

Coated CBN Grade for Cast Irons

BC5110

New
Products

**Excellent Wear Resistance when Turning Grey
Cast Irons at Low Cutting Speeds.
Provides Fine Surface Finishes on Low Rigidity
Workpieces.**



Coated CBN Grade for Cast Irons

BC5110

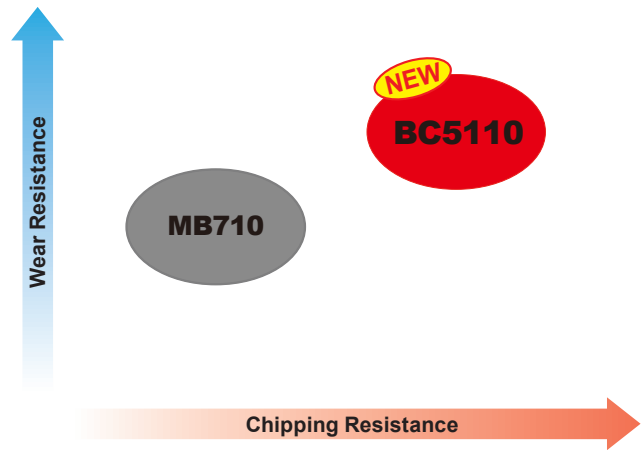
BC5110 uses a tough substrate with a highly hard coating to provide excellent chipping and wear resistance.

Excellent Chipping Resistance

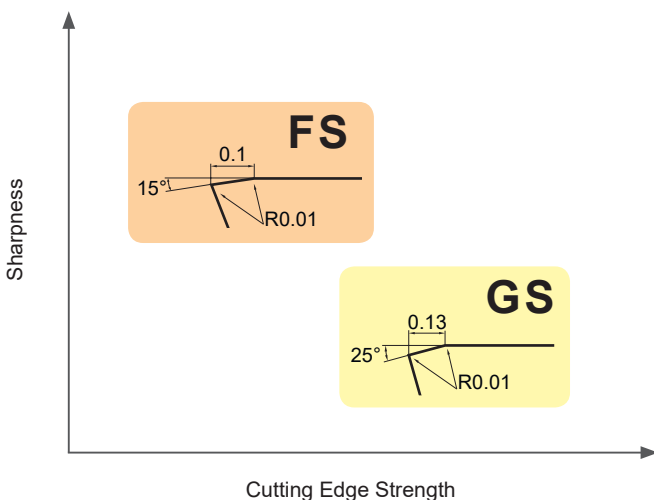
Compared to conventional grades, the fine grain and high cBN content greatly improves chipping resistance and provides stability and long tool life.

Excellent Wear Resistance Coating

The hard ceramic coating layer provides excellent surface finishes as well as wear and notch resistance during continuous cutting. Additionally, chipping and peeling of the coating layer is suppressed due to the improved bonding strength to the cBN substrate.



Line-up of Edge Preparation (Honing)



FS Honing

FS honing has a sharp edge with a small chamfer angle for good flank wear resistance. Recommended when burrs and a dull finishes tend to occur.

GS Honing

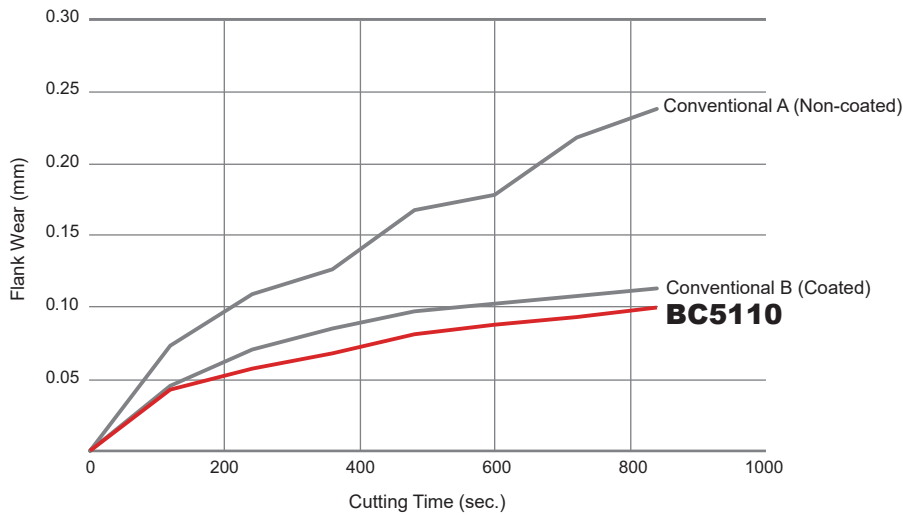
GS honing is suitable for thin or low rigidity workpiece material and for applications that are prone to chip the cutting edge.

Cutting Performance

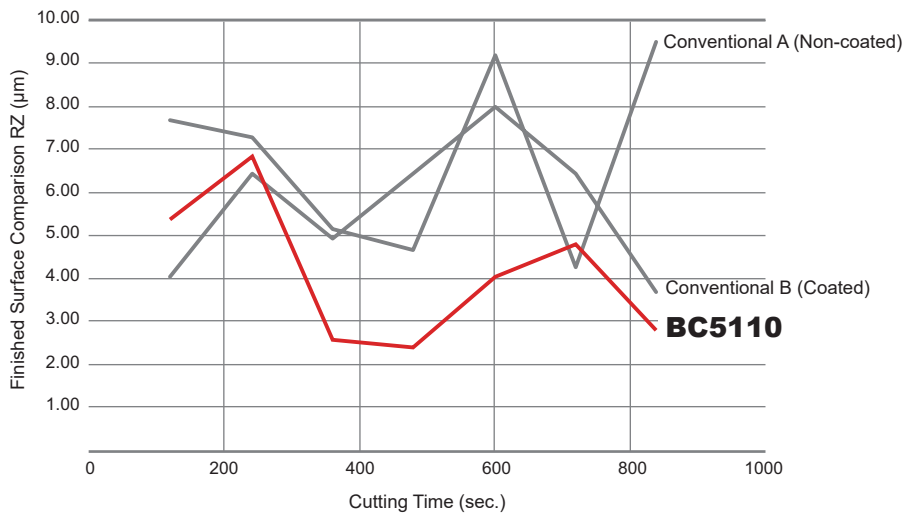
Machining FC250 : comparing wear resistance and surface roughness.

The tough substrate and wear resistant coating of BC5110 provides good surface finishes when compared to conventional uncoated grades.

Flank Wear Comparison



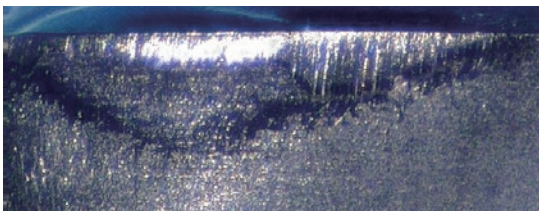
Finished Surface Comparison



<Cutting Conditions>
 Workpiece Material : JIS FC250
 Inserts : CNGA120408
 Machining Methods : External
 Continuous Cutting
 Cutting Speed : $v_c = 300$ m/min
 Feed per Rev. : $f_r = 0.1$ mm/rev
 Depth of Cut : $a_p = 0.2$ mm
 Cutting Mode : Dry Cutting

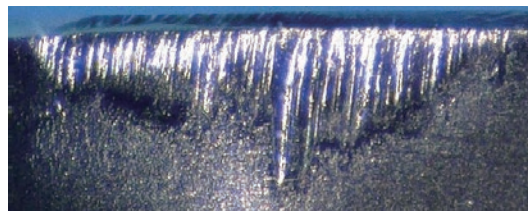
BC5110

900 sec.



Conventional

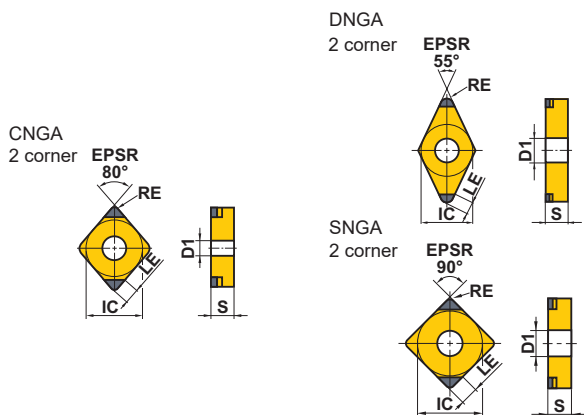
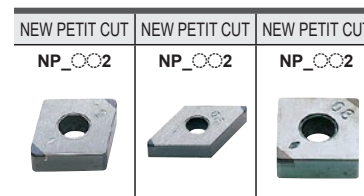
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Coated CBN Grade for Cast Irons

Negative Inserts (With Hole)

G Class

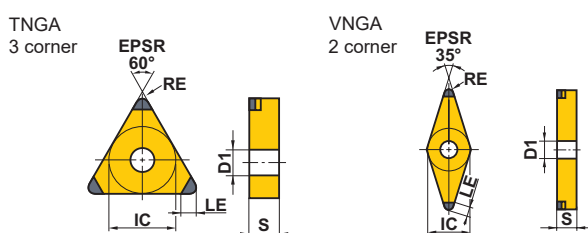
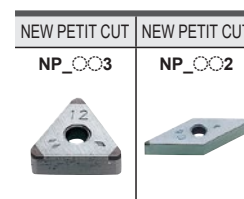


| Order Number | Coated CBN | Cutting Edges | IC | S | RE | D1 | LE |
|------------------|------------|---------------|------|------|-----|------|-----|
| | BC5110 | | | | | | |
| NP-CNGA120404FS2 | ● | 2 | 12.7 | 4.76 | 0.4 | 5.16 | 1.8 |
| NP-CNGA120408FS2 | ● | 2 | 12.7 | 4.76 | 0.8 | 5.16 | 2.0 |
| NP-CNGA120412FS2 | ● | 2 | 12.7 | 4.76 | 1.2 | 5.16 | 2.2 |
| NP-CNGA120404GS2 | ● | 2 | 12.7 | 4.76 | 0.4 | 5.16 | 1.8 |
| NP-CNGA120408GS2 | ● | 2 | 12.7 | 4.76 | 0.8 | 5.16 | 2.0 |
| NP-CNGA120412GS2 | ● | 2 | 12.7 | 4.76 | 1.2 | 5.16 | 2.2 |
| NP-DNGA150404FS2 | ● | 2 | 12.7 | 4.76 | 0.4 | 5.16 | 2.1 |
| NP-DNGA150408FS2 | ● | 2 | 12.7 | 4.76 | 0.8 | 5.16 | 2.0 |
| NP-DNGA150604FS2 | ● | 2 | 12.7 | 6.35 | 0.4 | 5.16 | 2.1 |
| NP-DNGA150608FS2 | ● | 2 | 12.7 | 6.35 | 0.8 | 5.16 | 2.0 |
| NP-DNGA150404GS2 | ● | 2 | 12.7 | 4.76 | 0.4 | 5.16 | 2.1 |
| NP-DNGA150408GS2 | ● | 2 | 12.7 | 4.76 | 0.8 | 5.16 | 2.0 |
| NP-DNGA150608GS2 | ● | 2 | 12.7 | 6.35 | 0.8 | 5.16 | 2.0 |
| NP-SNGA120408GS2 | ● | 2 | 12.7 | 4.76 | 0.8 | 5.16 | 2.2 |

(mm)

Negative Inserts (With Hole)

G Class



| Order Number | Coated CBN | Cutting Edges | IC | S | RE | D1 | LE |
|------------------|------------|---------------|-------|------|-----|------|-----|
| | BC5110 | | | | | | |
| NP-TNGA160404FS3 | ● | 3 | 9.525 | 4.76 | 0.4 | 3.81 | 1.6 |
| NP-TNGA160408FS3 | ● | 3 | 9.525 | 4.76 | 0.8 | 3.81 | 1.7 |
| NP-TNGA160412FS3 | ● | 3 | 9.525 | 4.76 | 1.2 | 3.81 | 1.9 |
| NP-TNGA160404GS3 | ● | 3 | 9.525 | 4.76 | 0.4 | 3.81 | 1.6 |
| NP-TNGA160408GS3 | ● | 3 | 9.525 | 4.76 | 0.8 | 3.81 | 1.7 |
| NP-TNGA160412GS3 | ● | 3 | 9.525 | 4.76 | 1.2 | 3.81 | 1.9 |
| NP-VNGA160404FS2 | ● | 2 | 9.525 | 4.76 | 0.4 | 3.81 | 2.5 |
| NP-VNGA160408FS2 | ● | 2 | 9.525 | 4.76 | 0.8 | 3.81 | 2.0 |
| NP-VNGA160404GS2 | ● | 2 | 9.525 | 4.76 | 0.4 | 3.81 | 2.5 |
| NP-VNGA160408GS2 | ● | 2 | 9.525 | 4.76 | 0.8 | 3.81 | 2.0 |

(mm)

● : Inventory maintained in Japan. (1 insert in one case)

Positive Inserts (With Hole)

G Class

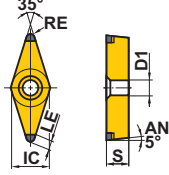
NEW PETIT CUT

NP_002



VBGW

2 corner EPSR



(mm)

| Order Number | Coated CBN | Cutting Edges | IC | S | RE | D1 | LE |
|------------------|------------|---------------|-------|------|-----|------|-----|
| | BC5110 | | | | | | |
| NP-VBGW160404GS2 | ● | 2 | 9.525 | 4.76 | 0.4 | 4.43 | 2.5 |
| NP-VBGW160408GS2 | ● | 2 | 9.525 | 4.76 | 0.8 | 4.43 | 2.0 |

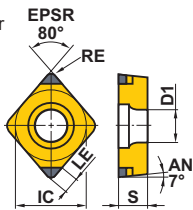
Positive Inserts (With Hole)

G Class



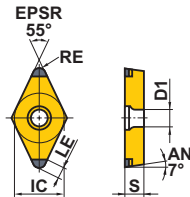
CCGW

2 corner



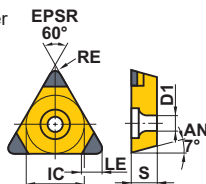
DCGW

2 corner



TCGW

3 corner



(mm)

| Order Number | Coated CBN | Cutting Edges | IC | S | RE | D1 | LE |
|------------------|------------|---------------|-------|------|-----|-----|-----|
| | BC5110 | | | | | | |
| NP-CCGW060202FS2 | ● | 2 | 6.35 | 2.38 | 0.2 | 2.8 | 1.7 |
| NP-CCGW060204FS2 | ● | 2 | 6.35 | 2.38 | 0.4 | 2.8 | 1.8 |
| NP-CCGW09T304FS2 | ● | 2 | 9.525 | 3.97 | 0.4 | 4.4 | 1.8 |
| NP-CCGW09T308FS2 | ● | 2 | 9.525 | 3.97 | 0.8 | 4.4 | 2.0 |
| NP-CCGW060202GS2 | ● | 2 | 6.35 | 2.38 | 0.2 | 2.8 | 1.7 |
| NP-CCGW09T304GS2 | ● | 2 | 9.525 | 3.97 | 0.4 | 4.4 | 1.8 |
| NP-CCGW09T308GS2 | ● | 2 | 9.525 | 3.97 | 0.8 | 4.4 | 2.0 |
| NP-DCGW070204FS2 | ● | 2 | 6.35 | 2.38 | 0.4 | 2.8 | 2.1 |
| NP-DCGW11T308FS2 | ● | 2 | 9.525 | 3.97 | 0.8 | 4.4 | 2.0 |
| NP-DCGW070204GS2 | ● | 2 | 6.35 | 2.38 | 0.4 | 2.8 | 2.1 |
| NP-DCGW11T304GS2 | ● | 2 | 9.525 | 3.97 | 0.4 | 4.4 | 2.1 |
| NP-DCGW11T308GS2 | ● | 2 | 9.525 | 3.97 | 0.8 | 4.4 | 2.0 |
| NP-TCGW110204FS3 | ● | 3 | 6.35 | 2.38 | 0.4 | 2.8 | 1.6 |
| NP-TCGW110208FS3 | ● | 3 | 6.35 | 2.38 | 0.8 | 2.8 | 1.7 |
| NP-TCGW090204GS3 | ● | 3 | 5.56 | 2.38 | 0.4 | 2.5 | 1.6 |
| NP-TCGW110208GS3 | ● | 3 | 6.35 | 2.38 | 0.8 | 2.8 | 1.7 |

Coated CBN Grade for Cast Irons

Positive Inserts (With Hole)

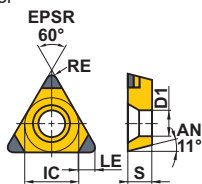
G Class

NEW PETIT CUT

NP_003



TPGB
3 corner



(mm)

| Order Number | Coated CBN | Cutting Edges | IC | S | RE | D1 | LE |
|------------------|------------|---------------|------|------|-----|-----|-----|
| | BC5110 | | | | | | |
| NP-TPGB090204FS3 | ● | 3 | 5.56 | 2.38 | 0.4 | 2.9 | 1.6 |
| NP-TPGB110304FS3 | ● | 3 | 6.35 | 3.18 | 0.4 | 3.4 | 1.6 |
| NP-TPGB110308FS3 | ● | 3 | 6.35 | 3.18 | 0.8 | 3.4 | 1.7 |
| NP-TPGB080204GS3 | ● | 3 | 4.76 | 2.38 | 0.4 | 2.4 | 1.6 |
| NP-TPGB110304GS3 | ● | 3 | 6.35 | 3.18 | 0.4 | 3.4 | 1.6 |
| NP-TPGB110308GS3 | ● | 3 | 6.35 | 3.18 | 0.8 | 3.4 | 1.7 |

Positive Inserts (Without Hole)

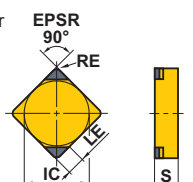
G Class

NEW PETIT CUT

NP_002



SPGN
2 corner

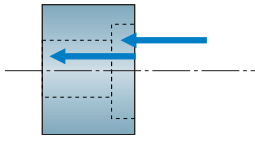
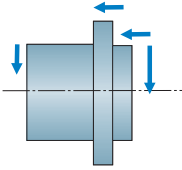
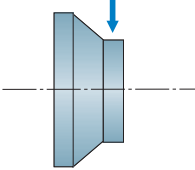








(mm)

| Order Number | Coated CBN | Cutting Edges | IC | S | RE | D1 | LE |
|------------------|------------|---------------|------|------|-----|----|-----|
| | BC5110 | | | | | | |
| NP-SPGN120412GS2 | ● | 2 | 12.7 | 4.76 | 1.2 | — | 2.5 |

● : Inventory maintained in Japan. (1 insert in one case)

Application Examples

| Insert | | NP-DCGW070204FS2 | NP-VCGW160408-FS2 | NP-VNGA160408FS2 |
|--------------------|---------------------------------|---|---|--|
| Workpiece Material | | Gray Cast Iron (JIS FC250)  | Gray Cast Iron (JIS FC250)  | Gray Cast Iron  |
| Component | | Automotive Parts | Automotive Parts | Ring |
| Cutting Conditions | Cutting Speed vc (m/min) | 364 | 530 | 110 |
| | Feed per Rev. f (mm/rev) | 0.1 | 0.1 | 0.12 |
| | Depth of Cut ap (mm) | 0.1 | 0.1 | 0.6 |
| Cutting Mode | | Wet Cutting | Wet Cutting | Dry Cutting |
| Results | | <p>Number of Workpieces 200 400 600</p> <p>BC5110 </p> <p>Conventional </p> <p>BC5110 achieved 1.25 X longer tool life with stable dimensional accuracy, without cloudiness on the surface, compared with conventional product</p> | <p>Number of Workpieces 200 400 600 800</p> <p>BC5110 </p> <p>Conventional </p> <p>BC5110 achieved 1.5 X longer tool life with suppress the flank wear greatly, compared with conventional product.</p> | <p>Number of Workpieces 1000 2000 3000 4000</p> <p>BC5110 </p> <p>Conventional </p> <p>BC5110 gave a 50% increase in tool life plus an improved surface finish.</p> |

The above application examples are customer's application examples, so it can be different from the recommended conditions.

Recommended Cutting Conditions

| Workpiece Material | Cutting Speed vc (m/min) | | | | | | f (mm/rev) | ap (mm) | Cutting Mode |
|---|--------------------------|-----|-----|-----|-----|-----|------------|---------|--------------|
| | 100 | 200 | 300 | 400 | 500 | 600 | | | |
| K Gray Cast Irons FC250, FC300 etc. | | | | | | | ≤ 0.5 | ≤ 0.5 | Dry, Wet |

For Your Safety

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or driver. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

MITSUBISHI MATERIALS CORPORATION

MITSUBISHI MATERIALS CORPORATION

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(Tools specifications subject to change without notice.)