

NEW

MC5100 SERIES

CVD COATED GRADES FOR CAST IRON TURNING
FROM HIGH SPEED THROUGH TO INTERRUPTED TURNING

B269E



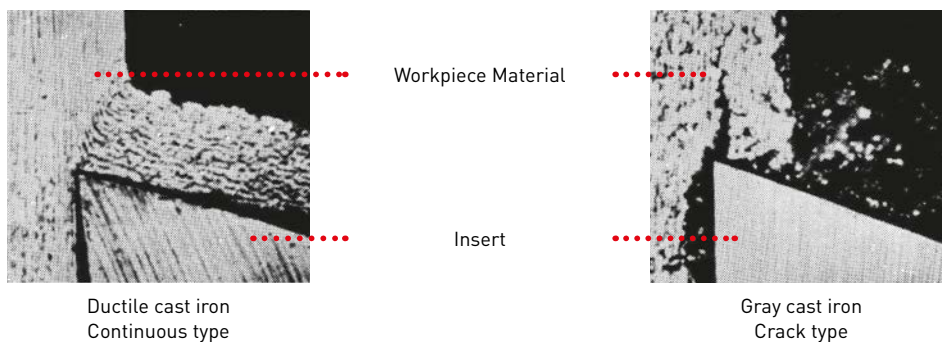
MC5100 SERIES

CVD COATED GRADES FOR CAST IRON TURNING

A CHOICE OF DIFFERENT GRADES IDEALLY SUITED TO ALL TYPES OF CAST IRON MACHINING

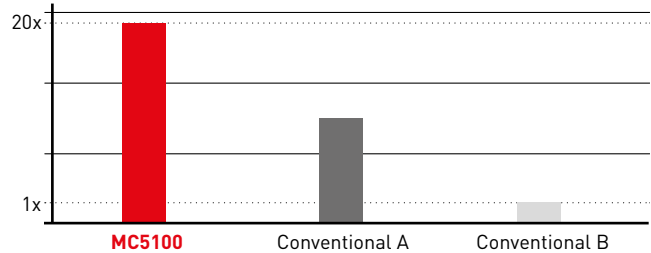
The process of casting iron enables complex geometries to be formed in the component that is produced. Different types of cast irons produce different chips when machined and can cause various types of damage to an insert. The complex shapes produced in castings also creates challenges because contact with the workpiece can suddenly change from continuous to interrupted cutting. In response to these challenges, Mitsubishi Materials has created a series of grades that are able to successfully machine all types of cast iron materials and component geometries.

CHIP MORPHOLOGY OF CAST IRON



"SUPER" NANO TEXTURE TECHNOLOGY

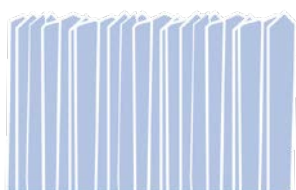
The standard Nano Texture Technology has been improved and developed to be an industry leading standard for crystal growth of Al_2O_3 coatings. This Super Nano Texture Technology increases tool life and wear resistance due to the fine, dense crystal growth process.



CRYSTAL ORIENTATION

(Image)

The ratio of Al_2O_3 crystal grains with the same orientation



"Super" Nano Texture

Uniformity of the growth direction has drastically improved.



Nano Texture

Uniformity of the grain size and growth direction has improved.

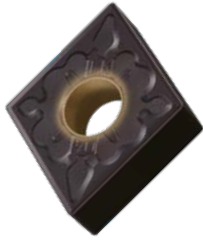


Conventional CVD inserts

Grain size and growth direction are uneven.

MC5100 SERIES

CVD COATED GRADES FOR CAST IRON TURNING



MC5105

FOR HIGH SPEED CUTTING OF GRAY CAST IRON

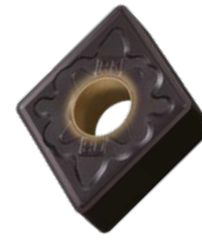
Provides outstanding wear resistance when turning gray cast iron at up to 1000 m/min cutting speeds.



MC5115

FIRST RECOMMENDED GRADE FOR DUCTILE CAST IRON

Prevents abnormal cutting edge damage and displays excellent wear and fracture resistance when machining ductile cast iron.



MC5125

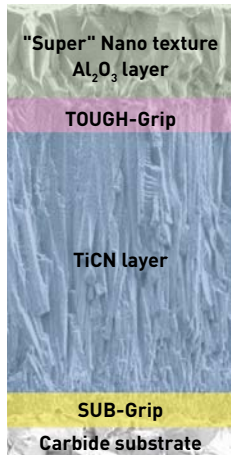
FOR HEAVY INTERRUPTED CUTTING OF DUCTILE CAST IRON

Demonstrates excellent fracture resistance that can withstand heavy interrupted cutting of high strength ductile cast iron.

TOUGH AND SUB GRIP LAYERS FOR DUCTILE CAST IRON GRADES

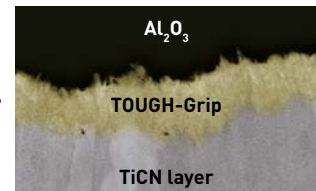
The extra strength of the adhesion between the coating layers (1.3 times stronger) suppresses peeling during machining of ductile cast iron.

Adhesion is 1.3 times* greater!



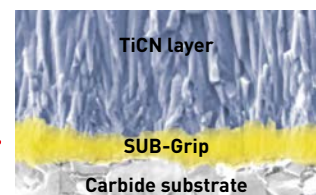
TOUGH-GRIP

The interface between the layers is controlled at the nano level, allowing the TOUGH-Grip layer extremely high levels of adhesion to prevent delamination.



SUB-GRIP

By increasing the degree of adhesion between the carbide substrate and the coating layer, a coating layer has been developed that is resistant to peeling even during strong intermittent machining.



*Compared with conventional grades from Mitsubishi Materials.

FROM THE DEVELOPERS

Since gray cast iron tends to be machined at high speeds (500 – 1000 m/min), it is important to make the Al_2O_3 film coating as strong as possible in order to ensure wear resistance. The focus was on the formation of crystals and the improvement of the intermediate layer of the coating. The coating has also been adjusted to provide excellent intermittent performance despite using a harder carbide substrate compared to conventional products.

Ductile cast iron is machined at relative low speeds (100 – 300 m/min) and TiCN has a higher hardness. As for the intermittent cutting performance it was difficult to identify the cause of the edge chipping, but the investigation results revealed that the peeling of the coating was the cause of chipping so a stronger adhesion layer was introduced.

The MC5100 series has been expanded to include grades that are optimal for each type of cast iron turning. These grades will become an indispensable tool for customers that machine cast iron materials.

MC5100 SERIES

MC5105

FOR HIGH SPEED CUTTING OF GRAY CAST IRON

Harder and with outstanding wear resistance



"Super" Nano texture
 Al_2O_3 layer

..... A thick top coating layer.

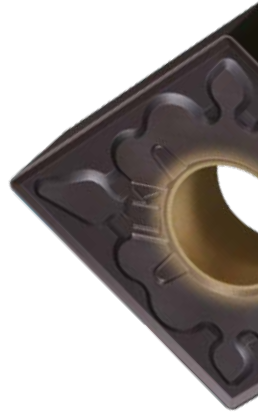
Super TOUGH-Grip

..... Intermediate layer suitable for high speed cutting.

TiCN layer

Carbide substrate

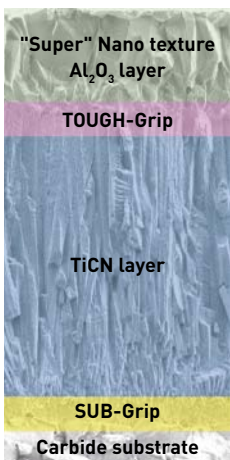
..... The substrate adopts a high hardness carbide material.



MC5115

FIRST RECOMMENDED GRADE FOR DUCTILE CAST IRON

Excellent durability and resistance to impacts



"Super" Nano texture
 Al_2O_3 layer

..... Al_2O_3 layer with excellent wear resistance.

TOUGH-Grip

..... Intermediate layer with microstructure suitable for ductile cast iron.

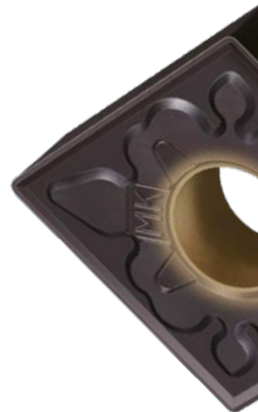
TiCN layer

..... Thick TiCN layer suitable for coping with the hardness of ductile cast iron.

SUB-Grip

Carbide substrate

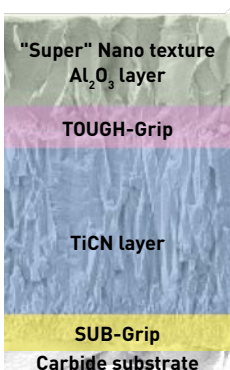
..... New adhesion layer with an enhanced resistance to peeling.



MC5125

FOR HEAVY INTERRUPTED CUTTING OF DUCTILE CAST IRON

Excellent stability and fracture resistance



"Super" Nano texture
 Al_2O_3 layer

..... Al_2O_3 layer with excellent wear resistance.

TOUGH-Grip

..... Intermediate layer with microstructure suitable for ductile cast iron.

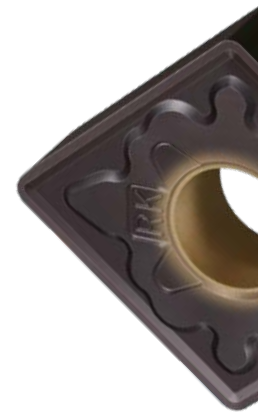
TiCN layer

..... TiCN layer for hardness for heavy interrupted cutting.

SUB-Grip

Carbide substrate

..... New adhesion layer with an enhanced resistance to peeling.



MC5100 SERIES

WAY TO SELECT MC5100 SERIES

GRAY CAST IRON

MC5105 is the first recommendation for high speed machining of gray cast iron.

Select a suitable chipbreaker to optimise tool life and reduce wear.

MC5115 is also capable of reliable machining at speeds of 100 – 300 m/min and for unstable cutting conditions.

HIGH SPEED CUTTING 200 – 1000 M/MIN

MC5105 → Change to a chipbreaker with a stronger cutting edge geometry.

In case of fracture

CUTTING SPEED 100 – 300 M/MIN

MC5115 → Change to a chipbreaker with a sharper cutting edge geometry.

In case of fracture

DUCTILE CAST IRON

MC5115 is the first recommendation for ductile cast iron, including high strength ductile cast iron.

In order to prevent breakage and wear, select a suitable chipbreaker.

MC5125 is also effective for heavy, interrupted and unstable cutting conditions.

FIRST RECOMMENDATION

MC5115 → Change to a chipbreaker with a stronger cutting edge geometry.

In case of fracture

↑
In case of wear

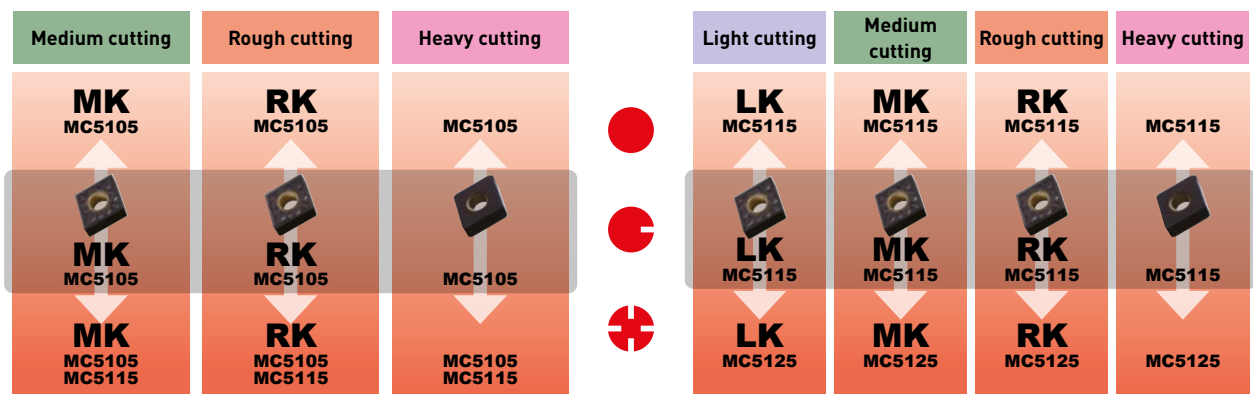
HEAVY, INTERRUPTED CUTTING

MC5125 → Change to a chipbreaker with a sharper cutting edge geometry.

In case of wear

GRAY CAST IRON

DUCTILE CAST IRON



MC5100 SERIES

CHIPBREAKER SYSTEM FOR CAST IRON TURNING

The entire range of new chipbreakers has been designed by taking advantage of the properties of the new grades. Each breaker has the optimum suitability for each respective application.

SELECT A CHIPBREAKER ACCORDING TO THE MACHINING CONDITIONS

Stable cutting (continuous cutting, without scale, etc.)/Low cutting resistance machining

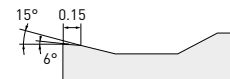
Focus on cutting edge sharpness

NEGATIVE INSERTS



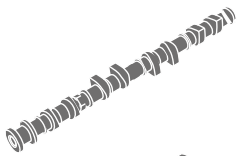
LK breaker

Positive land provides a sharp cutting edge and low cutting resistance.



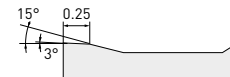
MA breaker

Positive land provides a sharp cutting edge.



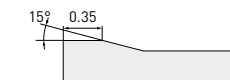
MK breaker

Optimum balance between sharpness and high edge strength for general use.



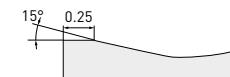
RK breaker

Extra wide land provides a stable cutting edge for interrupted machining and removal of scale.



GK breaker

Versatile standard breaker. Flat land maintains a stable cutting edge.



Flat top

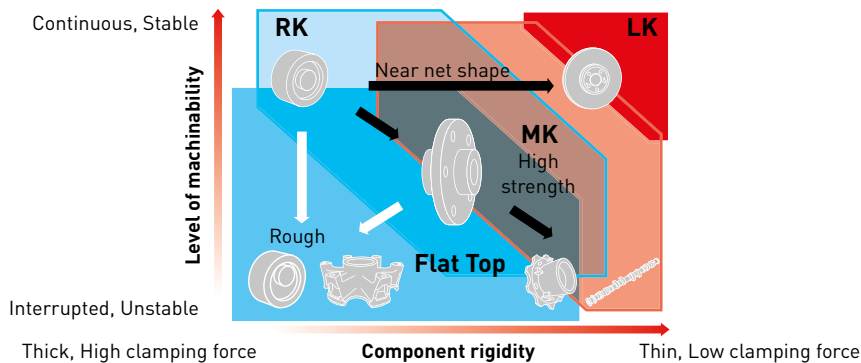
Flat top focusing on high edge strength.



Focus on cutting edge strength

Unstable cutting (interrupted cutting, with scale, etc.)/General to heavy cutting

APPLICATION MAP FOR CAST IRON








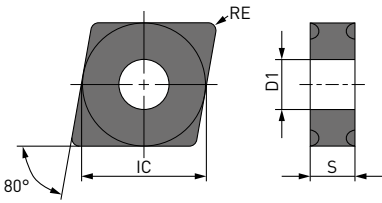





CNMG, CNMA

NEGATIVE INSERTS (WITH HOLE)

K

M-Class

Order number			IC	S	RE	D1		Geometry		
CNMG120404-LK	L	● ★	12.7	4.76	0.4	5.16				
CNMG120408-LK	L	● ★	12.7	4.76	0.8	5.16				
CNMG120412-LK	L	● ★	12.7	4.76	1.2	5.16				
CNMG120404-MA	M	● ●	12.7	4.76	0.4	5.16				
CNMG120408-MA	M	● ●	12.7	4.76	0.8	5.16				
CNMG120412-MA	M	● ●	12.7	4.76	1.2	5.16				
CNMG120416-MA	M	● ★	12.7	4.76	1.6	5.16				
CNMG160608-MA	M	● ●	15.875	6.35	0.8	6.35				
CNMG160612-MA	M	● ●	15.875	6.35	1.2	6.35				
CNMG160616-MA	M	● ★	15.875	6.35	1.6	6.35				
CNMG120404-MK	M	● ● ●	12.7	4.76	0.4	5.16				
CNMG120408-MK	M	● ● ●	12.7	4.76	0.8	5.16				
CNMG120412-MK	M	● ● ●	12.7	4.76	1.2	5.16				
CNMG120416-MK	M	★ ● ●	12.7	4.76	1.6	5.16				
CNMG160608-MK	M	★ ● ★	15.875	6.35	0.8	6.35				
CNMG160612-MK	M	● ● ●	15.875	6.35	1.2	6.35				
CNMG160616-MK	M	● ● ★	15.875	6.35	1.6	6.35				
CNMG190612-MK	M	★	19.05	6.35	1.2	7.93				
CNMG190616-MK	M	★	19.05	6.35	1.6	7.93				
CNMG120404-GK	M	● ●	12.7	4.76	0.4	5.16				
CNMG120408-GK	M	● ●	12.7	4.76	0.8	5.16				
CNMG120412-GK	M	● ●	12.7	4.76	1.2	5.16				
CNMG120416-GK	M	● ★	12.7	4.76	1.6	5.16				
CNMG160612-GK	M	● ★	15.875	6.35	1.2	6.35				
CNMG160616-GK	M	● ★	15.875	6.35	1.6	6.35				
CNMG120408-RK	R	● ● ●	12.7	4.76	0.8	5.16				
CNMG120412-RK	R	● ● ●	12.7	4.76	1.2	5.16				
CNMG120416-RK	R	● ● ●	12.7	4.76	1.6	5.16				
CNMG160608-RK	R	★ ● ★	15.875	6.35	0.8	6.35				
CNMG160612-RK	R	● ● ●	15.875	6.35	1.2	6.35				
CNMG160616-RK	R	● ● ●	15.875	6.35	1.6	6.35				
CNMG190612-RK	R	★	19.05	6.35	1.2	7.93				
CNMG190616-RK	R	★	19.05	6.35	1.6	7.93				
CNMA120404	R	● ● ●	12.7	4.76	0.4	5.16				
CNMA120408	R	● ● ●	12.7	4.76	0.8	5.16				
CNMA120412	R	● ● ●	12.7	4.76	1.2	5.16				
CNMA120416	R	● ● ●	12.7	4.76	1.6	5.16				
CNMA160612	R	● ● ●	15.875	6.35	1.2	6.35				
CNMA160616	R	● ● ●	15.875	6.35	1.6	6.35				
CNMA190612	R	●	19.05	6.35	1.2	7.93				
CNMA190616	R	●	19.05	6.35	1.6	7.93				
CNMA190624	R	●	19.05	6.35	2.4	7.93				

(10 inserts in one case)






● : Inventory maintained. ★ : Inventory maintained in Japan.

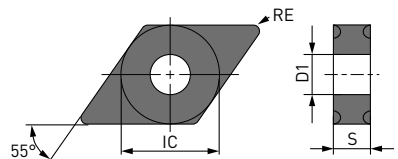
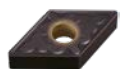
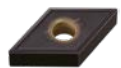
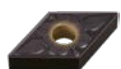
DNMG, DNMA

NEGATIVE INSERTS (WITH HOLE)

K

M-Class

Order number			IC	S	RE	D1		Geometry
DNMG110408-LK	L	● ★	9.525	4.76	0.8	3.81		
DNMG150404-LK	L	● ★	12.7	4.76	0.4	5.16		
DNMG150408-LK	L	● ★	12.7	4.76	0.8	5.16		
DNMG150412-LK	L	★ ★	12.7	4.76	1.2	5.16		
DNMG150604-LK	L	● ★	12.7	6.35	0.4	5.16		
DNMG150608-LK	L	● ★	12.7	6.35	0.8	5.16		
DNMG150612-LK	L	● ★	12.7	6.35	1.2	5.16		
DNMG150404-MA	M	● ★	12.7	4.76	0.4	5.16		
DNMG150408-MA	M	● ●	12.7	4.76	0.8	5.16		
DNMG150412-MA	M	★ ★	12.7	4.76	1.2	5.16		
DNMG150604-MA	M	● ★	12.7	6.35	0.4	5.16		
DNMG150608-MA	M	● ●	12.7	6.35	0.8	5.16		
DNMG150612-MA	M	● ●	12.7	6.35	1.2	5.16		
DNMG110408-MK	M	★ ● ●	9.525	4.76	0.8	3.81		
DNMG150404-MK	M	● ● ★	12.7	4.76	0.4	5.16		
DNMG150408-MK	M	● ● ●	12.7	4.76	0.8	5.16		
DNMG150412-MK	M	● ● ★	12.7	4.76	1.2	5.16		
DNMG150604-MK	M	● ● ●	12.7	6.35	0.4	5.16		
DNMG150608-MK	M	● ● ●	12.7	6.35	0.8	5.16		
DNMG150612-MK	M	● ● ●	12.7	6.35	1.2	5.16		
DNMG150404-GK	M	● ★	12.7	4.76	0.4	5.16		
DNMG150408-GK	M	● ★	12.7	4.76	0.8	5.16		
DNMG150412-GK	M	● ★	12.7	4.76	1.2	5.16		
DNMG150604-GK	M	● ★	12.7	6.35	0.4	5.16		
DNMG150608-GK	M	● ●	12.7	6.35	0.8	5.16		
DNMG150612-GK	M	● ★	12.7	6.35	1.2	5.16		
DNMG150408-RK	R	● ● ★	12.7	4.76	0.8	5.16		
DNMG150412-RK	R	● ● ★	12.7	4.76	1.2	5.16		
DNMG150608-RK	R	● ● ●	12.7	6.35	0.8	5.16		
DNMG150612-RK	R	● ● ●	12.7	6.35	1.2	5.16		
DNMA150404	R	● ● ★	12.7	4.76	0.4	5.16		
DNMA150408	R	● ● ★	12.7	4.76	0.8	5.16		
DNMA150412	R	● ● ★	12.7	4.76	1.2	5.16		
DNMA150604	R	● ● ★	12.7	6.35	0.4	5.16		
DNMA150608	R	● ● ●	12.7	6.35	0.8	5.16		
DNMA150612	R	● ● ●	12.7	6.35	1.2	5.16		












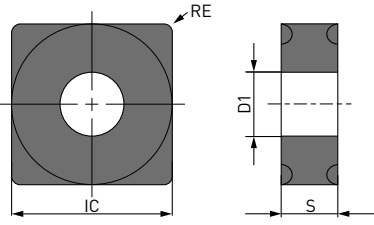






[10 inserts in one case]

SNMG, SNMA

NEGATIVE INSERTS (WITH HOLE)

K

M-Class

Order number			IC	S	RE	D1		Geometry
SNMG120408-LK	L	● ★	12.7	4.76	0.8	5.16		
SNMG120412-LK	L	● ★	12.7	4.76	1.2	5.16		
SNMG120404-MA	M	● ★	12.7	4.76	0.4	5.16		
SNMG120408-MA	M	● ★	12.7	4.76	0.8	5.16		
SNMG120412-MA	M	● ★	12.7	4.76	1.2	5.16		
SNMG120416-MA	M	● ★	12.7	4.76	1.6	5.16		
SNMG150612-MA	M	● ●	15.875	6.35	1.2	6.35		
SNMG120408-MK	M	● ● ★	12.7	4.76	0.8	5.16		
SNMG120412-MK	M	● ● ★	12.7	4.76	1.2	5.16		
SNMG120416-MK	M	★ ● ★	12.7	4.76	1.6	5.16		
SNMG150612-MK	M	★ ● ★	15.875	6.35	1.2	6.35		
SNMG150616-MK	M	★ ● ★	15.875	6.35	1.6	6.35		
SNMG190612-MK	M	★	19.05	6.35	1.2	7.93		
SNMG190616-MK	M	★	19.05	6.35	1.6	7.93		
SNMG120404-GK	M	● ★	12.7	4.76	0.4	5.16		
SNMG120408-GK	M	● ●	12.7	4.76	0.8	5.16		
SNMG120412-GK	M	● ●	12.7	4.76	1.2	5.16		
SNMG120416-GK	M	● ★	12.7	4.76	1.6	5.16		
SNMG150612-GK	M	● ★	15.875	6.35	1.2	6.35		
SNMG120408-RK	R	● ● ★	12.7	4.76	0.8	5.16		
SNMG120412-RK	R	● ● ●	12.7	4.76	1.2	5.16		
SNMG120416-RK	R	● ● ★	12.7	4.76	1.6	5.16		
SNMG150612-RK	R	★ ● ★	15.875	6.35	1.2	6.35		
SNMG150616-RK	R	★ ● ★	15.875	6.35	1.6	6.35		
SNMG190612-RK	R	★	19.05	6.35	1.2	7.93		
SNMG190616-RK	R	★	19.05	6.35	1.6	7.93		
SNMA090308	R	★ ★ ★	9.525	3.18	0.8	3.81		
SNMA120408	R	● ● ★	12.7	4.76	0.8	5.16		
SNMA120412	R	● ● ●	12.7	4.76	1.2	5.16		
SNMA120416	R	● ● ●	12.7	4.76	1.6	5.16		
SNMA150612	R	● ● ★	15.875	6.35	1.2	6.35		
SNMA150616	R	● ● ●	15.875	6.35	1.6	6.35		
SNMA190612	R	●	19.05	6.35	1.2	7.93		
SNMA190616	R	●	19.05	6.35	1.6	7.93		

[10 inserts in one case]














13 

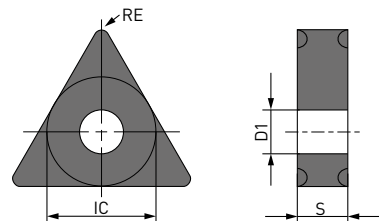
TNMG, TNMA

NEGATIVE INSERTS (WITH HOLE)

K

M-Class

Order number			IC	S	RE	D1		Geometry
TNMG160404-LK	L	● ★	9.525	4.76	0.4	3.81		
TNMG160408-LK	L	● ★	9.525	4.76	0.8	3.81		
TNMG160412-LK	L	● ★	9.525	4.76	1.2	3.81		
TNMG160404-MA	M	● ★	9.525	4.76	0.4	3.81		
TNMG160408-MA	M	● ●	9.525	4.76	0.8	3.81		
TNMG160412-MA	M	● ●	9.525	4.76	1.2	3.81		
TNMG160416-MA	M	● ★	9.525	4.76	1.6	3.81		
TNMG220408-MA	M	★ ★	12.7	4.76	0.8	5.16		
TNMG220412-MA	M	★ ★	12.7	4.76	1.2	5.16		
TNMG220416-MA	M	● ●	12.7	4.76	1.6	5.16		
TNMG160404-MK	M	● ● ★	9.525	4.76	0.4	3.81		
TNMG160408-MK	M	● ● ●	9.525	4.76	0.8	3.81		
TNMG160412-MK	M	● ● ★	9.525	4.76	1.2	3.81		
TNMG220408-MK	M	★ ● ★	12.7	4.76	0.8	5.16		
TNMG220412-MK	M	★ ★ ★	12.7	4.76	1.2	5.16		
TNMG220416-MK	M	★ ★ ★	12.7	4.76	1.6	5.16		
TNMG160404-GK	M	● ★	9.525	4.76	0.4	3.81		
TNMG160408-GK	M	● ●	9.525	4.76	0.8	3.81		
TNMG160412-GK	M	● ★	9.525	4.76	1.2	3.81		
TNMG160416-GK	M	● ★	9.525	4.76	1.6	3.81		
TNMG220408-GK	M	● ★	12.7	4.76	0.8	5.16		
TNMG220412-GK	M	★ ★	12.7	4.76	1.2	5.16		
TNMG160408-RK	R	● ● ●	9.525	4.76	0.8	3.81		
TNMG160412-RK	R	● ● ●	9.525	4.76	1.2	3.81		
TNMG160416-RK	R	● ● ★	9.525	4.76	1.6	3.81		
TNMG220408-RK	R	● ● ★	12.7	4.76	0.8	5.16		
TNMG220412-RK	R	● ● ★	12.7	4.76	1.2	5.16		
TNMG220416-RK	R	● ● ★	12.7	4.76	1.6	5.16		
TNMA160404	R	● ● ★	9.525	4.76	0.4	3.81		
TNMA160408	R	● ● ●	9.525	4.76	0.8	3.81		
TNMA160412	R	● ● ●	9.525	4.76	1.2	3.81		
TNMA160416	R	● ● ●	9.525	4.76	1.6	3.81		
TNMA160420	R	★ ★ ★	9.525	4.76	2.0	3.81		
TNMA220408	R	● ● ★	12.7	4.76	0.8	5.16		
TNMA220412	R	● ● ★	12.7	4.76	1.2	5.16		
TNMA220416	R	● ● ●	12.7	4.76	1.6	5.16		







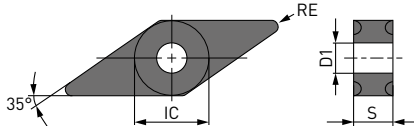












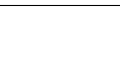
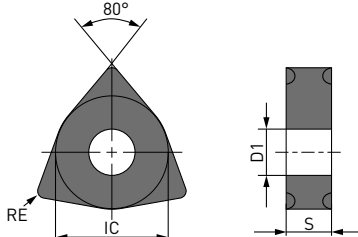











[10 inserts in one case]

VNMG, WNMG, WNMA

NEGATIVE INSERTS (WITH HOLE)

K

M-Class

Order number			IC	S	RE	D1		Geometry
VNMG160404-LK	L	● ★	9.525	4.76	0.4	3.81		
VNMG160408-LK	L	● ★	9.525	4.76	0.8	3.81		
VNMG160404-MA	M	● ★	9.525	4.76	0.4	3.81		
VNMG160408-MA	M	● ★	9.525	4.76	0.8	3.81		
VNMG160404-MK	M	● ● ★	9.525	4.76	0.4	3.81		
VNMG160408-MK	M	● ● ●	9.525	4.76	0.8	3.81		
VNMG160412-MK	M	● ● ●	9.525	4.76	1.2	3.81		
VNMG160404-GK	M	● ★	9.525	4.76	0.4	3.81		
VNMG160408-GK	M	● ★	9.525	4.76	0.8	3.81		
VNMG160412-GK	M	● ★	9.525	4.76	1.2	3.81		
VNMA160404	R	★ ● ★	9.525	4.76	0.4	3.81		
VNMA160408	R	★ ● ●	9.525	4.76	0.8	3.81		
VNMA160412	R	★ ● ★	9.525	4.76	1.2	3.81		
WNMG080404-LK	L	● ★	12.7	4.76	0.4	5.16		
WNMG080408-LK	L	● ★	12.7	4.76	0.8	5.16		
WNMG080412-LK	L	● ★	12.7	4.76	1.2	5.16		
WNMG060408-MA	M	● ●	9.525	4.76	0.8	3.81		
WNMG060412-MA	M	● ★	9.525	4.76	1.2	3.81		
WNMG080404-MA	M	● ★	12.7	4.76	0.4	5.16		
WNMG080408-MA	M	● ●	12.7	4.76	0.8	5.16		
WNMG080412-MA	M	● ●	12.7	4.76	1.2	5.16		
WNMG080416-MA	M	● ★	12.7	4.76	1.6	5.16		
WNMG080404-MK	M	● ● ★	12.7	4.76	0.4	5.16		
WNMG080408-MK	M	● ● ●	12.7	4.76	0.8	5.16		
WNMG080412-MK	M	● ● ●	12.7	4.76	1.2	5.16		
WNMG080416-MK	M	★ ● ★	12.7	4.76	1.6	5.16		
WNMG060404-GK	M	★ ●	9.525	4.76	0.4	3.81		
WNMG060408-GK	M	● ★	9.525	4.76	0.8	3.81		
WNMG080404-GK	M	● ★	12.7	4.76	0.4	5.16		
WNMG080408-GK	M	● ●	12.7	4.76	0.8	5.16		
WNMG080412-GK	M	● ●	12.7	4.76	1.2	5.16		
WNMG080416-GK	M	● ★	12.7	4.76	1.6	5.16		
WNMG080408-RK	R	● ● ●	12.7	4.76	0.8	5.16		
WNMG080412-RK	R	● ● ●	12.7	4.76	1.2	5.16		
WNMG080416-RK	R	● ● ●	12.7	4.76	1.6	5.16		
WNMA060408	R	★ ● ★	9.525	4.76	0.8	3.81		
WNMA060412	R	★ ● ★	9.525	4.76	1.2	3.81		
WNMA080404	R	● ● ★	12.7	4.76	0.4	5.16		
WNMA080408	R	● ● ●	12.7	4.76	0.8	5.16		
WNMA080412	R	● ● ●	12.7	4.76	1.2	5.16		
WNMA080416	R	● ● ★	12.7	4.76	1.6	5.16		

(10 inserts in one case)

13 



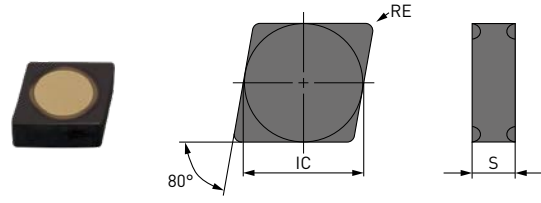
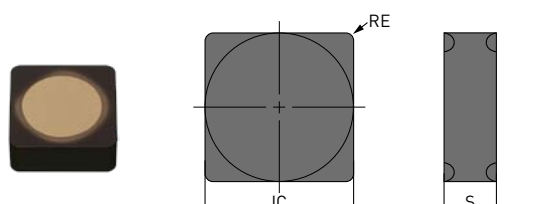
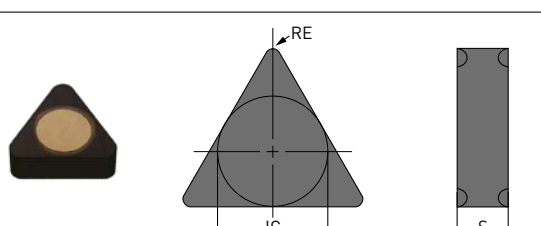
● : Inventory maintained. ★ : Inventory maintained in Japan.

CNMN, SNMN, TNMN

NEGATIVE INSERTS (WITHOUT HOLE)



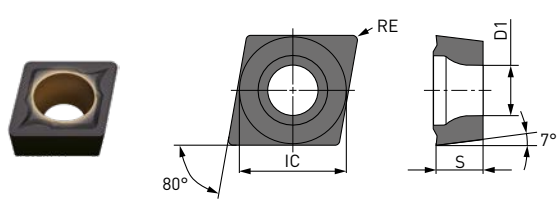
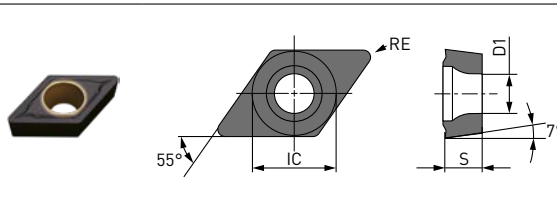
K

M-Class

Order number		MC5105	MC5115	MC5125	IC	S	RE	D1		Geometry
CNMN120408	R	★	●	★	12.7	4.76	0.8	R		
CNMN120412	R	★	●	★	12.7	4.76	1.2	R		
CNMN120416	R	★	●	★	12.7	4.76	1.6	R		
SNMN120408	R	★	●	★	12.7	4.76	0.8	R		
SNMN120412	R	★	●	●	12.7	4.76	1.2	R		
SNMN120416	R	★	★	★	12.7	4.76	1.6	R		
SNMN120420	R	★	●	★	12.7	4.76	2.0	R		
TNMN160408	R	★	●	★	9.525	4.76	0.8	R		
TNMN160412	R	★	●	★	9.525	4.76	1.2	R		
TNMN160416	R	★	★	●	9.525	4.76	1.6	R		
TNMN160420	R	★	●	★	9.525	4.76	2.0	R		

CCMT, DCMT

7° POSITIVE INSERTS (WITH HOLE)

Order number		MC5105	MC5115	MC5125	IC	S	RE	D1		Geometry
CCMT060204-MK	M	●	●		6.35	2.38	0.4	2.8		
CCMT060208-MK	M	●	★		6.35	2.38	0.8	2.8		
CCMT09T304-MK	M	●	●		9.525	3.97	0.4	4.4		
CCMT09T308-MK	M	●	●		9.525	3.97	0.8	4.4		
CCMT120404-MK	M	●	★		12.7	4.76	0.4	5.5		
CCMT120408-MK	M	●	●		12.7	4.76	0.8	5.5		
CCMT120412-MK	M	●	★		12.7	4.76	1.2	5.5		
DCMT070204-MK	M	●	★		6.35	2.38	0.4	2.8		
DCMT070208-MK	M	●	★		6.35	2.38	0.8	2.8		
DCMT11T304-MK	M	●	●		9.525	3.97	0.4	4.4		
DCMT11T308-MK	M	●	●		9.525	3.97	0.8	4.4		
DCMT150404-MK	M	●	★		12.7	4.76	0.4	5.5		
DCMT150408-MK	M	●	★		12.7	4.76	0.8	5.5		

(10 inserts in one case)

MC5100 SERIES

RECOMMENDED CUTTING CONDITIONS

NEGATIVE INSERTS (FOR EXTERNAL TURNING)

Material	Hardness	Cutting conditions	Grade	Vc
K Grey cast iron	< 350MPa	●	MC5105	230-700
		●	MC5105	210-640
		⊕	MC5105	195-605
	< 450MPa	⊕	MC5115	190-350
		●	MC5115	195-365
		●	MC5115	180-330
Ductile cast iron	< 800MPa	⊕	MC5125	95-190
		●	MC5115	175-325
		●	MC5115	160-295
		⊕	MC5125	85-170

Cutting range



f

ap

Light cutting	LK	0.10-0.50	0.50-2.50
Medium cutting	MK	0.20-0.55	0.50-4.00
Medium cutting	MA	0.20-0.50	0.30-4.00
Medium cutting	GK	0.25-0.60	1.50-5.00
Rough cutting	RK	0.20-0.60	1.50-6.00
Cast iron cutting	Flat	0.20-0.60	2.50-6.00

7° POSITIVE INSERTS (FOR EXTERNAL TURNING)

Material	Hardness	Cutting conditions	Grade	Vc
K Ductile cast iron	< 450MPa	●	MC5115	170-320
		●	MC5115	130-250
		⊕	MC5125	60-130
	< 800MPa	●	MC5115	125-240
		●	MC5115	105-200
		⊕	MC5125	55-115

Cutting range

Chipbreaker

f

ap

Medium cutting	MK	0.08-0.30	0.30-2.00
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APPLICATION EXAMPLES

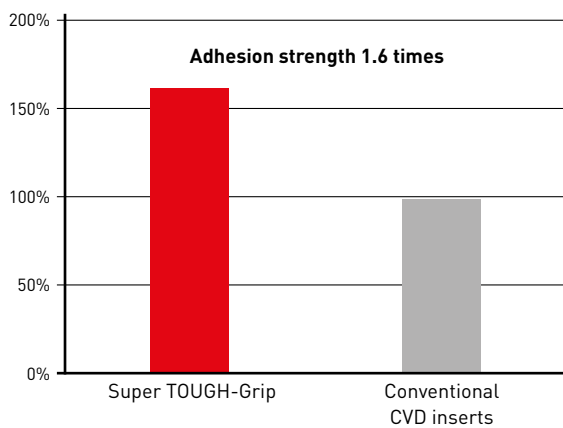
MC5105

COMPARISON OF WEAR RESISTANCE OF DIN GG30 AT CUTTING SPEEDS OF 1000 M/MIN

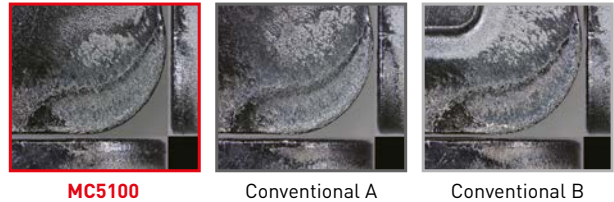
Adhesion strength evaluation:

Adhesion strength measurement is obtained from a scratch test that records the force needed to peel the coating layers.

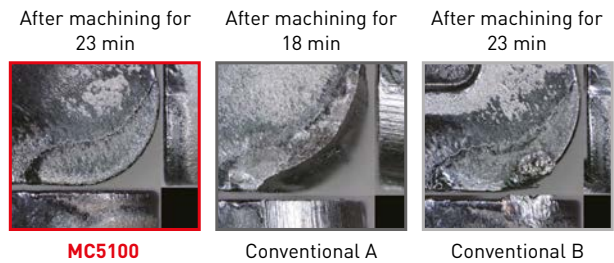
Material	DIN GG30
Tool	CNMA120412
Vc (m/min)	1.000
f (mm/rev.)	0.3
ap (mm)	2.0
Coolant	Dry cutting



After machining for 4 minutes



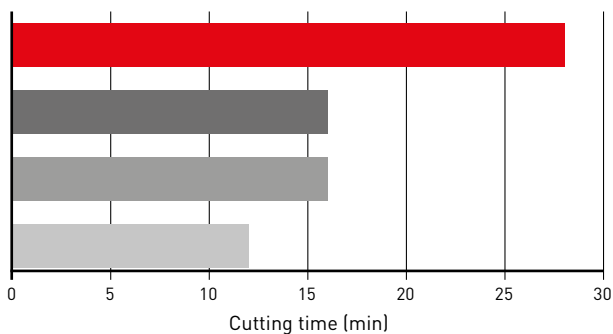
Final image



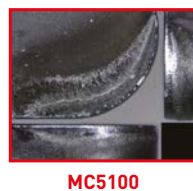
MC5115

COMPARISON OF WEAR RESISTANCE DURING CONTINUOUS CUTTING OF DIN GGG70

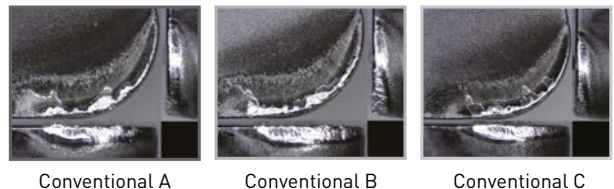
Material	DIN GGG70
Tool	CNMA120412
Vc (m/min)	250
f (mm/rev.)	0.3
ap (mm)	2.0
Coolant	Wet cutting



After machining for 16 min



After machining for 12 min

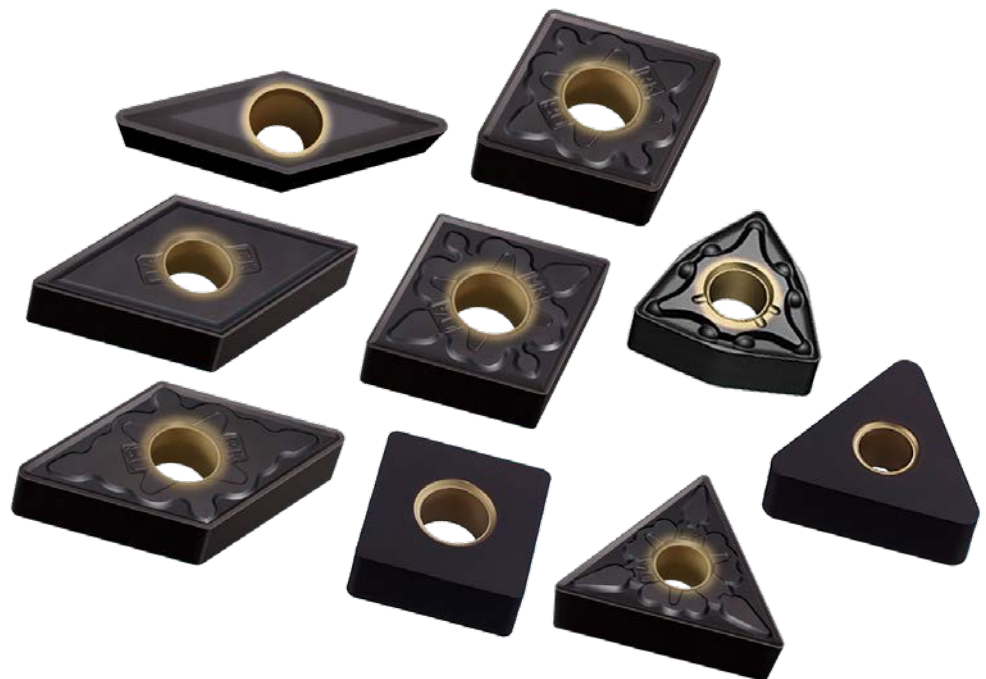
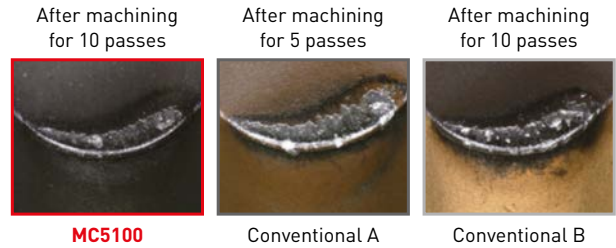
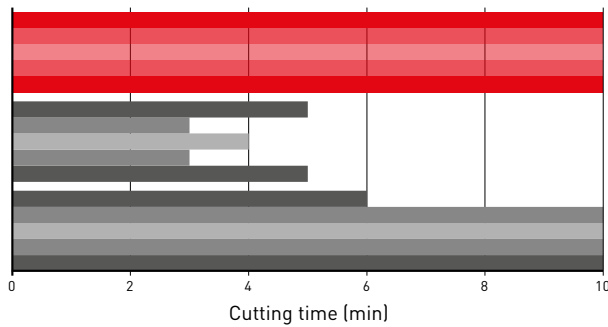


APPLICATION EXAMPLES

MC5125

COMPARISON OF FRACTURE RESISTANCE AFTER 10 PASSES OF INTERRUPTED CUTTING OF DIN GGG70

Material	DIN GGG70
Tool	CNMA120412
Vc (m/min)	250
f (mm/rev.)	0.3
ap (mm)	2.0
Coolant	Wet cutting



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