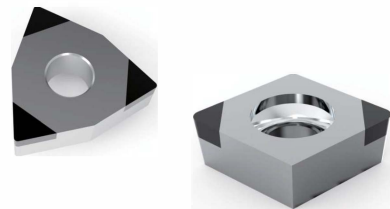




特殊切削材料 PCBN & PCD INSERTS



特殊切削材料

PCBN & PCD Inserts

- PCBN刀片命名规则
Code key for general turning inserts A78
- 负型车刀片
Negative basic-shape inserts A79
- 正型车刀片
Positive basic-shape inserts A82
- 车削材质说明
Turning grades introduction A85
- 切削参数推荐
Cutting parameter recommendations A85
- PCD刀片命名规则
Code key for general turning inserts A86
- 正型车刀片
Positive basic-shape inserts A87
- 车削材质说明
Turning grades introduction A90
- 切削参数推荐
Cutting parameter recommendations A90

PCBN命名规则

PCBN Code Key For General Turning Inserts

CNGA120404

参考ISO表为基准→ (A05) 页
Refer to the ISO table as a benchmark → Page A05

— **N2** **S2**
1 2

| 1 刃口形式 Edge types |
|--|
| N1 |
| N2★ |
| N3 |
| N4 |
| N5★ |
| N6 |
| N7 |
| 数字越大，抗冲击性越好 The higher number, the better impact resistance |

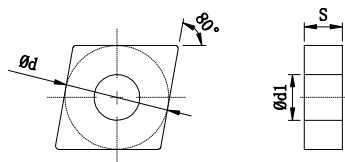
| 2 切刃数 Number of cutting edges |
|--|
| S 焊接式 Shielded Metal Arc Welding |
| E 镶嵌焊接式 Embedded welding |
| 数字代表具体刃数 The number represents the specific cutting edges |

PCBN负型刀片-CN/DN

PCBN Negative Inserts-CN/DN

CN □ □

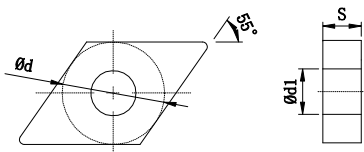
菱形80度负型CN -80° Rhombic negative



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|------|
| | | | | BPCC115 | BPC3115 | d | s | d1 |
| | CNGA120402 | N2 N5 | S1 S2 S4 E2 E4 | * | * | 5.16 | 4.76 | 12.7 |
| | CNGA120404 | | | * | * | | | |
| | CNGA120408 | | | * | * | | | |
| | CNGA120412 | | | * | * | | | |
| | CNGA120416 | | | * | * | | | |

DN □ □

菱形55度负型DN -55° Rhombic negative



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | | BPCC115 | BPC3115 | d | s | d1 |
| | DNGA110402 | N2 N5 | S1 S2 S4 E2 E4 | * | * | 3.81 | 4.76 | 9.525 |
| | DNGA110404 | | | * | * | | | |
| | DNGA110408 | | | * | * | | | |
| | DNGA110412 | | | * | * | | | |
| | DNGA150402 | | | * | * | 5.16 | 4.76 | 12.7 |
| | DNGA150404 | | | * | * | | | |
| | DNGA150408 | | | * | * | | | |
| | DNGA150412 | | | * | * | | | |

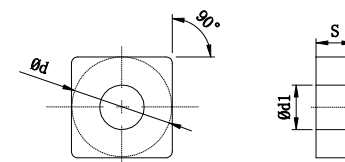
★为第一推荐牌号 Recommended grade
☆为第二推荐牌号 Optional grade

PCBN负型刀片-SN/TN

PCBN Negative Inserts-SN/TN

SN □ □

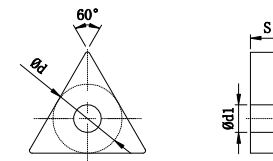
菱形90度负型SN -90° Rhombic negative



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|------|
| | | | | BPCC115 | BPC3115 | d | s | d1 |
| | SNGA120402 | N2 N5 | S1 S4 S8 E4 E8 | * | * | 5.16 | 4.76 | 12.7 |
| | SNGA120404 | | | * | * | | | |
| | SNGA120408 | | | * | * | | | |
| | SNGA120412 | | | * | * | | | |
| | SNGA120416 | | | * | * | | | |

TN □ □

三角形60度负型TN -60° Triangle negative



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | | BPCC115 | BPC3115 | d | s | d1 |
| | TNGA160402 | N2 N5 | S1 S3 S6 E3 E6 | * | * | 3.81 | 4.76 | 9.525 |
| | TNGA160404 | | | * | * | | | |
| | TNGA160408 | | | * | * | | | |
| | TNGA160412 | | | * | * | | | |
| | TNGA160416 | | | * | * | | | |

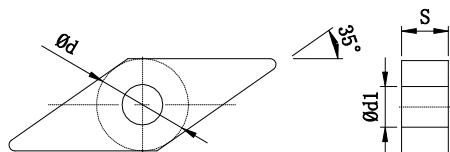
★为第一推荐牌号 Recommended grade
☆为第二推荐牌号 Optional grade


PCBN负型刀片-VN/WN

PCBN Negative Inserts-VN/WN

VN □ □

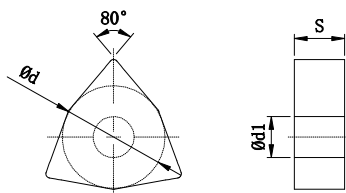
菱形35度负型VN - 35° Rhombic negative




| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | | BPC6115 | BPC3115 | d | s | d1 |
|  | VNGA160402 | N2 N5 | S1 S2 S4 E2 E4 | * | * | 3.81 | 4.76 | 9.525 |
| | VNGA160404 | | | * | * | | | |
| | VNGA160408 | | | * | * | | | |
| | VNGA160412 | | | * | * | | | |

WN □ □

三角形80°负型WN - 80° Triangle negative



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|------|
| | | | | BPC6115 | BPC3115 | d | s | d1 |
|  | WNGA080402 | N2 N5 | S1 S3 S6 E3 E6 | * | * | 5.16 | 4.76 | 12.7 |
| | WNGA080404 | | | * | * | | | |
| | WNGA080408 | | | * | * | | | |
| | WNGA080412 | | | * | * | | | |

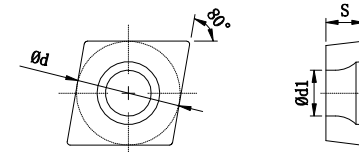
★为第一推荐牌号 Recommended grade
☆为第二推荐牌号 Optional grade


PCBN正型刀片-CC/DC

PCBN Positive Inserts-CC/DC

CC □ □

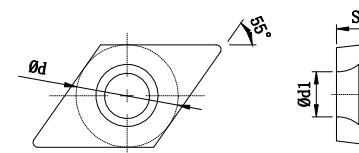
菱形80度正型CC - 80° Rhombic positive




| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | | BPC6115 | BPC3115 | d | s | d1 |
|  | CCGW060202 | N2 N5 | S1 S2 | * | * | 2.80 | 2.38 | 6.35 |
| | CCGW060204 | | | * | * | | | |
| | CCGW060208 | | | * | * | | | |
| | CCGW09T302 | | | * | * | 4.40 | 3.97 | 9.525 |
| | CCGW09T304 | | | * | * | | | |
| | CCGW09T308 | | | * | * | | | |
| | CCGW120402 | | | * | * | 5.50 | 4.76 | 12.7 |
| | CCGW120404 | | | * | * | | | |
| | CCGW120408 | | | * | * | | | |

DC □ □

菱形55度正型DC - 55° Rhombic positive



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | | BPC6115 | BPC3115 | d | s | d1 |
|  | DCGW070202 | N2 N5 | S1 S2 | * | * | 2.80 | 2.38 | 6.35 |
| | DCGW070204 | | | * | * | | | |
| | DCGW070208 | | | * | * | | | |
| | DCGW11T302 | | | * | * | 4.40 | 3.97 | 9.525 |
| | DCGW11T304 | | | * | * | | | |
| | DCGW11T308 | | | * | * | | | |

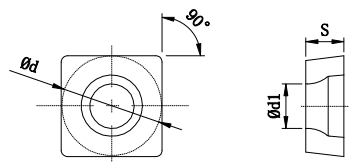
★为第一推荐牌号 Recommended grade
☆为第二推荐牌号 Optional grade

PCBN正型刀片-SC/VC

PCBN Positive Inserts-SC/VC

SC □ □

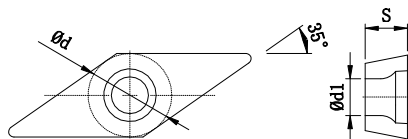
菱形90度正型SC - 90° Rhombic positive



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | | BPC6115 | BPC3115 | d | s | d1 |
| | SCGW09T302 | N2 N5 | S1 S4 | * | * | 4.40 | 3.97 | 9.525 |
| | SCGW09T304 | | | * | * | | | |
| | SCGW09T308 | | | * | * | | | |
| | SCGW120402 | | | * | * | 5.50 | 4.76 | 12.70 |
| | SCGW120404 | | | * | * | | | |
| | SCGW120408 | | | * | * | | | |

VB/VC □ □

菱形35度正型VC - 35° Rhombic positive



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|------|
| | | | | BPC6115 | BPC3115 | d | s | d1 |
| | VBGW110302 | N2 N5 | S1 S2 | * | * | 6.35 | 3.18 | 2.80 |
| | VBGW110304 | | | * | * | | | |
| | VBGW110308 | | | * | * | | | |
| | VBGW160402 | | | * | * | 9.525 | 4.76 | 4.40 |
| | VBGW160404 | | | * | * | | | |
| | VBGW160408 | | | * | * | | | |
| | VCGW110302 | | | * | * | 6.35 | 3.18 | 2.80 |
| | VCGW110304 | | | * | * | | | |
| | VCGW110308 | | | * | * | | | |
| | VCGW160402 | | | * | * | 9.525 | 4.76 | 4.40 |
| | VCGW160404 | | | * | * | | | |
| | VCGW160408 | | | * | * | | | |

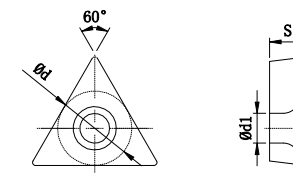
★为第一推荐牌号 Recommended grade
☆为第二推荐牌号 Optional grade

PCBN正型刀片-TC/TP

PCBN Positive Inserts-TC/TP

TC/TP □ □

三角形60度正型TC/TP - 60° Triangle positive



| 刀片 Inserts | 型号 Designation | 刃口类型 Edge type | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | | BPC6115 | BPC3115 | d | s | d1 |
| | TCGW080202 | N2 N5 | S1 S4 | * | * | 2.40 | 2.38 | 4.76 |
| | TCGW080204 | | | * | * | | | |
| | TCGW080208 | | | * | * | | | |
| | TCGW090202 | | | * | * | 2.80 | 2.38 | 5.56 |
| | TCGW090204 | | | * | * | | | |
| | TCGW090208 | | | * | * | | | |
| | TCGW110202 | | | * | * | 2.80 | 2.38 | 6.35 |
| | TCGW110204 | | | * | * | | | |
| | TCGW110208 | | | * | * | | | |
| | TCGW110302 | | | * | * | 3.40 | 3.18 | 6.35 |
| | TCGW110304 | | | * | * | | | |
| | TCGW110308 | | | * | * | | | |
| | TCGW160402 | | | * | * | 4.40 | 4.76 | 9.525 |
| | TCGW160404 | | | * | * | | | |
| | TCGW160408 | | | * | * | | | |
| | TPGW080202 | | | * | * | 2.40 | 2.38 | 4.76 |
| | TPGW080204 | | | * | * | | | |
| | TPGW080208 | | | * | * | | | |
| | TPGW090202 | | | * | * | 2.80 | 2.38 | 5.56 |
| | TPGW090204 | | | * | * | | | |
| | TPGW090208 | | | * | * | | | |
| | TPGW110202 | | | * | * | 2.80 | 2.38 | 6.35 |
| | TPGW110204 | | | * | * | | | |
| | TPGW110208 | | | * | * | | | |
| | TPGW110302 | | | * | * | 3.40 | 3.18 | 6.35 |
| | TPGW110304 | | | * | * | | | |
| | TPGW110308 | | | * | * | | | |
| | TPGW160402 | | | * | * | 4.40 | 4.76 | 9.525 |
| | TPGW160404 | | | * | * | | | |
| | TPGW160408 | | | * | * | | | |

★为第一推荐牌号 Recommended grade ☆为第二推荐牌号 Optional grade

材质说明

Material Description

| 材料分类 | ISO材料分类 | 牌号 | 应用推荐 |
|----------|--------------------|---------|---|
| Material | ISO Classification | Grade | Features |
| P | P20(P15-P30) | BPC6115 | 淬火钢通用材质，兼顾耐磨性和韧性 Universal grade for hardened steel with good wear resistance and toughness |
| K | K10(K05-K20) | BPC5115 | 适合于铸铁加工，耐磨性和韧性优异的材质 Suitable for cast iron machining with excellent wear resistance and high toughness |

切削参数推荐

Recommended Cutting Parameters

| 被切削材料 | 被切削材料硬度 | 加工形态 | | 切削参数 | | |
|---------------------------------|------------------------|--|---|--------------------|----------------|----------------|
| | | | | Cutting parameters | | |
| | | | | 切削速度Vc(m/min) | 切深ap(mm) | 进给fn(mm/rev) |
| Cutting material | Material hardness | Type of operation | | 切削速度Vc(m/min) | 切深ap(mm) | 进给fn(mm/rev) |
| 高硬度材 High hardness | 55HRC以上 Above 55HRC | 通用精加工 Finishing | 连续-断续 Continuous cut ~interrupted cut | 100-150-200 | 0.05-0.30-0.50 | 0.05-0.08-0.10 |
| | | 高效稳定加工 Efficient and stable processing | 轻断续-断续 Lightly interrupted cut ~interrupted cut | 80-120-160 | 0.05-0.30-0.50 | 0.05-0.08-0.10 |
| | | 断续(小切深) Interrupted(small depth of cut) | 断续-强断续 Interrupted cut~ heavily interrupted cut | 60-100-150 | 0.05-0.20-0.40 | 0.05-0.08-0.10 |
| | | 重切削 Heavy cutting | 连续-断续 Continuous cut~interrupted cut | 70-90-110 | 0.50-1.00-2.00 | 0.05-0.10-0.20 |
| | 55HRC以下 Below 55HRC | 精加工 Finishing | 连续 Continuous cut | 60-80-120 | 0.20-0.50-0.70 | 0.05-0.10-0.15 |
| 灰口铸铁 Gray iron | 250HB以下 Below 250H | 精加工 Finishing | 连续-轻断续 Continuous cut~ lightly interrupted cut | 400-800-1200 | 0.05-0.20-0.50 | 0.10-0.20-0.30 |
| | | 精加工 Finishing | 连续-轻断续 Continuous cut~ lightly interrupted cut | 300-500-700 | 0.05-0.20-0.50 | 0.10-0.20-0.30 |
| | | 高效率精加工 Efficient finishing | 连续-轻断续 Continuous cut~ lightly interrupted cut | 500-900-1200 | 0.10-0.50-1.00 | 0.05-0.10-0.20 |
| | | 重切削 Heavy cutting | 连续-断续 Continuous cut~interrupted cut | 500-700-900 | 0.50-1.50-3.00 | 0.10-0.30-0.50 |
| 冷硬铸铁 Chilled cast iron rolls | 55HRC以上 Above 55HRC | 精加工 Finishing | 连续-断续 Continuous cut~interrupted cut | 80-120-160 | 0.05-0.30-0.5 | 0.05-0.08-0.10 |
| | | 重切削 Heavy cutting | 连续-断续 Continuous cut ~interrupted cut | 70-90-110 | 0.30-0.70-1.00 | 0.05-0.10-0.15 |
| 铁系烧结金属 Sintered iron | | 精加工 Finishing | 连续-轻断续 Continuous cut ~lightly interrupted cut | 50-150-250 | 0.05-0.15-0.25 | 0.03-0.10-0.20 |
| | | 精加工 Finishing | 连续-断续 Continuous cut ~interrupted cut | 100-200-250 | 0.05-0.20-0.30 | 0.05-0.15-0.25 |

PCD命名规则

PCD Code Key For General Turning Inserts

CNGA120404

—

S2

参考ISO表为基准 → (A05) 页
Refer to the ISO table as a benchmark → Page A05

1

1 切刃数 Number of cutting edges

S焊接式
Shielded Metal Arc Welding

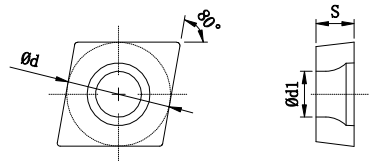
数字代表具体刃数
The number represents the specific cutting edges


PCD正型刀片-CC/DC

PCD Positive Inserts-CC/DC

CC □ □

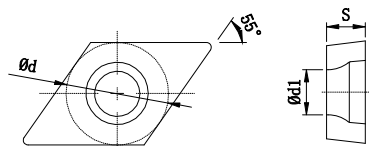
菱形80度正型CC - 80° Rhombic positive

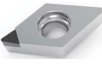


| 刀片 Inserts | 型号 Designation | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|--------------------------------|-------------|---------|----------------------|-------|-------|
| | | | BPD5105 | BPD5115 | d | s | d1 |
|  | CCGW060202 | S1 S2 | * | * | 2.80 | 2.38 | 6.35 |
| | CCGW060204 | | * | * | | | |
| | CCGW060208 | | * | * | | | |
| | CCGW09T302 | | * | * | 4.40 | 3.97 | 9.525 |
| | CCGW09T304 | | * | * | | | |
| | CCGW09T308 | | * | * | | | |
| | CCGW120402 | * | * | 5.50 | 4.76 | 12.70 | |
| | CCGW120404 | * | * | | | | |
| | CCGW120408 | * | * | | | | |

DC □ □

菱形55度正型DC - 55° Rhombic positive



| 刀片 Inserts | 型号 Designation | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | BPD5105 | BPD5115 | d | s | d1 |
|  | DCGW070202 | S1 S2 | * | * | 2.80 | 2.38 | 6.35 |
| | DCGW070204 | | * | * | | | |
| | DCGW070208 | | * | * | | | |
| | DCGW11T302 | | * | * | 4.40 | 3.97 | 9.525 |
| | DCGW11T304 | | * | * | | | |
| | DCGW11T308 | | * | * | | | |

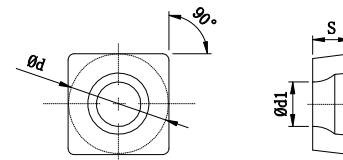
★为第一推荐牌号 Recommended grade
☆为第二推荐牌号 Optional grade


PCD正型刀片-SC/VC

PCD Positive Inserts-SC/VC

SC □ □

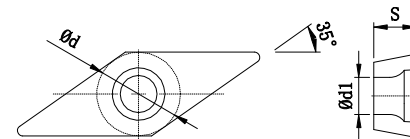
菱形90度正型SC - 90° Rhombic positive



| 刀片 Inserts | 型号 Designation | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | BPD5105 | BPD5115 | d | s | d1 |
|  | SCGW09T302 | S1 S4 | * | * | 4.40 | 3.97 | 9.525 |
| | SCGW09T304 | | * | * | | | |
| | SCGW09T308 | | * | * | | | |
| | SCGW120402 | | * | * | 5.50 | 4.76 | 12.70 |
| | SCGW120404 | | * | * | | | |
| | SCGW120408 | | * | * | | | |

VB/VC □ □

菱形35度正型VC - 35° Rhombic positive



| 刀片 Inserts | 型号 Designation | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---|-------------------|--------------------------------|-------------|---------|----------------------|------|------|
| | | | BPD5105 | BPD5115 | d | s | d1 |
|  | VBGW110302 | S1 S2 | * | * | 6.35 | 3.18 | 2.80 |
| | VBGW110304 | | * | * | | | |
| | VBGW110308 | | * | * | | | |
| | VBGW160402 | | * | * | 9.525 | 4.76 | 4.40 |
| | VBGW160404 | | * | * | | | |
| | VBGW160408 | | * | * | | | |
| | VCGW110302 | | * | * | 6.35 | 3.18 | 2.80 |
| | VCGW110304 | | * | * | | | |
| | VCGW110308 | | * | * | | | |
| | VCGW160402 | | * | * | 9.525 | 4.76 | 4.40 |
| | VCGW160404 | | * | * | | | |
| | VCGW160408 | | * | * | | | |

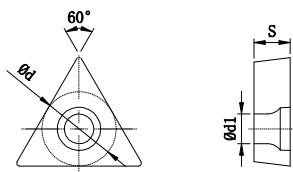
★为第一推荐牌号 Recommended grade
☆为第二推荐牌号 Optional grade

PCD正型刀片-TC

PCD Positive Inserts-TCD

TC/TP □ □

三角形60度正型TC/TP - 60°Triangle positive



| 刀片 Inserts | 型号 Designation | 切刃数 Number of cutting edges | 牌号 Grade | | 尺寸(mm) Dimensions | | |
|---------------|-------------------|--------------------------------|-------------|---------|----------------------|------|-------|
| | | | BPD5105 | BPD5115 | d | s | d1 |
| | TCGW080202 | S1 S3 | * | * | 2.40 | 2.38 | 4.76 |
| | TCGW080204 | | * | * | | | |
| | TCGW080208 | | * | * | | | |
| | TCGW090202 | | * | * | 2.80 | 2.38 | 5.56 |
| | TCGW090204 | | * | * | | | |
| | TCGW090208 | | * | * | | | |
| | TCGW110202 | | * | * | 2.80 | 2.38 | 6.35 |
| | TCGW110204 | | * | * | | | |
| | TCGW110208 | | * | * | | | |
| | TCGW110302 | | * | * | 3.40 | 3.18 | 6.35 |
| | TCGW110304 | | * | * | | | |
| | TCGW110308 | | * | * | | | |
| | TCGW160402 | | * | * | 4.40 | 4.76 | 9.525 |
| | TCGW160404 | | * | * | | | |
| | TCGW160408 | | * | * | | | |
| | TPGW080202 | | * | * | 2.40 | 2.38 | 4.76 |
| | TPGW080204 | | * | * | | | |
| | TPGW080208 | | * | * | | | |
| | TPGW090202 | | * | * | 2.80 | 2.38 | 5.56 |
| | TPGW090204 | | * | * | | | |
| | TPGW090208 | | * | * | | | |
| | TPGW110202 | | * | * | 2.80 | 2.38 | 6.35 |
| | TPGW110204 | | * | * | | | |
| | TPGW110208 | | * | * | | | |
| | TPGW110302 | | * | * | 3.40 | 3.18 | 6.35 |
| | TPGW110304 | | * | * | | | |
| | TPGW110308 | | * | * | | | |
| | TPGW160402 | | * | * | 4.40 | 4.76 | 9.525 |
| | TPGW160404 | | * | * | | | |
| | TPGW160408 | | * | * | | | |



材质说明

Material Description

| 材料分类 Material | ISO材料分类 ISO Classification | 牌号 Grade | 应用推荐 Features |
|------------------|-------------------------------|-------------|---|
| N | N05(N0-N10) | BPD5105 | 高密度金刚石, 具有优异的耐磨损性和耐崩损性 High-density diamond with excellent wear resistance and toughness |
| | N15(N10-N20) | BPD5115 | 超微粒金刚石, 兼具耐磨损性和耐崩损性 Ultra-fine diamond with excellent wear resistance and toughness |

切削参数推荐

Recommended Cutting Parameters

| 被切削材料 Cutting material | 切削参数 Cutting parameters | | | | 备注 Notes |
|---|----------------------------|------------------|------------------|--------------|-----------------------|
| | 切削速度 Vc(m/min) | 切深ap(mm) | | 进给fn(mm/rev) | |
| | | 正型刀片 Positive | 负型刀片 Negative | | |
| 铝合金-锌合金 Aluminum alloys & Zinc alloys | ~ 1.0 | ~ 1.0 | ~ 2.0 | 0.03-0.50 | 湿式干式均可 Wet and dry |
| 铜·黄铜·青铜 Copper, brass and bronze | ~ 1.0 | ~ 1.0 | ~ 2.0 | 0.03-0.50 | |
| 镁合金 Magnesium alloys | ~ 1.0 | ~ 1.0 | ~ 2.0 | 0.03-0.50 | |
| 硬质合金 Carbide | ~ 0.3 | ~ 0.3 | ~ 0.3 | 0.03-0.10 | |
| 钛合金 Titanium alloys | ~ 1.0 | ~ 1.0 | ~ 2.0 | 0.05-0.20 | 湿式 Wet type |
| 玻璃纤维增强塑料碳纤维 Glassfiber Reinforced Plastic & carbon fiber | ~ 1.0 | ~ 1.0 | ~ 2.0 | 0.05-0.50 | 干式 Dry type |
| 硅填充塑料-硬质纤维板 Silicone plastic hardboard | ~ 1.0 | ~ 1.0 | ~ 2.0 | 0.05-0.50 | |