

TurnLine

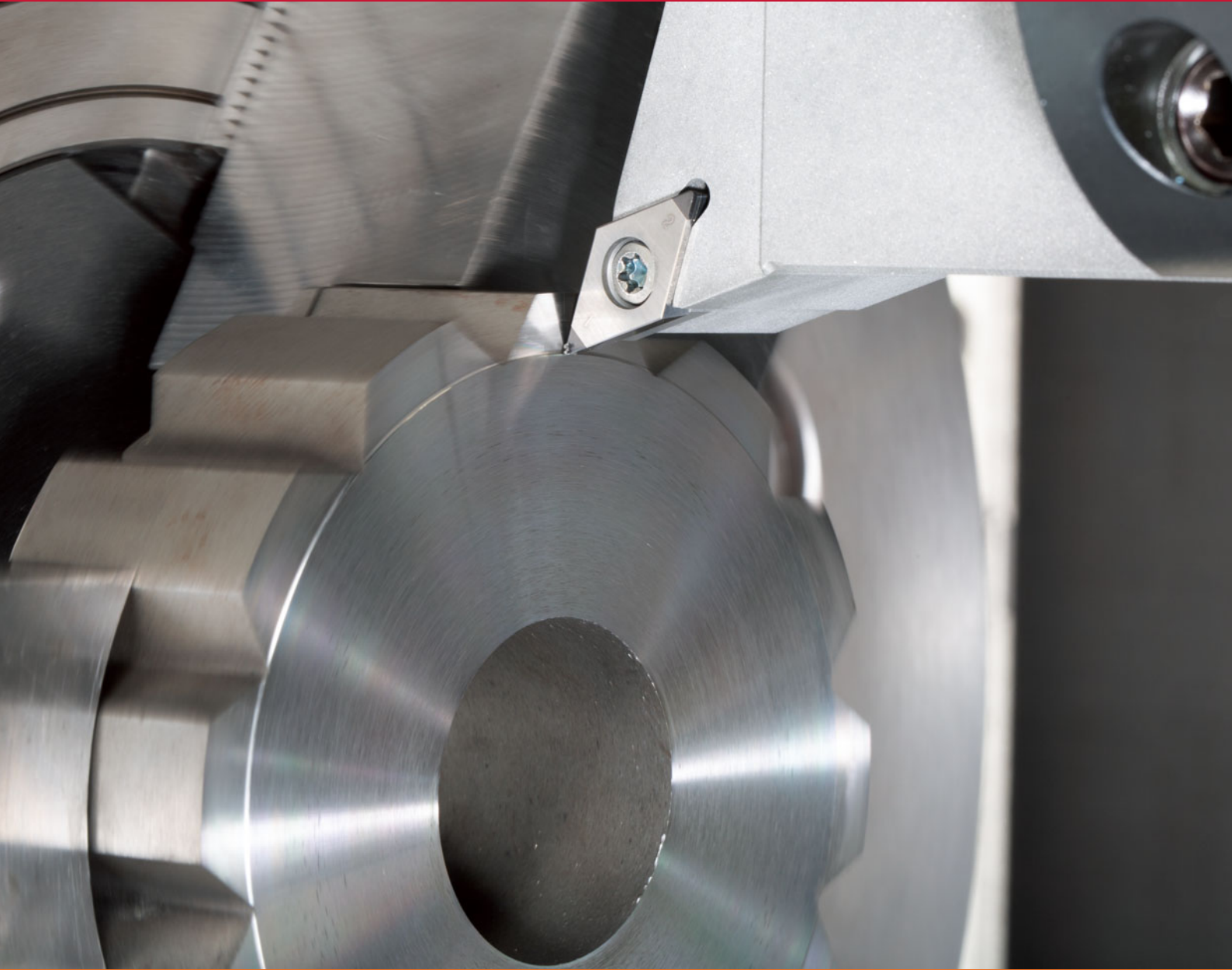


BX470 / BX480

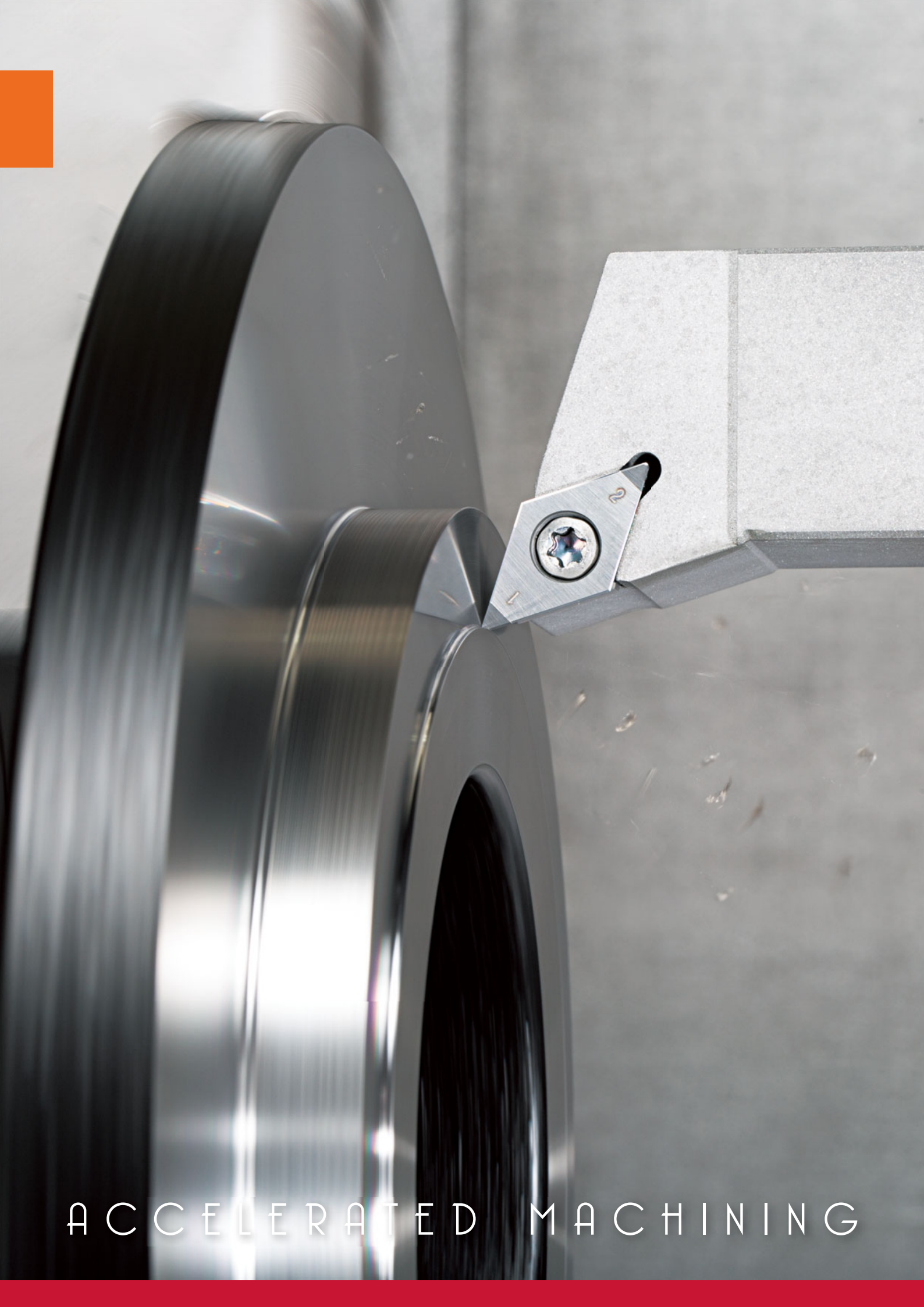
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Tungaloy Report No. 362-G

Now available in **positive inserts** for wider application range of sintered powder metals and cast iron parts



INDUSTRY 4.0
FEED the SPEED!

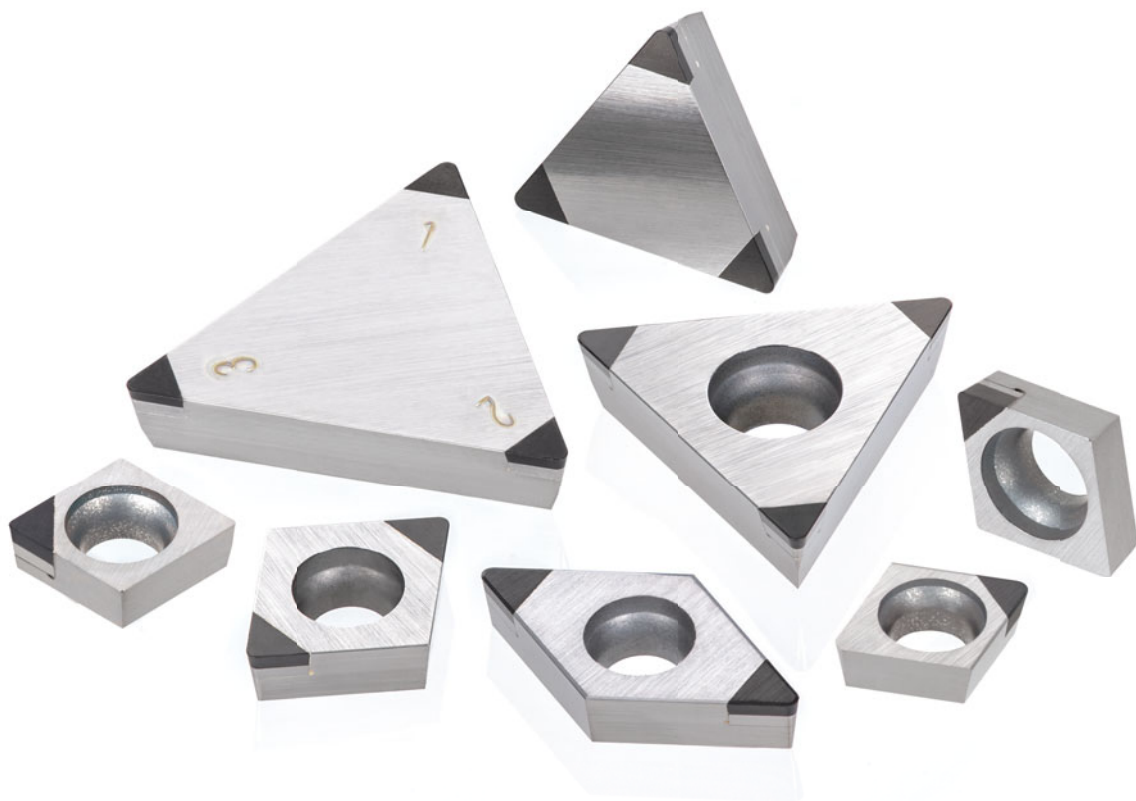


A C C E L E R A T E D M A C H I N I N G

TurnLine

BX470 / BX480

TUNGALOY



Ideal Grade for Sintered Powder Metals and High Speed Finishing of Cast Iron Parts

www.tungaloy.com

Exceptional reliability and long tool life in machining sintered powder metals and cast iron at high speed

BX470: fine-grained, high cBN content grade

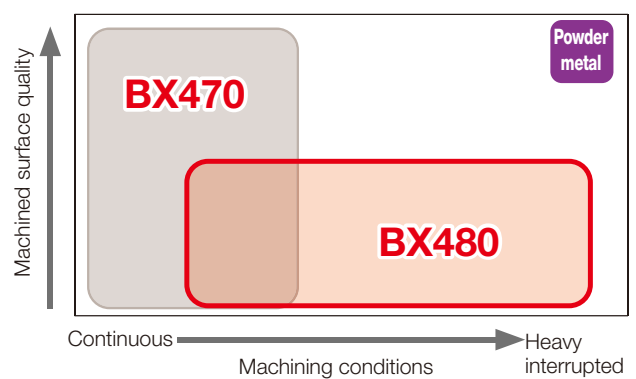
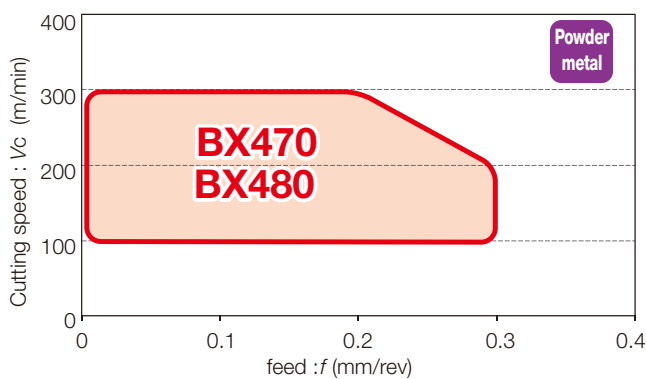
Excellent edge quality → reduces burr formation in powder metal parts
provides superior surface finishing in sintered powder metal parts

BX480: high cBN content grade with well-sintered cBN grains

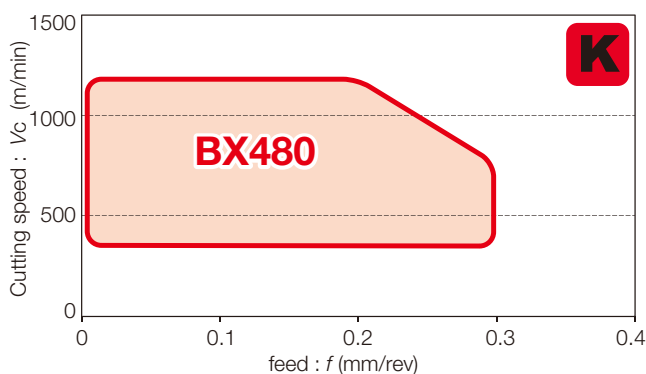
Fracture resistance → ensures stability during interrupted cutting of sintered powder metals
High thermal conductivity → ideal for high speed machining of cast iron

APPLICATION

Grade Application Range for Turning Sintered Powder Metal



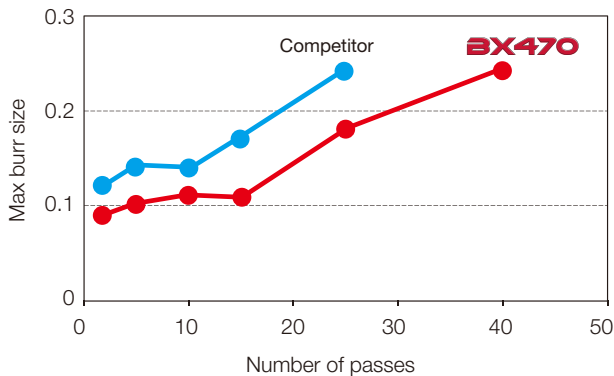
Grade Application Range for Turning Gray Cast Iron



CUTTING PERFORMANCE

BX470 Turning, Sintered Powder Metal

Reduces burr formation



Insert : CNGA120404
 Workpiece material : Ferrous powder metal (HRc 61)
 Cutting speed : $V_c = 200$ m/min
 Feed : $f = 0.08$ mm/rev
 Depth of cut : $a_p = 0.1$ mm
 Coolant : Wet

Powder metal

BX470 provided high edge quality and reduced burr formation

After 25 passes



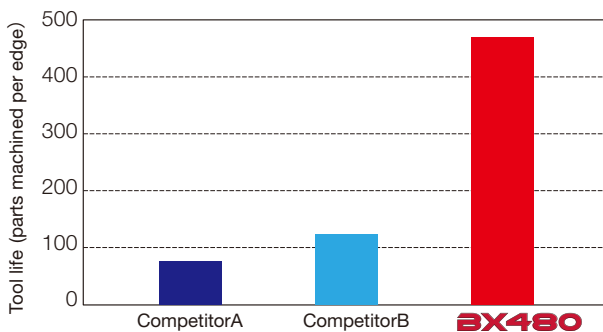
BX470



Competitor

BX480 Turning, Sintered Powder Metal

Machining stability in interrupted cuts



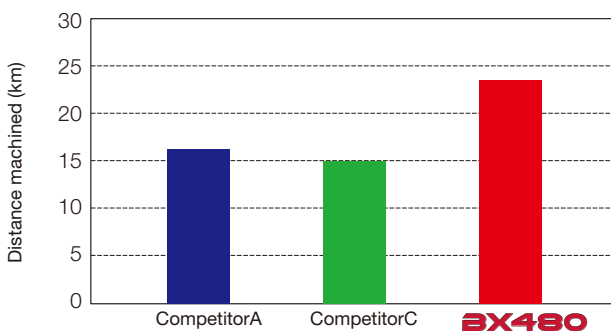
Insert : CNGA120412
 Workpiece material : Ferrous powder metal (HRc 61)
 Cutting speed : $V_c = 450$ m/min
 Feed : $f = 0.15$ mm/rev
 Depth of cut : $a_p = 0.2$ mm
 Coolant : Wet

Powder metal

BX480 exhibited excellent stability in machining ferrous powder metal

BX480 Finishing, Cast Iron

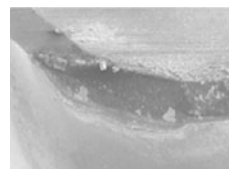
Machining stability in interrupted cuts



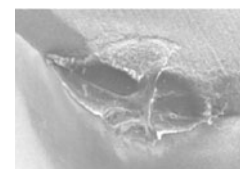
Insert : CNGA120408
 Workpiece material : Gray cast iron (GG25/FC250)
 Cutting speed : $V_c = 1,100$ m/min
 Feed : $f = 0.15$ mm/rev
 Depth of cut : $a_p = 0.2$ mm
 Coolant : Wet

K

BX480 ensures high fracture resistance in high speed machining of gray cast iron

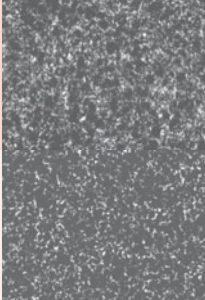



BX480





CompetitorA

GRADES

Application	Grade	Microstructure	Hardness (Hv)	T.R.S. (GPa)	Grade property
	BX470		4100 - 4300	1.90 - 2.10	Fine grained PcBN grade most suited for ferrous powder metal. Excellent edge quality reduces burr formation
	BX480		4100 - 4300	1.90 - 2.10	High cBN content PcBN grade with well-sintered medium-sized cBN grains. Suited for interrupted cuts of ferrous powder metal and high speed turning of gray cast iron

STANDARD CUTTING CONDITIONS

Application	Grade	Cutting speed V_c (m/min)	Depth of cut a_p (mm)	Feed f (mm/rev)
	BX470	100 - 300	0.05 - 0.50	0.05 - 0.30
	BX480	100 - 350	0.05 - 0.50	0.05 - 0.30
	BX480	300 - 1,200	0.05 - 0.50	0.05 - 0.30

Designation system for honing

Example:

Honing width: 0.13 mm

Honing angle: -25°

Tough honing



Shape

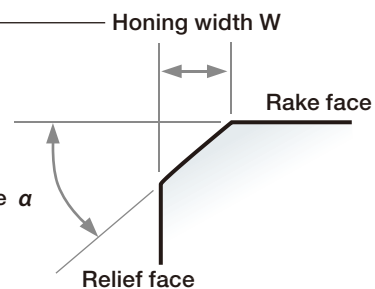
Honing width (W)

Honing angle (α)

T ... Chamfered honing

S ... Tough honing

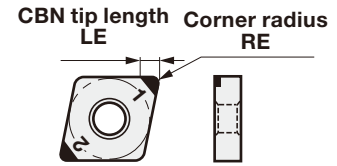
F ... Sharp edge











CBN insert NEGATIVE TYPE

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

P	Steel																		
M	Stainless																		
K	Cast iron		●✱																
N	Non-ferrous																		
S	Superalloys																		
H	Hard materials																		
	Powder metal	●●	●✱																



Insert shape	Designation	BX470	BX480							Dimension (mm)					Edge prep			Wiper	WavyJoint	Chipbreaker		
										Edge/insert	LE	RE	IC	S	D1	Standard	Sharp edge				L	H
	2QP-CNGA 2QP-CNGA120404	●	●							2	2.3	0.4	12.7	4.76	5.16	○						
	2QP-CNGA120408	●	●							2	2.2	0.8	12.7	4.76	5.16	○						
	2QP-CNGA120412	●	●								2	2.4	1.2	12.7	4.76	5.16	○					
	2QP-CNGA**F 2QP-CNGA120404F	●								2	2.3	0.4	12.7	4.76	5.16	○						
	2QP-CNGA120408F	●								2	2.2	0.8	12.7	4.76	5.16	○						
	2QP-DNGA 2QP-DNGA150404	●	●							2	2.5	0.4	12.7	4.76	5.16	○						
	2QP-DNGA150408	●	●							2	2.1	0.8	12.7	4.76	5.16	○						
	2QP-DNGA150412		●							2	2	1.2	12.7	4.76	5.16	○						
	2QP-SNGA 2QP-SNGA120404		●							2	2.4	0.4	12.7	4.76	5.16	○						
	2QP-SNGA120408		●							2	2.4	0.8	12.7	4.76	5.16	○						
	2QP-SNGA120412		●							2	2.4	1.2	12.7	4.76	5.16	○						
	3QP-TNGA 3QP-TNGA160404	●	●							3	2.2	0.4	9.525	4.76	3.81	○						
	3QP-TNGA160408	●	●							3	1.9	0.8	9.525	4.76	3.81	○						
	3QP-TNGA160412	●	●							3	2.4	1.2	9.525	4.76	3.81	○						
	3QP-TNGA**F 3QP-TNGA160404F	●								3	2.2	0.4	9.525	4.76	3.81	○						
	3QP-TNGA160408F	●								3	1.9	0.8	9.525	4.76	3.81	○						
	2QP-VNGA 2QP-VNGA160404	●	●							2	3.1	0.4	9.525	4.76	3.81	○						
	2QP-VNGA160408	●	●							2	2.2	0.8	9.525	4.76	3.81	○						
	3QP-WNGA 3QP-WNGA080408		●							3	2.2	0.8	12.7	4.76	5.16	○						

Standard honing specifications

Shape	Grade	BX470	BX480
Negative insert		T01315	S01325
Positive insert		T01315	S00515

● : Line-up

BX470 / BX480

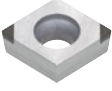





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CBN insert POSITIVE TYPE

- : Continuous cutting
- ◐ : Light interrupted cutting
- ✱ : Heavy interrupted cutting

P	Steel																			
M	Stainless																			
K	Cast iron		●✱																	
N	Non-ferrous																			
S	Superalloys																			
H	Hard materials																			
	Powder metal	●●	●✱																	



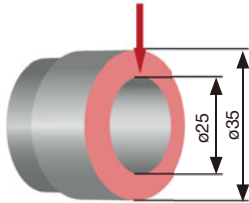

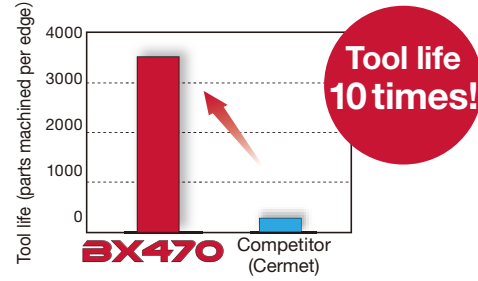
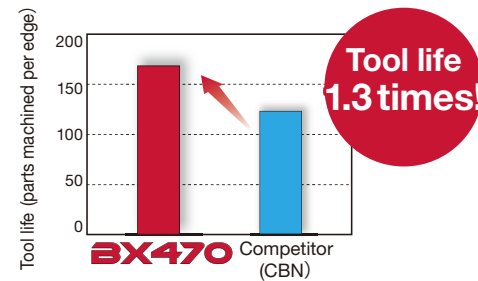


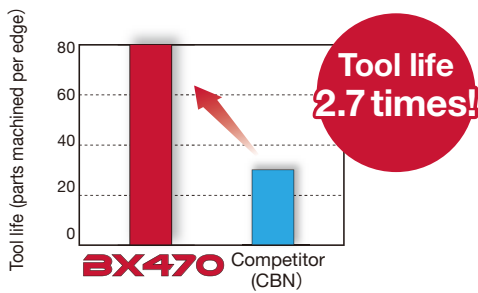
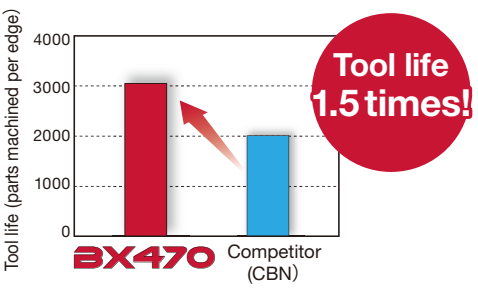
Insert shape	Designation	BX470	BX480	Dimension (mm)						Edge prep			Wiper	WavyJoint	Chipbreaker	
				Edge/insert	LE	RE	IC	S	D1	Standard	Sharp edge	L				H
 2QP-CCGW	2QP-CCGW060204	●	★	2	2.3	0.4	6.35	2.38	2.8	○						
	2QP-CCGW09T304	●	★	2	2.3	0.4	9.525	3.97	4.4	○						
	2QP-CCGW09T308	●		2	2.2	0.8	9.525	3.97	4.4	○						
 2QP-DCGW	2QP-DCGW070204	●	★	2	2.5	0.4	6.35	2.38	2.8	○						
	2QP-DCGW070208	●		2	2.5	0.8	6.35	2.38	2.8	○						
	2QP-DCGW11T304	●	★	2	2.5	0.4	9.525	3.97	4.4	○						
	2QP-DCGW11T308	●		2	2.7	0.8	9.525	3.97	4.4	○						
 2QP-DCGW**F	2QP-DCGW11T302F	●		2	2.1	0.2	9.525	3.97	4.4		○					
	2QP-DCGW11T304F	●		2	2.5	0.4	9.525	3.97	4.4		○					
 3QP-TPGW	3QP-TPGW110204	●		3	2.2	0.4	6.35	2.38	2.8	○						
	3QP-TPGW110208	●		3	2.2	0.8	6.35	2.38	2.8	○						
	3QP-TPGW110302		★	3	2.3	0.2	6.35	3.18	2.8	○						
	3QP-TPGW110304	●	★	3	2.2	0.4	6.35	3.18	2.8	○						
	3QP-TPGW110308	●	★	3	1.9	0.8	6.35	3.18	2.8	○						
	3QP-TPGW130302		★	3	2.3	0.2	7.94	3.18	2.8	○						
	3QP-TPGW130304		★	3	2.2	0.4	7.94	3.18	2.8	○						
	3QP-TPGW130308		★	3	2	0.8	7.94	3.18	2.8	○						
 3QP-TPGW**F	3QP-TPGW110304F	●		3	2.2	0.4	6.35	3.18	2.8	○	○					
	3QP-TPGW110308F	●		3	1.9	0.8	6.35	3.18	2.8	○	○					
 3QP-TPGN	3QP-TPGN110302		★	3	2.3	0.2	6.35	3.18	-	○						
	3QP-TPGN110304		★	3	2.2	0.4	6.35	3.18	-	○						
	3QP-TPGN110308		★	3	1.9	0.8	6.35	3.18	-	○						
	3QP-TPGN160304		★	3	2.2	0.4	9.525	3.18	-	○						
	3QP-TPGN160308		★	3	1.9	0.8	9.525	3.18	-	○						

Standard honing specifications

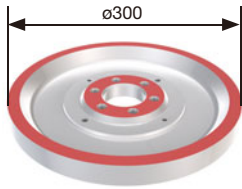
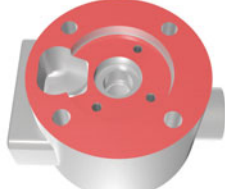
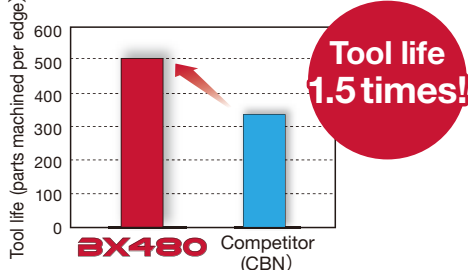
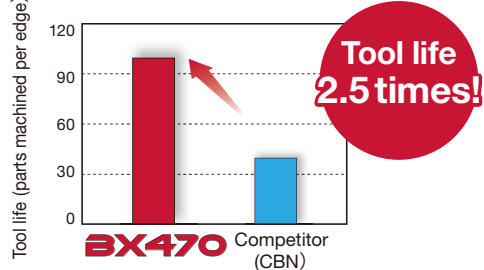

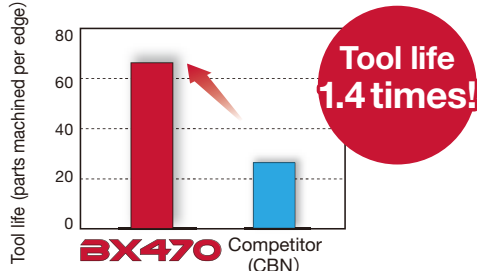
- : Line-up
- ★ : New product

Shape	Grade	BX470	BX480
		T01315	S01325
Positive insert		T01315	S00515

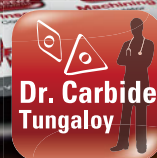
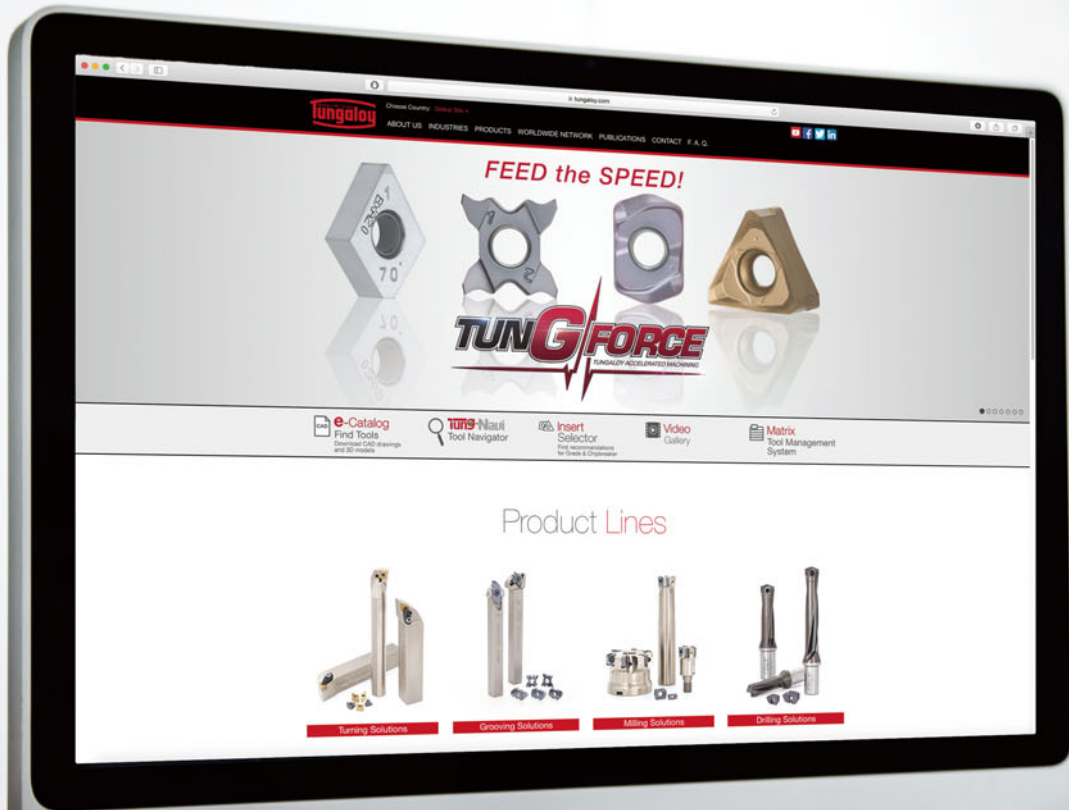
PRACTICAL EXAMPLES

Workpiece type		Ferrous sintered metals	Housing gear (automotive part)
Holder		ATQNR2525M16-A	PTFNR2525M3
Insert		3QP-TNGA160404F	3QP-TNGA160404
Grade		BX470	BX470
Workpiece material		Ferrous powder metal	Ferrous powder metal
			
Cutting conditions	Cutting speed : V_c (m/min)	300	140
	Feed : f (mm/rev)	0.1	0.08
	Depth of cut : a_p (mm)	0.2	0.1
	Method of machining	Facing	Facing
	Coolant	Wet	Wet
Results		 <p>Tool life 10 times!</p> <p>Cutting speed was improved by 1.5 times over a cermet insert. Tool life was improved over 10 times.</p>	 <p>Tool life 1.3 times!</p> <p>BX470 creates little burrs on interrupted parts, extending tool life by 1.3 times.</p>
Workpiece type		Sleeve (automotive part)	Rocker arm (automotive part)
Holder		E20S-SDQCR11-D250	JSDFCL1212H07
Insert		2QP-DCGW11T304	2QP-DCGW11T304F
Grade		BX470	BX470
Workpiece material		Ferrous powder metal (Hv700)	Ferrous powder metal
			
Cutting conditions	Cutting speed : V_c (m/min)	384	350
	Feed : f (mm/rev)	0.1	0.1
	Depth of cut : a_p (mm)	0.1	0.1
	Method of machining	Facing	Facing
	Coolant	Dry	Dry
Results		 <p>Tool life 2.7 times!</p> <p>BX470 creates little burrs on the exits, improving tool life by 2.7 times.</p>	 <p>Tool life 1.5 times!</p> <p>BX470 creates little burrs on the exits with improved tool life of 1.5 times.</p>

PRACTICAL EXAMPLES

Workpiece type		FC250 (ISO250)	Turbo bearing housing (automotive part)
Holder		ACCNR2525M12-A	C4SDJCL13060-11-AT
Insert		2QP-CNGA120408	2QP-DCGW11T304
Grade		BX480	BX480
Workpiece material		FC250 / 250  K	 K
Cutting conditions	Cutting speed : Vc (m/min)	600	550
	Feed : f (mm/rev)	0.04	0.1
	Depth of cut : ap (mm)	0.12	0.05
	Method of machining	Facing (partially interrupted)	Facing
	Coolant	Wet	Wet
Results		 <p>BX480 improved tool life by 1.5 times over competitor's grade in interrupted cuts of gray cast iron.</p>	 <p>BX480 extended tool life by 2.5 times thanks to its fracture resistance.</p>
Workpiece type		Housing (heavy equipment part)	
Holder		A40T-ADQNL15-D500	
Insert		2QP-DNGA150404	
Grade		BX480	
Workpiece material		FCV300/CGI 300  K	
Cutting conditions	Cutting speed : Vc (m/min)	150	
	Feed : f (mm/rev)	0.08	
	Depth of cut : ap (mm)	0.2	
	Method of machining	Internal and face turning	
	Coolant	Wet	
Results		 <p>BX480 extended tool life by 1.4 times thanks to the superior fracture resistance.</p>	

Check our site and our App to get more info!



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