



PR1535

MEGACOAT NANO Insert Grade for Turning

COMPLETE METALWORKING SOLUTIONS

(800) 991-4225

ISO Certified

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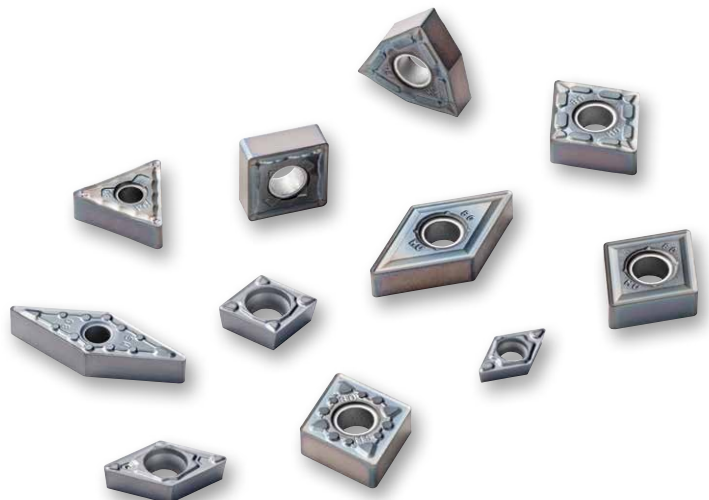
Tough Grade for Heat-Resistant Alloy, Titanium Alloy, and Stainless Steel

First Choice for Heat-Resistant Alloy, Titanium Alloy, and Stainless Steel

Reduced Sudden Fracturing during Scale Removal and Interrupted Machining

Reliable and Tough Grade for S35 / M35 / P35

Line-up Expansion **NEW**



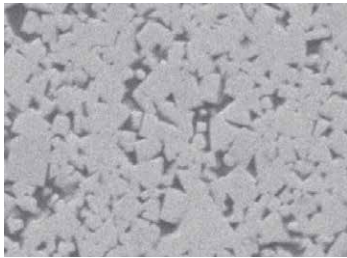
PR1535 MEGACOAT NANO

Fracture resistant with a tough substrate and high heat-resistant coating for stable machining of heat-resistant alloy, titanium alloy, and stainless steel

1 23% Improved Fracture Toughness

An increase in cobalt content yields a substrate with greater toughness. Fracture toughness values are improved by 23% over previous grades.

High Toughness Carbide Base Material

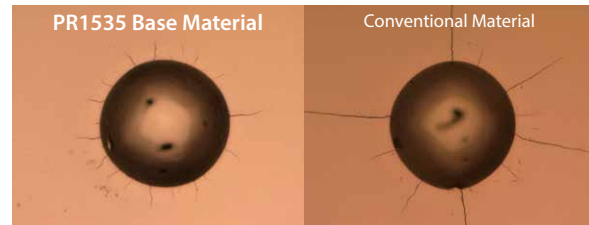


↑
23%
Fracture
Toughness

2 Stability Improvement

The coarse grain structure and uniform particle size correspond to improved heat resistance, with conductivity values decreased by 11%. The uniform structure also reduces crack propagation.

Cracking Comparison by Diamond Indenter (In-house Evaluation)

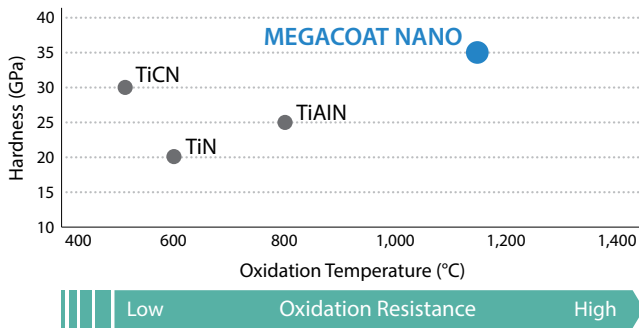


↑
Shock
Resistance

Short Cracks
(High Impact Improvement)

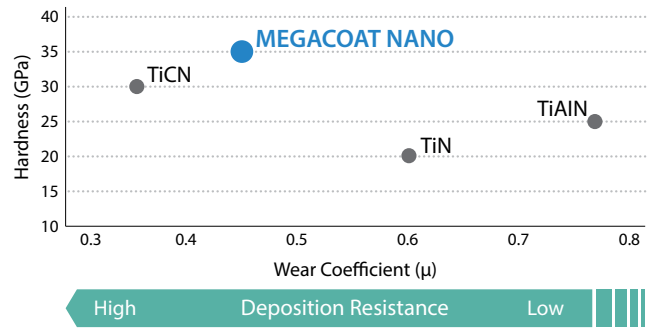
Long Cracks

Coating Properties (Abrasion Resistance)



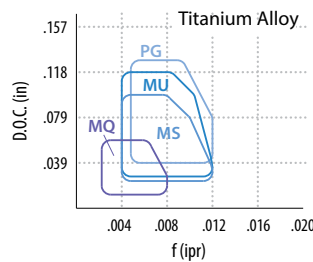
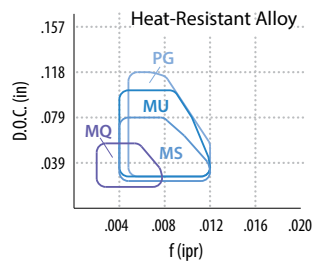
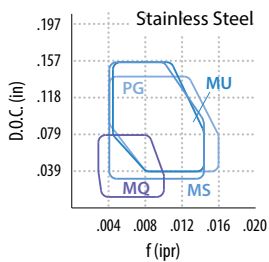
Achieves long tool life with the combination of a tough substrate and a special Nano coating layer

Coating Properties (Deposition Resistance)



Stable machining with excellent wear resistance

Cutting Conditions (External)



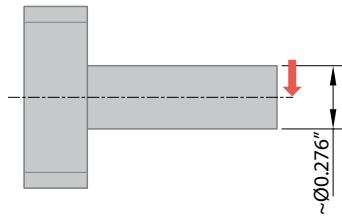
Workpiece Material	Cutting Speed Vc (sfm) Min. ~ Recommended ~ Max.
Stainless Steel	230 ~ 390 ~ 530
Heat-Resistant Alloy	130 ~ 160 ~ 200
Titanium Alloy	130 ~ 160 ~ 200

Case Studies

Ni-base Heat Resistant Alloy

Bolt

Vc = 165 sfm
D.O.C. = 0.118"
0.008 ipr
Wet
CNMG432MS PR1535



Machining Efficiency

PR1535
(MS Chipbreaker) **80 pcs/edge**

Tool Life
2.6x

Competitor A **30 pcs/edge**

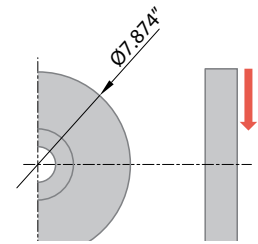
PR1535 (MS chipbreaker) shows 2.6 times longer tool life compared to Competitor A (PVD Coated Carbide).

(User Evaluation)

Ni-base Heat Resistant Alloy

Aircraft Parts

Vc = 165 sfm
D.O.C. = 0.020"
0.004 ipr
Wet
CNMG432MU PR1535



Machining Efficiency

PR1535
(MU Chipbreaker) **1 pcs/edge**

Competitor B **1 pcs/edge**

PR1535-MU Chipbreaker realized the stable machining by preventing the fracture at scaling and interrupted cutting compared with Competitor B (PVD coated).

(User Evaluation)



PR1535

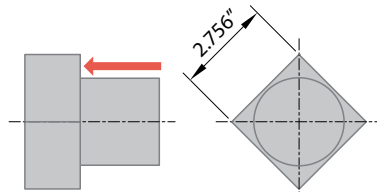


Competitor B

304 Stainless Steel

Square Bar

Vc = 330 sfm
D.O.C. = 0.079"
0.008 ipr
Wet
CNMG432MS PR1535



Machining Efficiency

PR1535
(MS Chipbreaker) **50 pcs/edge**

Tool Life
5x

Competitor C **10 pcs/edge**

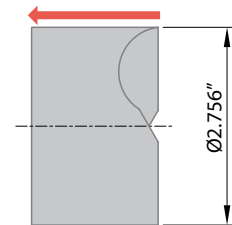
Competitor C fractured due to heavy interrupted machining. PR1535 (MS chipbreaker) shows 5 times longer tool life compared to Competitor C (CVD Coated Carbide).

(User Evaluation)

304 Stainless Steel

Lens Tube

Vc = 395 sfm
D.O.C. = 0.039"
0.006 ipr
Wet
CNMG432MS PR1535



Machining Efficiency

PR1535
(MS Chipbreaker) **80 pcs/edge**

Tool Life
2.6x

Competitor D **30 pcs/edge**

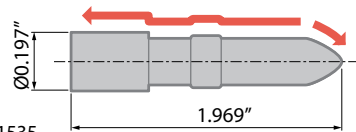
In heavy interrupted machining PR1535 (MS chipbreaker) shows 2.6 times longer tool life compared to Competitor D (PVD Coated Carbide).

(User Evaluation)

S17400 Stainless Steel

Pin

Vc = ~180 sfm
(n = 3,600 rpm)
D.O.C. = 0.004"~0.028"
0.0012 ipr
Wet (oil-based)
DCGT32505MFP-GQ PR1535



Machining Efficiency

PR1535
(GQ Chipbreaker) **1,600 pcs/edge**

Tool Life
1.3x

Competitor E **1,200 pcs/edge**

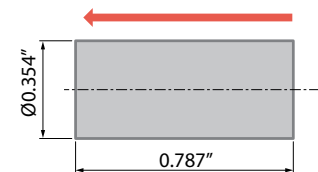
Competitor E had unstable tool life due to sudden defects. PR1535 with the GQ chipbreaker was capable of machining without defects and had improved tool life by 1.3 times that of Competitor E.

(User Evaluation)

440C Stainless Steel

Valve

Vc = 330 sfm
(n = 3,600 rpm)
D.O.C. = 0.004"
0.0024 ipr
Wet (oil-based)
DCGT32505MFP-SK PR1535



Machining Efficiency

PR1535
(SK Chipbreaker) **600 pcs/edge**

















Tool Life
1.3x


















Competitor F **450 pcs/edge**

SK chipbreaker in PR1535 increased tool life by 1.3 times that of Competitor F.

(User Evaluation)

Negative Inserts

● Light Interruption / 1st Choice		M	Stainless Steel			●	
		S	Heat-Resistant Alloy			●	
		Titanium Alloy				●	
Shape	Part Number	Dimensions (in)				MEGACOAT NANO	
		IC	Thickness	Hole	Corner-R (RE)	PR1535	
	CNMG 431HQ	1/2	3/16	0.203	1/64	●	
	432HQ				1/32	●	
	433HQ				3/64	●	
	CNMG 431MQ	1/2	3/16	0.203	1/64	●	
	432MQ				1/32	●	
	CNMG 431MS	1/2	3/16	0.203	1/64	●	
	432MS				1/32	●	
	433MS				3/64	●	
	434MS				1/16	●	
	CNMG 431MU	1/2	3/16	0.203	1/64	●	
	432MU				1/32	●	
	433MU				3/64	●	
	CNMG 542MU	5/8	1/4	0.250	1/32	●	
					543MU	3/64	●
					544MU	1/16	●
CNMG 643MU	3/4	1/4	0.313	3/64	●		
				644MU	1/16	●	
	CNMG 431PG	1/2	3/16	0.203	1/64	●	
	432PG				1/32	●	
	433PG				3/64	●	
	CNMG 431TK	1/2	3/16	0.203	1/64	●	
	432TK				1/32	●	
	CNMG 432SG	1/2	3/16	0.203	1/32	●	
	433SG				3/64	●	
	CNMG 543SG	5/8	1/4	0.250	3/64	●	
					544SG	1/16	●
	CNMG 643SG	3/4	1/4	0.313	3/64	●	
	CNMG 431	1/2	3/16	0.203	1/64	●	
	432				1/32	●	
	433				3/64	●	
	CNMG 431FP-TK	1/2	3/16	0.203	1/64	●	
	432FP-TK				1/32	●	
	CNMG 4305MFP-SK	1/2	3/16	0.203	<0.008	●	
	431MFP-SK				<1/64	●	
	DNMG 431HQ	1/2	3/16	0.203	1/64	●	
	432HQ				1/32	●	
	433HQ				3/64	●	
	DNMG 441HQ	1/2	1/4	0.203	1/64	●	
	442HQ				1/32	●	
	443HQ				3/64	●	
	DNMG 431MQ	1/2	3/16	0.203	1/64	●	
	432MQ				1/32	●	
	433MQ				3/64	●	
	DNMG 441MQ	1/2	1/4	0.203	1/64	●	
	442MQ				1/32	●	
	443MQ				3/64	●	
	DNMG 431MS	1/2	3/16	0.203	1/64	●	
	432MS				1/32	●	
	433MS				3/64	●	
	434MS				1/16	●	
	DNMG 441MS	1/2	1/4	0.203	1/64	●	
	442MS				1/32	●	
	443MS				3/64	●	
	DNMG 431MU	1/2	3/16	0.203	1/64	●	
	432MU				1/32	●	
	433MU				3/64	●	
	DNMG 441MU	1/2	1/4	0.203	1/64	●	
	442MU				1/32	●	


















● Light Interruption / 1st Choice		M	Stainless Steel			●
		S	Heat-Resistant Alloy			●
		Titanium Alloy				●
Shape	Part Number	Dimensions (in)				MEGACOAT NANO
		IC	Thickness	Hole	Corner-R (RE)	PR1535
	DNMG 431PG	1/2	3/16	0.203	1/64	●
	432PG				1/32	●
	433PG				3/64	●
	DNMG 441PG	1/2	1/4	0.203	1/64	●
	442PG				1/32	●
	443PG				3/64	●
	DNMG 431TK	1/2	3/16	0.203	1/64	●
	432TK				1/32	●
	433TK				3/64	●
	DNMG 441TK	1/2	1/4	0.203	1/64	●
	442TK				1/32	●
	DNMG 432SG	1/2	3/16	0.203	1/32	●
	433SG				3/64	●
	DNMG 4305R-LD	1/2	3/16	0.203	0.008	●
	431R-LD				1/64	●
	DNMG 431FP-TK	1/2	3/16	0.203	1/64	●
	432FP-TK				1/32	●
	DNMG 4305MFP-SK	1/2	3/16	0.203	<0.008	●
	431MFP-SK				<1/64	●
	SNMG 432HQ	1/2	3/16	0.203	1/32	●
	433HQ				3/64	●
	SNMG 431MQ	1/2	3/16	0.203	1/64	●
	432MQ				1/32	●
	SNMG 431MS	1/2	3/16	0.203	1/64	●
	432MS				1/32	●
	433MS				3/64	●
	434MS				1/16	●
	SNMG 643MU	3/4	1/4	0.313	3/64	●
	644MU				1/16	●
	SNMG 432PG	1/2	3/16	0.203	1/32	●
	433PG				3/64	●
	SNMG 432SG	1/2	3/16	0.203	1/32	●
	433SG				3/64	●
	SNMG 543SG	5/8	1/4	0.250	3/64	●
					544SG	1/16
SNMG 643SG	3/4	1/4	0.313	3/64	●	
	SNMG 432	1/2	3/16	0.203	1/32	●
	433				3/64	●
	TNMG 331HQ	3/8	3/16	0.150	1/64	●
	332HQ				1/32	●
	TNMG 331MQ	3/8	3/16	0.150	1/64	●
	332MQ				1/32	●
	TNMG 331MS	3/8	3/16	0.150	1/64	●
	332MS				1/32	●
	333MS				3/64	●








Insert with corner-R(RE) dimension shown with less than sign (e.g. <0.002, <0.004, <0.008 etc.) indicate inserts with minus tolerance for corner-R (RE).

● : Standard Item

Inserts sold in 10 piece boxes

Negative Inserts

● Light Interruption / 1st Choice		M	Stainless Steel			●
		S	Heat-Resistant Alloy			●
		Titanium Alloy			●	
Shape	Part Number	Dimensions (in)				MEGACOAT NANO
		IC	Thickness	Hole	Corner-R (RE)	PR1535
	TNMG 331MU 332MU	3/8	3/16	0.150	1/64	●
	TNMG 331PG 332PG 333PG	3/8	3/16	0.150	1/64 1/32 3/64	● ● ●
	TNMG 331TK 332TK	3/8	3/16	0.150	1/64 1/32	● ●
	TNMG 331^{3/4}-ST 332 ^{3/4} -ST	3/8	3/16	0.150	1/64 1/32	● ●
	TNMG 332SG 333SG TNMG 432SG 433SG	3/8 1/2	3/16 3/16	0.150 0.203	1/32 3/64 1/32 3/64	● ● ● ●
	TNMG 331 332	3/8	3/16	0.150	1/64 1/32	● ●
	TNMG 3305R-LD 331R-LD	3/8	3/16	0.150	0.008 1/64	● ●
	TNGG 331FP-TK 332FP-TK	3/8	3/16	0.150	1/64 1/32	● ●
	TNGG 3305^{3/4}-S 331 ^{3/4} -S 332 ^{3/4} -S	3/8	3/16	0.150	0.008 1/64 1/32	● ● ●
	TNGG 3302MFP-SK 3305MFP-SK 331MFP-SK	3/8	3/16	0.150	<0.004 <0.008 <1/64	● ● ●
	TNGG 331^{3/4}-25R 332 ^{3/4} -25R	3/8	3/16	0.150	1/64 1/32	● ●
	VNMG 331MQ 332MQ	3/8	3/16	0.150	1/64 1/32	● ●
	VNMG 331MS 332MS 333MS	3/8	3/16	0.150	1/64 1/32 3/64	● ● ●
	VNMG 331MU 332MU	3/8	3/16	0.150	1/64 1/32	● ●
	VNMG 331SG 332SG	3/8	3/16	0.150	1/64 1/32	● ●
	VNGG 3305MFP-SK 331MFP-SK	3/8	3/16	0.150	<0.008 <1/64	● ●
	WNMG 431HQ 432HQ	1/2	3/16	0.203	1/64 1/32	● ●





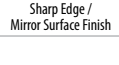



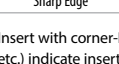

● Light Interruption / 1st Choice		M	Stainless Steel			●
		S	Heat-Resistant Alloy			●
		Titanium Alloy			●	
Shape	Part Number	Dimensions (in)				MEGACOAT NANO
		IC	Thickness	Hole	Corner-R (RE)	PR1535
	WNMG 431MQ 432MQ	1/2	3/16	0.203	1/64 1/32	● ●
	WNMG 431MS 432MS 433MS	1/2	3/16	0.203	1/64 1/32 3/64	● ● ●
	WNMG 431MU 432MU	1/2	3/16	0.203	1/64 1/32	● ●
	WNMG 431PG 432PG 433PG	1/2	3/16	0.203	1/64 1/32 3/64	● ● ●
	WNMG 431TK 432TK	1/2	3/16	0.203	1/64 1/32	● ●
	WNMG 432SG 433SG	1/2	3/16	0.203	1/32 3/64	● ●
	WNMG 431 432 433	1/2	3/16	0.203	1/64 1/32 3/64	● ● ●
	CNGU 2420MFR-U 24205MFR-U 2421MFR-U	0.295	1/8	0.142	<0.004 <0.008 <1/64	● ● ●
	CNGU 2420MFR-F 24205MFR-F 2421MFR-F	0.295	1/8	0.142	<0.004 <0.008 <1/64	● ● ●
	CNGU 2420MFP-SK 24205MFP-SK	0.295	1/8	0.142	<0.004 <0.008	● ●
	CNMU 24205E-GK 2421E-GK	0.295	1/8	0.142	<0.008 <1/64	● ●
	DNGU 22202MFR-U 22205MFR-U 2221MFR-U	0.276	1/8	0.142	<0.004 <0.008 <1/64	● ● ●
	DNGU 22202MFR-F 22205MFR-F 2221MFR-F	0.276	1/8	0.142	<0.004 <0.008 <1/64	● ● ●
	DNGU 22202MFP-SK 22205MFP-SK 2221MFP-SK	0.276	1/8	0.142	<0.004 <0.008 <1/64	● ● ●
	DNMU 22205E-GK 2221E-GK	0.276	1/8	0.142	0.008 1/64	● ●
	TNGU 18202MFR-U 18205MFR-U 1821MFR-U	7/32	1/8	0.118	<0.004 <0.008 <1/64	● ● ●
	TNGU 18202MFR-F 18205MFR-F 1821MFR-F	7/32	1/8	0.118	<0.004 <0.008 <1/64	● ● ●














Insert with corner-R(RE) dimension shown with less than sign (e.g. <0.002, <0.004, <0.008 etc.) indicate inserts with minus tolerance for corner-R (RE).

● : Standard Item

Inserts sold in 10 piece boxes

Positive Inserts

● Light Interruption / 1st Choice		M	Stainless Steel				●	
		S	Heat-Resistant Alloy				●	
				Titanium Alloy				●
Shape	Part Number	Dimensions (in)					MEGACOAT NANO	PR1535
		IC	Thickness	Hole	Corner-R (RE)	Relief Angle		
 Finishing	VBMT 2205VF	1/4	1/8	0.110	0.008	5°	●	
	221VF				1/64		●	
	222VF				1/32		●	
 Sharp Edge	VBET 22013M^{RL}-F	1/4	1/8	0.110	<0.002	5°	●	
	2202M^{RL}-F				<0.004		●	
	2205M^{RL}-F				<0.008		●	
 Finishing-Medium	VBET 22013M^{RL}-Y	1/4	1/8	0.110	<0.002	5°	●	
	2202M^{RL}-Y				<0.004		●	
	2205M^{RL}-Y				<0.008		●	
	221M^{RL}-Y				<1/64		●	
 Sharp Edge / Mirror Surface Finish	VCMT 2202MP-CF	1/4	1/8	0.110	<0.004	7°	●	
	2205MP-CF				<0.008		●	
 Sharp Edge / Mirror Surface Finish	VCMT 2202MFP-CF	1/4	1/8	0.110	<0.004	7°	●	
	2205MFP-CF				<0.008		●	
 Finishing	VCMT 151505PP	3/16	3/32	0.091	0.008	7°	●	
	15151PP				1/64		●	
	VCMT 331PP	3/8	3/16	0.173	1/64	7°	●	
332PP	1/32				●			
 Finishing	VCMT 151505VF	3/16	3/32	0.091	0.008	7°	●	
	15151VF				1/64		●	
 Finishing-Medium	VCMT 151505HQ	3/16	3/32	0.091	0.008	7°	●	
	15151HQ				1/64		●	
 Sharp Edge	VCET 2202M^{RL}-F	1/4	1/8	0.110	<0.004	7°	●	
	2205M^{RL}-F				<0.008		●	
	221M^{RL}-F				<1/64		●	
 Sharp Edge	VCET 22013M^{RL}-Y	1/4	1/8	0.110	<0.002	7°	●	
	2202M^{RL}-Y				<0.004		●	
	2205M^{RL}-Y				<0.008		●	
	221M^{RL}-Y				<1/64		●	

● Light Interruption / 1st Choice		M	Stainless Steel				●	
		S	Heat-Resistant Alloy				●	
				Titanium Alloy				●
Shape	Part Number	Dimensions (in)					MEGACOAT NANO	PR1535
		IC	Thickness	Hole	Corner-R (RE)	Relief Angle		
 Sharp Edge / Mirror Surface Finish	VPGT 2202MP-CF	1/4	1/8	0.110	<0.004	11°	●	
	2205MP-CF				<0.008		●	
 Sharp Edge / Mirror Surface Finish	VPGT 151502MP-CK	3/16	3/32	0.091	<0.004	11°	●	
	151505MP-CK				<0.008		●	
 Sharp Edge / Mirror Surface Finish	VPGT 2202MP-CK	1/4	1/8	0.110	<0.004	11°	●	
	2205MP-CK				<0.008		●	
 Sharp Edge / Mirror Surface Finish	VPGT 2202MFP-GF	1/4	1/8	0.110	<0.004	11°	●	
	2205MFP-GF				<0.008		●	
 Sharp Edge	VPET 151502M^{RL}-F	3/16	3/32	0.091	<0.004	11°	●	
	151505M^{RL}-F				<0.008		●	
 Sharp Edge	VPET 22013MR-F	1/4	1/8	0.110	<0.002	11°	●	
	2202MR-F				<0.004		●	
	2205M^{RL}-F				<0.008		●	
 Sharp Edge	VPET 151502MF^{RL}-U	3/16	3/32	0.091	<0.004	11°	●	
	151505MF^{RL}-U				<0.008		●	
	VPET 22013MF^{RL}-U				1/4		1/8	0.110
2202MF^{RL}-U	<0.008	●						
 Sharp Edge	VPET 22013MFR-J	1/4	1/8	0.110	<0.002	11°	●	
	2202MF^{RL}-J				<0.004		●	
 Sharp Edge / Mirror Surface Finish	WBGT 12102MP^{RL}-CF	5/32	1/16	0.091	<0.004	5°	●	
	12105MP^{RL}-CF				<0.008		●	
 Finishing	WBMT 12105^{RL}-DP	5/32	1/16	0.091	<0.008	5°	●	
	1211^{RL}-DP				<1/64		●	
 Finishing	WBMT 151505^{RL}-DP	3/16	3/32	0.091	<0.008	5°	●	
	15151L-DP				<1/64		●	
 Sharp Edge	WBET 121013ML-F	5/32	1/16	0.091	<0.002	5°	●	
	12102M^{RL}-F				<0.004		●	
	12105M^{RL}-F				<0.008		●	
	1211M^{RL}-F				<1/64		●	
 Sharp Edge	WBET 151502ML-F	3/16	3/32	0.091	<0.004	5°	●	
	151505ML-F				<0.008		●	
	15151M^{RL}-F				<1/64		●	

Insert with corner-R(RE) dimension shown with less than sign (e.g. <0.002, <0.004, <0.008 etc.) indicate inserts with minus tolerance for corner-R (RE).

● : Standard Item

Inserts sold in 10 piece boxes



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