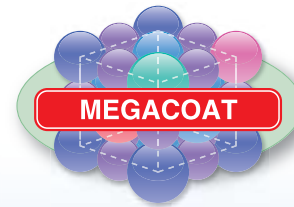


THE NEW VALUE FRONTIER



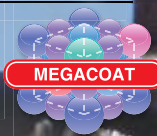
Next Generation Cermets

Featuring new MEGACOAT PVD Coated High Performance Cermets

- Two New PVD MEGACOAT Cermet Grades Providing Superior Tool Life and Stable Machining
- One New Uncoated Cermet Grade Providing Excellent Performance at an Economical Price

MEGACOAT Cermet
For Cast Iron Machining

PV7005



MEGACOAT Cermet
For Steel Machining

PV7010



Uncoated Cermet
For Steel Machining

TN6010

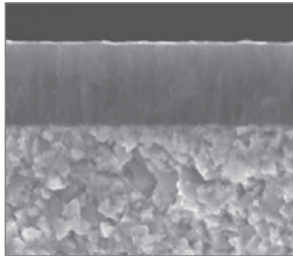


ADVANCING PRODUCTIVITY

MEGACOAT Cermet

■ New MEGACOAT PVD technology

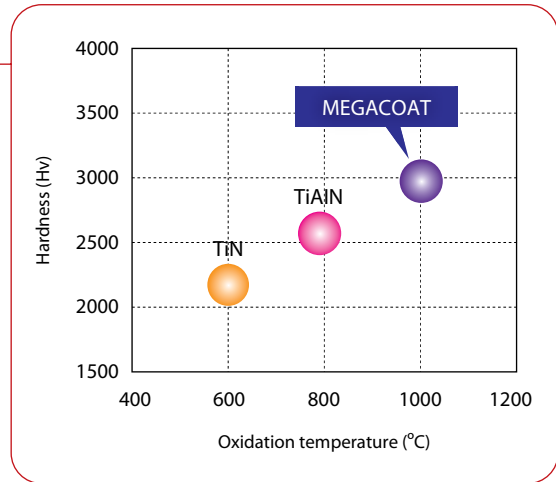
- MEGACOAT provides excellent wear resistance and heat resistance
- Combination of smooth surface finish with oxidation resistance at high temperatures



■ Wear resistant and heat resistant

MEGACOAT

- Nitride solid solution of high melting point metal
- Physically hard and oxidation resistant
- Superior surface roughness
- Superior crater wear resistance



MEGACOAT CERMET for Steel Machining

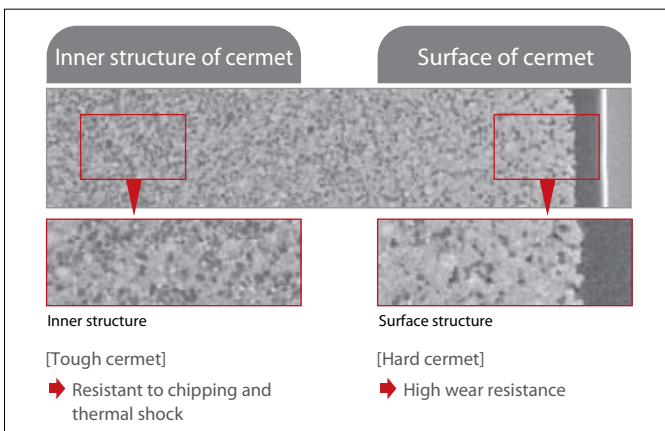
PV7010

Feature

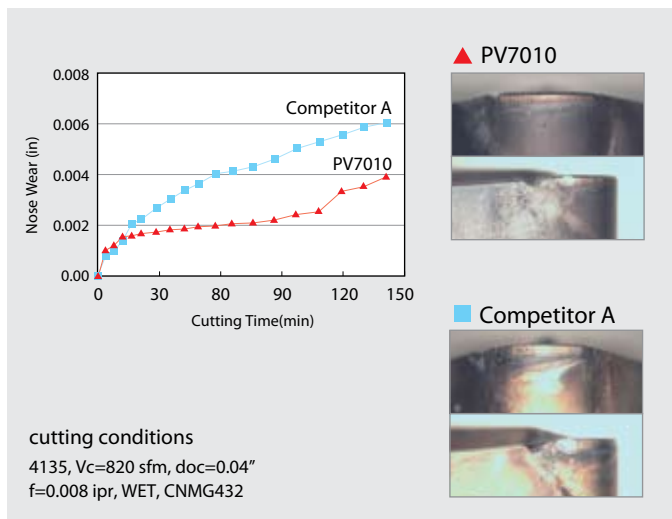
- Achieves superior tool life and stable machining with two new technologies -- MEGACOAT coating and a special blended substrate composition

■ Specially Structured Cermet

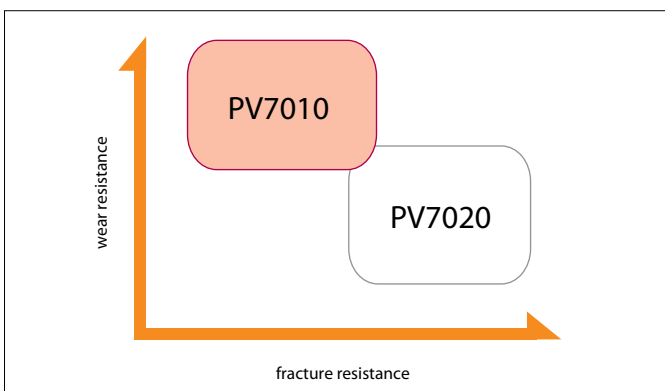
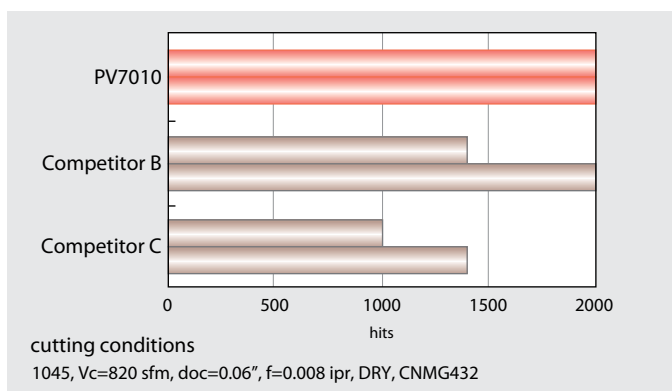
- The specially blended substrate combines an increased wear resistant surface structure with an increased fracture resistant inner structure.



■ Comparison of Wear Resistance



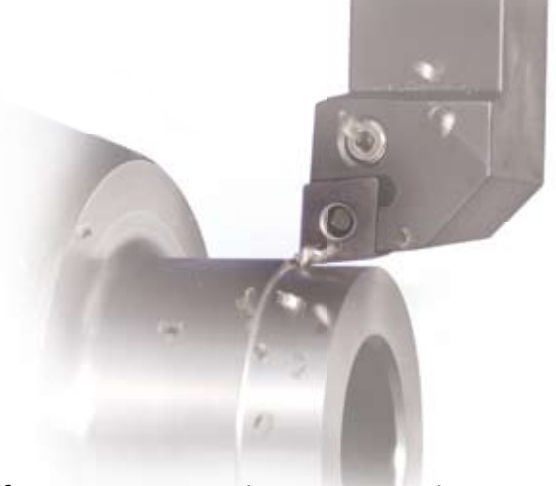
■ Comparison of Fracture Resistance



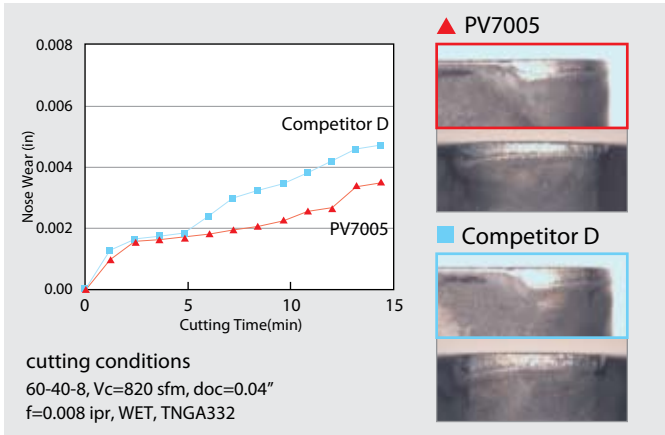
PV7005

Features

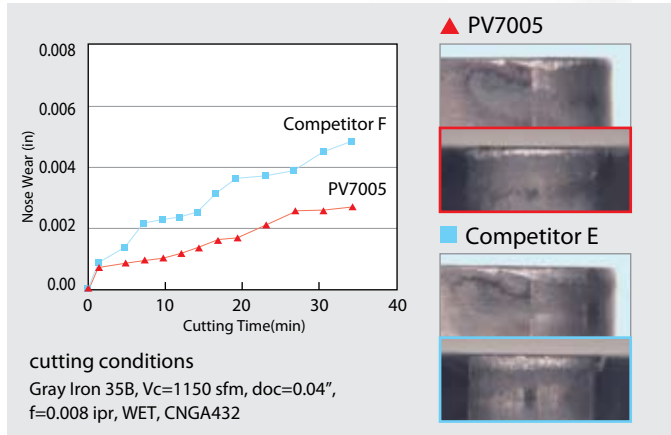
- Improved wear resistance for cast iron machining through the use of MEGACOAT coating technology
- Controls deterioration of the cutting edge due to progressive crater wear, enabling stable machining
- The substrate is a special TiC-TiN Cermet exclusive for cast iron machining



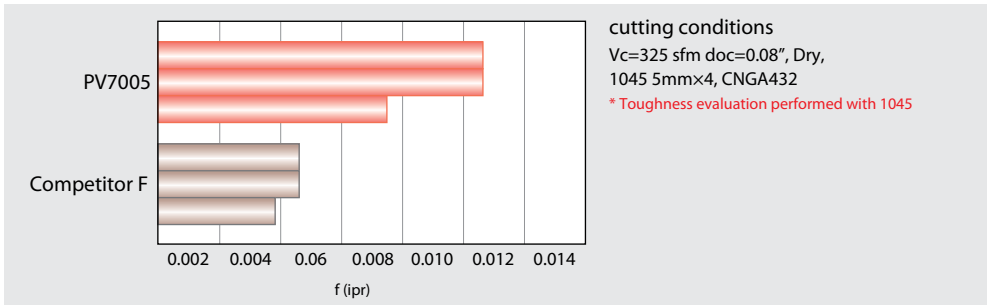
Comparison of Wear Resistance (60-40-8)



Comparison of Wear Resistance (Gray Iron, 35B)



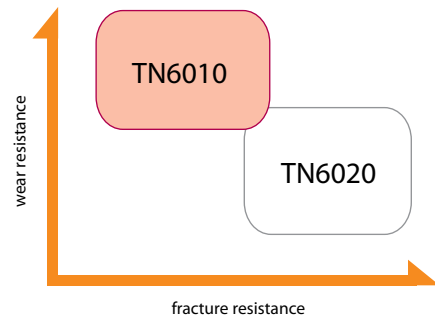
Comparison of Fracture Resistance



Uncoated CERMET for Steel Machining

- Specially blended substrate combining an increased wear resistant surface structure with an increased fracture resistant inner structure
- An uncoated cermet providing cost effective performance

TN6010



Recommended Cutting Conditions

Workpiece material	Insert Grade (Vc:sfm)
	PV7010
Carbon Steel	650-800-1000
Alloy Steel	500-650-800

Workpiece material	Insert Grade (Vc:sfm)
	TN6010
Carbon Steel	500-650-800
Alloy Steel	350-500-650













Workpiece material	Insert Grade (Vc:sfm)
	PV7005
Gray Cast Iron	1000-1150-1300
Nodular Cast Iron	500-800-1000



Stock Items (Negative)

Insert	Description	Dimension (Inch)					Grades		
		I.C.	T	Hole	Corner - R	Relief Angle	PVD	Cermel	TN6010
							Cermet		
	CNGA 431	1/2	3/16	0.008	1/64	-	○		
	432				1/32		○		
	CNMG 431	1/2	3/16	0.008	1/64	-	○		
	432				1/32		○		
	433				3/64		○		
	CNMG 431CQ	1/2	3/16	0.008	1/64	-		●	○
	432CQ				1/32			●	○
	CNMG 4305GP	1/2	3/16	0.008	0.008	-		●	
	431GP				1/64			●	○
	432GP				1/32			●	○
	CNMG 431HQ	1/2	3/16	0.008	1/64	-		●	○
	432HQ				1/32			●	○
	CNMG 431PS	1/2	3/16	0.008	1/64	-		●	○
	432PS				1/32			●	○
	CNMG 431WP	1/2	3/16	0.008	1/64	-		●	
	432WP				1/32			●	
	CNMG 431WQ	1/2	3/16	0.008	1/64	-		●	
	432WQ				1/32			●	
	CNMG 431XP	1/2	3/16	0.008	1/64	-		●	
	432XP				1/32			●	
	CNMG 431XQ	1/2	3/16	0.008	1/64	-		●	
	432XQ				1/32			●	
	DNGG 431 R/L	1/2	3/16	0.008	1/64	-	○		
	432 R/L				1/32		○		
	DNMG 432	1/2	3/16	0.008	1/32	-	○		
	442				1/32		○		
	DNMG 432CQ	1/2	3/16	0.008	1/32	-		●	○
	441CQ				1/64			●	○

Insert	Description	Dimension (Inch)					Grades		
		I.C.	T	Hole	Corner - R	Relief Angle	PVD	Cermel	TN6010
							Cermet		
	DNMG 4305GP	1/2	3/16	0.008	0.008	-		●	○
	431GP				1/64			●	○
	432GP				1/32			●	
	DNMG 4405GP	1/2	1/4	0.008	0.008	-		●	○
	441GP				1/64			●	○
	442GP				1/32			●	○
	DNMG 431HQ	1/2	3/16	0.008	1/64	-		●	○
	432HQ				1/32			●	○
	DNMG 441HQ	1/2	1/4	0.008	1/64	-		●	○
	442HQ				1/32			●	○
443HQ	3/64		●	○					
	DNMG 431PS	1/2	3/16	0.008	1/64	-		●	○
	432PS				1/32			●	○
	DNMG 441PS	1/2	1/4	0.008	1/64	-		●	○
	442PS				1/32			●	○
443PS	3/64		●	○					
	DNMG 431XP	1/2	3/16	0.008	1/64	-		●	
	432XP				1/32			●	
	DNMG 441XP	1/2	1/4	0.008	1/64	-		●	
	442XP				1/32			●	
	DNMG 431XQ	1/2	3/16	0.008	1/64	-		●	
	432XQ				1/32			●	
	DNMG 441XQ	1/2	1/4	0.008	1/64	-		●	
442XQ	1/32						●		
	RNMG 32	3/8	1/8	0.150	-	-	○		
	RNMG 43	1/2	3/16	0.203	-	-	○		
	SNGA 432	1/2	3/16	0.008	1/32	-	○		
	SNGG 321 R/L -B	3/8	1/8	0.150	1/64	-	○		
	SNGG 431 R/L -B	1/2	3/16	0.008	1/64	-	○		
	432 R/L -B				1/32		○		
	SNMG 431	1/2	3/16	0.008	1/64	-	○		
	432				1/32		○		
	SNMG 431HQ	1/2	3/16	0.008	1/64	-		●	○
	432HQ				1/32			●	○
	SNMG 432PS	1/2	3/16	0.008	1/32	-		●	○
	SNMG 432XP	1/2	3/16	0.008	1/32	-		●	
	SNMG 432XQ	1/2	3/16	0.008	1/32	-		●	












Stock Items (Negative)










Insert	Description		Dimension (Inch)					Grades		
								PVD Cermet	Cermet	
			I.C.	T	Hole	Corner - R	Relief Angle	PV7005	PV7010	TN6010
	TNGG	3305 ^R / _L -B	3/8	3/16	0.150	0.008		R	○	
		331 ^R / _L -B				1/64	○	●	○	
	TNGG	331 ^R / _L -C				1/64	○	●	○	
		332 ^R / _L -C				1/32	○	●	○	
		333 ^R / _L -C				3/64	○			
		334 ^R / _L -C				1/16	Ⓡ			
TNGG	431 ^R / _L -C	1/2	3/16	0.008	1/64	○				
	432 ^R / _L -C				1/32	○				
	TNGG	3305 ^R / _L -S	3/8	3/16	0.150	0.008			○	
		331 ^R / _L -S				1/64			○	
		332 ^R / _L -S				1/32			○	
	TNGA	331	3/8	3/16	0.150	1/64		○		
		332				1/32		○		
	TNMG	331	3/8	3/16	0.150	1/64	○	●		
		332				1/32	○			
	TNMG	331CQ	3/8	3/16	0.150	1/64		●	○	
		332CQ				1/32		●	○	
	TNMG	3305GP	3/8	3/16	0.150	0.008		●	○	
		331GP				1/64		●	○	
		332GP				1/32		●	○	
	TNMG	331HQ	3/8	3/16	0.150	1/64		●	○	
		332HQ				1/32		●	○	
	TNMG	331PS	3/8	3/16	0.150	1/64		●	○	
		332PS				1/32		●	○	
	TNMG	331XP	3/8	3/16	0.150	1/64		●		
		332XP				1/32		●		
	TNMG	331XQ	3/8	3/16	0.150	1/64		●		
		332XQ				1/32		●		
	VNGA	331	3/8	3/16	0.150	1/64		○		
		332				1/32		○		
	VNGG	3305 ^R / _L	3/8	3/16	0.150	0.008				
		331 ^R / _L				1/64			Ⓡ	
		332 ^R / _L				1/32			Ⓡ	

Insert	Description		Dimension (Inch)					Grades		
								PVD Cermet	Cermet	
			I.C.	T	Hole	Corner - R	Relief Angle	PV7005	PV7010	TN6010
	VNMG	332	3/8	3/16	0.150	1/32	-	○		
	VNMG	3305GP	3/8	3/16	0.150	0.008			●	○
		331GP				1/64		●	○	
		332GP				1/32		●	○	
	VNMG	331HQ	3/8	3/16	0.150	1/64			●	○
		332HQ				1/32		●	○	
	VNMG	331VF	3/8	3/16	0.150	1/64	-		●	○
	WNMG	432	1/2	3/16	0.150	1/32	-	○		
	WNMG	431CQ	1/2	3/16	0.150	1/64			●	○
		432CQ				1/32		●	○	
	WNMG	431GP	1/2	3/16	0.150	1/64			●	○
		432GP				1/32		●	○	
	WNMG	431HQ	1/2	3/16	0.150	1/64			●	○
		432HQ				1/32		●	○	
	WNMG	431PS	1/2	3/16	0.150	1/64			●	○
		432PS				1/32		●	○	
	WNMG	431WP	1/2	3/16	0.150	1/64			●	○
		432WP				1/32		●	○	
	WNMG	431WQ	1/2	3/16	0.150	1/64			●	○
		432WQ				1/32		●	○	
	WNMG	431XP	1/2	3/16	0.150	1/64			●	○
		432XP				1/32		●	○	
	WNMG	431XQ	1/2	3/16	0.150	1/64			●	○
		432XQ				1/32		●	○	

●: Stock Standard L: Left Hand Only
○: World Express R: Right Hand Only

Stock Items (Positive)

Insert	Description		Dimension (Inch)					Grades		
			I.C.	T	Hole	Corner - R	Relief Angle	PVD	PV7010	Cermel
								Cermet		
 Finishing	CCGT	110905 ^R / _L -S	0.138	0.055	0.075	0.008	7°		○	
		11091 ^R / _L -S				1/64			○	
 Finishing	CCGT	141105 ^R / _L -S	0.169	0.071	0.091	0.008	7°		○	
		14111 ^R / _L -S				1/64			○	
 Finishing-Medium	CCMT	21505GK	1/4	3/16	0.110	0.008	7°	●	○	
		2151GK				1/64		●	○	
	CCMT	32505GK	3/8	5/32	0.173	0.008	7°	●	○	
		3251GK				1/64		●	○	
	CCMT	431GK	1/2	3/16	0.217	1/64	7°	●	○	
		432GK				1/32		●	○	
 Finishing-Medium	CCMT	21505HQ	1/4	3/16	0.110	0.008	7°	●	○	
		2151HQ				1/64		●	○	
	CCMT	32505HQ	3/8	5/32	0.173	0.008	7°	●	○	
		3251HQ				1/64		●	○	
 Medium Cutting	CPMH	25151	5/16	3/16	0.138	1/64	11°	●	○	
		25152				1/32		●	○	
	CPMH	321	3/8	1/8	0.177	1/64	11°	●	○	
 Finishing-Medium	CPMH	25151HQ	5/16	3/16	0.138	1/64	11°	●	○	
		25152HQ				1/32		●	○	
	CPMH	321HQ	3/8	1/8	0.177	1/64	11°	●	○	
 Finishing	CPMT	25151GP	5/16	3/16	0.130	1/64	11°	●	○	
		321GP				3/8		1/8	0.177	1/64
	CPMT	322GP	3/8	1/8	0.177	1/32	11°	●	○	
 Finishing	CPMT	25151XP	5/16	3/16	0.130	1/64	11°	●	○	
		321XP				3/8		1/8	0.177	1/64
	CPMT	322XP	3/8	1/8	0.177	1/32	11°	●	○	
 Low Carbon Steel Finishing-Medium	CPMT	321XQ	3/8	1/8	0.177	1/64	11°	●	○	
		322XQ				1/32		●	○	
 Finishing	DCMT	21505GP	1/4	3/16	0.110	0.008	7°	●	○	
		2151GP				1/64		●	○	
	DCMT	3251GP	3/8	5/32	0.173	1/64	7°	●	○	
		3252GP				1/32		●	○	
 Finishing-Medium	DCMT	21505GK	1/4	3/16	0.110	0.008	7°	●	○	
		2151GK				1/64		●	○	
		2152GK				1/32		●	○	
	DCMT	32505GK	3/8	5/32	0.173	0.008	7°	●	○	
		3251GK				1/64		●	○	
DCMT	3252GK	3/8	5/32	0.173	1/32	7°	●	○		

Insert	Description		Dimension (Inch)					Grades		
			I.C.	T	Hole	Corner - R	Relief Angle	PVD	PV7010	Cermel
								Cermet		
 Finishing-Medium	DCMT	21505HQ	1/4	3/16	0.110	0.008	7°	●	○	
		2151HQ				1/64		●	○	
	DCMT	2152HQ	1/32	●	○					
	DCMT	32505HQ	3/8	5/32	0.173	0.008	7°	●	○	
3251HQ		1/64				●		○		
3252HQ		1/32				●		○		
 Low Carbon Steel Finishing	DCMT	2151XP	1/4	3/16	0.110	1/64	7°	●	○	
		32505XP				0.008		●	○	
	DCMT	3251XP	3/8	5/32	0.173	1/64	7°	●	○	
		3252XP				1/32		●	○	
 Low Carbon Steel Medium-Finishing	DCMT	3251XQ	3/8	5/32	0.173	1/64	7°	●	○	
		3252XQ				1/32		●	○	
 Finishing-Medium	SCMT	3251HQ	3/8	5/32	0.173	1/64	7°	●	○	
		3252HQ				1/32		●	○	
 Without Chipbreaker	SPG	321	3/8	1/8	-	1/64	11°	○	○	
		322				1/32		○	○	
	SPG	421	1/2	1/8	-	1/64	11°	○	○	
		422				1/32		○	○	
 Finishing	SPGR	321 ^R / _L	3/8	1/8	0.177	1/64	11°	○	○	
		422 ^R / _L				1/2		1/8	0.217	1/32
 Finishing-Medium	TCMT	181505HQ	7/32	3/16	0.098	0.008	7°	●	○	
		18151HQ				1/64		●	○	
	TCMT	21505HQ	1/4	3/16	0.110	0.008	7°	●	○	
		2151HQ				1/64		●	○	
TPG	2152HQ	1/4	3/16	0.110	1/32	7°	●	○		
 Without Chipbreaker	TPG	221	1/4	1/8	-	1/64	11°	○	○	
		222				1/32		○	○	
	TPG	321	3/8	1/8	-	1/64	11°	○	○	
		322				1/32		○	○	
 Finishing	TPGH	151505 ^R / _L	3/16	3/16	0.091	0.008	11°	○	○	
		15151 ^R / _L				1/64		○	○	
	TPGH	181505 ^R / _L	7/32	3/16	0.118	0.008	11°	○	○	
		18151 ^R / _L				1/64		○	○	
	TPGH	21505 ^R / _L	1/4	3/16	0.138	0.008	11°	○	○	
		2151 ^R / _L				1/64		○	○	
	TPGH	2205 ^R / _L	1/4	1/8	0.130	0.008	11°	○	○	
		221 ^R / _L				1/64		○	○	
		222 ^R / _L				1/32		○	○	
	TPGH	3205 ^R / _L	3/8	1/8	0.177	0.008	11°	○	○	
321 ^R / _L		1/64				○		○		
322 ^R / _L		1/32				○		○		

Stock Items (Positive)

Insert	Description		Dimension (Inch)					Grades		
								PVD Cermet	Cermet	
			I.C.	T	Hole	Corner - R	Relief Angle	PV7005	PV7010	TN6010
	TPGB	18151	7/32	3/16	0.118	1/64	11°	○		
	TPGB	221	1/4	1/8	0.130	1/64	11°	○		
		222				1/32		○		
TPGB	321	3/8	1/8	0.177	1/64	11°	○			
	TPGH	2205 ^{R/L} -H	1/4	1/8	0.130	0.008	11°			○
		221 ^{R/L} -H				1/64				○
		222 ^{R/L} -H				1/32				○
TPGH	321 ^{R/L} -H	3/8	1/8	0.177	1/64	11°			○	
	TPGR	2205 ^{R/L} -A	1/4	1/8	-	0.008	11°	○		
		221 ^{R/L} -A				1/64		○		
	TPGR	3205 ^{R/L} -B	3/8	1/8	-	0.008	11°	○	L	○
		321 ^{R/L} -B				1/64		○	L	○
		322 ^{R/L} -B				1/32		○	L	
TPGR	321 ^{R/L} -C	3/8	1/8	-	1/64	11°		L	○	
	TPMR	321	3/8	1/8	-	1/64	11°	○		
		322				1/32		○	●	○
	TPMR	321HQ	3/8	1/8	-	1/64	11°		●	○
		322HQ				1/32			●	○
	TPMT	181505GP	7/32	3/16	0.110	0.008	11°		●	○
		18151GP				1/64			●	○
	TPMT	221GP	1/4	1/8	0.130	1/64	11°		●	○
		222GP				1/32			●	○
TPMT	321GP	3/8	1/8	0.173	1/64	11°		●	○	
	TPMT	181505HQ	7/32	3/16	0.110	0.008	11°		●	○
		18151HQ				1/64			●	○
	TPMT	2205HQ	1/4	1/8	0.130	0.008	11°		●	○
		221HQ				1/64			●	○
		222HQ				1/32			●	○
	TPMT	321HQ	3/8	1/8	0.173	1/64	11°		●	○
322HQ		1/32						●	○	
	TPMT	18151XP	7/32	3/16	0.110	1/64	11°		●	
		221XP				1/64			●	
	TPMT	222XP	1/4	1/8	0.130	1/32	11°		●	○
		321XP				1/64			●	
TPMT	322XP	3/8	1/8	0.173	1/32	11°		●		
	TPMT	221XQ	1/4	1/8	0.130	1/64	11°		●	
		222XQ				1/32			●	○
	TPMT	321XQ	3/8	1/8	0.173	1/64	11°		●	
		322XQ				1/32			●	

Insert	Description		Dimension (Inch)					Grades			
								PVD Cermet	Cermet		
			I.C.	T	Hole	Corner - R	Relief Angle	PV7005	PV7010	TN6010	
	VBGT	2205 ^{R/L} -F	1/4	1/8	0.110	0.008	5°			○	
		2205 ^{R/L} -Y				1/4		1/8	0.110	0.008	5°
	VBGT	221 ^{R/L} -Y	3/8	3/16	0.173		1/64			5°	
		3305 ^{R/L} -Y				0.008			○		
	VBMT	221GP	1/4	1/8	0.110	1/64	5°		●	○	
		331GP				1/64			●	○	
	VBMT	332GP	3/8	3/16	0.173	1/32	5°		●	○	
		221HQ				1/4		1/8	0.110	1/64	5°
	VBMT	222HQ	3/8	3/16	0.173		1/32			5°	
		331HQ				1/64	5°		●		○
	VBMT	332HQ	3/8	3/16	0.173			1/32	5°		●
		333HQ				3/64		●		○	
	VBMT	2205VF	1/4	1/8	0.110	0.008	5°		●	○	
		221VF				1/64			●	○	
		222VF				1/32			●	○	
		VBMT	3305VF	3/8	3/16	0.173	0.008	5°		●	○
			331VF				1/64			●	○
			332VF				1/32			●	○
VBMT	333VF	3/64		●	○						
	VCMT	151505HQ	3/16	3/16	0.091	0.008	7°		●	○	
		15151HQ				1/64			●	○	
	VCMT	151505VF	3/16	3/16	0.091	0.008	7°		●	○	
		15151VF				1/64			●	○	
	WBGT	12105 ^{R/L} -F	5/32	1/16	0.091	0.008	5°			○	
		1211 ^{R/L} -F				1/64				○	
	WBGT	151505 ^{R/L} -F	3/16	3/16	0.091	0.008	5°			○	
		15151 ^{R/L} -F				1/64				○	
	WBMT	12105 ^{R/L} -DP	5/32	1/16	0.091	0.008	5°		L	○	
		1211 ^{R/L} -DP				1/64				L	○
	WBMT	151505 ^{R/L} -DP	3/16	3/16	0.091	0.008	5°		L	○	
		15151 ^{R/L} -DP				1/64				L	○
	WPMT	2151HQ	1/4	3/16	0.110	1/64	11°		●	○	
		321HQ				1/64			●	○	
	WPMT	322HQ	3/8	1/8	0.173	1/32	11°		●	○	

THE NEW VALUE FRONTIER



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