMS	3493316	●
9,0	100,0	0,6 x 20°	KMS	3493317	●
10,0	100,0	0,8 x 20°	KMS	3493318	●
12,0	100,0	0,8 x 20°	KMS	3493320	●
14,0	100,0	0,8 x 20°	KMS	3493321	●
16,0	100,0	0,8 x 20°	KMS	3493322	●
18,0	100,0	1,0 x 20°	KMS	3493324	●
20,0	100,0	1,0 x 20°	KMS	3519580	●

- On stock
- ▲ Limited stock, upon request.

Other grades and dimensions upon request.





Carbide Rods

Rods with 2 helical coolant channels, unground

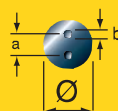
Ø [mm]	Length [mm]	Grade	Int. Ø a [mm]	Hole Ø b [mm]	Pitch [mm]	Degree of pitch	Material N°	Availability
3,3	325	KMS	1,39	0,35	16,32	30,0	3494898	●
3,3	325	KMS	1,60	0,42	16,32	30,0	3494901	▲
4,3	325	KMS	1,86	0,50	21,75	30,0	3494902	●
4,3	325	KMS	2,12	0,56	21,75	30,0	3494923	●
5,3	325	KMS	2,20	0,64	27,21	30,0	3494924	●
5,3	325	KMS	2,65	0,77	27,21	30,0	3494925	●
6,3	325	KMS	1,60	0,50	18,00	46,2	3494926	●
6,3	325	KMS	1,90	0,60	23,00	39,2	3494929	●
6,3	325	KMS	2,20	0,70	32,65	30,0	3494931	●
8,3	325	KMS	3,30	1,00	35,00	35,4	3494932	●
8,3	325	KMS	3,30	1,00	43,50	30,0	3494935	●
10,3	325	KMS	4,40	1,15	46,00	34,2	3494936	●
10,3	325	KMS	4,80	1,30	54,40	30,0	3494939	●
12,3	325	KMS	5,40	1,50	57,00	33,3	3494940	●
12,3	325	KMS	6,30	1,70	65,30	30,0	3494941	▲
14,3	325	KMS	7,00	2,00	76,20	30,0	3494942	●
16,20	325	KMS	8,20	2,24	89,20	30,0	3475526	●
16,20	325	KMS	4,80	1,44	69,00	36,0	3475527	▲
18,20	325	KMS	9,60	2,24	100,00	30,0	3475528	●
18,20	325	KMS	5,60	1,60	77,00	36,0	3475529	▲
20,20	325	KMS	10,80	2,40	111,00	30,0	3475531	●
20,20	325	KMS	6,30	1,76	86,00	36,0	3475533	▲
25,20	325	KMS	14,00	3,20	136,00	30,0	3475534	●
25,20	325	KMS	7,90	2,24	108,00	36,0	3475535	▲

Manufacturing tolerance

Tolerance in diameter

3,3 - 10,3 mm + 0,30 mm
12,3 - 25,2 mm + 0,40 mm

Tolerance in length + 10 mm



Rods with 2 helical coolant channels, unground

Ø [mm]	Length [mm]	Grade	Int. Ø a [mm]	Hole Ø b [mm]	Pitch [mm]	Degree of pitch	Material N°	Availability
3,3	325	THA-U	1,39	0,35	16,32	30,0	3520712	●
4,3	325	THA-U	1,78	0,42	21,77	30,0	3520753	●
5,3	325	THA-U	2,25	0,49	27,21	30,0	3520754	●
6,3	325	THA-U	2,72	0,70	32,65	30,0	3520755	●
7,3	325	THA-U	3,27	0,85	38,09	30,0	3520756	●
8,3	325	THA-U	3,68	0,99	43,53	30,0	3520757	●
9,3	325	THA-U	4,16	1,13	48,97	30,0	3520758	●
10,3	325	THA-U	4,63	1,44	54,41	30,0	3520759	●

Tolerance in diameter

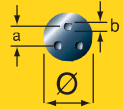
3,3 - 10,3 mm + 0,30 mm

Tolerance in length + 10 mm

● On stock
▲ Limited stock, upon request.

Other grades and dimensions upon request.





Carbide Rods

Manufacturing tolerance

Tolerance in diameter

5,3 - 10,3 mm + 0,30 mm

11,3 - 16,3 mm + 0,40 mm

Tolerance in length + 10 mm

Rods with 3 helical coolant channels, unground

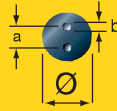
Ø [mm]	Length [mm]	Grade	Int. Ø a [mm]	Hole Ø b [mm]	Pitch [mm]	Degree of pitch	Material N°	Availability
5,3	325	KMS	2,90	0,42	27,21	30,0	3519102	●
6,3	325	KMS	3,50	0,56	32,65	30,0	3519164	●
7,3	325	KMS	4,00	0,63	38,09	30,0	3519165	●
8,3	325	KMS	4,50	0,63	43,50	30,0	3519166	●
9,3	325	KMS	5,10	0,84	48,97	30,0	3519167	●
10,3	325	KMS	5,70	0,84	54,40	30,0	3519170	●
11,3	325	KMS	6,00	1,05	59,86	30,0	3519171	●
12,3	325	KMS	6,25	1,25	65,30	30,0	3519172	●
13,3	325	KMS	6,50	1,25	70,74	30,0	3519204	●
14,3	325	KMS	7,10	1,40	76,20	30,0	3519205	●
15,3	325	KMS	7,70	1,40	81,62	30,0	3519206	●
16,3	325	KMS	8,30	1,40	87,10	30,0	3519207	●

● On stock

▲ Limited stock, upon request.

Other grades and dimensions upon request.





Rods with 2 parallel coolant channels, unground

Ø [mm]	Length [mm]	Grade	Int. Ø a [mm]	Hole Ø b [mm]	Material N°	Availability
6,3	325	KMS	2,00	0,80	3545903	●
8,3	325	KMS	3,02	1,12	3545908	●
8,3	325	KMS	3,65	1,28	3545923	●
10,3	325	KMS	4,22	1,44	3545924	●
12,3	325	KMS	5,67	1,60	3545925	●
14,3	325	KMS	7,06	1,84	3545926	●
16,3	325	KMS	8,52	2,00	3545927	●
18,3	325	KMS	9,92	2,24	1914495	●
20,3	325	KMS	11,32	2,48	1914496	●

Carbide Rods

Manufacturing tolerance

Tolerance in diameter

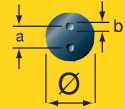
6,3 - 10,3 mm + 0,30 mm
 12,3 - 18,3 mm + 0,40 mm
 20,3 mm + 0,50 mm

Tolerance in length + 10 mm



- On stock
- ▲ Limited stock, upon request.

Other grades and dimensions upon request.



Carbide Rods

Manufacturing tolerance

Tolerance in diameter

4,3 - 10,3 mm + 0,30 mm

12,3 - 18,25 mm + 0,40 mm

20,25 - 25,3 mm + 0,50 mm

Tolerance in length + 10 mm

Rods with 2 parallel coolant channels, unground

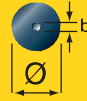
Ø [mm]	Length +10 [mm]	Grade	Int. Ø a [mm]	Hole Ø b [mm]	Material N°	Availability
4,3	325	THM-F	1,50	0,90	2086613	●
6,3	325	THM-F	1,10	0,50	2072065	●
6,3	325	THM-F	2,00	0,90	2050652	●
6,3	325	THM-F	3,00	0,90	2086614	●
6,6	325	THM-F	3,00	1,30	2072066	●
8,3	325	THM-F	2,00	0,90	2050653	●
8,3	325	THM-F	3,60	1,20	2050654	●
10,3	325	THM-F	2,60	1,20	2050655	●
10,3	325	THM-F	4,00	1,50	2050656	●
12,3	325	THM-F	3,50	1,50	2050657	●
12,3	325	THM-F	5,00	2,00	2050658	●
14,3	325	THM-F	5,00	2,00	2050659	●
14,3	325	THM-F	7,00	1,70	2072067	●
16,3	325	THM-F	5,00	2,00	2072069	●
16,3	325	THM-F	8,00	2,70	2050660	●
18,3	325	KF1	9,92	2,24	3493295	●
18,3	325	KF1	5,60	1,60	3493297	●
20,3	325	KF1	11,32	2,48	3493298	●
20,3	325	KF1	6,34	1,84	3493299	●
21,3	325	KF1	13,01	2,48	3493300	●
21,3	325	KF1	6,84	1,84	3493301	●
22,3	325	KF1	13,51	2,80	3493302	●
22,3	325	KF1	7,25	2,00	3493313	●
25,3	325	KF1	13,85	3,20	3493314	●
25,3	325	KF1	7,74	2,24	3493315	●

● On stock

▲ Limited stock, upon request.

Other grades and dimensions upon request.





Carbide Rods

Rods with 1 central coolant channel, unground

Ø [mm]	Length +10 [mm]	Grade	Hole Ø b [mm]	Material N°	Availability
6,3	325	KF1	1,00	1942384	●
8,3	325	KF1	1,30	1971192	●
10,3	325	KF1	2,00	1941781	●
12,3	325	KF1	2,00	1858659	●
14,3	325	KF1	2,00	1971223	●
16,3	325	KF1	2,00	1971224	●
18,3	325	KF1	2,00	1971225	●
20,3	325	KF1	3,00	1942385	●

Manufacturing tolerance

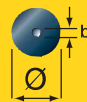
Tolerance in diameter

6,3 - 10,3 mm + 0,30 mm

12,3 - 18,3 mm + 0,40 mm

20,3 mm + 0,50 mm

Tolerance in length + 10 mm



Rods with 1 central coolant channel, unground

Ø [mm]	Length +10 [mm]	Grade	Hole Ø b [mm]	Material N°	Availability
6,3	325	KMS	1,00	1894119	●
8,3	325	KMS	1,30	1773947	●
10,3	325	KMS	2,00	1760777	●
12,3	325	KMS	2,00	1894120	●
14,3	325	KMS	2,00	1894121	●
16,3	325	KMS	2,00	1894122	●
18,3	325	KMS	2,00	1941823	●
20,3	325	KMS	3,00	1930883	●

Manufacturing tolerance

Tolerance in diameter

6,3 - 10,3 mm + 0,30 mm

12,3 - 18,3 mm + 0,40 mm

20,3 mm + 0,50 mm

Tolerance in length + 10 mm

● On stock

▲ Limited stock, upon request.

Other grades and dimensions upon request.





Your supplier for tungsten carbide blanks.

At Kennametal, we strive to offer our customers outstanding performance in everything we do.

As part of the Kennametal Engineered Products group, the round tool product business benefits of all the Kennametal resources to help to solve our customers' most complex wear and performance problems. Kennametal's leadership in complex metallurgy and material science is ensuring the end users of our blanks of the optimum performance of their tools.

KENNAMETAL, THE WEAR PARTS EXPERTS

Optimised benefits for the tool makers and the end users.

Kennametal provides the best cemented carbide blanks, with the highest accuracy in dimensions and metallurgical properties, to the advantage of the tool makers, as well as highly automated drills and end mills manufacturing plants, ensuring smooth and flawless processes.

The aim of our products and services is to help our customers to increase their productivity and to get the maximum benefits in the manufacturing as well as in the usage of their tools.

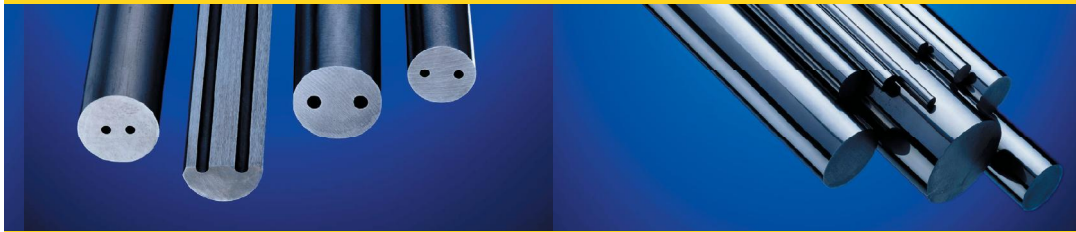
Consistent metallurgical properties, as well as consistent dimensional accuracy has made the solid reputation of the Kennametal blanks all over the world. Kennametal has been a constant innovator in the field of hard metal blanks, and continues to develop new processes and new materials to maintain its leadership in this market segment. As a well known specialist of the cutting tool process, Kennametal will keep on delivering blanks for the best performance in drilling and end milling operations.

Working closely with tool makers and tool users, Kennametal takes pride in its long experience and 80 years commitment to new products development for the benefits of its customers. Our grades are made of high purity raw materials, ensuring consistency in the performance of the tools.

Our special blend of powder in the binder phase guarantees minimal corrosion and staining issues (corrosion) created by the working environments: air moisture, grinding coolant, etc. This will ultimately optimise the adhesion of specific PVD surface coatings used by many toolmakers, and finally the tool performance.

Properties of Tungsten Carbide

Tungsten carbide blanks are made of a combination of hard and wear resistant particles of different sizes (tungsten carbide WC) mixed and bonded together by a



ductile metal (cobalt, nickel, chromium, iron). Addition of so called “cubic” carbide (TiC, TaC, VaC, NbC) is sometimes necessary to optimise some specific characteristics of the mix. Very accurately composed mixes, combined with specific sintering processes will give the final mechanical properties of the products.

Hardness and toughness of the sintered material, especially at higher temperatures, are the requested characteristics. These properties are the result of a fine balance between the WC grain sizes and the binder content.

«Hardness (ASTM B-294/ISO 3738 and 3878) defined as the resistance of a material to indentation by a diamond indenter. It is commonly tested in the Vickers system with a load of 30 kgs (HV30).

Toughness (ASTM B-406/ISO 3327) is expressed in Transverse rupture strength (TRS). It is a measure of the stress at the breaking point of the material in a simple 3 points bending test.»

Generally speaking, “hard” means “long life”, and comes at the expense of strength and toughness. The optimisation between HARDNESS and TOUGHNESS is a fine balance in WC grain size, bound mixture and weight, as well as close work with coating experts to bring to the market the rotary tool blank with best performance at the end users. Kennametal, with the heritage of the Hertel and WIDIA grades, has pioneered many products and manufacturing process developments over the last 80 years.

Homogeneity and consistency over time of the micro structure is also critical for quality and reliability of the end product. The results are the well known Kennametal grades optimised with the cooperation of toolmakers and end users world wide. Ask your Kennametal EPG sales engineer for the optimised grade specification for your rotary tool applications (end mills, drills and reamers).

Dimensional characteristics and control

Geometric characteristics are defined in the ANSI Y14.5M-1982 norm .

Straightness, roundness, cylindricity are captured in the measure of specific circular runout. The blanks are placed in fixtures and rotate 360 degree, with indicators placed in specific positions.

Surface finish: For ground blanks, the surface finish is defined in Ra (deviation from the mean line over a specified length). The general values range from Ra 0.05 (polished) to Ra 0.45 (rough ground). The characteristics of the surface finish, within the above listed range, is independent from the tolerance on the diameter of the blanks.

Quality

Our Kennametal plants are certified DIN EN ISO 9001-2000 and VDA6.4-2004.



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Your sales representant::

