MITSUBISHI

MITSUBISHI CARBIDE

TOOLS NEWS

B061G

CVD coated grade targeted for turning of cast iron and ductile cast iron

UC5105/UC5115

New smooth coating technology ensuring most stable cutting.

Debut of cast iron cutting new grade with improved wear and fracture resistance

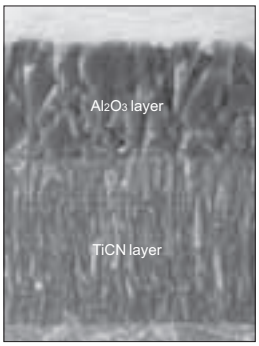
CVD coated grade targeted for turning of cast iron and ductile cast iron

UC5105/UC5115

Features of UC5105/UC5115

Very effective on cast iron and ductile cast iron

Newly developed "All-black Super-even Coat"



Structure of UC5105/UC5115

Improved wear resistance

Wear resistance has increased dramatically thanks to the thick, fine Al_2O_3 layer and the fine and fibrous TiCN layer, compared to previous grades.

Improved chipping resistance

Abnormal damages, such as welding chipping, are unlikely to occur and stable cutting for long time becomes possible, thanks to the smoother-surface coating than competitors that has boosted welding resistance.

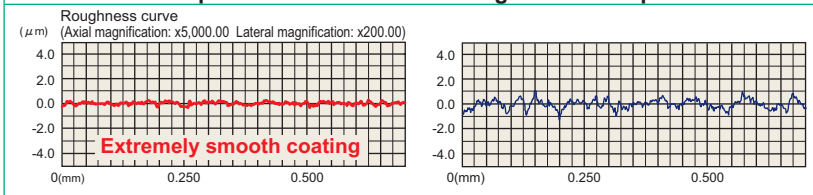
UC5105

Grade consisting of a very hard cemented carbide substrate and an all-black super-even coat.
Effective in high-speed turning of cast iron and ductile cast iron.

UC5115

Grade consisting of a very tough cemented carbide substrate and an all-black super-even coat.
The first recommended grade for cast iron and ductile cast iron turning.

Comparison of measured coating surface shapes



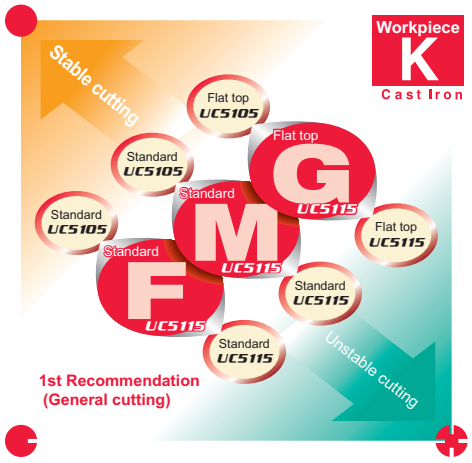
All-black super-even coat　　Competitor's CVD coating

Application Range and Recommended Cutting Conditions

●TOOL NAVI SYSTEM

UC5105 is a grade for cast iron and ductile cast iron turning with improved wear resistance.
UC5115 is a grade for cast iron and ductile cast iron turning with excellent balance of wear resistance and fracture resistance.

Negative Inserts for Cast Iron and Ductile Cast Iron



Cutting conditions

Stable cutting	Continuous cutting Constant depth of cutting Pre-machined Securely clamped component cutting
General cutting	
Unstable cutting	Heavy interrupted cutting Irregular depth of cutting Low clamping rigidity cutting

Cutting area

F	Finish cutting (ap≦0.5mm)	G	Semi-heavy cutting (ap=4.0−7.0mm)
M	Medium cutting (ap=1.5−4.0mm)		

Application Range

ISO	Gray cast iron, Ductile cast iron
K01	NEW UC5105
K10	NEW UC5115
K20	
K30	

Recommended Cutting Conditions

Workpiece		Tensile strength (MPa)	Recommended cutting speed (m/min)	
			UC5105	UC5115
K	Gray cast iron	≦300	300 (200−400)	250 (150−300)
	Ductile cast iron	≦450	300 (200−400)	250 (150−300)
		500−800	230 (180−300)	200 (150−250)

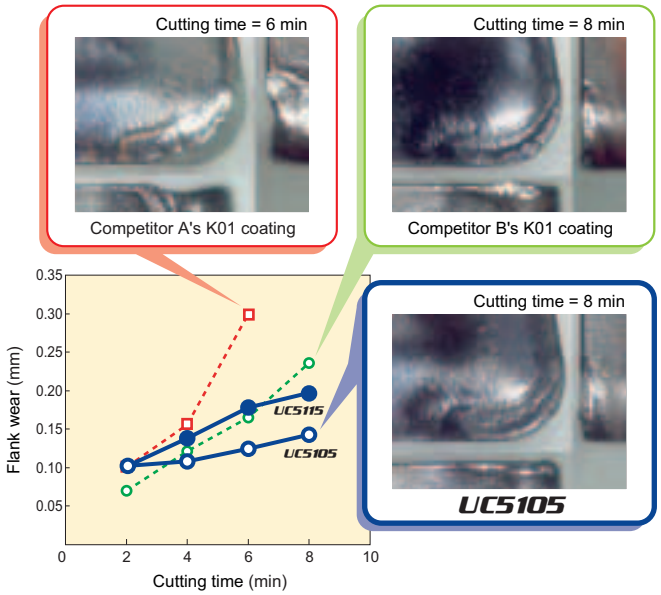
Cutting Performance of UC5105/UC5115

Wear Resistance

Continuous turning of Gray cast iron (JIS FC300)

UC5105 exhibits excellent wear resistance.

<Cutting Conditions>
Insert : CNMG120408
Tool : PCLNL2525M12
Cutting speed : 300m/min
Feed : 0.3mm/rev
Depth of cut : 1.5mm
Coolant : Dry cutting
External continuous cutting

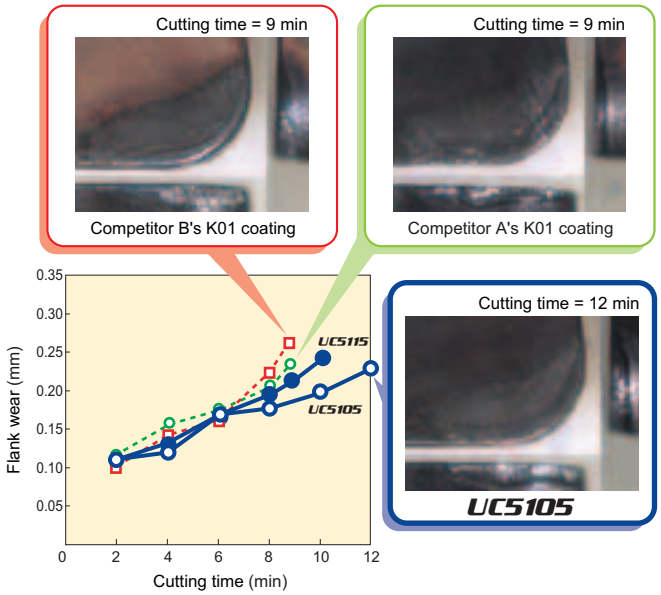


Wear Resistance

Continuous turning of Ductile cast iron (JIS FCD700)

UC5105 exhibits excellent wear resistance.

<Cutting Conditions>
Insert : CNMA120408
Tool : PCLNL2525M12
Cutting speed : 200m/min
Feed : 0.3mm/rev
Depth of cut : 1.5mm
Coolant : Wet cutting
External continuous cutting

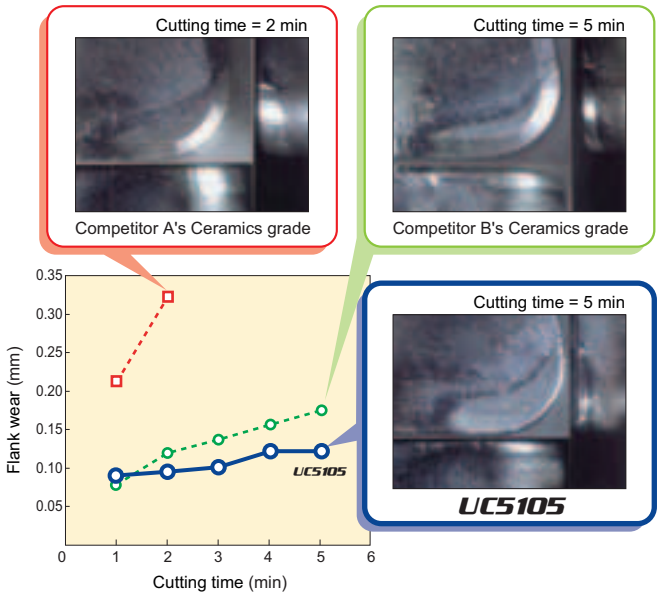


Wear Resistance

High speed turning of Gray cast iron (JIS FC300) (vc=600m/min)

UC5105 exhibits extraordinary wear resistance similar to those of ceramics grades!!

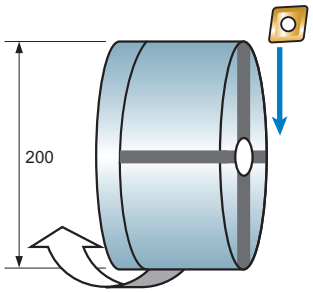
<Cutting Conditions>
Insert : CNMA120408
Tool : PCLNL2525M12
Cutting speed : 600m/min
Feed : 0.3mm/rev
Depth of cut : 1.5mm
Coolant : Dry cutting
External continuous cutting



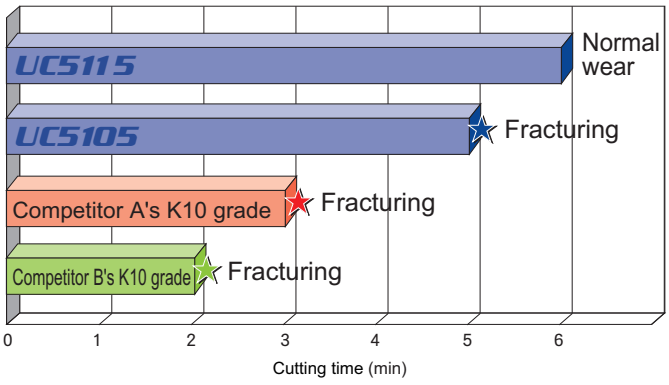
Fracture Resistance

Interrupted facing of Ductile cast iron (JIS FCD450)

UC5105 displays exceptional chipping resistance and achieves extremely stable cutting edge reliability!!



<Cutting Conditions>
Insert : CNMA120408
Tool : PCLNL2525M12
Cutting speed : 120m/min
Feed : 0.3mm/rev
Depth of cut : 1.5mm
Coolant : Wet cutting

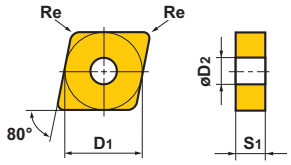
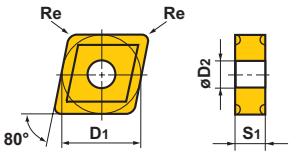
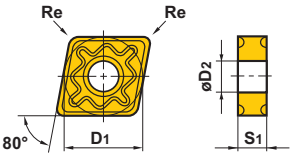
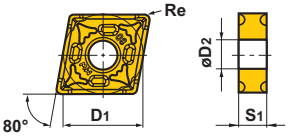
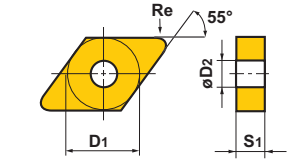
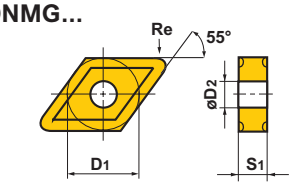
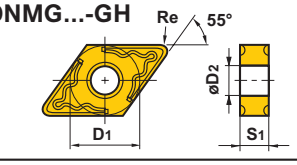
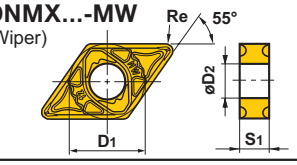


CVD coated grade targeted for turning of cast iron and ductile cast iron

UC5105/UC5115

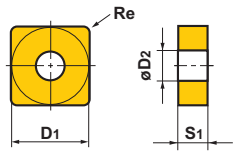
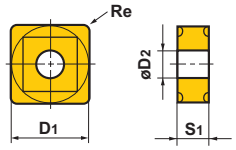
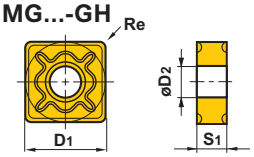
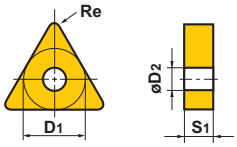
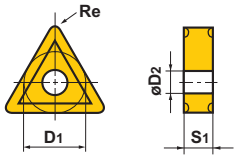
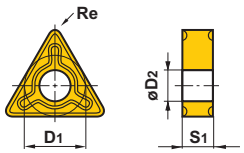
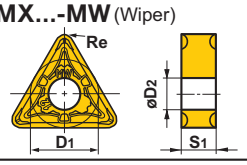
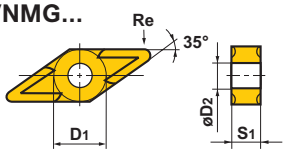
Inserts

●Negative Insert

Geometry	Order Number	Stock		Dimensions (mm)			
		UC5105	UC5115	D_1	S_1	Re	D_2
CNMA... 	**CNMA120404**	●	●	12.7	4.76	0.4	5.16
	120408	●	●	12.7	4.76	0.8	5.16
	120412	●	●	12.7	4.76	1.2	5.16
	120416	●	●	12.7	4.76	1.6	5.16
	160612	●	●	15.875	6.35	1.2	6.35
	160616	●	●	15.875	6.35	1.6	6.35
	190612	●	●	19.05	6.35	1.2	7.93
	190616	●	●	19.05	6.35	1.6	7.93
CNMG... 	**CNMG120404**	●	●	12.7	4.76	0.4	5.16
	120408	●	●	12.7	4.76	0.8	5.16
	120412	●	●	12.7	4.76	1.2	5.16
	120416	●	●	12.7	4.76	1.6	5.16
	160612	●	●	15.875	6.35	1.2	6.35
	160616	●	●	15.875	6.35	1.6	6.35
	190612	●	●	19.05	6.35	1.2	7.93
	190616	●	●	19.05	6.35	1.6	7.93
CNMG...-GH 	**CNMG120408-GH**	●	●	12.7	4.76	0.8	5.16
	120412-GH	●	●	12.7	4.76	1.2	5.16
	160612-GH	●	●	15.875	6.35	1.2	6.35
	160616-GH	●	●	15.875	6.35	1.6	6.35
	190612-GH	●	●	19.05	6.35	1.2	7.93
	190616-GH	●	●	19.05	6.35	1.6	7.93
CNMG...-MW (Wiper) 	**CNMG120408-MW**	●	●	12.7	4.76	0.8	5.16
	120412-MW	●	●	12.7	4.76	1.2	5.16
DNMA... 	**DNMA150404**	●	●	12.7	4.76	0.4	5.16
	150408	●	●	12.7	4.76	0.8	5.16
	150412	●	●	12.7	4.76	1.2	5.16
	150416	□	□	12.7	4.76	1.6	5.16
	150608	●	●	12.7	6.35	0.8	5.16
	150612	●	●	12.7	6.35	1.2	5.16
DNMG... 	**DNMG150404**	●	●	12.7	4.76	0.4	5.16
	150408	●	●	12.7	4.76	0.8	5.16
	150412	●	●	12.7	4.76	1.2	5.16
	150604	□	□	12.7	6.35	0.4	5.16
	150608	●	●	12.7	6.35	0.8	5.16
	150612	●	●	12.7	6.35	1.2	5.16
DNMG...-GH 	**DNMG150408-GH**	●	●	12.7	4.76	0.8	5.16
	150412-GH	●	●	12.7	4.76	1.2	5.16
	150608-GH	●	●	12.7	6.35	0.8	5.16
	150612-GH	●	●	12.7	6.35	1.2	5.16
DNMX...-MW (Wiper) 	**DNMX150408-MW**	□	□	12.7	4.76	0.8	5.16
	150412-MW	□	□	12.7	4.76	1.2	5.16
	150608-MW	□	□	12.7	6.35	0.8	5.16
	150612-MW	□	□	12.7	6.35	1.2	5.16

● : Inventory maintained. □ : Non stock, produced to order only.

●Negative Insert

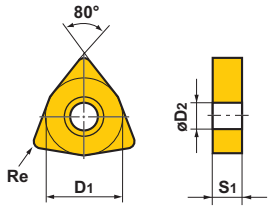
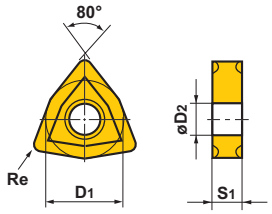
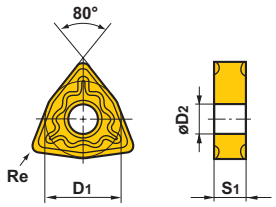
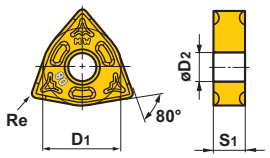
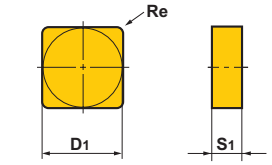
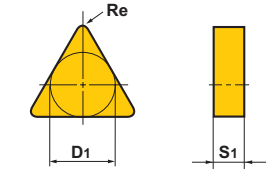
Geometry	Order Number	Stock		Dimensions (mm)			
		UC5105	UC5115	D1	S1	Re	D2
SNMA... 	**SNMA090308**	●	●	9.525	3.18	0.8	3.81
	120408	●	●	12.7	4.76	0.8	5.16
	120412	●	●	12.7	4.76	1.2	5.16
	120416	●	●	12.7	4.76	1.6	5.16
	190612	●	●	19.05	6.35	1.2	7.93
	190616	●	●	19.05	6.35	1.6	7.93
SNMG... 	**SNMG120408**	●	●	12.7	4.76	0.8	5.16
	120412	●	●	12.7	4.76	1.2	5.16
	120416	●	●	12.7	4.76	1.6	5.16
	150612	□	□	15.875	6.35	1.2	6.35
	190612	●	●	19.05	6.35	1.2	7.93
	190616	●	●	19.05	6.35	1.6	7.93
SNMG...-GH 	**SNMG120408-GH**	●	●	12.7	4.76	0.8	5.16
	120412-GH	●	●	12.7	4.76	1.2	5.16
TNMA... 	**TNMA160404**	●	●	9.525	4.76	0.4	3.81
	160408	●	●	9.525	4.76	0.8	3.81
	160412	●	●	9.525	4.76	1.2	3.81
	160416	●	●	9.525	4.76	1.6	3.81
	160420	●	●	9.525	4.76	2.0	3.81
	220408	●	●	12.7	4.76	0.8	5.16
	220412	●	●	12.7	4.76	1.2	5.16
	220416	●	●	12.7	4.76	1.6	5.16
TNMG... 	**TNMG160404**	●	●	9.525	4.76	0.4	3.81
	160408	●	●	9.525	4.76	0.8	3.81
	160412	●	●	9.525	4.76	1.2	3.81
	160416	●	●	9.525	4.76	1.6	3.81
	160420	●	●	9.525	4.76	2.0	3.81
	220408	●	●	12.7	4.76	0.8	5.16
	220412	●	●	12.7	4.76	1.2	5.16
	220416	●	●	12.7	4.76	1.6	5.16
TNMG...-GH 	**TNMG160408-GH**	●	●	9.525	4.76	0.8	3.81
	160412-GH	●	●	9.525	4.76	1.2	3.81
	220408-GH	●	●	12.7	4.76	0.8	5.16
	220412-GH	●	●	12.7	4.76	1.2	5.16
TNMX...-MW (Wiper) 	**TNMX160408-MW**	□	□	9.525	4.76	0.8	3.81
	160412-MW	□	□	9.525	4.76	1.2	3.81
VNMG... 	**VNMG160404**	□	□	9.525	4.76	0.4	3.81
	160408	●	●	9.525	4.76	0.8	3.81
	160412	●	●	9.525	4.76	1.2	3.81

CVD coated grade targeted for turning of cast iron and ductile cast iron

UC5105/UC5115

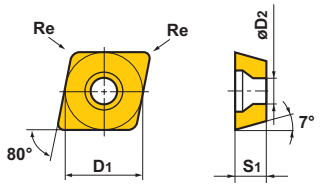
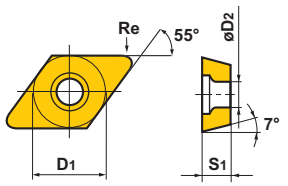
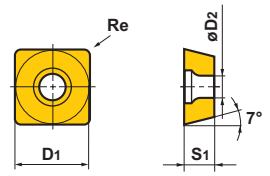
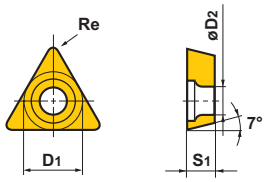
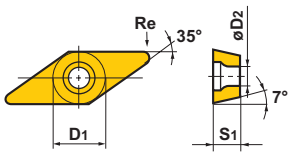
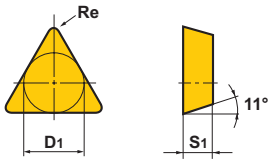
Inserts

●Negative Insert

Geometry	Order Number	Stock		Dimensions (mm)			
		UC5105	UC5115	D_1	S_1	Re	D_2
WNMA... 	**WNMA080404**	□	□	12.7	4.76	0.4	5.16
	080408	●	●	12.7	4.76	0.8	5.16
	080412	●	●	12.7	4.76	1.2	5.16
	080416	●	●	12.7	4.76	1.6	5.16
WNMG... 	**WNMG080404**	□	□	12.7	4.76	0.4	5.16
	080408	●	●	12.7	4.76	0.8	5.16
	080412	●	●	12.7	4.76	1.2	5.16
	080416	●	●	12.7	4.76	1.6	5.16
WNMG...-GH 	**WNMG080408-GH**	●	●	12.7	4.76	0.8	5.16
	080412-GH	●	●	12.7	4.76	1.2	5.16
WNMG...-MW (Wiper) 	**WNMG060408-MW**	□	□	9.525	4.76	0.8	3.81
	060412-MW	□	□	9.525	4.76	1.2	3.81
	080408-MW	●	●	12.7	4.76	0.8	5.16
	080412-MW	●	●	12.7	4.76	1.2	5.16
SNMN... 	**SNMN120408**	●	●	12.7	4.76	0.8	–
	120412	●	●	12.7	4.76	1.2	–
	120416	●	●	12.7	4.76	1.6	–
TNMN... 	**TNMN160408**	●	●	9.525	4.76	0.8	–
	160412	●	●	9.525	4.76	1.2	–
	160416	●	●	9.525	4.76	1.6	–
	160420	●	●	9.525	4.76	2.0	–

● : Inventory maintained. □ : Non stock, produced to order only.

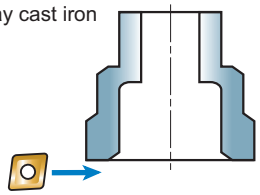
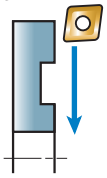
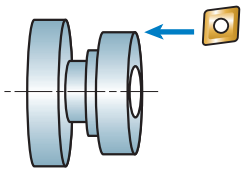
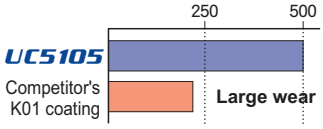
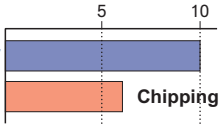
●Positive Insert

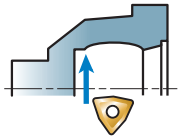
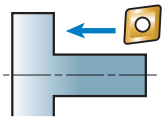
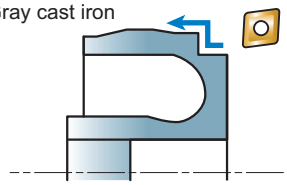
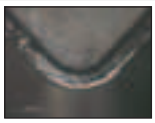
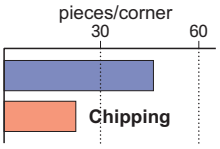
Geometry	Order Number	Stock		Dimensions (mm)			
		UC5105	UC5115	D_1	S_1	Re	D_2
CCMW... 	**CCMW060204**	●	●	6.35	2.38	0.4	2.8
	09T304	●	●	9.525	3.97	0.4	4.4
	09T308	●	●	9.525	3.97	0.8	4.4
	120404	●	●	12.7	4.76	0.4	5.5
	120408	●	●	12.7	4.76	0.8	5.5
	120412	□	□	12.7	4.76	1.2	5.5
DCMW... 	**DCMW070204**	□	□	6.35	2.38	0.4	2.8
	11T304	●	●	9.525	3.97	0.4	4.4
	11T308	●	●	9.525	3.97	0.8	4.4
	150408	□	□	12.7	4.76	0.8	5.5
SCMW... 	**SCMW09T304**	●	●	9.525	3.97	0.4	4.4
	09T308	●	●	9.525	3.97	0.8	4.4
	120404	●	●	12.7	4.76	0.4	5.5
	120408	●	●	12.7	4.76	0.8	5.5
TCMW... 	**TCMW110204**	□	□	6.35	2.38	0.4	2.8
	16T304	●	●	9.525	3.97	0.4	4.4
	16T308	●	●	9.525	3.97	0.8	4.4
VCMW... 	**VCMW160404**	□	□	9.525	4.76	0.4	4.4
	160408	●	●	9.525	4.76	0.8	4.4
TPMN... 	**TPMN110304**	●	●	6.35	3.18	0.4	–
	110308	●	●	6.35	3.18	0.8	–
	160304	●	●	9.525	3.18	0.4	–
	160308	●	●	9.525	3.18	0.8	–
	160312	□	□	9.525	3.18	1.2	–
	220408	□	□	12.7	4.76	0.8	–

CVD coated grade targeted for turning of cast iron and ductile cast iron MITSUBISHI

UC5105/UC5115

Application Examples

Insert (Grade)	CNMA120408(UC5105)	CNMA120412 (UC5105)	CNMA120408 (UC5105)
Workpiece	Gray cast iron 	Ductile cast iron 	Ductile cast iron 
Component	Hub	Wheel	Retainer ring
Cutting Conditions: Cutting Speed (m/min)	250	230	330
Cutting Conditions: Feed (mm/rev)	0.30	0.30	0.36
Cutting Conditions: Depth of Cut (mm)	2.5	2.0	3.2
Coolant	Wet cutting	Wet cutting	Wet cutting
Results	pieces/corner 250 500  UC5105 Competitor's K01 coating Large wear **UC5105** achieved more than double the tool life.	pieces/corner 5 10  UC5105 Competitor's K01 coating Chipping **UC5105** achieved 1.5 times longer tool life without any abnormal wear.	UC5105 70 pieces/corner  Competitor's K01 coating 46 pieces/corner 

Insert (Grade)	WNMG080412-GH (UC5115)	CNMG120408 (UC5115)	CNMG120412 (UC5105)
Workpiece	Ductile cast iron 	Ductile cast iron 	Gray cast iron 
Component	Differential case	Crank shaft	Break drum
Cutting Conditions: Cutting Speed (m/min)	160	145－160	600
Cutting Conditions: Feed (mm/rev)	0.25	0.20	0.35
Cutting Conditions: Depth of Cut (mm)	1－2	2.5	2.0
Coolant	Wet cutting	Wet cutting	Dry cutting
Results	UC5115 100 pieces/corner  Competitor's K10 coating 100 pieces/corner 	pieces/corner 30 60  UC5115 Competitor's K10 coating Chipping **UC5115** has allowed more than 1.7 times longer tool life without chipping.	UC5105 37 pieces/corner  Competitor's Ceramics grade 37 pieces/corner  **UC5105** has exhibited higher wear resistance than a ceramic grade.

For Your Safety
●Do not touch cutting edges and chips without gloves. ●Machine under recommended conditions, and replace the expired tools witn new ones in advance. ●Use protectors such as safety covers and protective glasses. High-temperature chips can scatter or curlless long chips can be discharged. ●Always take fire prevention measures when using water-insoluble cutting fluid. ●Clamp inserts and parts firmly by using the attahced wrench or spanner. ●When machining workpieces with tools revolved, always test-run and check that there is no vibrations or abnormal sounds.

MITSUBISHI MATERIALS CORPORATION

JSA Tsukuba Plant ISO 9001-2000 Registration No. JSAQ 080 Gifu Plant ISO 9001-2000 Registration No. JSAQ 094
JSA Tsukuba Plant ISO 14001:1996 Registration No. JSAE 036

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(Tools specifications subject to change without notice.)

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