

CVD coated grade for turning of steels

## **UE** series

Making the best use of peeling resistance property of a coating and plastic deformation resistance property of a cemented carbide substrate.

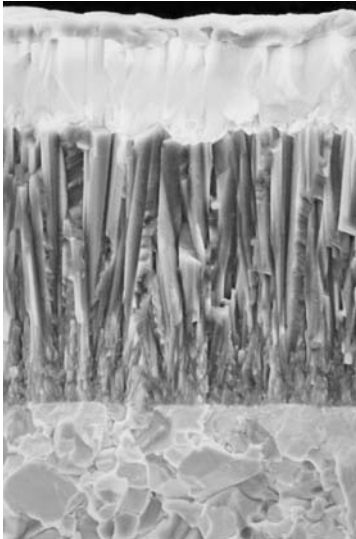
**Extraordinary resistance to wear, fracture and welding for steel turning.**



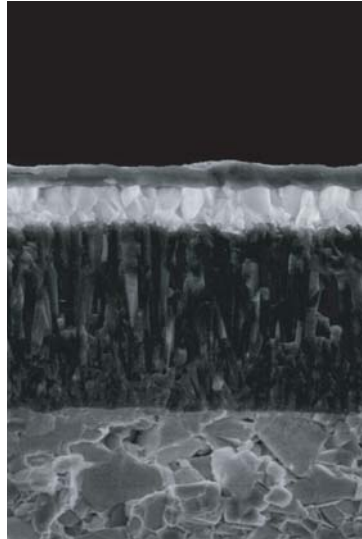
# CVD coated grade for turning of steels

## **UE** series

### ■ Features

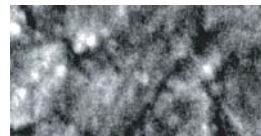


Micro-structure of **UE6010**



Micro-structure of **UE6020**

**A smooth layer of aluminium oxide (Al<sub>2</sub>O<sub>3</sub>) and evenly coating technology.**



Evenly Coating Technology



Conventional coated grade

Smooth layers of Mitsubishi Materials' own, evenly coated special TiCN compound for high adhesive fracture and pilling resistance and micro-grain aluminum oxide.

- **UE6010** is a general-purpose grade for steel turning. Extraordinary resistance to wear and fracture, compared to conventional grades.
- **UE6020** is an eagerly awaited grade. High resistance to fracture and plastic deformation, showing superior edge reliability.
- **UE6005** is recommended for high speed, highly efficient, stable cutting that demands high wear resistance. **UE6035** can be selected for unstable interrupted machining, where high fracture resistance is essential. Super-coated cemented carbide grade "UE series" is ideal for both continuous and interrupted turning of steel.

**"UE series," high-performance grade, is designed so that its CVD coated layer and a special cemented carbide substrate can make the best use of their characteristics, high shock resistance and plastic deformation resistance, respectively.**

#### Improved wear resistance

Increased strength between coating layers and a substrate and a newly developed micro-grain aluminum oxide (Al<sub>2</sub>O<sub>3</sub>) layer have led to much higher wear resistance than conventional grades.

#### Improved fracture resistance

A special cemented carbide substrate, which has a hard core and a tougher surface layer than existing grades, have reduced chipping and fractures.

#### Preventing "Built-Up" edge

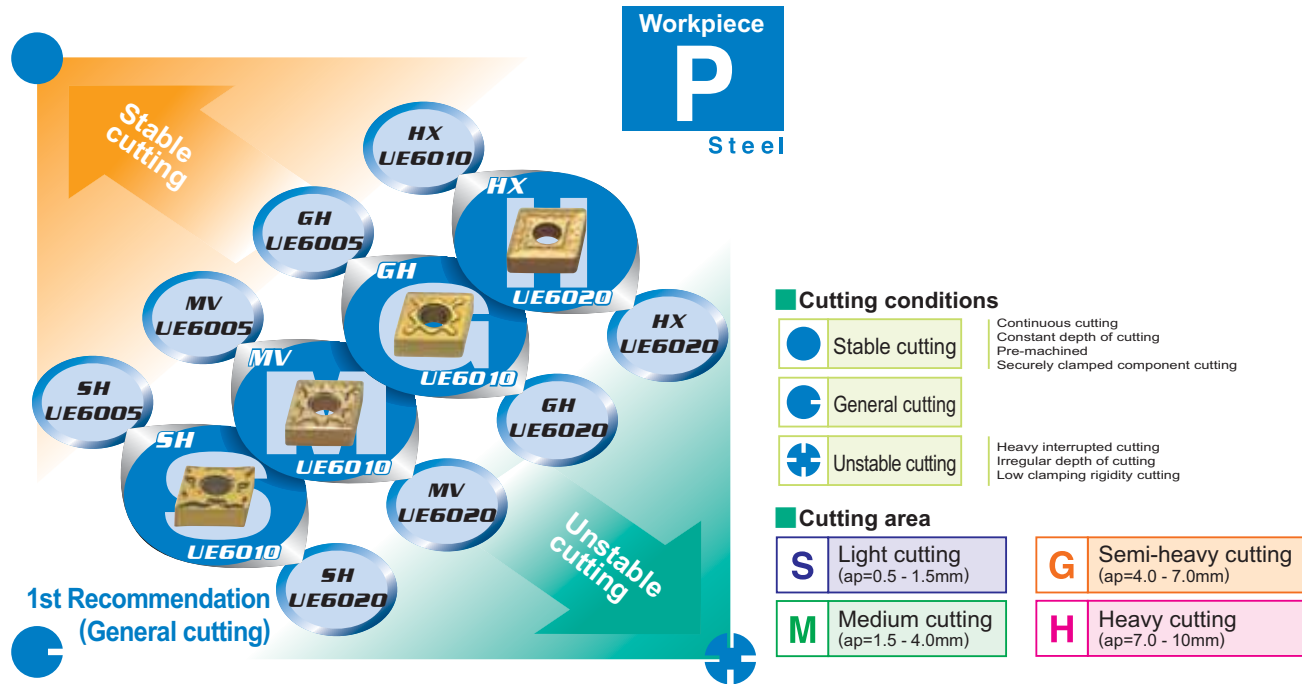
The surface of the coating layers is lamination of special titanium compound that is vapor deposited by Even Coating technology. This prevents the occurrence of welding, which is the cause of chipping at the top cutting edge.

# Application range and recommended cutting conditions

## ● Optimum inserts

This diagram shows optimal combinations of a grade suitable for turning each steel workpiece and a chipbreaker ideal for each cutting application range. High wear-resistant UE6005 and UE6010 also can be used for cutting cast iron. UE6020 and UE6010 with superior resistance to welding are recommended for bearing steel and stainless steel, too.

### NEGATIVE INSETS FOR STEEL



Application range	
ISO	Steel
P01	UE6005
P10	UE6010
P20	UE6020
P30	UE6035
P40	UE6035

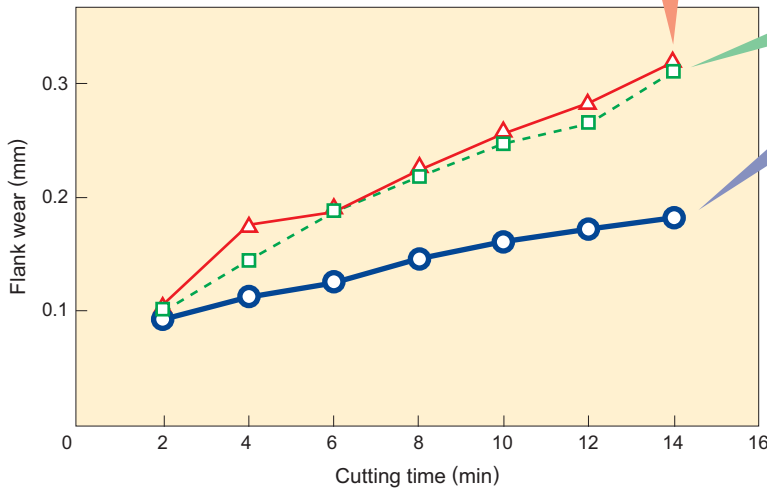
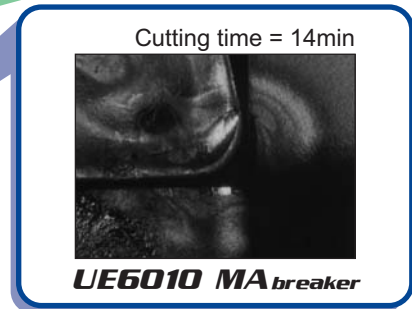
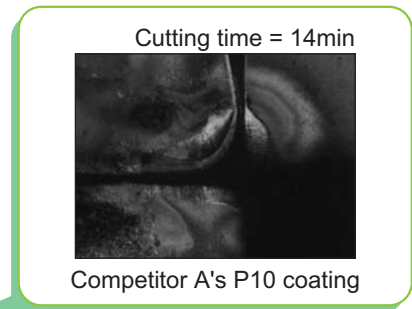
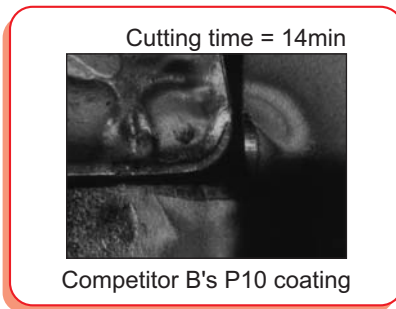
Recommended cutting conditions						
Workpiece (Hardness)	Cutting area	Cutting speed (m/min)				
		UE6005	UE6010	UE6020	UE6035	
Mild steel JIS SS400, JIS S10C, etc. (≤180HB)	Light cutting	370 (330-400)	330 (280-390)	220 (170-280)	-	
	Medium cutting	350 (300-400)	300 (250-350)	200 (150-250)	150 (100-200)	
	Semi-heavy cutting	-	270 (230-320)	180 (140-230)	140 (90-180)	
Carbon steel Alloy steel S45C SCM440, etc. (180 - 280HB)	Heavy cutting	-	210 (180-250)	140 (120-200)	100 (70-140)	
	Light cutting	280 (220-330)	220 (170-280)	180 (110-240)	-	
	Medium cutting	250 (200-300)	200 (150-250)	160 (100-220)	130 (80-180)	
	Semi-heavy cutting	-	180 (140-230)	140 (90-200)	120 (70-160)	
	Heavy cutting	-	140 (120-200)	100 (60-130)	90 (60-130)	

## Cutting performance of *UE6010*

### Wear resistance

### Wear in continuous machining

Alloy steel JIS SNCM439 (270HB)



<Cutting conditions>

Insert : CNMG120408-○○○

Tool : PCLNL2525M12

Cutting speed : 200m/min

Feed rate : 0.3mm/rev

Depth of cut : 1.5mm

Wet, continuous, external turning

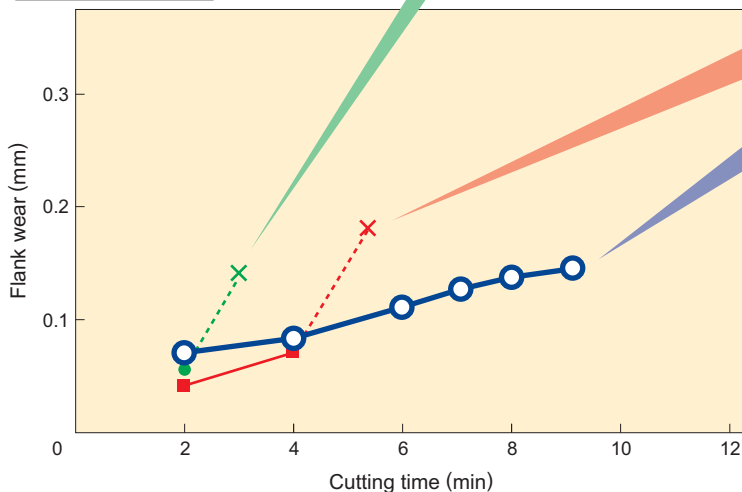
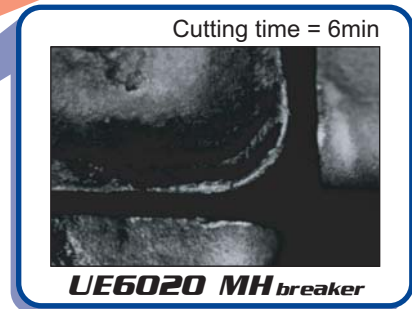
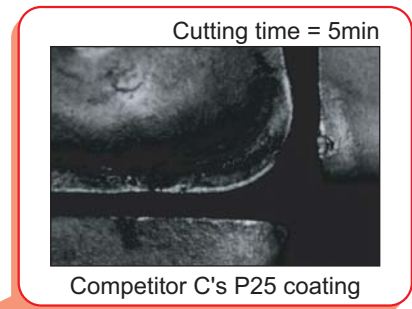
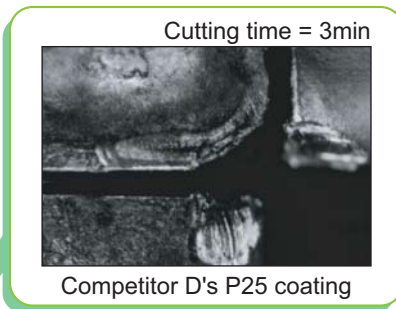
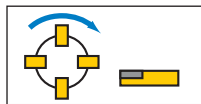
○○○ indicates each company's general-purpose chipbreaker.

## Cutting performance of *UE6020*

### Fracture resistance

### No chipping under high speed, interrupted cutting

Alloy steel JIS SNCM440 (220HB)



<Cutting conditions>

Insert : CNMG120408-○○○

Tool : PCLNL2525M12

Cutting speed : 230m/min

Feed rate : 0.2mm/rev

Depth of cut : 1.5mm

Dry, interrupted, external turning

○○○ indicates a chip breaker.

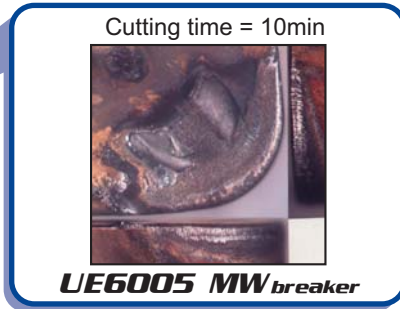
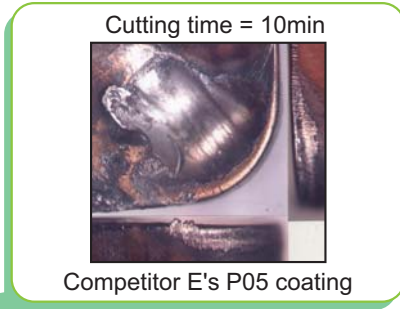
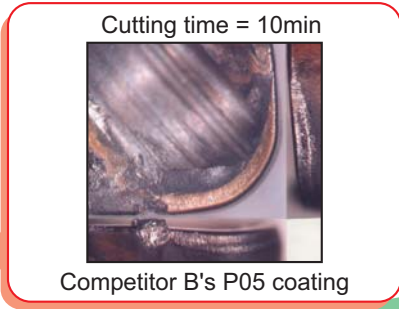
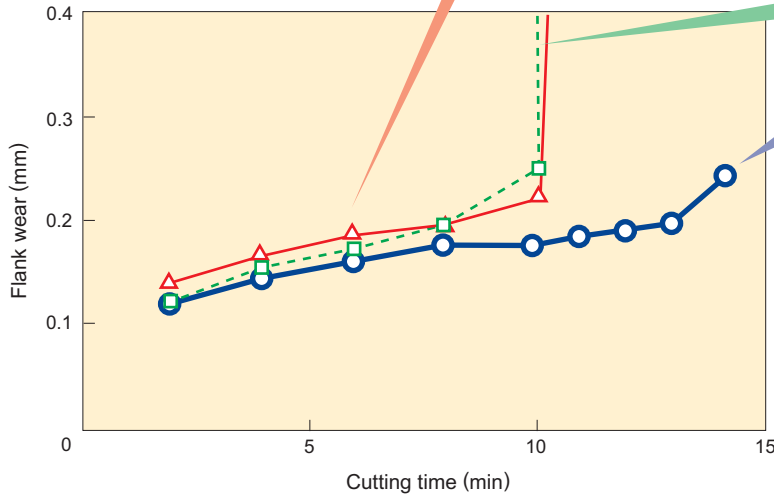


# Cutting performance of **UE6005**

## Wear resistance

**High-speed, high-feed-rate machining because of a grade and wiper insert combination. Long tool life.**

Alloy steel JIS SCM440 (220HB)



<Cutting conditions>

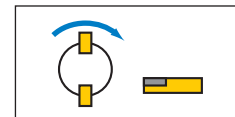
- Insert : CNMG120408-○○○
- Tool : PCLNL2525M12
- Cutting speed : 250m/min
- Feed rate : 0.75mm/rev
- Depth of cut : 1.5mm
- Wet, continuous, external turning
- indicates each company's general-purpose chipbreaker.

## Fracture resistance

**Compared with competitors' grades, Greatly increased wear resistance.**

Strong interrupted cutting of alloy steels.  
JIS SNCM439 (270HB)

Feed rate (mm/rev)	0.212		0.236		0.265		0.300		0.335	
Cutting time (min)	1	2	1	2	1	2	1	2	1	2
<b>UE6010 MV breaker</b>					○	○	×	×		
<b>UE6020 MV breaker</b>							○	×	×	×
Competitor's P10 coating	○	×								
Competitor's P20 coating			○	×	○	×	×	×		
Competitor's P25 coating			○	×	○	×	×	×		











- Normal wear
- × Fracture






<Cutting conditions>

- Insert : CNMG120408-○○○
- Tool : PCLNR2525M12
- Cutting speed : 100m/min
- Depth of cut : 3.0mm
- Dry, interrupted, external turning
- indicates each company's general-purpose chipbreaker.

Standard inserts

● Negative insert with hole

Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
<b>CNMG...-FH</b>  Finish cutting	CNMG120404-FH	●	●		
	120408-FH		●	●	
	120412-FH		□		
<b>CNMG...-FS</b>  Finish cutting	CNMG120404-FS			●	
	120408-FS			●	
<b>CNMG...-SH</b>  Light cutting	CNMG090304-SH		●		
	090308-SH		●		
	090312-SH		●		
	09T304-SH		●		
	09T308-SH		●		
	09T312-SH		□		
	120404-SH	●	●	●	
	120408-SH	●	●	●	
<b>CNMG...-SA</b>  Light cutting	CNMG120404-SA		●	●	
	120408-SA		●	●	
	120412-SA		●	●	
	160608-SA		□	□	
	160612-SA		●	□	
<b>CNMG...-SW</b>  Light cutting (Wiper insert)	CNMG120404-SW	●	□		
	120408-SW	●	□		
<b>CNMG...-MV</b>  Medium cutting	CNMG120404-MV	●	●	●	
	120408-MV	●	●	●	
	120412-MV	●	●	●	
	120416-MV	●	●	●	
<b>CNMG...-MH</b>  Medium cutting	CNMG120404-MH	●	●	●	●
	120408-MH	●	●	●	●
	120412-MH	●	●	●	●
	120416-MH		●	□	
	160612-MH	●	●	●	●
	190612-MH	●	●	●	●
<b>CNMG...-MA</b>  Medium cutting	CNMG120404-MA	●	●	●	●
	120408-MA	●	●	●	●
	120412-MA	●	●	●	●
	120416-MA	●	●	□	●
	160608-MA	●	●	●	●
	160612-MA	●	●	●	●
	160616-MA	●	●		●
	190612-MA	●	●	●	●
190616-MA		●	●	●	

Shape	Order number	Coated				
		UE6005	UE6010	UE6020	UE6035	
<b>CNMG...-MW</b>  Medium cutting (Wiper insert)	CNMG120408-MW	●	●			
	120412-MW	●	●			
<b>CNMG...</b>  Medium cutting	CNMG090304		□			
	090308		●			
	09T304		●			
	09T308		●			
	120404	●	●	●	□	
	120408	●	●	●	●	
	120412	●	●	●	●	
	120416	●	●		□	
	160608	●	●	●	□	
	160612	●	●	●	●	
	160616	●	●	●	●	
<b>CNMG...-MS</b>  Medium cutting	CNMG090304-MS		□			
	090308-MS		●			
	09T304-MS		□			
	09T308-MS		●			
	120404-MS		●	●		
	120408-MS		●	●		
<b>CNMG...-GH</b>  Semi-heavy cutting	CNMG120408-GH	●	●	●		
	120412-GH	●	●	●		
	160612-GH	●	●	●		
	160616-GH		□			
	190612-GH	●	●	●		
	190616-GH		●	●		
	<b>CNMM...-HX</b>  Heavy cutting	CNMM160612-HX		□	□	□
		160616-HX		□	□	□
190612-HX			●	●	□	
190616-HX			●	●	□	
190624-HX			●	●	□	
250724-HX			●	●	□	
250732-HX			□	□	□	
250924-HX			●	●	□	
250932-HX		□	□	□		









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







No mark : Not manufactured.

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To be replaced by new products. To be replaced by new products.










● Negative insert with hole






Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
<b>CNMM...-HZ</b>  Heavy cutting	CNMM120408-HZ		●	●	
	120412-HZ		●	●	
	160612-HZ		●	●	
	160616-HZ		●	●	
	190612-HZ		●	●	
	190616-HZ		●	●	
<b>CNMM...-HV</b>  Heavy cutting	CNMM190616-HV	□	●	●	□
	190624-HV	□	●	●	□
	250724-HV	□	●	●	□
	250924-HV	□	●	●	□
<b>CNMM...-HA</b>  Heavy cutting	CNMM120408-HA				△
	120412-HA				△
	160608-HA				△
	160612-HA				△
	160616-HA				△
	190612-HA				▲
	190616-HA				▲
<b>CNMM...-HH</b>  Heavy cutting	CNMM160612-HH			▲	△
	190612-HH			▲	▲
	190616-HH			▲	▲
	190624-HH			▲	△
	250924-HH			▲	△
<b>CNMA...</b>  Heavy cutting	CNMA120404	●	□		
	120408	●	□		
	120412	●	□		
	120416	●	□		
	160612	●	□		
	160616	●			
	190612	●	□		
	190616	●	□		
<b>DNMG...-FH</b>  Finish cutting	DNMG150404-FH		●	●	
	150408-FH		●	●	
	150604-FH		□		
	150608-FH		□		
<b>DNMG...-FS</b>  Finish cutting	DNMG150404-FS			●	
	150408-FS			●	
<b>DNMG...-SH</b>  Light cutting	DNMG110404-SH		●		
	110408-SH		●		
	150404-SH		●	●	●
	150408-SH		●	●	●
	150412-SH		●	●	●
	150604-SH		□		
	150608-SH		□		
	150612-SH		□		

Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
<b>DNMG...-SA</b>  Light cutting	DNMG150404-SA		●	●	
	150408-SA		●	●	
	150412-SA		●	●	
	150604-SA		□	●	
	150608-SA		□	●	
	150612-SA		□	●	
<b>DNMX...-SW</b>  Light cutting (Wiper insert)	DNMX150404-SW	●	□		
	150408-SW	●	□		
	150604-SW	●	□		
	150608-SW	●	□		
<b>DNMG...-MV</b>  Medium cutting	DNMG150404-MV	●	●	●	
	150408-MV	●	●	●	
	150412-MV	●	●	●	
	150416-MV	●	●	●	
	150604-MV	●	●	●	
	150608-MV	●	●	●	
	150612-MV	●	●	●	
150616-MV	●	●	●		
<b>DNMG...-MH</b>  Medium cutting	DNMG150404-MH	●	●	●	●
	150408-MH	●	●	●	●
	150412-MH	●	●	●	●
	150604-MH		□	●	
	150608-MH		□	●	
	150612-MH		□	●	
<b>DNMG...-MA</b>  Medium cutting	DNMG150404-MA	●	●	●	●
	150408-MA	●	●	●	●
	150412-MA	●	●	●	●
	150604-MA	●	●	●	□
	150608-MA	●	●	●	●
150612-MA	●	●	●	□	
<b>DNMX...-MW</b>  Medium cutting (Wiper insert)	DNMX150408-MW	●	●	□	
	150412-MW	●	●	□	
	150608-MW	●	●	□	
<b>DNMG...</b>  Medium cutting	DNMG110408		●		
	150404		●	●	●
	150408		●	●	●
	150412		●	●	●
	150416		□		
	150604		●	●	□
	150608		●	●	●
150612		●	●	●	
150616		●			
<b>DNMG...-MS</b>  Medium cutting	DNMG110408-MS		●		
	150404-MS		●	●	
	150408-MS		●	●	
	150412-MS		□		
	150604-MS		●		
	150608-MS		●		
	150612-MS		□		

Standard inserts

● Negative insert with hole

Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
 <p>Semi-heavy cutting</p>	DNMG150408-GH	●	●	●	
	150412-GH	●	●	●	
	150608-GH	●	●	●	
	150612-GH	●	●	●	
 <p>Heavy cutting</p>	DNMM150408-HZ		●	●	
	150412-HZ		●	●	
	150416-HZ		●	●	
	150608-HZ		●	●	
	150612-HZ		●	●	
	150616-HZ		●	●	
	DNMA150404		□		
	150408	●	□		
	150412	●	□		
 <p>Finish cutting</p>	SNMG120404-FH			●	
	120408-FH			●	
 <p>Finish cutting</p>	SNMG120404-FS			●	
	120408-FS			●	
 <p>Light cutting</p>	SNMG120404-SH	□	●	●	
	120408-SH	●	●	●	
	120412-SH	□	●	●	
 <p>Light cutting</p>	SNMG120404-SA		●	□	
	120408-SA		●	●	
	120412-SA		●	●	
 <p>Medium cutting</p>	SNMG120404-MV	●	●	●	
	120408-MV	●	●	●	
	120412-MV	●	●	●	
 <p>Medium cutting</p>	SNMG120408-MH	●	●	●	●
	120412-MH	●	●	●	●

Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
 <p>Medium cutting</p>	SNMG120404-MA	●	●	●	●
	120408-MA	●	●	●	●
	120412-MA	●	●	●	●
	150608-MA	●	●	□	□
	150612-MA	●	●	●	□
	190612-MA		□		
 <p>Medium cutting</p>	SNMG090304		●	●	
	090308		●	●	
	090312		□		
	120404	●	●	●	□
	120408	●	●	●	●
	120412	●	●	●	●
	120416	●	●	●	
	120420	●	●	●	
	150412		□		
	150612	●	●	●	●
	150616		□		
	190612	●	●	●	●
	190616	●	●	●	●
	250724		□		
250924		□			
 <p>Medium cutting</p>	SNMG090304-MS		□		
	090308-MS		□		
	120404-MS		□		
	120408-MS		●	●	
	120412-MS		□		
	120416-MS		□		
	150608-MS		□		
150612-MS		□			
190616-MS		□			
 <p>Semi-heavy cutting</p>	SNMG120408-GH	●	●	●	
	120412-GH	●	●	●	
	120416-GH		●		
	150612-GH		●		
	190612-GH		●		
	190616-GH		●		
250924-GH		□			
 <p>Heavy cutting</p>	SNMM150612-HX		□	□	□
	190612-HX		□	□	□
	190616-HX		●	●	□
	190624-HX		●	●	□
	250724-HX		●	●	□
	250732-HX		□	□	□
	250924-HX		●	●	□
250932-HX		□	□	□	

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




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▲ : Inventory maintained. △ : Non stock, produced to order only.

To be replaced by new products. To be replaced by new products.











● Negative insert with hole










Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
<b>SNMM...-HZ</b>  Heavy cutting	SNMM120408-HZ		●	●	
	120412-HZ		●	●	
	150612-HZ		●	●	
	190612-HZ		●	●	
	190616-HZ		●	●	
<b>SNMM...-HV</b>  Heavy cutting	SNMM190616-HV	□	●	●	□
	190624-HV	□	●	●	□
	250724-HV	□	●	●	□
	250924-HV	□	●	●	□
<b>SNMM...-HA</b>  Heavy cutting	SNMM120408-HA				△
	120412-HA				△
	150612-HA				△
	190612-HA				▲
	190616-HA				▲
	190620-HA				△
	190624-HA				△
	250724-HA				△
<b>SNMM...-HH</b>  Heavy cutting	SNMM190612-HH			▲	▲
	190616-HH			▲	▲
	250724-HH			▲	▲
<b>SNMA...</b>  Heavy cutting	SNMA090308	●			
	120408	●			
	120412	●			
	120416	●			
	190612	●			
	190616	●	□		
<b>TNMG...-FH</b>  Finish cutting	TNMG160404-FH		●	●	
	160408-FH		●	●	
<b>TNMG...-FS</b>  Finish cutting	TNMG160404-FS			●	
	160408-FS			●	
<b>TNMG...-SH</b>  Light cutting	TNMG160404-SH	●	●	●	
	160408-SH	●	●	●	
	220408-SH	●	●	●	
<b>TNMG...-SA</b>  Light cutting	TNMG160404-SA		●	●	
	160408-SA		●	●	
	160412-SA		●	●	
	220408-SA		●	●	
	220412-SA		●	●	
<b>TNMX...-SW</b>  Light cutting (Wiper insert)	TNMX160404-SW	●	□		
	160408-SW	●	□		

Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
<b>TNMG...-C</b>  Light cutting	TNMG160404-C		▲		
	160408-C		▲		
<b>TNMG...-MV</b>  Medium cutting	TNMG160404-MV	●	●	●	
	160408-MV	●	●	●	
	160412-MV	●	●	●	
	220408-MV	●	●	●	
	220412-MV	●	●	●	
<b>TNMG...-MH</b>  Medium cutting	TNMG160404-MH	●	●	●	●
	160408-MH	●	●	●	●
	160412-MH	●	●	●	●
	220408-MH	●	●	●	●
	220412-MH	●	●	●	●
<b>TNMG...-MA</b>  Medium cutting	TNMG160304-MA		□		
	160308-MA		□		
	160404-MA	●	●	●	●
	160408-MA	●	●	●	●
	160412-MA	●	●	●	●
	220408-MA	●	●	●	●
	220412-MA	●	●	●	●
	270608-MA		●	●	□
270612-MA		●	●	●	
<b>TNMX...-MW</b>  Medium cutting (Wiper insert)	TNMX160408-MW	●	●	□	
	160412-MW	●	●	□	
<b>TNMG...</b>  Medium cutting	TNMG110304		●	●	
	110308		●	●	
	160304		●	□	
	160308		●	●	
	160404	●	●	●	
	160408	●	●	●	●
	160412	●	●	●	●
	160416	●	●	□	
	160420		□		
	220404	●	●	●	
	220408	●	●	●	●
	220412	●	●	●	●
	220416	●	●	●	
	220420		●		
	220424		□		
	220432		□		
270608		●			
270612		●	□		
270616		●	□		
330924		●			

Standard inserts





● Negative insert with hole






Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
 <p>Medium cutting</p>	TNMG160404-MS	●	●	●	●
	160408-MS		●	●	
	160412-MS		□		
	220408-MS		●	□	
	220412-MS		□		
 <p>Semi-heavy cutting</p>	TNMG160408-GH	●	●	●	
	160412-GH	●	●	●	
	220408-GH	●	●	●	
	220412-GH	●	●	●	
	220416-GH	●	●	●	
	270612-GH	●	●		
	270616-GH		□		
 <p>Heavy cutting</p>	TNMM160408-HZ		●	●	
	220408-HZ		●	●	
	220412-HZ		●	●	
	220416-HZ		●	●	
 <p>Heavy cutting</p>	TNMM330924-HV	□	□	□	□
	TNMA160308	●			
	160404	●			
	160408	●	□		
	160412	●			
	160416	●			
	160420	●			
	220408	●	□		
	220412	●	□		
	220416	●			
	220420		□		
 <p>Finish cutting</p>	VNMG160404-FH			●	
	160408-FH			●	
 <p>Finish cutting</p>	VNMG160404-FS			●	
	160408-FS			●	
 <p>Medium cutting</p>	VNMG160404-MV	●	●	●	
	160408-MV	●	●	●	

Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
 <p>Medium cutting</p>	VNMG160404-MH	●	●	●	●
	160408-MH	●	●	●	●
 <p>Medium cutting</p>	VNMG160404-MA	●	●	●	
	160408-MA	●	●	●	●
 <p>Medium cutting</p>	VNMG160404	●	●	●	
	160408	●	●	●	
	160412		●		
 <p>Medium cutting</p>	VNMG160404-MS		●		
	160408-MS		●		
 <p>Finish cutting</p>	WNMG080404-FH		●	●	
	080408-FH		●	●	
 <p>Finish cutting</p>	WNMG080404-FS			●	
	080408-FS			●	
 <p>Light cutting</p>	WNMG060308-SH		□		
	06T304-SH		●		
	06T308-SH		●		
	06T312-SH		●		
	060404-SH		●		
	060408-SH		●		
	060412-SH		●		
	080404-SH	●	●	●	
	080408-SH	●	●	●	
	080412-SH	●	●	●	
 <p>Light cutting</p>	WNMG080404-SA		●	□	
	080408-SA		●	●	
	080412-SA		●	●	
 <p>Light cutting (Wiper insert)</p>	WNMG060404-SW	●	□		
	060408-SW	●	□		
	080404-SW	●	□		
	080408-SW	●	□		

● : Inventory maintained. □ : Non stock, produced to order only.  
No mark : Not manufactured.







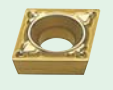


● Negative insert with hole









Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
 <p>Medium cutting</p>	WNUMG06T304-MV	●	●	●	
	06T308-MV	●	●	●	
	06T312-MV	●	●	●	
	060404-MV	●	●	●	
	060408-MV	●	●	●	
	060412-MV	●	●	●	
	080404-MV	●	●	●	
	080408-MV	●	●	●	
	080412-MV	●	●	●	
 <p>Medium cutting</p>	WNUMG080404-MH	●	●	●	●
	080408-MH	●	●	●	●
	080412-MH	●	●	●	●
 <p>Medium cutting</p>	WNUMG06T304-MA		●		
	06T308-MA		●		
	06T312-MA		●		
	060404-MA		●		
	060408-MA		●		
	060412-MA		●		
	080404-MA	●	●	●	□
	080408-MA	●	●	●	●
	080412-MA	●	●	●	●
	100612-MA	●	●	●	□
100616-MA		□			
 <p>Medium cutting (Wiper insert)</p>	WNUMG060408-MW	●	●	□	
	060412-MW	●	●	□	
	080408-MW	●	●		
	080412-MW	●	●		

Shape	Order number	Coated			
		UE6005	UE6010	UE6020	UE6035
 <p>Medium cutting</p>	WNUMG080404	●	●	●	
	080408	●	●	●	
	080412	●	●	●	
	080416		□		
 <p>Medium cutting</p>	WNUMG060304-MS		□		
	06T304-MS		●		
	06T308-MS		●		
	060404-MS		●		
	060408-MS		●		
	080404-MS		●	□	
	080408-MS		●	□	
080412-MS		●	□		
 <p>Semi-heavy cutting</p>	WNUMG080408-GH	●	●	●	
	080412-GH	●	●	●	
	WNMA080408	●	□		
	080412	●	□		
 <p>Medium cutting</p>	RNMG120400		●	●	
	190600		●	●	
	250900		●		

Standard inserts










● Positive insert with hole









Shape	Order number	Coated	
		UE6010	UE6020
 Medium cutting	VBMT110304-MV		●
	110308-MV		●
	160404-MV		●
	160408-MV		●
 Medium cutting	WBMTL30202R-MV		●
	L30202L-MV		●
	L30204R-MV		●
	L30204L-MV		●
 Finish cutting	CCMT060202-FV		●
	060204-FV		●
	09T304-FV		●
	09T308-FV		●
 Light cutting (Wiper insert)	CCMT060202-SW		●
	060204-SW		●
	09T302-SW		●
	09T304-SW		●
 Light cutting	CCMH060202-SV		●
	060204-SV		●
 Medium cutting	CCMT060202	●	●
	060204	●	●
	060208	●	●
	080304	●	□
	080308	●	□
	09T302	●	●
	09T304	●	●
	09T308	●	●
	120404	●	●
	120408	●	●
120412	●	●	
 Medium cutting	CCMH060202-MV		●
	060204-MV		●
 Medium cutting (Wiper insert)	CCMT060204-MW		●
	060208-MW		●
	09T304-MW		●
	09T308-MW		●
	120404-MW		●
	120408-MW		●
 Finish cutting	DCMT070202-FV		●
	070204-FV		●
	11T304-FV		●
	11T308-FV		●

Shape	Order number	Coated	
		UE6010	UE6020
 Light cutting	DCMT070202-SV		●
	070204-SV		●
	070208-SV		●
	11T302-SV		●
	11T304-SV		●
 Medium cutting	DCMT070202-MV		●
	070204-MV		●
	070208-MV		●
	11T302-MV		●
	11T304-MV		●
 Medium cutting	DCMT070202	●	●
	070204	●	●
	070208	□	
	11T302	●	●
	11T304	●	●
	11T308	●	●
	11T312	□	
	150404	●	●
	150408	●	●
	150412	□	□
 Finish cutting	SCMT09T304-FV		●
 Medium cutting	SCMT09T304	●	●
	09T308	●	●
	120404	●	□
	120408	●	●
 Finish cutting	TCMT110204-FV		●
	16T304-FV		●
 Medium cutting	TCMT080204	□	□
	090204	●	●
	110202	●	□
	110204	●	●
	130302	□	□
	130304	●	□
	16T304	●	●
16T308	●	●	
 Finish cutting	VCMT160404-FV		●
	160408-FV		●

● : Inventory maintained. □ : Non stock, produced to order only.  
 No mark : Not manufactured.  
 ▲ : Inventory maintained. To be replaced by new products.

● Positive insert with hole




Shape	Order number	Coated	
		UE6010	UE6020
<b>VCMT...-MV</b>  Medium cutting	VCMT080202-MV		●
	080204-MV		●
<b>VCMT...</b>  Medium cutting	VCMT110304	●	●
	160404	●	●
	160408	●	●
	160412	●	●
<b>VCMW...</b>  	VCMW110304	□	
	160404	□	□
	160408	□	□
<b>WCMT...</b>  Medium cutting	WCMT020102	□	□
	020104	□	□
	L30202	□	
	L30204	□	
	040202	□	□
	040204	□	□
	040208	□	□
	06T304	□	□
06T308	□	□	
<b>RCMT...</b>  Medium cutting	RCMT0602M0	●	
	0803M0	●	
<b>RCMX...</b>  Medium cutting	RCMX1003M0	●	●
	1204M0	●	●
	1606M0	●	●
	2006M0	●	●
	2507M0	●	●
3209M0	□	□	
<b>CPMT...-SQ</b>  	CPMT080204-SQ	▲	
	080208-SQ	▲	
	090304-SQ	▲	
	090308-SQ	▲	
<b>CPMH...-SV</b>  Light cutting	CPMH080202-SV		●
	080204-SV		●
	090302-SV		●
	090304-SV		●
	090308-SV		●
<b>CPMH...-MV</b>  Medium cutting	CPMH080204-MV		●
	080208-MV		●
	090304-MV		●
	090308-MV		●

Shape	Order number	Coated	
		UE6010	UE6020
<b>CPMT...-MQ</b>  Medium cutting	CPMT080204-MQ	▲	
	080208-MQ	▲	
	090304-MQ	▲	
	090308-MQ	▲	
<b>CPMX...</b>  Medium cutting	CPMX080204	□	□
	080208	●	□
	090304	●	●
	090308	●	●
<b>TPMH...-SV</b>  Light cutting	TPMH080202-SV		●
	080204-SV		●
	090202-SV		●
	090204-SV		●
	110302-SV		●
	110304-SV		●
	110308-SV		●
	160302-SV		●
160304-SV		●	
160308-SV		●	
<b>TPMH...-MV</b>  Medium cutting	TPMH080202-MV		●
	080204-MV		●
	090202-MV		●
	090204-MV		●
	110302-MV		●
	110304-MV		●
	110308-MV		●
160304-MV		●	
160308-MV		●	
<b>TPMV...-MQ</b>  Medium cutting	TPMV090204-MQ	▲	
	090208-MQ	▲	
	110304-MQ	▲	
	110308-MQ	▲	
<b>TPMT...-MQ</b>  Medium cutting	TPMT160304-MQ	▲	
	160308-MQ	▲	
<b>WPMT...-MV</b>  Medium cutting	WPMT040202-MV		●
	040204-MV		●
	060304-MV		●
	060308-MV		●
<b>WPMT...-MQ</b>  Medium cutting	WPMT040204-MQ	▲	
	060304-MQ	▲	
	060308-MQ	▲	







## Standard inserts








### ● Negative insert without hole

Shape	Order number	Coated		
		UE6005	UE6010	UE6020
	SNMN120408	●		
	120412	●	□	
	120416	●		
	120420	●		
	TNMN160408	●		
	160412	●		
	160416	●		
	160420	●		
 <p>Semi-heavy cutting</p>	KNMX190504R		●	
	190504L		□	
	190508R		●	
	190508L		□	
	190512R		●	
	190512L		□	




### ● Positive insert without hole

Shape	Order number	Coated		
		UE6005	UE6010	UE6020
 <p>Medium cutting</p>	SPMR090304		□	●
	090308		●	●
	120304		●	●
	120308		●	●
	120312		□	□
	SPMN090308		□	
	120304		●	□
	120308		●	●
	120312		□	●
	120408		□	
	120412		□	
	190408			□
190412			●	
 <p>Medium cutting</p>	TPMR090202		□	
	090204		●	□
	090208		□	□
	110302		●	□
	110304		●	●
	110308		●	●
	160304		●	●
	160308		●	●
160312		●	●	
	TPMN110304	●	●	□
	110308	●	●	□
	110312		□	□
	160304	●	●	□
	160308	●	●	●
	160312		□	□
	160316		□	□
	160320		□	□
	160408		●	●
	220404		●	●
	220408	●	●	●
	220412		●	●
220416		□	□	

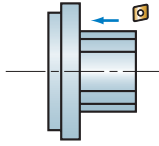
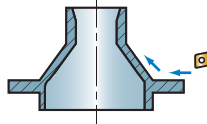
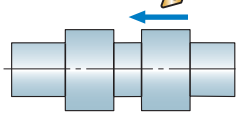
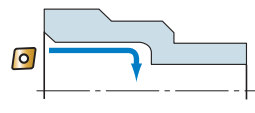
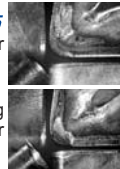

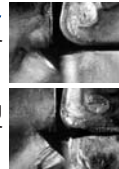

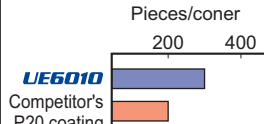


● Inserts for grooving

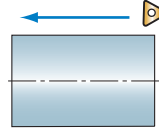
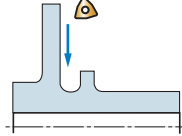
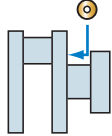
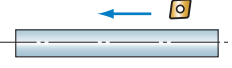
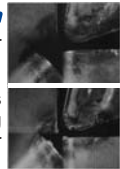

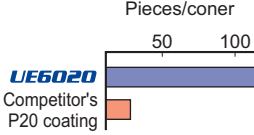
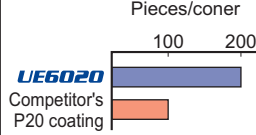
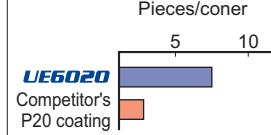
Shape	Order number	Coated
		UE6020
	DGM30CT	●
	40CT	●
	50CT	●
	DGM40CTB	●
	50CTB	●
	60CTB	●
	DGM50CTD04	●
	50CTD08	●
	DGM50CTR04	●
	50CTL04	●
	DGM30CTF	●
	40CTF	●
	50CTF	●
	60CTF	●
	KGT2N	●
	3N	●
	4N	●
	5N	●
	KGT2R	●
	2L	●
	3R	●
	3L	●
	4R	□
	4L	□
	5R	□
5L	□	

● For TAF type drills

Shape	Order number	Coated
		UE6020
	GPMT060204-U1	●
	070204-U1	●
	090304-U1	●
	11T308-U1	●
	140408-U1	●
	GPMT060204-U2	●
	070204-U2	●
	090304-U2	●
	11T308-U2	●
	140408-U2	●
	GPMT060204-U3	●
	070204-U3	●
	090304-U3	●
	11T308-U3	●
	140408-U3	●

Application examples

Insert (Grade)	CNMG120408-MW(UE6005)	CNMG160612-MH(UE6005)	DNMG150408-MA(UE6010)	CNMG120412-MV(UE6010)	
Workpiece	Carbon steel (JIS S55C) 	Alloy steel (JIS SNCM220H) 	Alloy steel (JIS SCr420H) 	Carbon steel (JIS S45C) 	
Component	Hub	Outer bearing cup	Cam shaft	Differential case	
Cutting conditions	Cutting speed (m/min)	Rough cutting : 180 Finish cutting : 240	250	230	280
	Feed (mm/rev)	Rough cutting : 0.4 Finish cutting : 0.2	0.55	0.35	0.25
	Depth of cut (mm)	3.0	2.5	2.0	1.5
Coolant	Wet cutting	Wet cutting	Wet cutting	Wet cutting	
Result	Cutting edge condition <b>UE6005</b> 38 pieces/corner  Competitor coating 20 pieces/corner 	Cutting edge condition <b>UE6005</b> 98 pieces/corner  Competitor coating 55 pieces/corner 	 <b>UE6010</b> Competitor's P20 coating No abnormal wear at scaling when using <b>UE6010</b> . <b>UE6010</b> achieved 1.5 times longer tool life.	Cutting edge condition <b>UE6010</b> 80 pieces/corner  Competitor's P10 coating 40 pieces/corner 	

Insert (Grade)	TNMG160408-MA(UE6010)	WNMG080408-MV(UE6020)	RCMX1204M0(UE6020)	CNMM250924-HV(UE6020)	
Workpiece	Carbon steel (JIS S45C) 	Alloy steel (JIS SCM420) 	Alloy steel (JIS SCM435) 	Cast steel 	
Component	Shaft	Gear	Crank shaft	Shaft	
Cutting conditions	Cutting speed (m/min)	320	160	75	80-130
	Feed (mm/rev)	0.3	0.25	0.3	1.0
	Depth of cut (mm)	2.0	2.0	2.6	8-14
Coolant	Wet cutting	Wet cutting	Dry cutting	Dry cutting	
Result	Cutting edge condition <b>UE6010</b> 400 pieces/corner  Competitor's P20 coating 200 pieces/corner 	 <b>UE6020</b> Competitor's P20 coating Grade <b>UE6020</b> achieved 6 times long tool life.	 <b>UE6020</b> Competitor's P20 coating Grade <b>UE6020</b> achieved 2 times long tool life.	 <b>UE6020</b> Competitor's P20 coating Grade <b>UE6020</b> achieved 2 times long tool life.	

For your safety

●Do not touch cutting or chips without wearing gloves. ●Use tools under recommended cutting conditions, and exchange tools before excessive wear occurs. ●Chips become extremely hot, scattered over and may be stretched. Ensure safety guards and goggles are used. ●In case of using non-water soluble oil, make sure to have a fire prevention countermeasure. ●Use the provided wrench spanner, and ensure the inserts and spare parts are damped securely.

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(Tools specifications subject to change without notice.)