Member IMC Group Tungaloy

In an accelerated world, a quick response to market needs is necessary. As a pioneer in innovation, **Tungaloy** leads the market in developing unique and powerful grades and geometries for this new era. TUNGFORCE, our newest line of products is designed for accelerated machining, bringing you the newest and greatest solutions for your machining needs.

Member IMC Group Tungaloy

2017 / 2018

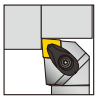
full product line

www.tungaloy.com

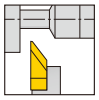
Introduction

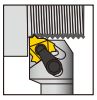
Icons along the right/left side of the page

Turning

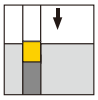

Ext. toolholder


Int. toolholder


Miniature tool


Threading tool

Grooving, turning, and parting-off


Grooving, turning, and parting-off tool


Ext. grooving


Int. grooving


Face grooving


Parting-off

Milling


High-feed milling


Shoulder milling


Face milling


Slot milling


Profile milling


Multi-functional milling

Drilling


2-effective drill


Indexable drill

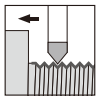

Deep hole drill

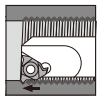
Tooling system


Tooling system

Icons in the chart section for each product

Threading

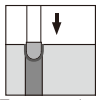

Ext. threading


Int. threading

Grooving

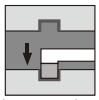

Ext. grooving


Ext. grooving and turning


Ext. grooving (full R)


Ext. grooving and turning (full R)

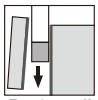

Forming

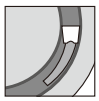

Int. grooving


Int. grooving and turning

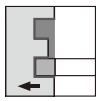

Int. grooving and turning (full R)

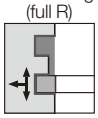

Int. grooving (full R)

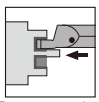

Parting-off


Face grooving


Face grooving and turning


Int. face grooving


Int. face grooving and turning

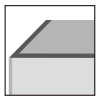

Face grooving for shaft

Milling


Shoulder milling


Deep shoulder milling

Shoulder milling (with radius)


Face milling

Slotting

Slotting (with radius)

Side slotting

Side milling

Pocketing

Ramping

Profiling

Plunging

Hole enlarging

Holemaking

Counterboring

Hole chamfering

Chamfering

Cutting-off

Drilling

Drilling

Small-diameter drilling

Deep-hole drilling

Hole chamfering

Tool kit

Oil hole

Oil hole for high-pressure

Introduction

Note in using this catalog:

★ This catalog provides the information of Tungaloy's cutting tools as of June 2017.

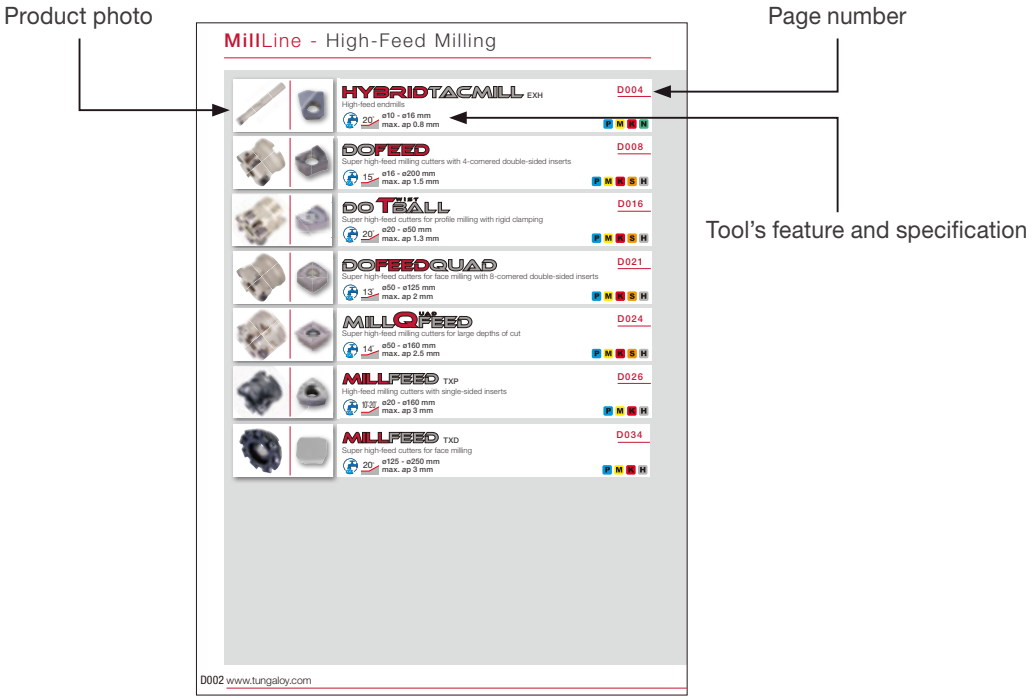
★ The specifications are subject to change without prior notice for product improvements. Also, the products may be discontinued in the future due to the development of new products.

★ The dimensions of all products are shown in millimeters (mm).

★ For indexable tools, such as toolholders, cutters, drill bodies, applicable inserts or heads need to be ordered separately.

How to find a tool:

★ The catalog classifies the cutting tools into 5 lines – TurnLine (turning tools), GrooveLine (grooving tools), MillLine (milling tools), DrillLine (drilling tools), and ToolLine (tooling systems). The tools in each line are categorized by the applications.



Example: Contents of the cutters for high-feed milling in MillLine

★ Alphanumeric index in User's Guide helps you search a specific product.

How to read the list for the standard items:

★ Designations for indexable tools – toolholders, cutters, drill bodies, etc.

· Orders are to be received for the tools with the designations in the catalog.

· For the tool with right- and left-hand options, the designation includes **R/L** as shown below.

Ex. 1: Designation: A16Q-STFP**R/L**13-D180

You can order both right- and left-hand tools. A16Q-STFP**R**13-D180 (a right-hand tool) and A16Q-STFP**L**13-D180 (a left-hand tool) will be available.

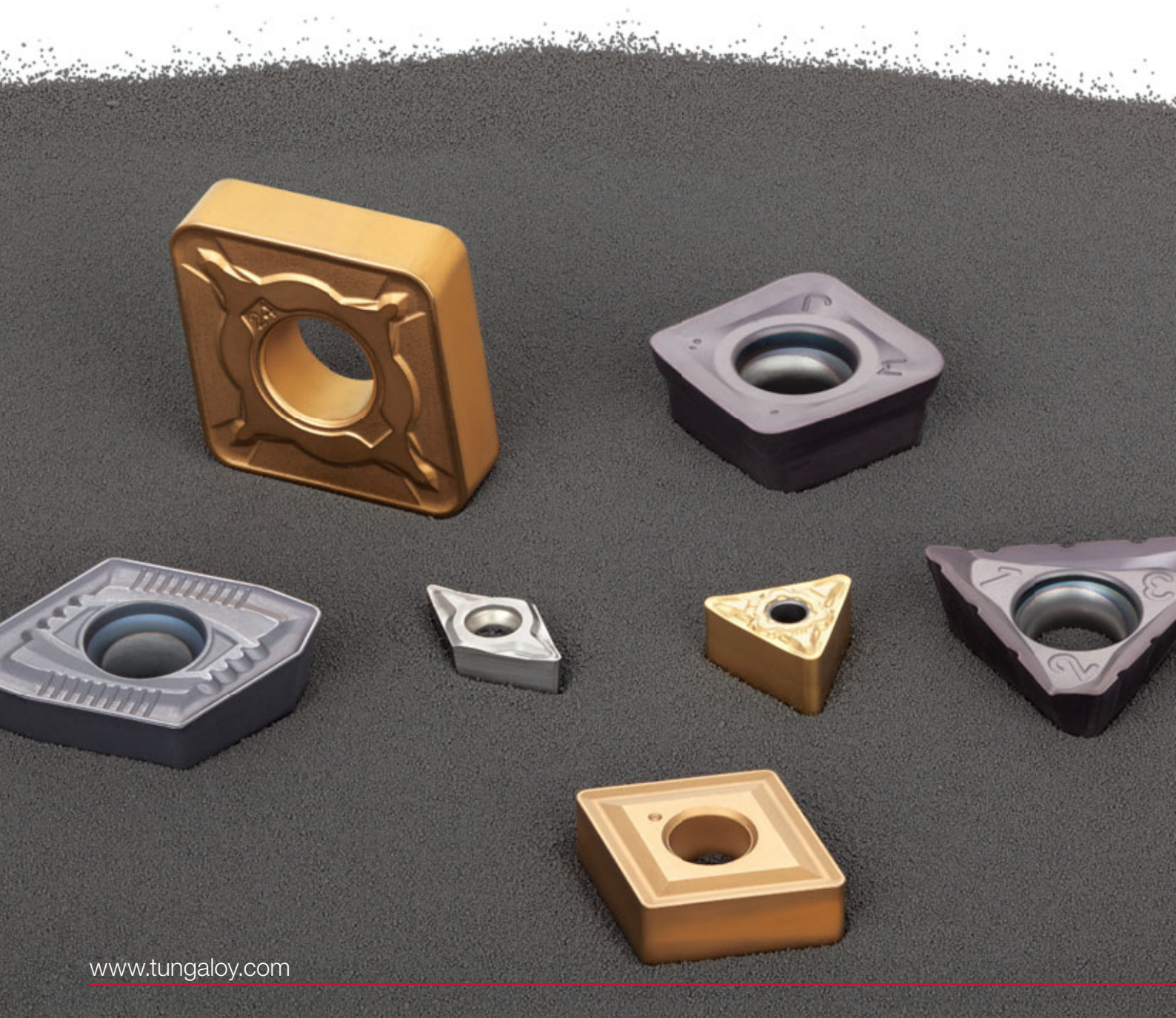
Ex. 2: Designation: A20R-STFP**R**13-D220

You can order only right-hand tools. Please contact us when you need left-hand tools.

★ Line up for inserts and solid tools

Blank : Please contact us regarding the product.

Grade



GRADE

CVD - Coated Grade

Grade	Coating		Application	Feature	Turning	Grooving	Milling	Drilling
	Main composition	Thickness / µm						
T9105 P01 - P10 K10 - K20	TiCN-Al_2O_3	16	P K	- Good wear resistance - Excellent performance in high-speed cutting	■			
T9115 P10 - P20 K15 - K30	TiCN-Al_2O_3	16	P K	- Well-balanced between wear and chipping resistance - Suitable for a wide range of turning applications	■			
T9125 P20 - P30	TiCN-Al_2O_3	16	P	- High chipping resistance in light to medium interrupted cutting - First choice for machining steel	■		■	
T9135 P30 - P40	TiCN-Al_2O_3	16	P	- Excellent fracture resistance in heavy interrupted cutting	■			
T6120 P10 - P20 M10 - M20	TiCN	6	P M	- Good wear resistance in continuous cutting at high speed	■			
T6130 P15 - P30 M15 - M30	TiCN	6	P M	- High wear resistance in cutting at medium to high speed - First choice for machining stainless steel	■			
T515 K10 - K20	TiCN-Al_2O_3	16	K	- Good wear resistance even in high-speed machining - First choice for roughing cast iron	■			
T5105 K05 - K15	TiCN-Al_2O_3	16	K	- High resistance to wear and plastic deformation in continuous cutting at high speed	■			
T5115 K10 - K20	TiCN-Al_2O_3	16	K	- Stable machining in a wide range of applications from continuous to interrupted cutting	■			
T5125 K15 - K30	TiCN-Al_2O_3	16	K	- Strong resistance to sudden fracture - Ideal for heavy interrupted machining	■			
T313V -	TiCN-Al_2O_3	3	Threading	- Good resistance to plastic deformation - Designed for threading	■			
T3225 P20 - P35 M20 - M35	TiCN-Al_2O_3	10	P M	- High chipping and fracture resistance - Suitable for machining steel and stainless steel				■
T3130 P20 - P40 M20 - M40	TiCN-Al_2O_3	6	P M	- Good balance between wear and chipping resistance - Ideal for machining steel and stainless steel				■
T1215 K10 - K25	TiCN-Al_2O_3	10	K	- Good balance between wear and chipping resistance - Designed for machining cast iron				■
T1115 K10 - K25	TiCN-Al_2O_3	11	K	- High wear resistance - Ideal for machining cast iron				■

PVD - Coated Grade

Grade	Coating: Main composition	Coating: Thickness / μm	Application	Feature	Turning	Grooving	Milling	Drilling
AH110 P05 - P15 M05 - M15 K10 - K25 S05 - S15	(Ti, Al)N	3	P M K S	- High wear resistance - Suitable for finishing steel, cast iron, and high-hardened material	■		■	
AH120 P15 - P25 M15 - M25 K15 - K30 S10 - S25	(Ti, Al)N	3	P M K S	- Good balance between wear and fracture resistance - Suitable for machining steel, stainless steel, and cast iron under general cutting conditions	■	■	■	■
AH130 P25 - P40 M25 - M40	(Ti, Al)N	3	P M	- High chipping and fracture resistance - Designed for machining austenitic stainless steel under general cutting conditions			■	
AH140 M30 - M45	(Ti, Al)N	3	M	- High fracture resistance - Suitable for machining stainless steel			■	
AH170 P20 - P35 M20 - M35 K15 - K30	(Ti, Al)N	3	P M K	- High wear resistance - Suitable for steel and cast iron drilling				■
AH180 P20 - P35 M20 - M35 K15 - K30	(Ti, Al)N	3	P M K	- High wear resistance - Suitable for steel and cast iron, stainless drilling				■
AH330 P15 - P30	(Ti, Al)N	3	P	- Excellent wear resistance	■		■	
AH630 P15 - P30 M15 - M30	(Ti, Al)N	5	P M	- Good resistance to wear and fracture in machining stainless steel at low to medium cutting speed	■			
AH645 P30 - P40 M30 - M40	(Ti, Al)N	5	P M	- High fracture resistance in machining stainless steel	■			
AH710 P05 - P15 K05 - K15 H05 - H15	(Ti, Al)N	3	P K H	- High wear resistance - Ideal for finishing cast iron and high-hardened material	■	■	■	
AH725 P15 - P30 M15 - M30 K25 - K30 S15 - S25	(Ti, Al)N	2	P M K S	- Good balance between wear and chipping resistance - Suitable for machining steel and stainless steel under general cutting conditions	■	■	■	■
AH7025 P20 - P30 M20 - M30 S15 - S25	(Ti, Al)N	3.5	P M S	- Excellent wear resistance and high rigidity - First choice for grooving of various materials		■		
AH730 P15 - P30	(Ti, Al)N	3	P	- Well-balanced between wear and fracture resistance	■		■	
AH740 P25 - P40	(Ti, Al)N	3	P	- Excellent chipping resistance in machining steel				■
AH750 H15 - H30	(Ti, Al)N	3	H	- High wear resistance - Suitable for hard material machining			■	
AH8005 M01 - M10 S01 - S10	(Al,Ti)N	3.5	M S	- Good balance between wear and fracture resistance - First choice for machining heat-resistant alloys under general cutting conditions	■			
AH8015 M10 - M20 S10 - S20	(Al,Ti)N	3.5	M S	- Strong resistance to wear and built-up edge	■			
AH905 S01 - S10	(Al, Ti)N	1.5	S	- Strong resistance to wear and built-up edge	■	■		

PVD - Coated Grade

Grade	Coating: Main composition	Coating: Thickness / µm	Application	Feature	Turning	Grooving	Milling	Drilling
AH3035 P20 - P45 H20 - H30	(Ti, Al)N	5	P H	- Good balance between wear and chipping resistance - Suitable for machining high-hardened material at high feed			■	
AH3135 P30 - P40 M30 - M40	(Ti, Al)N	4	P M	- High fracture resistance - Ideal for machining steel and stainless steel under general cutting conditions			■	
AH4035 M30 - M45	(Ti, Al)N	5	M	- Good balance for wear and fracture resistance - Suitable for difficult stainless steel machining			■	
AH6030 M25 - M35 S15 - S30	(Ti, Al)N	5	M S	- High fracture resistance - Ideal for drilling stainless steel and heat-resistant alloys under general cutting conditions				■
AH9030 P15 - 35 K10 - 25	(Ti, Al)N	5	P K	- High wear resistance - Designed for drilling steel and cast iron at high speed				■
SH725 P20 - P30 M20 - M30	(Ti, Al)N	2	P M	- Excellent wear resistance - Suitable for machining steel and stainless steel	■	■		
SH730 P20 - P35 M20 - M35 S05 - S15	(Ti, Al)N	1	P M S	- High wear resistance - Suitable for machining steel, stainless steel, and difficult-to-cut materials	■	■		
GH110 K10 - K25 N05 - N15	Ti(C, N, O)	3	K N	- Good wear resistance	■		■	
GH130 P25 - P40 M25 - M40 K25 - K40	Ti(C, N, O)	3	P M K	- High chipping and fracture resistance - Suitable for machining steel, stainless steel and cast iron		■	■	■
GH330 P15 - P30 M15 - M30 K05 - K30	Ti(C, N, O)	3	P M K	- Strong resistance to wear and fracture - Suitable for continuous to medium interrupted cutting	■	■	■	
GH730 P20 - P35 M20 - M35 K20 - K30	Ti(C, N, O)	3	P M K	- High wear resistance - Ideal for turning and grooving at low speed	■	■		
J740 -	TiN	1	For small lathes	- Ultra-fine-grain cemented carbide coated with TiN-based compound	■	■		
YH170 P20 - P35 M20 - M35	Ti(C, N)	1.5	P M	- Strong resistance to wear and fracture - Suitable for steel and stainless drilling				■
YH180 P20 - P35 M20 - M35	Ti(C, N)	1.5	P M	- High wear resistance - Suitable for steel and stainless drilling				■
JM10 P20 - P35 M20 - M35	TiN	1	P M	- High wear resistance - Suitable for steel and stainless drilling				■
DS1100 N05 - N20	DLC coating	Thin layer	N	- High wear resistance - Designed for finishing aluminium			■	
DS1200 N10 - N25	DLC coating	Thin layer	N	- Good balance between wear and chipping resistance - Ideal for semi-finishing to finishing of aluminium			■	

Ceramic

Grade	Specific gravity	Hard-ness (HRA)	T.R.S. (GPa)	Application	Feature	Turning	Grooving	Milling	Drilling
LX11	4.35	94.0	0.9	H	- Alumina base - Suitable for continuous cutting of high-hardened materials	■			
LX21	4.24	94.0	0.8	K	- Alumina base - Excellent chipping resistance in continuous cutting of cast iron	■			
FX105	3.24	93.0	1.3	K	- Silicon nitride base - Suitable for high-speed machining of cast iron	■		■	
CX710	3.20	92.9	1.1	K	- Silicon nitride base - Excellent performance in high-speed machining of cast iron	■			

Cermet

Grade	Coating		Application	Feature	Turning	Grooving	Milling	Drilling
	Main composition	Thickness / µm						
GT9530	Ti(C, N, O)	3	P K	- High wear resistance - Ideal for finishing with high surface quality	■			
J9530	TiN	1	For small lathes	- Suitable for small-part machining	■	■		
NS9530	Uncoated	-	P K	- High fracture resistance - Suitable for finishing to medium cutting of steel	■	■		
NS740	Uncoated	-	P	- Good resistance to fracture and thermal crack - Ideal for milling operations that require high rigidity			■	
NS520	Uncoated	-	P K	- Good wear resistance	■			
GT720	Ti(C, N, O)	3	P K	- Good wear resistance in high speed machining	■			
X407	Uncoated	-	P	- Good wear resistance for finish on dry machining	■		■	
N308	Uncoated	-	P	- Good wear resistance			■	

CBN (T-CBN)

Grade	Hardness (Hv)	T.R.S. (GPa)	Application	Feature	Turning	Grooving	Milling	Drilling
BXA20	3300 ~ 3500	1.30 ~ 1.50	H	- Excellent performance in machining hardened steel	■			
BXM10	2700 ~ 2900	0.80 ~ 0.90	H	- Suitable for machining hardened steel with continuous cutting at high speed	■			
BXM20	3500 ~ 3700	1.35 ~ 1.50	H	- First choice for machining hardened steel in a wide range of applications	■			
BXC50	3500 ~ 3700	1.15 ~ 1.30	H	- High fracture resistance in continuous to interrupted machining	■			
BX310	2700 ~ 2900	0.80 ~ 0.90	H	- Good wear resistance - Designed for continuous cutting of hardened steel at high speed	■			
BX330	2800 ~ 3000	0.85 ~ 0.95	H	- Excellent sharpness - Designed for finishing hardened steel	■			
BX360	3200 ~ 3400	1.00 ~ 1.10	H	- Suitable for general-purpose machining of hardened steel	■	■		
BX380	3500 ~ 3700	1.15 ~ 1.30	H	- High fracture resistance - Suitable for heavy interrupted cutting of hardened steel	■			
BX530	2800 ~ 3000	0.85 ~ 0.95	H	- Suitable for finishing hardened steel with high surface quality	■			
BXC90 (BX90S)	3900 ~ 4100	1.80 ~ 1.90	K	- Suitable for machining cast iron at high speed	■		■	
BX910	2600 ~ 2800	0.80 ~ 0.90	K	- Excellent wear resistance in high-speed machining - Ideal for machining centrifugally cast iron	■		■	
BX930	3000 ~ 3200	0.95 ~ 1.20	K	-Designed for machining ductile cast iron	■			
BX950	3900 ~ 4100	1.80 ~ 1.90	K S	- High fracture resistance - Good performance in high-speed machining	■		■	
BX850	3300 ~ 3500	0.75 ~ 0.85	K H	- High fracture resistance in machining cast iron - Suitable for hardened steel finish milling	■		■	
BX870	3000 ~ 3200	0.95 ~ 1.20	K	- High wear resistance - Suitable for machining cylinder liners made of cast iron	■		■	
BX470	4100 ~ 4300	1.90 ~ 2.10	Sintered metal	- Excellent sharpness - Suitable for machining ferrous sintered metal	■			
BX480	4100 ~ 4300	1.90 ~ 2.10	Sintered metal	- Hardest grade of all T-CBN grades - Suitable for machining ferrous sintered metal	■			
M714B	3000 ~ 3200	1.00 ~ 1.10	S	- High wear resistance and thermostability - Good performance in high-speed machining of Inconel	■			

PCD (T-DIA)

Grades	Grain size (μm)	Hard-ness (Hv)	T.R.S. (GPa)	Application	Feature	Turning	Grooving	Milling	Drilling
DX110	< 1	8500	1.8	N	- Excellent sharpness for high surface quality - Suitable for finishing non-ferrous metal and nonmetal				
DX120	4.5	9000	1.8	N	- Suitable for precision machining of non-ferrous metal and nonmetal				
DX140	12.5	10000	1.7	N	- High wear resistance - Suitable for machining non-ferrous metal and nonmetal				
DX160	28	11000	1.6	N	- Designed for machining ceramic, cemented carbide, and nonmetal				
DX180	45	12000	1.5	N	- High wear resistance - Designed for ceramic, cemented carbide, and nonmetal				

Uncoated Cemented Carbide

Grades	Specific gravity	Hard-ness (HRA)	T.R.S. (GPa)	Application	Turning	Grooving	Milling	Drilling
UX30 P30 M30	12.6	91.1	2.3	P M				
TH10 P10 M10 K10 N10	14.7	92.0	2.4	P M K N				
KS05F K05 S05 N05	15.0	93.0	2.9	K S N				
KS15F N15	14.4	91.5	3.0	N				
KS20 K20 N20 S20	14.5	90.8	2.8	K S N				
TH03 P05 M05 K05 N05	13.8	93.8	1.9	P M K N				
F	14.9	93.4	2.5	P K				
EM10 P10 - P25 K10 - K25	14	91.5	3.4	P K				

Grades	Specific gravity	Hard-ness (HRA)	T.R.S. (GPa)	Application	Turning	Grooving	Milling	Drilling
UM K10 - K25 N10 - N25	13.9	90.9	3.5	K N				
G2 K10 - K25 N10 - N25	15	90.8	2.7	K N				
G1F P10 - P25 K10 - K25	15.1	92	2.6	P K				
MD10 P10 - P25 M10 - M25	15	92.8	3.4	P M				
MD20 P20 - P35 M20 - M35	14.4	91.5	3.9	P M				