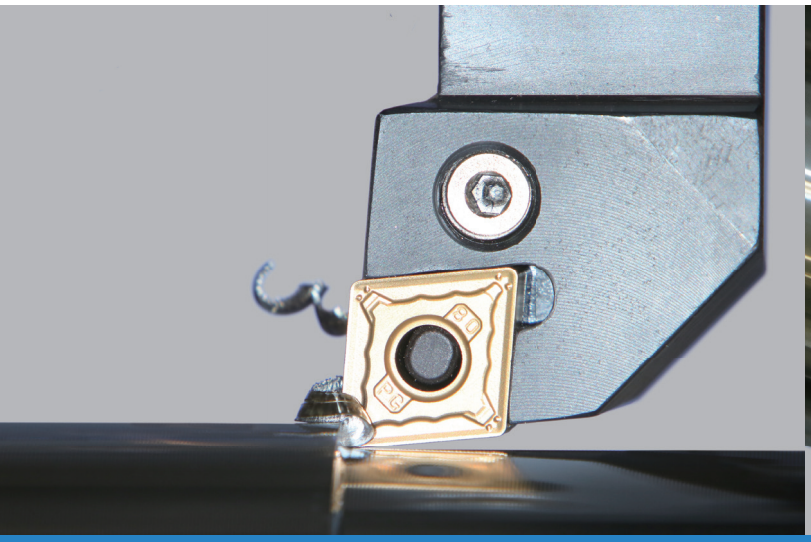
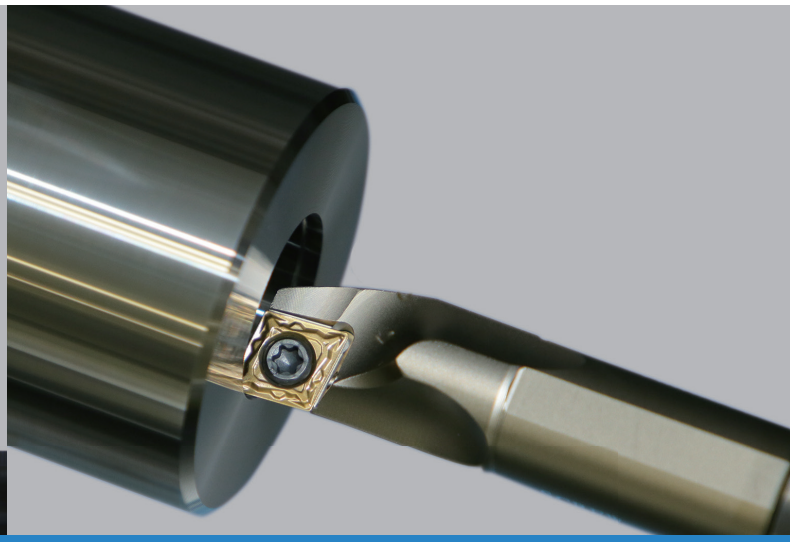
CVD Coated Carbide Grade for Steel

CA5 series





Long Tool Life and Stable Machining of Steel

New Coated Carbide Grade CA5 series for longer tool life and stable machining

Various Chipbreakers Available for Steel Machining

NEW WF Chipbreaker (Finishing)

WE Chipbreaker (Finishing - Medium)

New Wiper Inserts Added to the Lineup

CVD Coated Carbide Grade for Steel

CA5 series

New Coated Carbide Grade CA5 series for longer tool life and stable machining
Various Chipbreakers Available for Steel Machining

1 New Coated Carbide Grade for Longer Tool Life and Stable Machining

Longer tool life

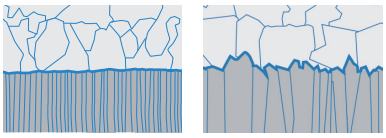
High-Performance α-Al_2O_3 Layer
Excellent Wear and Fracture Resistance

Prevents Layer Peeling

Strong Intra-coating Adhesion
Higher adhesion between each layer with improved crystal structure

Control chipping

Micro TiCN Layer
Higher Layer Strength and Fracture Resistance

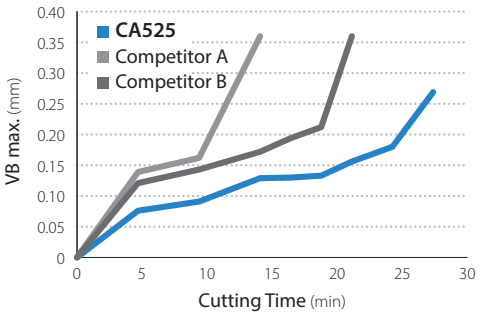


CRIOS Technology is Kyocera's original CVD Coating Technology

1st Recommendation General Use **CA525**

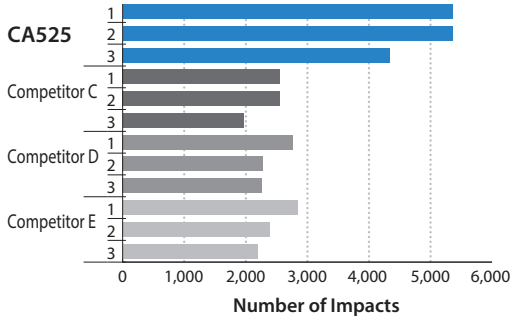
Special substrate and tough coating layer provides high wear and fracture resistance

Wear Resistance Comparison
(In-house Evaluation)

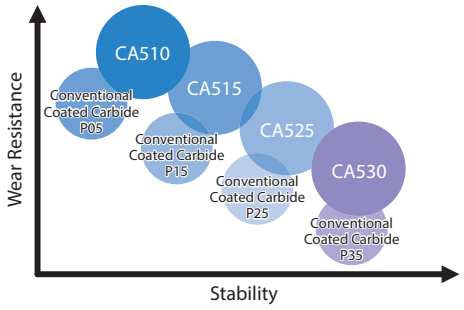


Cutting Conditions: Vc = 300 m/min, ap = 2.0 mm, f = 0.3 mm/rev, Wet
Workpiece: SCM435

Fracture Resistance Comparison
(In-house Evaluation)



Cutting Conditions: Vc = 300 m/min, ap = 1.5 mm, f = 0.3 mm/rev, Wet
Workpiece: SCM440 (with 4 Slots)



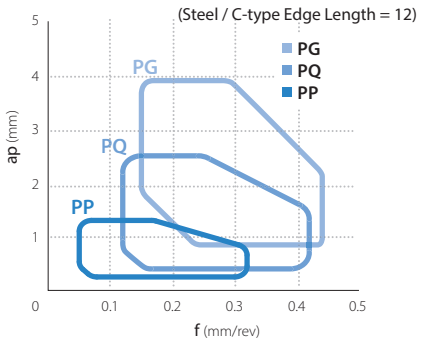
CA510 High speed and high efficiency steel machining
Wear Resistance Oriented

CA515 Continuous to light interrupted steel machining

CA530 General to heavy interrupted machining
Stability Oriented

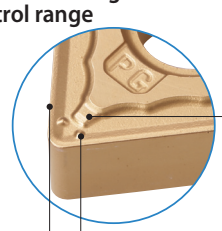
2 Various Chipbreakers Available for Steel Machining

Negative type



PG Chipbreaker (Medium - Roughing)

Provides stable machining with wide chip control range



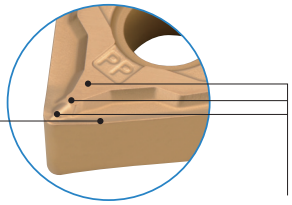
Step Wall
Prevents chip compacting at high feed rate

Hybrid Land
Good balance of sharpness and strength due to double structure of flat and positive land design

Twin Dots
Improve chip control at low feed rate
Control crater wear

PP Chipbreaker (Finishing)

For a wide range of feed rates in steel finishing

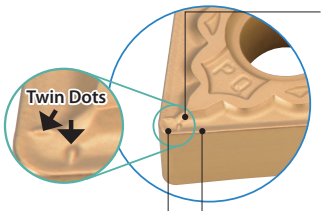


Smooth Taper Cutting Edge
Reduces the Cutting Force

3-step Smart Dot Structure
The 3 different dots provide smooth chip evacuation in a wide range of feed rate

PQ Chipbreaker (Finishing - Medium)

Stable chip control in a wide range of applications

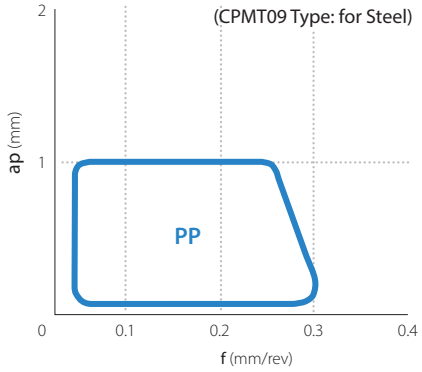


2-step Smart Wall
(2-step rising smooth surface)
Excellent chip control in a wide range of applications, preventing the dots from being damaged at high feed cuttings

Continuously Variable Land
Specially designed positive land has well-balanced combination of sharpness and toughness

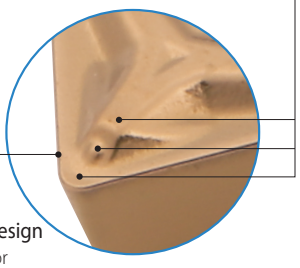
Flat Zone
(Braking Area)

Positive type



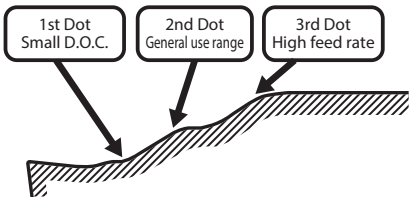
PP Chipbreaker (Finishing)

Stable chip control when finishing steel



Composite-Dot Chipbreaker
Multi-dot design with different functions
Controls chip's curling condition and flow direction that varies depending on the cutting conditions and work materials

Stable chip control regardless of feed rate and work materials



High-Stability Cutting Edge Design
Suitable shape for controlling the edge stress and heat generation

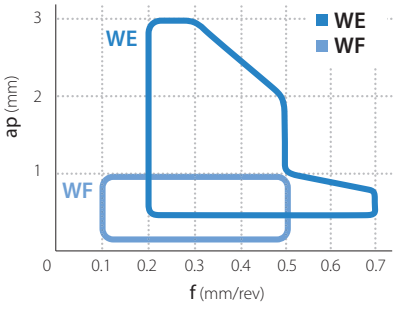
Stable performance with superior edge strength

3 New Wiper Inserts Added to the Lineup (Negative)

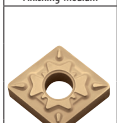
High Productivity with Newly Designed Wiper Edge Geometry

WE Chipbreaker (Finishing - Medium)
Stable Chip Control in a Wide Range of Feed Rates

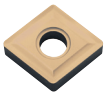
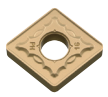
WF Chipbreaker (Finishing)
Good Surface Finish due to Stable Chip Control in Steel Finishing



Stock Items (Negative)

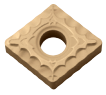
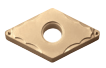
Shape	Description		Dimensions (mm)				CVD Coated Carbide			
			I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Finishing with Wiper Edge	CNMG	120404WF	12.70	4.76	5.16	0.4	●	●	●	●
		120408WF				0.8	●	●	●	●
 Finishing with Wiper Edge	CNMG	120404WP	12.70	4.76	5.16	0.4	●	●	●	●
		120408WP				0.8	●	●	●	●
 Finishing-Medium with Wiper Edge	CNMG	120404WE	12.70	4.76	5.16	0.4	●	●	●	●
		120408WE				0.8	●	●	●	●
		120412WE				1.2	●	●	●	●
 Finishing-Medium with Wiper Edge	CNMG	120404WQ	12.70	4.76	5.16	0.4	●	●	●	●
		120408WQ				0.8	●	●	●	●
		120412WQ				1.2	●	●	●	●
 Finishing	CNMG	120402PP	12.70	4.76	5.16	0.2	●	●	●	●
		120404PP				0.4	●	●	●	●
		120408PP				0.8	●	●	●	●
		120412PP				1.2	●	●	●	●
 Finishing	CNMG	120402GP	12.70	4.76	5.16	0.2	●	●	●	●
		120404GP				0.4	●	●	●	●
		120408GP				0.8	●	●	●	●
 Finishing-Medium	CNMG	120404PQ	12.70	4.76	5.16	0.4	●	●	●	●
		120408PQ				0.8	●	●	●	●
		120412PQ				1.2	●	●	●	●
 Finishing-Medium	CNMG	090404HQ	9.525	4.76	3.81	0.4	●	●	●	●
		090408HQ				0.8	●	●	●	●
	CNMG	120404HQ	12.70	4.76	5.16	0.4	●	●	●	●
		120408HQ				0.8	●	●	●	●
		120412HQ				1.2	●	●	●	●
 Finishing-Medium / Up Facing	CNMG	120404CQ	12.70	4.76	5.16	0.4	●	●	●	●
		120408CQ				0.8	●	●	●	●
		120412CQ				1.2	●	●	●	●
	CNMG	160608CQ	15.875	6.35	6.35	0.8	●	●	●	●
		160612CQ				1.2	●	●	●	●
 Finishing-Medium / Up Facing	CNMG	120408CJ	12.70	4.76	5.16	0.8	●	●	●	●
		120412CJ				1.2	●	●	●	●
	CNMG	160612CJ	15.875	6.35	6.35	1.2	●	●	●	●
		160616CJ				1.6	●	●	●	●
 Medium-Roughing	CNMG	090404GS	9.525	4.76	3.81	0.4	●	●	●	●
		090408GS				0.8	●	●	●	●
	CNMG	120404GS	12.70	4.76	5.16	0.4	●	●	●	●
		120408GS				0.8	●	●	●	●
		120412GS				1.2	●	●	●	●

● : Standard Stock

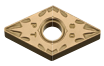
Shape	Description		Dimensions (mm)				CVD Coated Carbide			
			I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Medium-Roughing	CNMG	120404PG	12.70	4.76	5.16	0.4	●	●	●	●
		120408PG				0.8	●	●	●	●
		120412PG				1.2	●	●	●	●
		120416PG				1.6	●	●	●	●
 Medium-Roughing	CNMG	120404PS	12.70	4.76	5.16	0.4	●	●	●	●
		120408PS				0.8	●	●	●	●
		120412PS				1.2	●	●	●	●
		120416PS				1.6	●	●	●	●
	CNMG	160612PS	15.875	6.35	6.35	1.2	●	●	●	●
		160616PS				1.6	●	●	●	●
 Medium-Roughing / High Feed	CNMG	120408PT	12.70	4.76	5.16	0.8	●	●	●	●
		120412PT				1.2	●	●	●	●
	CNMG	160608PT	15.875	6.35	6.35	0.8	●	●	●	●
		160612PT				1.2	●	●	●	●
		160616PT				1.6	●	●	●	●
 Medium-Roughing / High Feed	CNMG	120408GT	12.70	4.76	5.16	0.8	●	●	●	●
		120412GT				1.2	●	●	●	●
 Roughing	CNMG	120404	12.70	4.76	5.16	0.4	●	●	●	●
		120408				0.8	●	●	●	●
		120412				1.2	●	●	●	●
	CNMG	160608	15.875	6.35	6.35	0.8			●	●
		160612				1.2			●	●
	CNMG	190612	19.05	6.35	7.94	1.2	●	●	●	●
		190616				1.6	●	●	●	●
 Roughing	CNMG	120408PH	12.70	4.76	5.16	0.8	●	●	●	●
		120412PH				1.2	●	●	●	●
		120416PH				1.6	●	●	●	●
	CNMG	160608PH	15.875	6.35	6.35	0.8	●	●	●	●
		160612PH				1.2	●	●	●	●
		160616PH				1.6	●	●	●	●
	CNMG	190608PH	19.05	6.35	7.94	0.8	●	●	●	●
		190612PH				1.2	●	●	●	●
		190616PH				1.6	●	●	●	●
		190624PH				2.4	●	●	●	●
 Single Sided Roughing / High Feed	CNMM	120408PX	12.70	4.76	5.16	0.8	●	●	●	●
		120412PX				1.2	●	●	●	●
		120416PX				1.6			●	●
	CNMM	160608PX	15.875	6.35	6.35	0.8	●	●	●	●
		160612PX				1.2	●	●	●	●
		160616PX				1.6	●	●	●	●
	CNMM	190608PX	19.05	6.35	7.94	0.8			●	●
		190612PX				1.2	●	●	●	●
		190616PX				1.6	●	●	●	●
		190624PX				2.4			●	●

● : Standard Stock

Stock Items (Negative)

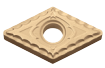
Shape	Description	Dimensions (mm)				CVD Coated Carbide			
		I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Low Carbon Steel / Finishing	CNMG 120404XP	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408XP				0.8	●	●	●	●
 Low Carbon Steel / Medium	CNMG 120404XQ	12.70	4.76	5.16	0.4	●	●	●	●
	CNMG 120408XQ				0.8	●	●	●	●
 Low Carbon Steel / Roughing	CNMG 120408XS	12.70	4.76	5.16	0.8	●	●	●	●
 Finishing with Wiper Edge	DNMX 150404WF	12.70	4.76	5.16	0.4	●	●	●	●
	150408WF				0.8	●	●	●	●
	150412WF				1.2	●	●	●	●
	DNMX 150604WF	12.70	6.35	5.16	0.4	●	●	●	●
	150608WF				0.8	●	●	●	●
	150612WF				1.2	●	●	●	●
 Finishing	DNMG 150402PP	12.70	4.76	5.16	0.2	●	●	●	●
	150404PP				0.4	●	●	●	●
	150408PP				0.8	●	●	●	●
	150412PP				1.2	●	●	●	●
	DNMG 150602PP	12.70	6.35	5.16	0.2	●	●	●	●
	150604PP				0.4	●	●	●	●
	150608PP				0.8	●	●	●	●
	150612PP				1.2	●	●	●	●
 Finishing	DNMG 110404GP	9.525	4.76	3.81	0.4	●	●	●	●
	110408GP				0.8	●	●	●	●
	DNMG 150402GP	12.70	4.76	5.16	0.2	●	●	●	●
	150404GP				0.4	●	●	●	●
	150408GP				0.8	●	●	●	●
 Finishing-Medium	DNMG 150404PQ	12.70	4.76	5.16	0.4	●	●	●	●
	150408PQ				0.8	●	●	●	●
	150412PQ				1.2	●	●	●	●
	DNMG 150604PQ	12.70	6.35	5.16	0.4	●	●	●	●
	150608PQ				0.8	●	●	●	●
	150612PQ				1.2	●	●	●	●
 Finishing-Medium	DNMG 110402HQ	9.525	4.76	3.81	0.2	●	●	●	●
	110404HQ				0.4	●	●	●	●
	DNMG 150404HQ	12.70	4.76	5.16	0.4	●	●	●	●
	150408HQ				0.8	●	●	●	●
	150412HQ				1.2	●	●	●	●
	DNMG 150604HQ	12.70	6.35	5.16	0.4	●	●	●	●
	150608HQ				0.8	●	●	●	●
	150612HQ				1.2	●	●	●	●

● : Standard Stock

Shape	Description	Dimensions (mm)				CVD Coated Carbide			
		I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Finishing-Medium / Up Facing	DNMG 150404CQ	12.70	4.76	5.16	0.4	●	●	●	●
	150408CQ				0.8	●	●	●	●
	150412CQ				1.2	●	●	●	●
	DNMG 150604CQ	12.70	6.35	5.16	0.4	●	●	●	●
	150608CQ				0.8	●	●	●	●
	150612CQ				1.2	●	●	●	●
 Finishing-Medium / Up Facing	DNMG 150408CJ	12.70	4.76	5.16	0.8	●	●	●	●
	150412CJ				1.2	●	●	●	●
	DNMG 150608CJ	12.70	6.35	5.16	0.8	●	●	●	●
	150612CJ				1.2	●	●	●	●
 Medium-Roughing	DNMG 110404GS	9.525	4.76	3.81	0.4	●	●	●	●
	110408GS				0.8	●	●	●	●
	DNMG 150404GS	12.70	4.76	5.16	0.4	●	●	●	●
	150408GS				0.8	●	●	●	●
	150412GS				1.2	●	●	●	●
	DNMG 150604GS	12.70	6.35	5.16	0.4			●	●
	150608GS				0.8			●	●
 Medium-Roughing	DNMG 150404PG	12.70	4.76	5.16	0.4	●	●	●	●
	150408PG				0.8	●	●	●	●
	150412PG				1.2	●	●	●	●
	150416PG				1.6	●	●	●	●
	DNMG 150604PG	12.70	6.35	5.16	0.4	●	●	●	●
	150608PG				0.8	●	●	●	●
	150612PG				1.2	●	●	●	●
	150616PG				1.6	●	●	●	●
 Medium-Roughing	DNMG 150404PS	12.70	4.76	5.16	0.4	●	●	●	●
	150408PS				0.8	●	●	●	●
	150412PS				1.2	●	●	●	●
	DNMG 150604PS	12.70	6.35	5.16	0.4	●	●	●	●
	150608PS				0.8	●	●	●	●
	150612PS				1.2	●	●	●	●
	150616PS				1.6	●	●	●	●
 Medium-Roughing / High Feed	DNMG 150408PT	12.70	4.76	5.16	0.8	●	●	●	●
	150412PT				1.2	●	●	●	●
	DNMG 150608PT	12.70	6.35	5.16	0.8	●	●	●	●
	150612PT				1.2	●	●	●	●
 Medium-Roughing / High Feed	DNMG 150408GT	12.70	4.76	5.16	0.8	●	●	●	●
	150412GT				1.2	●	●	●	●
	DNMG 150608GT	12.70	6.35	5.16	0.8	●	●	●	●
	150612GT				1.2	●	●	●	●

● : Standard Stock

Stock Items (Negative)

Shape	Description		Dimensions (mm)				CVD Coated Carbide			
			I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Roughing	DNMG	150404	12.70	4.76	5.16	0.4	●	●	●	●
		150408				0.8	●	●	●	●
	DNMG	150608	12.70	6.35	5.16	0.8	●	●	●	●
		150612				1.2	●	●	●	●
 Roughing	DNMG	150408PH	12.70	4.76	5.16	0.8	●	●	●	●
		150412PH				1.2	●	●	●	●
		150416PH				1.6			●	●
	DNMG	150608PH	12.70	6.35	5.16	0.8	●	●	●	●
		150612PH				1.2	●	●	●	●
		150616PH				1.6	●	●	●	●
 Single Sided Roughing / High Feed	DNMM	150408PX	12.70	4.76	5.16	0.8			●	●
		150412PX				1.2			●	●
		150416PX				1.6			●	●
	DNMM	150608PX	12.70	6.35	5.16	0.8	●	●	●	●
		150612PX				1.2	●	●	●	●
		150616PX				1.6			●	●
 Low Carbon Steel / Finishing	DNMG	150404XP	12.70	4.76	5.16	0.4	●	●	●	●
		150408XP				0.8	●	●	●	●
 Low Carbon Steel / Medium	DNMG	150404XQ	12.70	4.76	5.16	0.4	●	●	●	●
		150408XQ				0.8	●	●	●	●
 Low Carbon Steel / Roughing	DNMG	150408XS	12.70	4.76	5.16	0.8	●	●	●	●
 Medium-Roughing	RNMG	090300	9.525	3.18	3.81	—	●	●	●	●
	RNMG	120400	12.70	4.76	5.16	—	●	●	●	●
	RNMG	150600	15.875	6.35	6.35	—			●	●
 Finishing-Medium	SNMG	120404PQ	12.70	4.76	5.16	0.4	●	●	●	●
		120408PQ				0.8	●	●	●	●
		120412PQ				1.2	●	●	●	●
 Finishing-Medium	SNMG	120404HQ	12.70	4.76	5.16	0.4	●	●	●	●
		120408HQ				0.8	●	●	●	●
		120412HQ				1.2	●	●	●	●
 Medium-Roughing	SNMG	120408PG	12.70	4.76	5.16	0.8	●	●	●	●
		120412PG				1.2	●	●	●	●
		120416PG				1.6	●	●	●	●

● : Standard Stock

Shape	Description		Dimensions (mm)				CVD Coated Carbide			
			I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Medium-Roughing	SNMG	120408PS	12.70	4.76	5.16	0.8	●	●	●	●
		120412PS				1.2	●	●	●	●
		120416PS				1.6	●	●	●	●
 Medium-Roughing / High Feed	SNMG	120408PT	12.70	4.76	5.16	0.8	●	●	●	●
		120412PT				1.2	●	●	●	●
 Roughing	SNMG	090304	9.525	3.18	3.81	0.4			●	●
		090308				0.8			●	●
	SNMG	120408	12.70	4.76	5.16	0.8	●	●	●	●
		120412				1.2	●	●	●	●
		120416				1.6			●	●
 Roughing	SNMG	120408PH	12.70	4.76	5.16	0.8	●	●	●	●
		120412PH				1.2	●	●	●	●
		120416PH				1.6	●	●	●	●
	SNMG	150612PH	15.875	6.35	6.35	1.2	●	●	●	●
		150616PH				1.6	●	●	●	●
	SNMG	190612PH	19.05	6.35	7.94	1.2			●	●
		190616PH				1.6			●	●
 Single Sided Roughing / High Feed	SNMM	120408PX	12.70	4.76	5.16	0.8	●	●	●	●
		120412PX				1.2	●	●	●	●
		120416PX				1.6			●	●
	SNMM	150612PX	15.875	6.35	6.35	1.2			●	●
		150616PX				1.6			●	●
	SNMM	190612PX	19.05	6.35	7.94	1.2	●	●	●	●
		190616PX				1.6	●	●	●	●
		190624PX				2.4			●	●
 Low Carbon Steel / Finishing	SNMG	120408XP	12.70	4.76	5.16	0.8	●	●	●	●
 Low Carbon Steel / Medium	SNMG	120408XQ	12.70	4.76	5.16	0.8	●	●	●	●
 Low Carbon Steel / Roughing	SNMG	120408XS	12.70	4.76	5.16	0.8	●	●	●	●
 Finishing with Wiper Edge	TNMX	160404WF	9.525	4.76	3.81	0.4	●	●	●	●
		160408WF				0.8	●	●	●	●
		160412WF				1.2	●	●	●	●
 Finishing	TNMG	160402PP	9.525	4.76	3.81	0.2	●	●	●	●
		160404PP				0.4	●	●	●	●
		160408PP				0.8	●	●	●	●
		160412PP				1.2	●	●	●	●

● : Standard Stock

Stock Items (Negative)

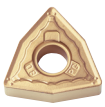
Shape	Description		Dimensions (mm)				CVD Coated Carbide			
			I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Finishing	TNMG	160402GP	9.525	4.76	3.81	0.2	●	●	●	●
		160404GP				0.4	●	●	●	●
		160408GP				0.8	●	●	●	●
 Finishing-Medium	TNMG	160404PQ	9.525	4.76	3.81	0.4	●	●	●	●
		160408PQ				0.8	●	●	●	●
		160412PQ				1.2	●	●	●	●
 Finishing-Medium	TNMG	110404HQ	6.35	4.76	2.26	0.4	●	●	●	●
		110408HQ				0.8	●	●	●	●
	TNMG	160404HQ	9.525	4.76	3.81	0.4	●	●	●	●
		160408HQ				0.8	●	●	●	●
		160412HQ				1.2	●	●	●	●
 Finishing-Medium / Up Facing	TNMG	160404CQ	9.525	4.76	3.81	0.4	●	●	●	●
		160408CQ				0.8	●	●	●	●
		160412CQ				1.2	●	●	●	●
	TNMG	220408CQ	12.70	4.76	5.16	0.8	●	●	●	●
		220412CQ				1.2	●	●	●	●
 Medium-Roughing	TNMG	110404GS	6.35	4.76	2.26	0.4			●	●
		110408GS				0.8			●	●
	TNMG	160404GS	9.525	4.76	3.81	0.4	●	●	●	●
		160408GS				0.8	●	●	●	●
 Medium-Roughing	TNMG	160404PG	9.525	4.76	3.81	0.4	●	●	●	●
		160408PG				0.8	●	●	●	●
		160412PG				1.2	●	●	●	●
 Medium-Roughing	TNMG	160404PS	9.525	4.76	3.81	0.4	●	●	●	●
		160408PS				0.8	●	●	●	●
		160412PS				1.2	●	●	●	●
	TNMG	220404PS	12.70	4.76	5.16	0.4	●	●	●	●
		220408PS				0.8	●	●	●	●
		220412PS				1.2	●	●	●	●
		220416PS				1.6	●	●	●	●
 Medium-Roughing / High Feed	TNMG	160408PT	9.525	4.76	3.81	0.8	●	●	●	●
		160412PT				1.2	●	●	●	●
 Medium-Roughing / High Feed	TNMG	160408GT	9.525	4.76	3.81	0.8	●	●	●	●
		160412GT				1.2	●	●	●	●
 Roughing	TNMG	160404	9.525	4.76	3.81	0.4	●	●	●	●
		160408				0.8	●	●	●	●
		160412				1.2	●	●	●	●
	TNMG	220408	12.70	4.76	5.16	0.8	●	●	●	●
		220412				1.2	●	●	●	●

● : Standard Stock

Shape Handed Insert shows Right-hand	Description		Dimensions (mm)				CVD Coated Carbide			
			I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Roughing	TNMG	160408PH	9.525	4.76	3.81	0.8	●	●	●	●
		160412PH				1.2	●	●	●	●
	TNMG	220408PH	12.70	4.76	5.16	0.8	●	●	●	●
		220412PH				1.2	●	●	●	●
		220416PH				1.6	●	●	●	●
 Single Sided Roughing / High Feed	TNMM	160408PX	9.525	4.76	3.81	0.8			●	●
		160412PX				1.2			●	●
	TNMM	220408PX	12.70	4.76	5.16	0.8			●	●
		220412PX				1.2			●	●
		220416PX				1.6			●	●
 Low Carbon Steel / Finishing	TNMG	160404XP	9.525	4.76	3.81	0.4	●	●	●	●
		160408XP				0.8	●	●	●	●
 Low Carbon Steel / Medium	TNMG	160404XQ	9.525	4.76	3.81	0.4	●	●	●	●
		160408XQ				0.8	●	●	●	●
 Low Carbon Steel / Roughing	TNMG	160408XS	9.525	4.76	3.81	0.8	●	●	●	●
 Medium-Roughing	TNMG	160404 R/L-ST	9.525	4.76	3.81	0.4	●	●	●	●
		160408 R/L-ST				0.8	●	●	●	●
 Finishing	VNMG	160402PP	9.525	4.76	3.81	0.2	●	●	●	●
		160404PP				0.4	●	●	●	●
		160408PP				0.8	●	●	●	●
		160412PP				1.2	●	●	●	●
 Finishing	VNMG	160402GP	9.525	4.76	3.81	0.2	●	●	●	●
		160404GP				0.4	●	●	●	●
		160408GP				0.8	●	●	●	●
 Finishing-Medium	VNMG	160404 R/L-VC	9.525	4.76	3.81	0.4	●	●	●	●
		160408 R/L-VC				0.8	●	●	●	●
		160412 R/L-VC				1.2	●	●	●	●
 Finishing-Medium	VNMG	160404VF	9.525	4.76	3.81	0.4	●	●	●	●
		160408VF				0.8	●	●	●	●
		160412VF				1.2	●	●	●	●
 Finishing-Medium	VNMG	160404PQ	9.525	4.76	3.81	0.4	●	●	●	●
		160408PQ				0.8	●	●	●	●
		160412PQ				1.2	●	●	●	●
 Finishing-Medium	VNMG	160404HQ	9.525	4.76	3.81	0.4	●	●	●	●
		160408HQ				0.8	●	●	●	●
		160412HQ				1.2	●	●	●	●
 Roughing	VNMG	160404	9.525	4.76	3.81	0.4	●	●	●	●
		160408				0.8	●	●	●	●

● : Standard Stock

Stock Items (Negative)

Shape	Description	Dimensions (mm)				CVD Coated Carbide			
		I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Finishing with Wiper Edge	WNMG 080404WF	12.70	4.76	5.16	0.4	●	●	●	●
	080408WF				0.8	●	●	●	●
 Finishing with Wiper Edge	WNMG 080404WP	12.70	4.76	5.16	0.4	●	●	●	●
	080408WP				0.8	●	●	●	●
 Finishing-Medium with Wiper Edge	WNMG 080404WE	12.70	4.76	5.16	0.4	●	●	●	●
	080408WE				0.8	●	●	●	●
	080412WE				1.2	●	●	●	●
 Finishing-Medium with Wiper Edge	WNMG 080404WQ	12.70	4.76	5.16	0.4	●	●	●	●
	080408WQ				0.8	●	●	●	●
	080412WQ				1.2	●	●	●	●
 Finishing	WNMG 080402PP	12.70	4.76	5.16	0.2	●	●	●	●
	080404PP				0.4	●	●	●	●
	080408PP				0.8	●	●	●	●
	080412PP				1.2	●	●	●	●
 Finishing-Medium	WNMG 080404PQ	12.70	4.76	5.16	0.4	●	●	●	●
	080408PQ				0.8	●	●	●	●
	080412PQ				1.2	●	●	●	●
 Finishing-Medium	WNMG 06T304HQ	9.525	3.97	3.81	0.4			●	●
	06T308HQ				0.8			●	●
	WNMG 060404HQ	9.525	4.76	3.81	0.4	●	●	●	●
	060408HQ				0.8	●	●	●	●
	WNMG 080404HQ	12.70	4.76	5.16	0.4	●	●	●	●
	080408HQ				0.8	●	●	●	●
	080412HQ				1.2	●	●	●	●
 Finishing-Medium / Up Facing	WNMG 080404CQ	12.70	4.76	5.16	0.4	●	●	●	●
	080408CQ				0.8	●	●	●	●
	080412CQ				1.2	●	●	●	●
 Finishing-Medium / Up Facing	WNMG 080408CJ	12.70	4.76	5.16	0.8	●	●	●	●
	080412CJ				1.2	●	●	●	●
 Medium-Roughing	WNMG 060404GS	9.525	4.76	3.81	0.4	●	●	●	●
	060408GS				0.8	●	●	●	●
	WNMG 080404GS	12.70	4.76	5.16	0.4	●	●	●	●
	080408GS				0.8	●	●	●	●
	080412GS				1.2	●	●	●	●
 Medium-Roughing	WNMG 080404PG	12.70	4.76	5.16	0.4	●	●	●	●
	080408PG				0.8	●	●	●	●
	080412PG				1.2	●	●	●	●
	080416PG				1.6	●	●	●	●

● : Standard Stock

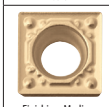
Shape	Description	Dimensions (mm)				CVD Coated Carbide			
		I.C.	Thickness	Hole	Corner-R (rε)	CA510	CA515	CA525	CA530
 Medium-Roughing	WNMG 080404PS	12.70	4.76	5.16	0.4	●	●	●	●
	080408PS				0.8	●	●	●	●
	080412PS				1.2	●	●	●	●
	080416PS				1.6	●	●	●	●
 Medium-Roughing / High Feed	WNMG 080408PT	12.70	4.76	5.16	0.8	●	●	●	●
	080412PT				1.2	●	●	●	●
 Medium-Roughing / High Feed	WNMG 080408GT	12.70	4.76	5.16	0.8	●	●	●	●
	080412GT				1.2	●	●	●	●
 Roughing	WNMG 080404	12.70	4.76	5.16	0.4	●	●	●	●
	080408				0.8	●	●	●	●
	080412				1.2	●	●	●	●
 Roughing	WNMG 080408PH	12.70	4.76	5.16	0.8	●	●	●	●
	080412PH				1.2	●	●	●	●
 Low Carbon Steel / Finishing	WNMG 080404XP	12.70	4.76	5.16	0.4	●	●	●	●
	080408XP				0.8	●	●	●	●
 Low Carbon Steel / Medium	WNMG 080404XQ	12.70	4.76	5.16	0.4	●	●	●	●
	080408XQ				0.8	●	●	●	●
 Low Carbon Steel / Roughing	WNMG 080408XS	12.70	4.76	5.16	0.8	●	●	●	●

● : Standard Stock

Stock Items (Positive)

Shape	Description		Dimensions (mm) I.C.	Thickness	Hole	Corner-R (rε)	Relief Angle	CVD Coated Carbide CA510	CA515	CA525	CA530
 Finishing with Wiper Edge	CCMT	060202WP	6.35	2.38	2.8	0.2	7°	●	●	●	●
		060204WP				0.4		●	●	●	●
		060208WP				0.8		●	●	●	●
	CCMT	09T302WP	9.525	3.97	4.4	0.2	7°	●	●	●	●
		09T304WP				0.4		●	●	●	●
		09T308WP				0.8		●	●	●	●
 Finishing	CCMT	060202PP	6.35	2.38	2.8	0.2	7°	●	●	●	●
		060202PP				0.4		●	●	●	●
	CCMT	09T302PP	9.525	3.97	4.4	0.2	7°	●	●	●	●
		09T304PP				0.4		●	●	●	●
		09T308PP				0.8		●	●	●	●
 Finishing-Medium	CCMT	060202GK	6.35	2.38	2.8	0.2	7°	●	●	●	●
		060204GK				0.4		●	●	●	●
	CCMT	09T302GK	9.525	3.97	4.4	0.2	7°	●	●	●	●
		09T304GK				0.4		●	●	●	●
	CCMT	120404GK	12.70	4.76	5.5	0.4	7°	●	●	●	●
		120408GK				0.8		●	●	●	●
		120412GK				1.2		●	●	●	●
 Finishing-Medium	CCMT	060202HQ	6.35	2.38	2.8	0.2	7°	●	●	●	●
		060204HQ				0.4		●	●	●	●
	CCMT	09T302HQ	9.525	3.97	4.4	0.2	7°	●	●	●	●
		09T304HQ				0.4		●	●	●	●
		09T308HQ				0.8		●	●	●	●
 Medium	CCMT	09T308	9.525	3.97	4.4	0.8	7°	●	●	●	●
 Finishing	CPMT	080202PP	7.94	2.38	3.3	0.2	11°	●	●	●	●
		080204PP				0.4		●	●	●	●
	CPMT	090302PP	9.525	3.18	4.4	0.2	11°	●	●	●	●
		090304PP				0.4		●	●	●	●
		090308PP				0.8		●	●	●	●
 Finishing	CPMT	080204GP	7.94	2.38	3.3	0.4	11°	●	●	●	●
	CPMT	090304GP	9.525	3.18	4.4	0.4	11°	●	●	●	●
		090308GP				0.8		●	●	●	●
 Finishing-Medium	CPMH	080204HQ	7.94	2.38	3.5	0.4	11°	●	●	●	●
		080208HQ				0.8		●	●	●	●
	CPMH	090304HQ	9.525	3.18	4.5	0.4	11°	●	●	●	●
		090308HQ				0.8		●	●	●	●
 Medium	CPMH	080204	7.94	2.38	3.5	0.4	11°	●	●	●	●
		080208				0.8		●	●	●	●
	CPMH	090304	9.525	3.18	4.5	0.4	11°	●	●	●	●
		090308				0.8		●	●	●	●
 Low Carbon Steel / Finishing	CPMT	080204XP	7.94	2.38	3.3	0.4	11°	●	●	●	●
	CPMT	090304XP	9.525	3.18	4.4	0.4	11°	●	●	●	●
		090308XP				0.8		●	●	●	●
 Low Carbon Steel / Finishing-Medium	CPMT	090304XQ	9.525	3.18	4.4	0.4	11°	●	●	●	●
		090308XQ				0.8		●	●	●	●

● : Standard Stock

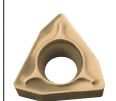
Shape	Description		Dimensions (mm) I.C.	Thickness	Hole	Corner-R (rε)	Relief Angle	CVD Coated Carbide CA510	CA515	CA525	CA530
 Finishing with Wiper Edge	DCMX	070202WP	6.35	2.38	2.8	0.2	7°	●	●	●	●
		070204WP				0.4		●	●	●	●
		070208WP				0.8		●	●	●	●
	DCMX	11T302WP	9.525	3.97	4.4	0.2	7°	●	●	●	●
		11T304WP				0.4		●	●	●	●
		11T308WP				0.8		●	●	●	●
 Finishing	DCMT	070202PP	6.35	2.38	2.8	0.2	7°	●	●	●	●
		070204PP				0.4		●	●	●	●
	DCMT	11T302PP	9.525	3.97	4.4	0.2	7°	●	●	●	●
		11T304PP				0.4		●	●	●	●
		11T308PP				0.8		●	●	●	●
 Finishing	DCMT	070202GP	6.35	2.38	2.8	0.2	7°	●	●	●	●
		070204GP				0.4		●	●	●	●
	DCMT	11T304GP	9.525	3.97	4.4	0.4	7°	●	●	●	●
		11T308GP				0.8		●	●	●	●
 Finishing-Medium	DCMT	070202GK	6.35	2.38	2.8	0.2	7°	●	●	●	●
		070204GK				0.4		●	●	●	●
		070208GK				0.8		●	●	●	●
	DCMT	11T302GK	9.525	3.97	4.4	0.2	7°	●	●	●	●
		11T304GK				0.4		●	●	●	●
		11T308GK				0.8		●	●	●	●
 Finishing-Medium	DCMT	070202HQ	6.35	2.38	2.8	0.2	7°	●	●	●	●
		070204HQ				0.4		●	●	●	●
		070208HQ				0.8		●	●	●	●
	DCMT	11T302HQ	9.525	3.97	4.4	0.2	7°	●	●	●	●
		11T304HQ				0.4		●	●	●	●
		11T308HQ				0.8		●	●	●	●
 Low Carbon Steel / Finishing	DCMT	070204XP	6.35	2.38	2.8	0.4	7°	●	●	●	●
	DCMT	11T302XP	9.525	3.97	4.4	0.2	7°	●	●	●	●
		11T304XP				0.4		●	●	●	●
		11T308XP				0.8		●	●	●	●
 Low Carbon Steel / Finishing-Medium	DCMT	11T304XQ	9.525	3.97	4.4	0.4	7°	●	●	●	●
		11T308XQ				0.8		●	●	●	●
 Medium	RCMX	1003M0	10.0	3.18	3.6	—	7°	●	●	●	●
	RCMX	1204M0	12.0	4.76	4.2	—		●	●	●	●
 Finishing-Medium	SCMT	09T304HQ	9.525	3.97	4.4	0.4	7°	●	●	●	●
		09T308HQ				0.8		●	●	●	●
 Medium	SPMR	090304	9.525	3.18	—	0.4	11°	●	●	●	●
		090308				0.8		●	●	●	●
	SPMR	120304	12.70	3.18	—	0.4	11°	●	●	●	●
		120308				0.8		●	●	●	●
 Finishing	TBMT	060102DP	3.97	1.59	2.3	0.2	5°	●	●	●	●
		060104DP				0.4		●	●	●	●

● : Standard Stock

Stock Items (Positive)

Shape	Description	Dimensions (mm) I.C.	Thickness	Hole	Corner-R (rε)	Relief Angle	CVD Coated Carbide CA510	CA515	CA525	CA530
 Finishing with Wiper Edge	TCMX 090204WP	5.56	2.38	2.5	0.4	7°	●	●	●	●
	TCMX 110204WP	6.35	2.38	2.8	0.4	7°	●	●	●	●
 Finishing-Medium	TCMT 110204HQ	6.35	2.38	2.8	0.4	7°	●	●	●	●
	110208HQ				0.8		●	●	●	●
 Finishing with Wiper Edge	TPMX 090202WP	5.56	2.38	3.0	0.2	11°	●	●	●	●
	090204WP				0.4		●	●	●	●
	090208WP				0.8		●	●	●	●
	TPMX 110302WP	6.35	3.18	3.3	0.2	11°	●	●	●	●
	110304WP				0.4		●	●	●	●
	110308WP				0.8		●	●	●	●
 Finishing	TPMT 090202PP	5.56	2.38	2.8	0.2	11°	●	●	●	●
	090204PP				0.4		●	●	●	●
	TPMT 110302PP	6.35	3.18	3.3	0.2	11°	●	●	●	●
	110304PP				0.4		●	●	●	●
	110308PP				0.8		●	●	●	●
 Finishing	TPMT 090204GP	5.56	2.38	2.8	0.4	11°	●	●	●	●
	TPMT 110304GP	6.35	3.18	3.3	0.4	11°	●	●	●	●
	110308GP				0.8		●	●	●	●
	TPMT 160304GP	9.525	3.18	4.4	0.4	11°	●	●	●	●
 Finishing-Medium	TPMT 090202HQ	5.56	2.38	2.8	0.2	11°	●	●	●	●
	090204HQ				0.4		●	●	●	●
	TPMT 110302HQ	6.35	3.18	3.3	0.2	11°	●	●	●	●
	110304HQ				0.4		●	●	●	●
	110308HQ				0.8		●	●	●	●
	TPMT 160304HQ	9.525	3.18	4.4	0.4	11°	●	●	●	●
	160308HQ				0.8		●	●	●	●
 Low Carbon Steel / Finishing	TPMT 090204XP	5.56	2.38	2.8	0.4	11°	●	●	●	●
	TPMT 110304XP	6.35	3.18	3.3	0.4	11°	●	●	●	●
	110308XP				0.8		●	●	●	●
	TPMT 160304XP	9.525	3.18	4.4	0.4	11°	●	●	●	●
	160308XP				0.8		●	●	●	●
 Low Carbon Steel / Finishing-Medium	TPMT 110304XQ	6.35	3.18	3.3	0.4	11°	●	●	●	●
	110308XQ				0.8		●	●	●	●
	TPMT 160304XQ	9.525	3.18	4.4	0.4	11°	●	●	●	●
	160308XQ				0.8		●	●	●	●
 Finishing	TPMR 160304GP	9.525	3.18	—	0.4	11°	●	●	●	●
 Finishing-Medium	TPMR 110304HQ	6.35	3.18	—	0.4	11°	●	●	●	●
	110308HQ				0.8		●	●	●	●
	TPMR 160304HQ	9.525	3.18	—	0.4	11°	●	●	●	●
	160308HQ				0.8		●	●	●	●
 Medium	TPMR 110304	6.35	3.18	—	0.4	11°	●	●	●	●
	110308				0.8		●	●	●	●
	TPMR 160304	9.525	3.18	—	0.4	11°	●	●	●	●
	160308				0.8		●	●	●	●

● : Standard Stock

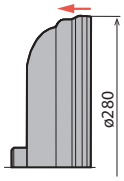
Shape Handed Insert shows Left-hand	Description	Dimensions (mm) I.C.	Thickness	Hole	Corner-R (rε)	Relief Angle	CVD Coated Carbide CA510	CA515	CA525	CA530
 Finishing	VBMT 110302PP	6.35	3.18	2.8	0.2	5°	●	●	●	●
	110304PP				0.4		●	●	●	●
	110308PP				0.8		●	●	●	●
	VBMT 160404PP	9.525	4.76	4.4	0.4	5°	●	●	●	●
	160408PP				0.8		●	●	●	●
	160412PP				1.2		●	●	●	●
 Finishing	VBMT 110304GP	6.35	3.18	2.8	0.4	5°	●	●	●	●
	VBMT 160404GP	9.525	4.76	4.4	0.4	5°	●	●	●	●
	160408GP				0.8		●	●	●	●
 Finishing	VBMT 110302VF	6.35	3.18	2.8	0.2	5°	●	●	●	●
	110304VF				0.4		●	●	●	●
	110308VF				0.8		●	●	●	●
	VBMT 160402VF	9.525	4.76	4.4	0.2	5°	●	●	●	●
	160404VF				0.4		●	●	●	●
	160408VF				0.8		●	●	●	●
	160412VF				1.2		●	●	●	●
 Finishing-Medium	VBMT 110304HQ	6.35	3.18	2.8	0.4	5°	●	●	●	●
	110308HQ				0.8		●	●	●	●
	VBMT 160404HQ	9.525	4.76	4.4	0.4	5°	●	●	●	●
	160408HQ				0.8		●	●	●	●
	160412HQ				1.2		●	●	●	●
 Finishing	VCMT 080202PP	4.76	2.38	2.3	0.2	7°	●	●	●	●
	080204PP				0.4		●	●	●	●
	VCMT 160404PP	9.525	4.76	4.4	0.4	7°	●	●	●	●
	160408PP				0.8		●	●	●	●
 Finishing	VCMT 080202VF	4.76	2.38	2.3	0.2	7°	●	●	●	●
	080204VF				0.4		●	●	●	●
 Finishing-Medium	VCMT 080202HQ	4.76	2.38	2.3	0.2	7°	●	●	●	●
	080204HQ				0.4		●	●	●	●
 Finishing	WBMT 060102L-DP	3.97	1.59	2.3	0.2	5°	L	L	L	L
	060104L-DP				0.4		L	L	L	L
	WBMT 080202L-DP	4.76	2.38	2.3	0.2	5°	L	L	L	L
	080204L-DP				0.4		L	L	L	L
 Finishing	WPMT 110204GP	6.35	2.38	2.8	0.4	11°	●	●	●	●
	WPMT 160304GP	9.525	3.18	4.4	0.4	11°	●	●	●	●
 Finishing	WPMT 110202HQ	6.35	2.38	2.8	0.2	11°	●	●	●	●
	110204HQ				0.4		●	●	●	●
	WPMT 160304HQ	9.525	3.18	4.4	0.4	11°	●	●	●	●
	160308HQ				0.8		●	●	●	●

● : Standard Stock
L : L-hand Only

Case Studies

Hot Rolled Steel

Automotive Parts
Vc = 500 m/min
ap = 0.7 mm
f = 0.3 mm/rev
Wet
CNMG120408PG



Tool Life

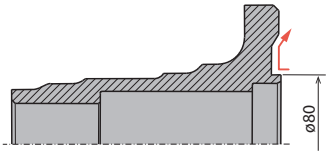
CA510 **100 pcs/edge** x1.3

Competitor F (CVD Coated Carbide) **75 pcs/edge**

CA510 produces 33% longer tool life compared to Competitor F's CVD. (User evaluation)

Carbon steel

Automotive Parts
Vc = 300 m/min
ap = 1.0 mm
f = 0.3 mm/rev
Wet
DNMG150408PQ



Tool Life

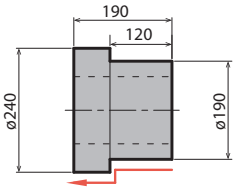
CA510 **200 pcs/edge** x1.3

Competitor G (CVD Coated Carbide) **150 pcs/edge**

CA510 produces 33% longer tool life compared to Competitor G's CVD. (User evaluation)

SCM440

Cover
Vc = 140~150 m/min
ap = 3.0~3.5 mm
f = 0.35~0.4 mm/rev
Wet
CNMG120408PT



Tool Life

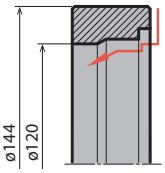
CA515 **10 pcs/edge** x1.4

Competitor H (CVD Coated Carbide) **7 pcs/edge**

CA515 produces 43% longer tool life compared to Competitor H's CVD. (User evaluation)

SCr415H

Gear
Vc = 380 m/min
ap = 1.5~2.0 mm
f = 0.3~0.4 mm/rev
Wet
WNMG080408PQ



Tool Life

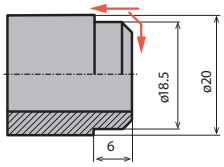
CA515 **430 pcs/edge** x1.1

Competitor I (CVD Coated Carbide) **380 pcs/edge**

CA515 produces 13% longer tool life compared to Competitor I's CVD. (User evaluation)

SS400

Machine Part
Vc = 170 m/min
ap = 0.8 mm
f = 0.2 mm/rev
Wet
CNMG120408PQ



Tool Life

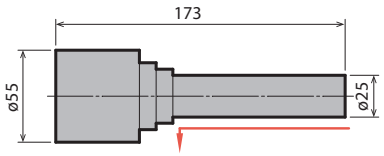
CA525 **1,400 pcs/edge and more** x1.4

Competitor J (CVD Coated Carbide) **800-1,000 pcs/edge**

CA525 produces 43% longer tool life compared to Competitor J's CVD. Chip control was smooth. (User evaluation)

SCM420

Shaft
Vc = 120 m/min
ap = 2.0 mm
f = 0.25 mm/rev
Dry
TNMG160408R-ST



Tool Life

CA525 **10 pcs/edge** 5 times

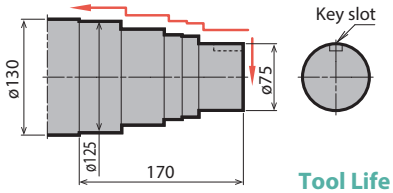
Competitor K (CVD Coated Carbide) **2 pcs/edge**

CA525 shows 5 times longer tool life compare to Competitor K's CVD. (User evaluation)

Case Studies

S45C

Shaft
Vc = 250 m/min
ap = 3.0 mm
f = 0.3 mm/rev
Wet
CNMG120408PS



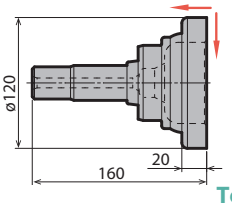
CA525 10 pcs/edge — Tool Life x1.6

Competitor L (CVD Coated Carbide) 6 pcs/edge
Competitor M (PVD Coated Carbide) Instant breakage

CA525 produces 66% longer tool life compared to Competitor L's CVD. Competitor M's PVD carbide could not complete 1pc before breakage. (User evaluation)

SCM420

Flange Shaft
Vc = 260~280 m/min
ap = 0.6 mm
f = 0.3~0.5 mm/rev
Wet
CNMG120408PQ



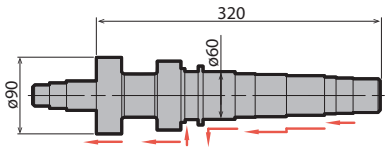
CA525 180 pcs/edge — Tool Life x1.2

Competitor N (CVD Coated Carbide) 150 pcs/edge

CA525 produces 20% longer tool life compared to Competitor N's CVD. (User evaluation)

S45C

Shaft
Vc = 100 m/min
ap = 2.0~4.0 mm
f = 0.4 mm/rev
Wet
WNMG080408PS



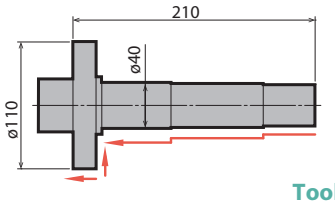
CA525 70 pcs/edge — Tool Life x1.7

Competitor O (CVD Coated Carbide) 40 pcs/edge

CA525 produces 70% longer tool life compared to Competitor O's CVD. (User evaluation)

SCr420

Shaft
Vc = 90 m/min
ap = 2.0~3.0 mm
f = 0.32 mm/rev
Wet
WNMG080408PS



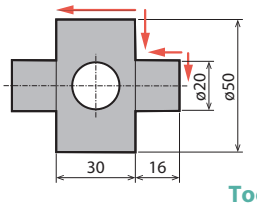
CA525 260 pcs/edge — Tool Life x1.3

Competitor P (CVD Coated Carbide) 190 pcs/edge

CA525 produces 30% longer tool life compared to Competitor P's CVD. (User evaluation)

SCr420H

Gear
Vc = 180 m/min
ap = 2.0 mm
f = 0.2 mm/rev
Wet
DNMG150404CQ



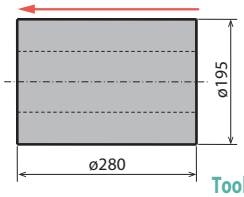
CA530 10 pcs/edge — Tool Life x1.25

Competitor Q (CVD Coated Carbide) 3-8 pcs/edge

CA530 averages 25% longer tool life compared to Competitor Q's CVD. (User evaluation)

13Cr

Machine Parts
Vc = 100 m/min
ap = 2.0 mm
f = 0.4 mm/rev
Wet
SNMG120412PH



CA530 9 pcs/edge — Tool Life x1.8 — Efficiency 11%

Competitor R (CVD Coated Carbide) 5 pcs/edge

CA530 produces 80% longer tool life compared to Competitor R's CVD.
Improved machining efficiency by 1.1 times. (User evaluation)