



# CA025P

CVD Coated Carbide for Steel



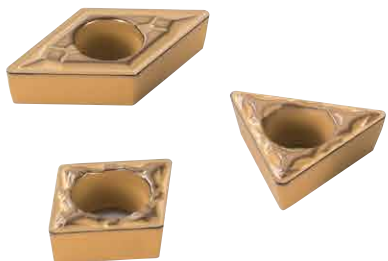
Next Generation CVD Coating for Longer Tool Life

Improved Wear Resistance

Excellent Fracture Resistance

Excellent Adhesion Resistance and Chipping Resistance

**NEW** Positive Inserts Added to the Lineup



# CA025P

## CVD Coated Carbide Grade for Steel

Next Generation CVD Coating for Longer Tool Life

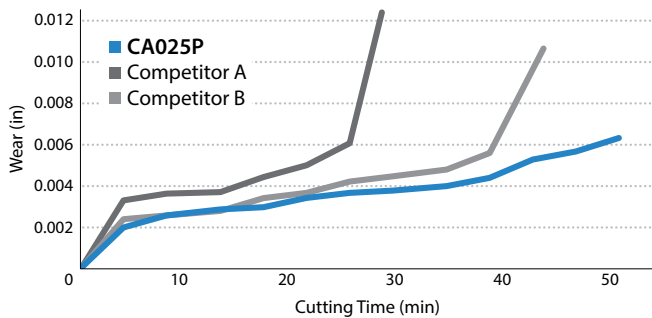


### 1 Improved Wear Resistance with New CVD Grade for Steel

Thickened Alumina with Good Thermal Resistance (Twice as thick as conventional coating)

Improved Plastic Deformation Resistance by Increased Temperature Strength

Wear Resistance Comparison (Internal Evaluation)



CA025P (50.4 min)    Competitor A (29.4 min)    Competitor B (42 min)

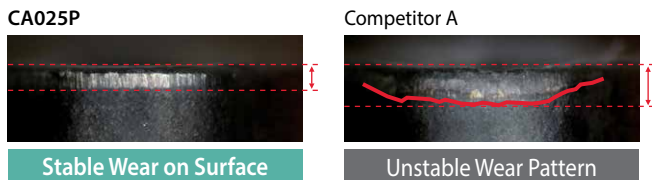


Good Surface Condition

Cutting Conditions : Vc = 980 sfm, D.O.C. = 0.059", f = 0.012 ipr, Wet Workpiece : 4137

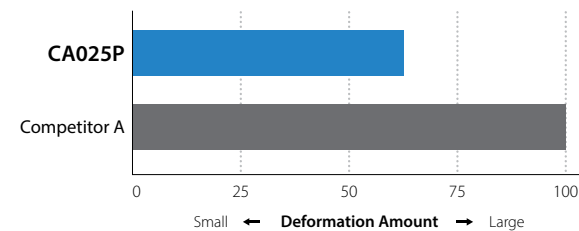
### CA025P Maintains Smooth and Flat Surface with Stable Tool Life

Wear Comparison (Internal Evaluation) Cutting Time 25.2 min



Cutting Conditions : Vc = 980 sfm, D.O.C. = 0.059", f = 0.012 ipr, Wet Workpiece : 4137

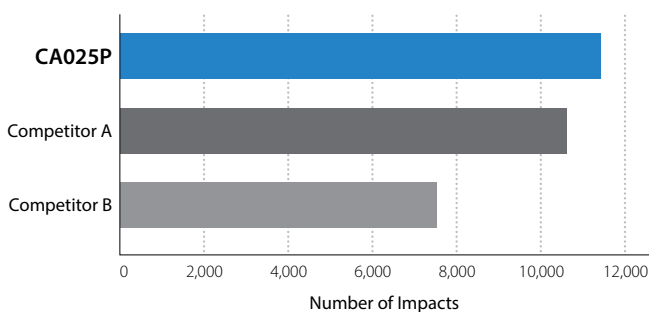
Plastic Deformation Comparison under High Temperature (Internal Evaluation) Comparison with Competitor A



### 2 Excellent Fracture Resistance

New Substrate with High Stability Provides Excellent Chipping Resistance

Fracture Resistance Comparison (Internal Evaluation) Average of 5 times



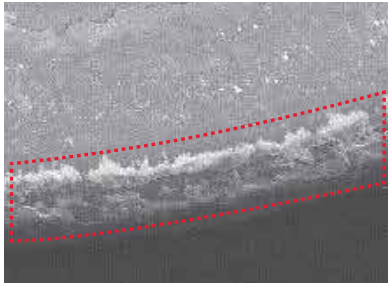
Cutting Conditions : Vc = 820 sfm, D.O.C. = 0.059", f = 0.014 ipr, Wet Workpiece : 4140 (with 4 Slots)

# 3 Excellent Adhesion Resistance and Chipping Resistance

## Specialized Post-coating Process Prevents Adhesion

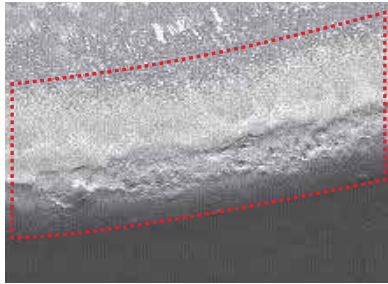
Adhesion on the Edge after Cutting (Internal Evaluation)

Specialized Post-coating



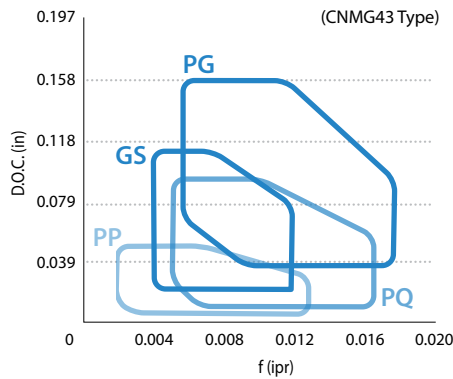
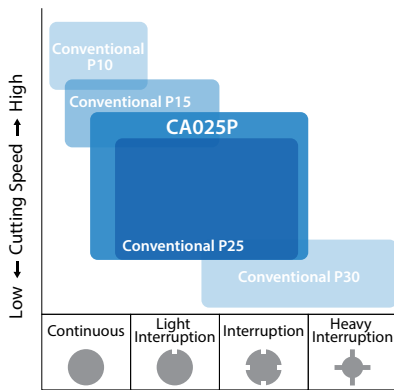
Less Adhesion

Without Specialized Post-coating



Wide Area of Adhesion  
\* Adhesion area appears white

Cutting Conditions : Vc = 890 sfm, D.O.C. = 0.039", f = 0.004 ipr, Wet Workpiece : 4140 (with 4 Slots)



**PG Chipbreaker (Medium-Roughing)** **1st Recommendation**  
Interruption (Medium-Roughing)  
Stable Machining and Good Chip Control in a Wide Range of Applications

**GS Chipbreaker (Medium-Roughing)** **1st Recommendation**  
Continuous (Medium-Roughing)  
Hybrid Land Enables Stable Machining During Light Interruption

**PQ Chipbreaker (Finishing-Medium)**  
Reduces Chip Clogging and Resistance at High Feed Rates

**PP Chipbreaker (Finishing)**  
Improves Chip Clogging and Chip Crunching at High Feed Rates with Small D.O.C.

## Recommended Cutting Conditions

Inserts		Vc (sfm)		
		Low Carbon Steel Low Carbon Alloy Steel 150 HB or Below	Medium Carbon Steel Medium Carbon Alloy Steel 250 HB or Below	High Carbon Alloy Steel 300 HB or Below
CA025P	Negative	490 ~ <b>790</b> ~ 1050		490 ~ <b>720</b> ~ 920
	Positive	390 ~ <b>620</b> ~ 850		360 ~ <b>560</b> ~ 760

## Case Studies

### Cold Forging Die H13

Vc = 755 sfm  
 D.O.C. = 0.079"~  
 f = 0.009 ipr  
 Wet  
 CNMG432PG  
 CA025P



Tool Life

**CA025P**  
 PG Chipbreaker

**25 pcs/edge**

**1.6x**  
 ↑  
 Tool Life

Competitor B  
 (Molded Chipbreaker)

**15 pcs/edge**



CA025P



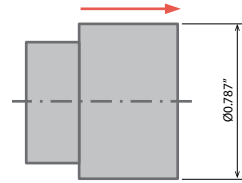
Competitor B

CA025P PG chipbreaker extended tool life by 1.6 times when compared to Competitor B. Good cutting edge provided continuous machining.

(User Evaluation)

### Pipe 4140

Vc = 525 sfm  
 D.O.C. = 0.047"  
 f = 0.008 ipr  
 Wet  
 DNMG432PG  
 CA025P



Tool Life

**CA025P**  
 PG Chipbreaker

**40 pcs/edge**

**2x**  
 ↑  
 Tool Life

Competitor C  
 (Molded Chipbreaker)

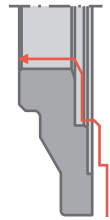
**20 pcs/edge**

CA025P PG chipbreaker maintained doubled the tool life of Competitor C. Less edge build-up and superior surface finish.

(User Evaluation)

### Flange 1045

Vc = 820 sfm  
 D.O.C. = 0.039"  
 f = 0.004 ~ 0.014 ipr  
 Wet  
 WNMG432PQ  
 CA025P



Tool Life

**CA025P**  
 PQ Chipbreaker

**150 pcs/edge**

**1.5x**  
 ↑  
 Tool Life

Competitor D  
 (Molded Chipbreaker)

**100 pcs/edge**



CA025P



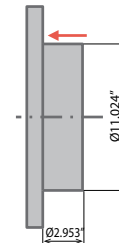
Competitor D

CA025P PQ chipbreaker extended tool life by 1.5 times that of Competitor D. Excellent cutting edge maintained continuous machining.

(User Evaluation)

### Flange 4140 (Normalized)

Vc = 655 sfm  
 D.O.C. = 0.012"  
 f = 0.006 ipr  
 Wet  
 DNMG431PP  
 CA025P



Tool Life

**CA025P**  
 PP Chipbreaker

**30 pcs/edge**

**Improved**  
 ↑  
 Cutting Edge

Competitor E  
 (Molded Chipbreaker)

**30 pcs/edge**



CA025P








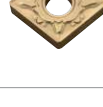

Competitor E

CA025P PP chipbreaker showed less wear on cutting edge after machining 30 pcs and maintained stable machining.

(User Evaluation)

# Negative Inserts








Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (re)	CA025P	
Wiper Edge  Finishing	CNMG 431WF	1/2	3/16	0.203	1/64	●	
	432WF				1/32	●	
Wiper Edge  Finishing	CNMG 431WP	1/2	3/16	0.203	1/64	●	
	432WP				1/32	●	
Wiper Edge  Finishing-Medium	CNMG 431WE	1/2	3/16	0.203	1/64	●	
	432WE				1/32	●	
	433WE				3/64	●	
Wiper Edge  Finishing-Medium	CNMG 431WQ	1/2	3/16	0.203	1/64	●	
	432WQ				1/32	●	
	433WQ				3/64	●	
Finishing 	CNMG 4305PP	1/2	3/16	0.203	0.008	●	
	431PP				1/64	●	
	432PP				1/32	●	
	433PP				3/64	●	
Finishing 	CNMG 4305GP	1/2	3/16	0.203	0.008	●	
	431GP				1/64	●	
	432GP				1/32	●	
Finishing-Medium 	CNMG 431PQ	1/2	3/16	0.203	1/64	●	
	432PQ				1/32	●	
	433PQ				3/64	●	
Finishing-Medium 	CNMG 331HQ	3/8	3/16	0.150	1/64	●	
	332HQ				1/32	●	
	CNMG 431HQ	1/2	3/16	0.203	1/64	●	
	432HQ				1/32	●	
Finishing-Medium / Up Facing 	CNMG 431CQ	1/2	3/16	0.203	1/64	●	
	432CQ				1/32	●	
	433CQ				3/64	●	
	CNMG 542CQ	5/8	1/4	0.250	1/32	●	
	543CQ				3/64	●	
Finishing-Medium / Up Facing 	CNMG 432CJ	1/2	3/16	0.203	1/32	●	
	433CJ				3/64	●	
	CNMG 543CJ	5/8	1/4	0.250	3/64	●	
	544CJ				1/16	●	
Medium-Roughing (Continuous) 	CNMG 331GS	3/8	3/16	0.150	1/64	●	
	332GS				1/32	●	
	CNMG 431GS	1/2	3/16	0.203	1/64	●	
	432GS				1/32	●	
	433GS				3/64	●	






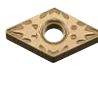

Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (re)	CA025P	
Medium-Roughing (Interrupted) 	CNMG 431PG	1/2	3/16	0.203	1/64	●	
	432PG				1/32	●	
	433PG				3/64	●	
	434PG				1/16	●	
Medium-Roughing 	CNMG 431PS	1/2	3/16	0.203	1/64	●	
	432PS				1/32	●	
	433PS				3/64	●	
	434PS				1/16	●	
	CNMG 543PS	5/8	1/4	0.250	3/64	●	
	544PS				1/16	●	
Medium-Roughing / High Feed 	CNMG 432PT	1/2	3/16	0.203	1/32	●	
	433PT				3/64	●	
	CNMG 542PT	5/8	1/4	0.250	1/32	●	
	543PT				3/64	●	
	544PT				1/16	●	
Medium-Roughing / High Feed 	CNMG 432GT	1/2	3/16	0.203	1/32	●	
	433GT				3/64	●	
Roughing 	CNMG 431	1/2	3/16	0.203	1/64	●	
	432				1/32	●	
	433				3/64	●	
	CNMG 542	5/8	1/4	0.250	1/32	●	
	543				3/64	●	
	CNMG 643				3/4	1/4	0.313
644	1/16	●					
Roughing 	CNMG 432PH	1/2	3/16	0.203	1/32	●	
	433PH				3/64	●	
	434PH				1/16	●	
	CNMG 542PH	5/8	1/4	0.250	1/32	●	
	543PH				3/64	●	
	544PH				1/16	●	
	CNMG 642PH	3/4	1/4	0.313	1/32	●	
	643PH				3/64	●	
	644PH				1/16	●	
	646PH				3/32	●	
Roughing / High Feed / Single Sided 	CNMM 432PX	1/2	3/16	0.203	1/32	●	
	433PX				3/64	●	
	434PX				1/16	●	
	CNMM 542PX	5/8	1/4	0.250	1/32	●	
	543PX				3/64	●	
	544PX				1/16	●	
	CNMM 642PX	3/4	1/4	0.313	1/32	●	
	643PX				3/64	●	
	644PX				1/16	●	
	646PX				3/32	●	

Inserts sold in 10 piece boxes

● : U.S. Stock

# Negative Inserts




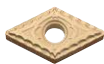








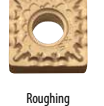
Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (rε)	CA025P	
Low Carbon Steel  Finishing	CNMG 431XP	1/2	3/16	0.203	1/64	●	
	432XP				1/32	●	
Low Carbon Steel  Medium	CNMG 431XQ	1/2	3/16	0.203	1/64	●	
	432XQ				1/32	●	
Low Carbon Steel  Roughing	CNMG 432XS	1/2	3/16	0.203	1/32	●	
Wiper Edge 	DNMX 431WF	1/2	3/16	0.203	1/64	●	
	432WF				1/32	●	
	433WF				3/64	●	
	DNMX 441WF	1/2	1/4	0.203	1/64	●	
	442WF				1/32	●	
	443WF				3/64	●	
Finishing 	DNMG 4305PP	1/2	3/16	0.203	0.008	●	
	431PP				1/64	●	
	432PP				1/32	●	
	433PP				3/64	●	
	DNMG 4405PP	1/2	1/4	0.203	0.008	●	
	441PP				1/64	●	
	442PP				1/32	●	
	443PP				3/64	●	
Finishing 	DNMG 331GP	3/8	3/16	0.150	1/64	●	
	332GP				1/32	●	
	DNMG 4305GP	1/2	3/16	0.203	0.008	●	
	431GP				1/64	●	
432GP	1/32	●					
Finishing-Medium 	DNMG 431PQ	1/2	3/16	0.203	1/64	●	
	432PQ				1/32	●	
	433PQ				3/64	●	
	DNMG 441PQ	1/2	1/4	0.203	1/64	●	
	442PQ				1/32	●	
	443PQ				3/64	●	
Finishing-Medium 	DNMG 3305HQ	3/8	3/16	0.150	0.008	●	
	331HQ				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	●	

Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (rε)	CA025P	
Finishing-Medium / Up-Facing 	DNMG 431CQ	1/2	3/16	0.203	1/64	●	
	432CQ				1/32	●	
	433CQ				3/64	●	
	DNMG 441CQ	1/2	1/4	0.203	1/64	●	
	442CQ				1/32	●	
	443CQ				3/64	●	
Finishing-Medium / Up-Facing 	DNMG 432CJ	1/2	3/16	0.203	1/32	●	
	433CJ				3/64	●	
	DNMG 442CJ	1/2	1/4	0.203	1/32	●	
	443CJ				3/64	●	
Medium-Roughing (Continuous) 	DNMG 331GS	3/8	3/16	0.150	1/64	●	
	332GS				1/32	●	
	DNMG 431GS	1/2	3/16	0.203	1/64	●	
	432GS				1/32	●	
	433GS				3/64	●	
	DNMG 441GS	1/2	1/4	0.203	1/64	●	
	442GS				1/32	●	
	Medium-Roughing (Interrupted) 	DNMG 431PG	1/2	3/16	0.203	1/64	●
432PG		1/32				●	
433PG		3/64				●	
434PG		1/16				●	
DNMG 441PG		1/2	1/4	0.203	1/64	●	
442PG					1/32	●	
443PG					3/64	●	
444PG					1/16	●	
Medium-Roughing 	DNMG 431PS	1/2	3/16	0.203	1/64	●	
	432PS				1/32	●	
	433PS				3/64	●	
	DNMG 441PS	1/2	1/4	0.203	1/64	●	
	442PS				1/32	●	
	443PS				3/64	●	
444PS	1/16	●					
Medium-Roughing / High Feed 	DNMG 432PT	1/2	3/16	0.203	1/32	●	
	433PT				3/64	●	
	DNMG 442PT	1/2	1/4	0.203	1/32	●	
	443PT				3/64	●	
Medium-Roughing / High Feed 	DNMG 432GT	1/2	3/16	0.203	1/32	●	
	433GT				3/64	●	
	DNMG 442GT	1/2	1/4	0.203	1/32	●	
	443GT				3/64	●	

Inserts sold in 10 piece boxes

● : U.S. Stock

# Negative Inserts

Shape	Part Number	Dimensions (in)				CVD Coated Carbide				
		I.C.	Thickness	Hole	Corner-R (re)	CA025P				
Roughing		DNMG 431	1/2	3/16	0.203	1/64	●			
		432				1/32	●			
		DNMG 442	1/2	1/4	0.203	1/32	●			
		443				3/64	●			
Roughing		DNMG 432PH	1/2	3/16	0.203	1/32	●			
		433PH				3/64	●			
		434PH				1/16	●			
		DNMG 442PH	1/2	1/4	0.203	1/32	●			
		443PH				3/64	●			
		444PH				1/16	●			
Roughing / High Feed / Single Sided		DNMM 432PX	1/2	3/16	0.203	1/32	●			
		433PX				3/64	●			
		434PX				1/16	●			
		DNMM 442PX	1/2	1/4	0.203	1/32	●			
		443PX				3/64	●			
		444PX				1/16	●			
Low Carbon Steel		DNMG 431XP	1/2	3/16	0.203	1/64	●			
		432XP				1/32	●			
Low Carbon Steel		DNMG 431XQ	1/2	3/16	0.203	1/64	●			
		432XQ				1/32	●			
Low Carbon Steel		DNMG 432XS	1/2	3/16	0.203	1/32	●			
Medium-Roughing		RNMG 32	3/8	1/8	0.150	-	●			
		RNMG 43	1/2	3/16	0.203	-	●			
		RNMG 54	5/8	1/4	0.250	-	●			
Finishing-Medium		SNMG 431PQ	1/2	3/16	0.203	1/64	●			
		432PQ				1/32	●			
		433PQ				3/64	●			
Finishing-Medium		SNMG 431HQ	1/2	3/16	0.203	1/64	●			
		432HQ				1/32	●			
		433HQ				3/64	●			
Medium-Roughing (Interrupted)		SNMG 432PG	1/2	3/16	0.203	1/32	●			
		433PG				3/64	●			
		434PG				1/16	●			
Medium-Roughing		SNMG 432PS	1/2	3/16	0.203	1/32	●			
		433PS				3/64	●			
		434PS				1/16	●			
Medium-Roughing / High Feed		SNMG 432PT	1/2	3/16	0.203	1/32	●			
		433PT				3/64	●			
Roughing		SNMG 321	3/8	1/8	0.150	1/64	●			
		322				1/32	●			
		SNMG 432	1/2	3/16	0.203	1/32	●			
		433				3/64	●			
Roughing		434	1/2	3/16	0.203	1/16	●			
		SNMG 432PH				1/2	3/16	0.203	1/32	●
		433PH							3/64	●
		434PH	1/16	●						
		SNMG 543PH	5/8	1/4	0.250	3/64	●			
		544PH				1/16	●			
		SNMG 643PH	3/4	1/4	0.313	3/64	●			
		644PH				1/16	●			
		Roughing / High Feed / Single Sided		SNMM 432PX	1/2	3/16	0.203	1/32	●	
				433PX				3/64	●	
434PX	1/16			●						
SNMM 543PX	5/8			1/4	0.250	3/64	●			
544PX						1/16	●			
SNMM 643PX	3/4			1/4	0.313	3/64	●			
644PX		1/16	●							
646PX	3/32	●								
Low Carbon Steel		SNMG 432XP	1/2	3/16	0.203	1/32	●			
Low Carbon Steel		SNMG 432XQ	1/2	3/16	0.203	1/32	●			
Low Carbon Steel		SNMG 432XS	1/2	3/16	0.203	1/32	●			
Wiper Edge		TNMX 331WF	3/8	3/16	0.150	1/64	●			
		332WF				1/32	●			
		333WF				3/64	●			
Finishing		TNMG 3305PP	3/8	3/16	0.150	0.008	●			
		331PP				1/64	●			
		332PP				1/32	●			
		333PP				3/64	●			

Inserts sold in 10 piece boxes

● : U.S. Stock

# Negative Inserts

Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (r <sub>e</sub> )	CA025P	
Finishing	TNMG 3305GP	3/8	3/16	0.150	0.008	●	
	331GP				1/64	●	
	332GP				1/32	●	
Finishing-Medium	TNMG 331PQ	3/8	3/16	0.150	1/64	●	
	332PQ				1/32	●	
	333PQ				3/64	●	
Finishing-Medium	TNMG 231HQ	1/4	3/16	0.089	1/64	●	
	232HQ				1/32	●	
	TNMG 331HQ	3/8	3/16	0.150	1/64	●	
	332HQ				1/32	●	
	333HQ				3/64	●	
Finishing-Medium / Up Facing	TNMG 331CQ	3/8	3/16	0.150	1/64	●	
	332CQ				1/32	●	
	333CQ				3/64	●	
	TNMG 432CQ	1/2	3/16	0.203	1/32	●	
	433CQ				3/64	●	
Medium-Roughing (Continuous)	TNMG 231GS	1/4	3/16	0.089	1/64	●	
	232GS				1/32	●	
	TNMG 331GS	3/8	3/16	0.150	1/64	●	
332GS	1/32				●		
Medium-Roughing (Interrupted)	TNMG 331PG	3/8	3/16	0.150	1/64	●	
	332PG				1/32	●	
	333PG				3/64	●	
Medium-Roughing	TNMG 331PS	3/8	3/16	0.150	1/64	●	
	332PS				1/32	●	
	333PS				3/64	●	
	TNMG 431PS	1/2	3/16	0.203	1/64	●	
	432PS				1/32	●	
433PS	3/64				●		
434PS	1/16	●					
Medium-Roughing / High Feed	TNMG 332PT	3/8	3/16	0.150	1/32	●	
	333PT				3/64	●	
Medium-Roughing / High Feed	TNMG 332GT	3/8	3/16	0.150	1/32	●	
	333GT				3/64	●	
Roughing	TNMG 331	3/8	3/16	0.150	1/64	●	
	332				1/32	●	
	333				3/64	●	
	TNMG 432	1/2	3/16	0.203	1/32	●	
	433				3/64	●	










Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (r <sub>e</sub> )	CA025P	
Roughing	TNMG 332PH	3/8	3/16	0.150	1/32	●	
	333PH				3/64	●	
	TNMG 432PH	1/2	3/16	0.203	1/32	●	
	433PH				3/64	●	
434PH	1/16	●					
Medium-Roughing / High Feed	TNMM 332PX	3/8	3/16	0.150	1/32	●	
	333PX				3/64	●	
	TNMM 432PX	1/2	3/16	0.203	1/32	●	
	433PX				3/64	●	
434PX	1/16	●					
Low Carbon Steel	TNMG 331XP	3/8	3/16	0.150	1/64	●	
	332XP				1/32	●	
Low Carbon Steel	TNMG 331XQ	3/8	3/16	0.150	1/64	●	
	332XQ				1/32	●	
Low Carbon Steel	TNMG 332XS	3/8	3/16	0.150	1/32	●	
	Medium-Roughing	TNMG 331 <sup>R</sup> / <sub>L</sub> -ST	3/8	3/16	0.150	1/64	●
332 <sup>R</sup> / <sub>L</sub> -ST		1/32				●	
Finishing	VNMG 3305PP	3/8	3/16	0.150	0.008	●	
	331PP				1/64	●	
	332PP				1/32	●	
	333PP				3/64	●	
Finishing	VNMG 3305GP	3/8	3/16	0.150	0.008	●	
	331GP				1/64	●	
	332GP				1/32	●	
Finishing-Medium	VNMG 331 <sup>R</sup> / <sub>L</sub> -VC	3/8	3/16	0.150	1/64	●	
	332 <sup>R</sup> / <sub>L</sub> -VC				1/32	●	
	333 <sup>R</sup> / <sub>L</sub> -VC				3/64	●	
Finishing-Medium	VNMG 331VF	3/8	3/16	0.150	1/64	●	
	332VF				1/32	●	
	333VF				3/64	●	
Finishing-Medium	VNMG 331PQ	3/8	3/16	0.150	1/64	●	
	332PQ				1/32	●	
	333PQ				3/64	●	
Finishing-Medium	VNMG 331HQ	3/8	3/16	0.150	1/64	●	
	332HQ				1/32	●	
	333HQ				3/64	●	
Roughing	VNMG 331	3/8	3/16	0.150	1/64	●	
	332				1/32	●	











Inserts sold in 10 piece boxes

● : U.S. Stock



# Negative Inserts

Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (r <sub>e</sub> )	CA025P	
Wiper Edge  Finishing	WNMG 431WF	1/2	3/16	0.203	1/64	●	
	432WF				1/32	●	
Wiper Edge  Finishing	WNMG 431WP	1/2	3/16	0.203	1/64	●	
	432WP				1/32	●	
Wiper Edge  Finishing-Medium	WNMG 431WE	1/2	3/16	0.203	1/64	●	
	432WE				1/32	●	
	433WE				3/64	●	
Wiper Edge  Finishing-Medium	WNMG 431WQ	1/2	3/16	0.203	1/64	●	
	432WQ				1/32	●	
	433WQ				3/64	●	
Finishing 	WNMG 4305PP	1/2	3/16	0.203	0.008	●	
	431PP				1/64	●	
	432PP				1/32	●	
	433PP				3/64	●	
Finishing-Medium 	WNMG 431PQ	1/2	3/16	0.203	1/64	●	
	432PQ				1/32	●	
	433PQ				3/64	●	
Finishing-Medium 	WNMG 3251HQ	3/8	5/32	0.150	1/64	●	
	3252HQ				1/32	●	
	WNMG 331HQ	3/8	3/16	0.150	1/64	●	
	332HQ				1/32	●	
	WNMG 431HQ	1/2	3/16	0.203	1/64	●	
	432HQ				1/32	●	
433HQ	3/64				●		
Finishing-Medium / Up Facing 	WNMG 431CQ	1/2	3/16	0.203	1/64	●	
	432CQ				1/32	●	
	433CQ				3/64	●	
Finishing-Medium / Up Facing 	WNMG 432CJ	1/2	3/16	0.203	1/32	●	
	433CJ				3/64	●	












Shape	Part Number	Dimensions (in)				CVD Coated Carbide	
		I.C.	Thickness	Hole	Corner-R (r <sub>e</sub> )	CA025P	
Medium-Roughing (Continuous) 	WNMG 331GS	3/8	3/16	0.150	1/64	●	
	332GS				1/32	●	
	WNMG 431GS	1/2	3/16	0.203	1/64	●	
	432GS				1/32	●	
433GS	3/64	●					
Medium-Roughing (Intermittent) 	WNMG 431PG	1/2	3/16	0.203	1/64	●	
	432PG				1/32	●	
	433PG				3/64	●	
	434PG				1/16	●	
Medium-Roughing 	WNMG 431PS	1/2	3/16	0.203	1/64	●	
	432PS				1/32	●	
	433PS				3/64	●	
	434PS				1/16	●	
Medium-Roughing / High Feed 	WNMG 432PT	1/2	3/16	0.203	1/32	●	
	433PT				3/64	●	
Medium-Roughing / High Feed 	WNMG 432GT	1/2	3/16	0.203	1/32	●	
	433GT				3/64	●	
Roughing 	WNMG 431	1/2	3/16	0.203	1/64	●	
	432				1/32	●	
	433				3/64	●	
Roughing 	WNMG 432PH	1/2	3/16	0.203	1/32	●	
	433PH				3/64	●	
Low Carbon Steel  Finishing	WNMG 431XP	1/2	3/16	0.203	1/64	●	
	432XP				1/32	●	
Low Carbon Steel  Medium	WNMG 431XQ	1/2	3/16	0.203	1/64	●	
	432XQ				1/32	●	
Low Carbon Steel  Roughing	WNMG 432XS	1/2	3/16	0.203	1/32	●	



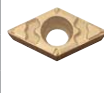








Inserts sold in 10 piece boxes

● : U.S. Stock



# Positive Inserts

Shape	Part Number	Dimensions (in)				Relief Angle	CVD Coated Carbide CA025P
		I.C.	Thickness	Hole	Corner-R (r <sub>e</sub> )		
Wiper Edge  Finishing	CCMT 21505WP	1/4	3/32	0.110	0.008	7°	●
	2151WP				1/64		●
	2152WP				1/32		●
	CCMT 32505WP	3/8	5/32	0.173	0.008	7°	●
	3251WP				1/64		●
	3252WP				1/32		●
Finishing 	CCMT 21505PP	1/4	3/32	0.110	0.008	7°	●
	2151PP				1/64		●
	CCMT 32505PP	3/8	5/32	0.173	0.008	7°	●
	3251PP				1/64		●
	3252PP				1/32		●
Finishing-Medium 	CCMT 21505GK	1/4	3/32	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		●
	433GK				3/64		●
Finishing-Medium 	CCMT 21505HQ	1/4	3/32	0.110	0.008	7°	●
	2151HQ				1/64		●
	CCMT 32505HQ	3/8	5/32	0.173	0.008	7°	●
	3251HQ				1/64		●
	3252HQ				1/32		●
Medium 	CCMT 3252	3/8	5/32	0.173	1/32	7°	●
Finishing 	CPMT 251505PP	5/16	3/32	0.130	0.008	11°	●
	25151PP				1/64		●
	CPMT 3205PP	3/8	1/8	0.173	0.008	11°	●
	321PP				1/64		●
	322PP				1/32		●
Finishing 	CPMT 25151GP	5/16	3/32	0.130	1/64	11°	●
	CPMT 321GP	3/8	1/8	0.173	1/64	11°	●
	322GP				1/32		●
Finishing-Medium 	CPMH 25151HQ	5/16	3/32	0.138	1/64	11°	●
	25152HQ				1/32		●
	CPMH 321HQ	3/8	1/8	0.177	1/64	11°	●
	322HQ				1/32		●
Medium 	CPMH 25151	5/16	3/32	0.138	1/64	11°	●
	25152				1/32		●
	CPMH 321	3/8	1/8	0.177	1/64	11°	●
	322				1/32		●
Low Carbon Steel  Finishing	CPMT 25151XP	5/16	3/32	0.130	1/64	11°	●
	CPMT 321XP	3/8	1/8	0.173	1/64	11°	●
	322XP				1/32		●
Low Carbon Steel  Finishing-Medium	CPMT 321XQ	3/8	1/8	0.173	1/64	11°	●
	322XQ				1/32		●

Shape	Part Number	Dimensions (in)				Relief Angle	CVD Coated Carbide CA025P
		I.C.	Thickness	Hole	Corner-R (r <sub>e</sub> )		
Wiper Edge  Finishing	DCMX 21505WP	1/4	3/32	0.110	0.008	7°	●
	2151WP				1/64		●
	2152WP				1/32		●
	DCMX 32505WP	3/8	5/32	0.173	0.008	7°	●
	3251WP				1/64		●
	3252WP				1/32		●
Finishing 	DCMT 21505PP	1/4	3/32	0.110	0.008	7°	●
	2151PP				1/64		●
	DCMT 32505PP	3/8	5/32	0.173	0.008	7°	●
	3251PP				1/64		●
	3252PP				1/32		●
Finishing 	DCMT 21505GP	1/4	3/32	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	3/32	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		●
3252GK	1/32	●					
Finishing-Medium 	DCMT 21505HQ	1/4	3/32	0.110	0.008	7°	●
	2151HQ				1/64		●
	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	3/32	0.110	1/64	7°	●
	DCMT 32505XP	3/8	5/32	0.173	0.008	7°	●
	3251XP				1/64		●
	3252XP				1/32		●
Low Carbon Steel  Finishing-Medium	DCMT 3251XQ	3/8	5/32	0.173	1/64	7°	●
	3252XQ				1/32		●
Medium 	RCMX 1003M0	0.394	1/8	0.142	-	7°	●
	RCMX 1204M0	0.472	3/16	0.165	-	7°	●
Finishing-Medium 	SCMT 3251HQ	3/8	5/32	0.173	1/64	7°	●
	3252HQ				1/32		●
Medium 	SPMR 321	3/8	1/8	-	1/64	11°	●
	322				1/32		●
	SPMR 421	1/2	1/8	-	1/64	11°	●
422				1/32		●	
Finishing 	TBMT 12105DP	5/32	1/16	0.091	0.008	5°	●
	1211DP				1/64		●

Inserts sold in 10 piece boxes

● : U.S. Stock

Shape	Part Number	Dimensions (in)				Relief Angle	CVD Coated Carbide CA025P
		I.C.	Thickness	Hole	Corner-R (re)		
Wiper Edge Finishing	TCMX 18151WP	7/32	3/32	0.098	1/64	7°	●
	TCMX 2151WP	1/4	3/32	0.110	1/64	7°	●
Finishing-Medium	TCMT 2151HQ	1/4	3/32	0.110	1/64	7°	●
	2152HQ				1/32		●
Wiper Edge Finishing	TPMX 181505WP	7/32	3/32	0.110	0.008	11°	●
	18151WP				1/64		●
	18152WP				1/32		●
	TPMX 2205WP	1/4	1/8	0.130	0.008	11°	●
	221WP				1/64		●
	222WP				1/32		●
Finishing	TPMT 181505PP	7/32	3/32	0.110	0.008	11°	●
	18151PP				1/64		●
	TPMT 2205PP	1/4	1/8	0.130	0.008	11°	●
	221PP				1/64		●
Finishing	TPMT 222PP	3/8	1/8	0.173	1/64	11°	●
	TPMT 18151GP				1/32		●
	TPMT 221GP				1/64		●
	222GP				1/32		●
Finishing-Medium	TPMT 321GP	3/8	1/8	0.173	1/64	11°	●
	TPMT 181505HQ	7/32	3/32	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		●	
Low Carbon Steel Finishing	TPMT 18151XP	7/32	3/32	0.110	1/64	11°	●
	TPMT 221XP	1/4	1/8	0.130	1/64	11°	●
	222XP				1/32		●
	TPMT 321XP	3/8	1/8	0.173	1/64	11°	●
322XP	1/32				●		
Low Carbon Steel Finishing-Medium	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				●		
Finishing	TPMR 321GP	3/8	1/8	-	1/64	11°	●
Finishing-Medium	TPMR 221HQ	1/4	1/8	-	1/64	11°	●
	222HQ				1/32		●
	TPMR 321HQ	3/8	1/8	-	1/64	11°	●
	322HQ				1/32		●
Medium	TPMR 221	1/4	1/8	-	1/64	11°	●
	222				1/32		●
	TPMR 321	3/8	1/8	-	1/64	11°	●
	322				1/32		●

Shape	Part Number	Dimensions (in)				Relief Angle	CVD Coated Carbide CA025P
		I.C.	Thickness	Hole	Corner-R (re)		
Finishing	VBMT 2205PP	1/4	1/8	0.110	0.008	5°	●
	221PP				1/64		●
	222PP				1/32		●
	VBMT 331PP	3/8	3/16	0.173	1/64	5°	●
	332PP				1/32		●
333PP	3/64	●					
Finishing	VBMT 221GP	1/4	1/8	0.110	1/64	5°	●
	VBMT 331GP	3/8	3/16	0.173	1/64	5°	●
	332GP				1/32		●
Finishing	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	●					
333VF	3/64	●					
Finishing-Medium	VBMT 221HQ	1/4	1/8	0.110	1/64	5°	●
	222HQ				1/32		●
	VBMT 331HQ	3/8	3/16	0.173	1/64	5°	●
	332HQ				1/32		●
333HQ	3/64	●					
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		●
Finishing	WBMT 12105L-DP	5/32	1/16	0.091	0.008	5°	●
	1211L-DP				1/64		●
	WBMT 151505L-DP	3/16	3/32	0.091	0.008	5°	●
15151L-DP	1/64				●		
Finishing	WPMT 2151GP	1/4	3/32	0.110	1/64	11°	●
	WPMT 321GP	3/8	1/8	0.173	1/64	11°	●
Finishing-Medium	WPMT 21505HQ	1/4	3/32	0.110	0.008	11°	●
	2151HQ				1/64		●
	WPMT 321HQ	3/8	1/8	0.173	1/64	11°	●
322HQ	1/32				●		

Inserts sold in 10 piece boxes

● : U.S. Stock



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