

TURNLINE Stainless steel turning series

T6100 SERIES CVD coated grade

AH600 SERIES PVD coated grade

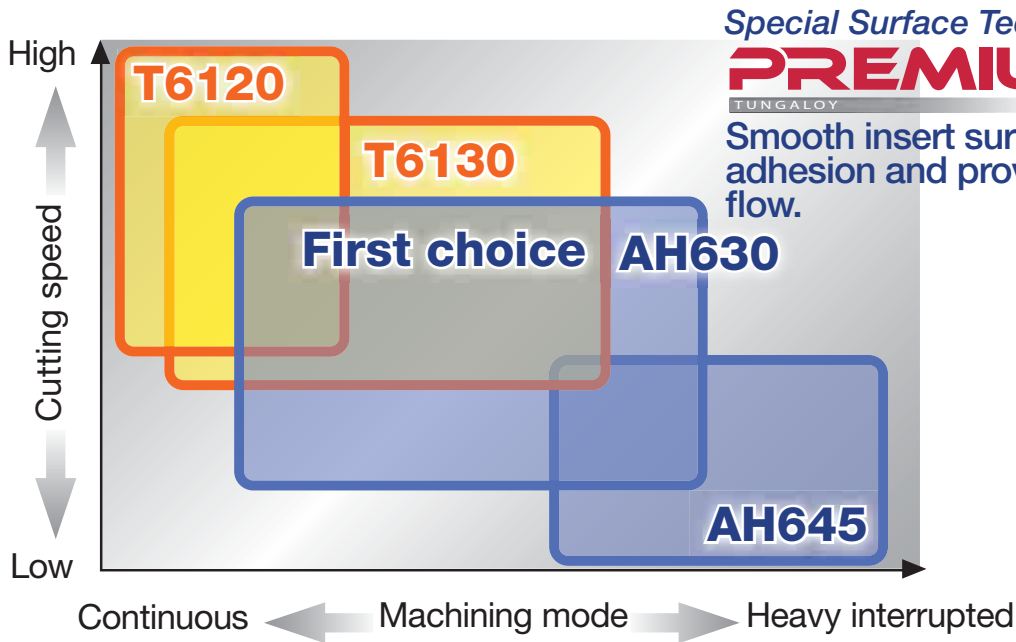
PREMIUMTEC
TUNGALOY

Most efficient grades for stainless steel turning



Incredible reliability in stainless steel turning !

■ Application range of T6100 & AH600



T6100 SERIES
TUNGALOY

New CVD coated grade



Columnar Stabilization Technology

Excellent fracture and chipping resistance for extended tool life.

Unique substrate with improved adhesion strength

High adhesion strength significantly improves chipping and fracture resistance.

T6120

- Suitable for high speed cutting.
- Delivers excellent plastic deformation resistance.
- Especially suitable for austenite and precipitation hardened stainless steel machining.

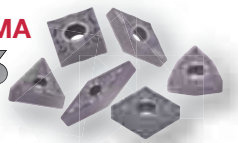
T6130

- Provides excellent wear resistance in medium to high speed machining.
- Ideal grade especially for ferrite and martensite stainless steel machining.
- Thicker layer than PVD leads to outstanding wear resistance.

Technical Award of 2012 year from JCTMA

AH600 SERIES
TUNGALOY

New PVD coated grade



Advanced wear and fracture resistance

This innovative coating layer reduces cracks while keeping a high level of wear resistance that enhances fracture resistance.

Extremely high reliability !

Newly developed substrate with high adhesion strength on the coating layer.

AH630

- Recommended grade for general machining with its perfect balance of fracture and wear resistance
- High chipping resistance with excellent adhesion strength

AH645

- Excellent fracture resistance when machining at low to medium cutting speed
- Suitable grade for interrupted and heavy machining of stainless steel



M Stainless

Stainless

Negative type

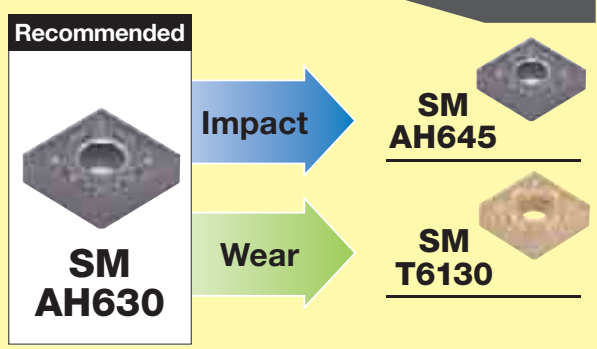
Finishing

Continuous to light interrupted



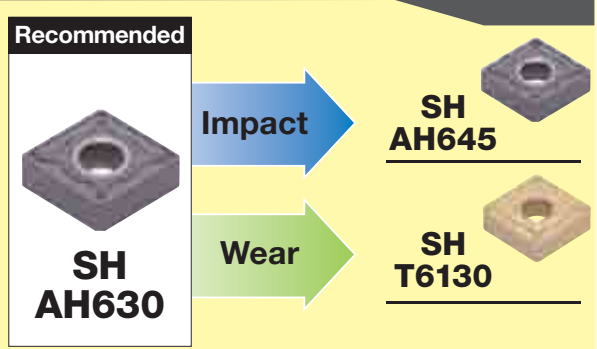
Medium cutting

Continuous to light interrupted



Medium to heavy cutting

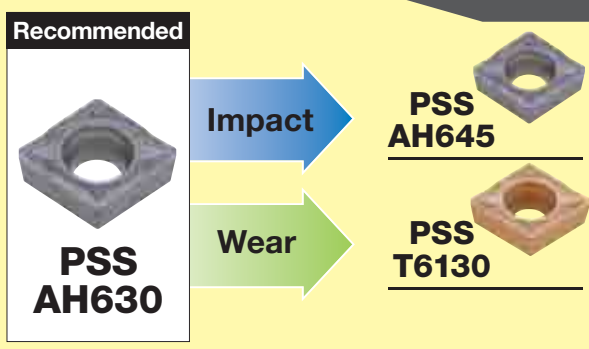
Continuous to light interrupted



Positive type

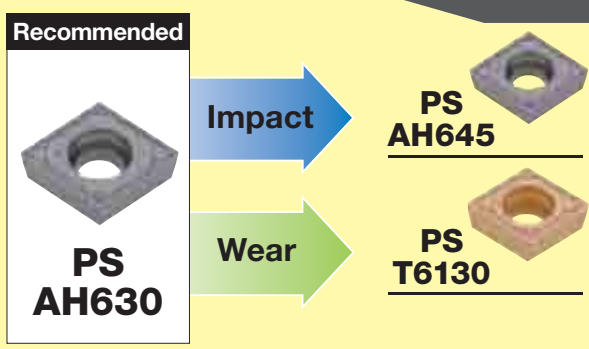
Finishing

Continuous to light interrupted



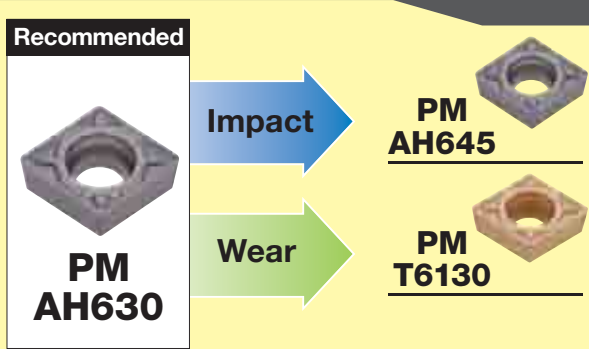
Medium cutting

Continuous to light interrupted



Medium to heavy cutting

Continuous to light interrupted

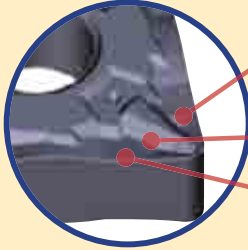


Chipbreaker

Negative type

For finishing operations

SF type



- Excellent chip control for finish machining
- Outstanding chip control when high feed turning at small depths of cut.
- Sharp edge reduces cutting forces and burrs

Low cutting force

- ➔ Large rake angle

Reduces chip adhesion

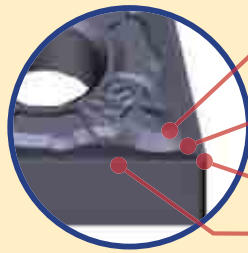
- ➔ Dimples around protrusion reduces contact with chips

Excellent chip evacuation

- ➔ Large inclination

For medium cutting

SM type



- Versatile chipbreaker applicable to a wide range of cutting conditions.
- Sharp cutting edge leads the excellent chip control

Outstanding control of chips

- ➔ Well-designed protrusion curls chips smoothly

Low cutting force

- ➔ Created by the large rake angle and deep chipbreaker

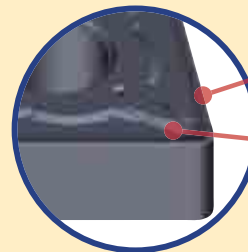
Tough cutting edge with excellent sharpness offers stable machining

- ➔ Sharp positive-land on the corner

- ➔ Toughness with wide land at the main cutting edge

For medium to heavy cutting

SH type



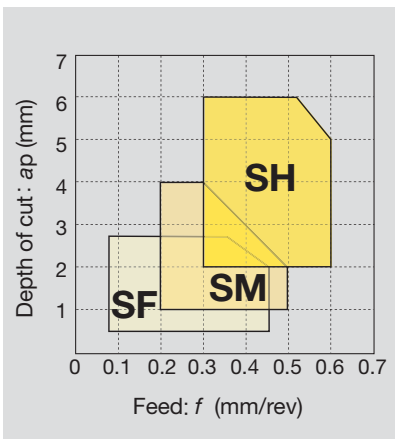
- Suitable for roughing operations and interrupted machining with tough cutting edges
- Applicable for a wide range of cutting conditions and ideal for machining with a fluctuating depth of cut
- Newly designed cutting edges increase the fracture resistance

Incredible fracture resistance

- ➔ Provided from advanced cutting edges

Low cutting forces and excellent chip control

- ➔ Credit to a unique chipbreaker geometry



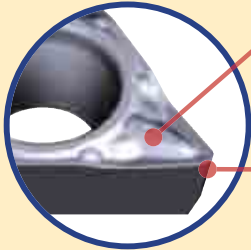
| Operation | Machining mode | Chip-breaker | Grades | Depth of cut ap (mm) | Feed f (mm/rev) |
|-------------------------|---------------------------------|--------------|--------------|----------------------|-----------------|
| Finishing | Continuous | SF | T6120 | 0.5 ~ 2.5 | 0.08 ~ 0.45 |
| | Continuous to Light interrupted | | T6130 | | |
| | Heavy interrupted | | AH630 | | |
| Medium cutting | Continuous | SM | T6120 | 1.0 ~ 4.0 | 0.2 ~ 0.5 |
| | Continuous to Light interrupted | | T6130 | | |
| | Light interrupted | | AH630 | | |
| | Heavy interrupted | | AH645 | | |
| Medium to heavy cutting | Continuous | SH | T6130 | 2.0 ~ 6.0 | 0.3 ~ 0.6 |
| | Continuous to Light interrupted | | AH630 | | |
| | Heavy interrupted | | AH645 | | |

Note: Conditions in above table are for regular sized inserts.

Positive type

Finishing to light cutting

PSS type



- Optimum chipbreaker for finish cutting of stainless steel
- Provides excellent chip control at small depths of cut

Remarkable chip breaking

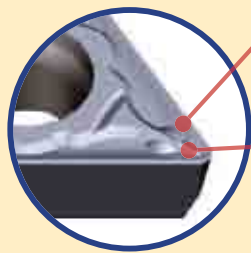
➔ Arc shaped protrusion allows stable chip control even at small depths of cut

Stable machining with low cutting force

➔ Optimized inclination and rake angle reduces cutting forces and controls the chip flow when finish cutting

Finishing to medium cutting

PS type



- Recommended chipbreaker for finish to medium cutting of stainless steel

Provides high reliability with low cutting force

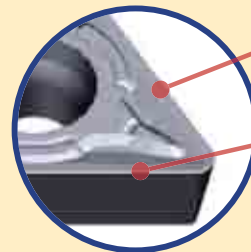
➔ Ideal combination of optimum rake angle and tough cutting edge

Stable chip control in a wide range of cutting conditions

➔ Uniquely designed protrusion creates smooth chip curling

Heavy cutting

PM type



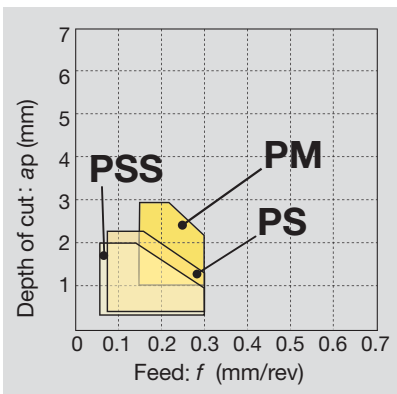
- Sharp and tough cutting edge provides high reliability for stainless steel machining

Allows exceptional chip control with low cutting force

➔ Sharp cutting edges with optimum rake angle

Reduces chipping and notch wear

➔ Flexible land width along the cutting edge prevents chipping



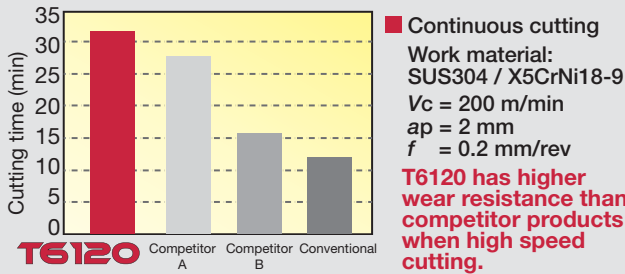
| Operation | Chipbreaker | Grades | Depth of cut ap (mm) | Feed f (mm/rev) |
|-----------------------------|-------------|--------|----------------------|-----------------|
| Finishing to Light cutting | PSS | T6120 | 0.3 ~ 2.0 | 0.08 ~ 0.3 |
| | | T6130 | | |
| | | AH630 | | |
| | | AH645 | | |
| Finishing to Medium cutting | PS | T6120 | 0.5 ~ 2.5 | 0.08 ~ 0.3 |
| | | T6130 | | |
| | | AH630 | | |
| | | AH645 | | |
| Heavy cutting | PM | T6120 | 1.0 ~ 3.0 | 0.15 ~ 0.3 |
| | | T6130 | | |
| | | AH630 | | |
| | | AH645 | | |

Note: Conditions in above table are for regular sized inserts.

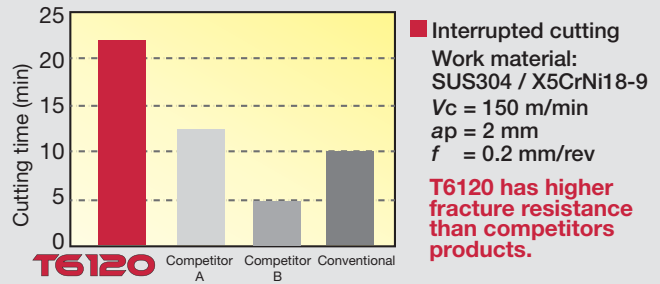
Cutting performance

T6120

Wear resistance test

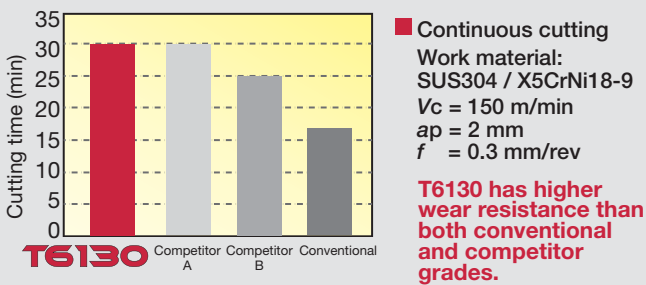


Fracture resistance test

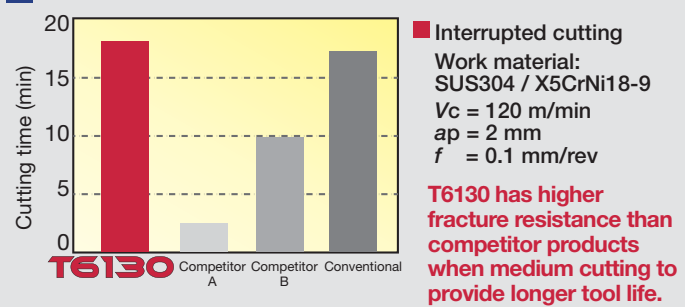


T6130

Wear resistance test

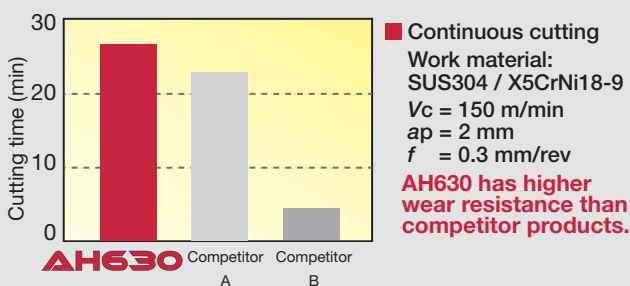


Fracture resistance test

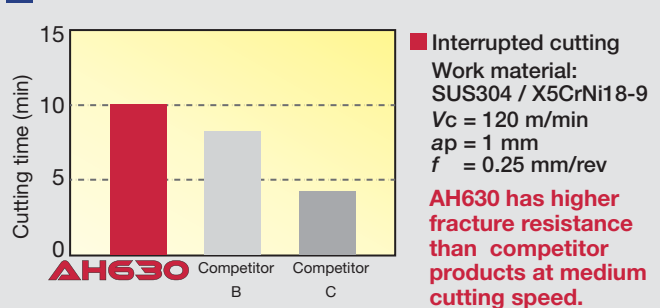


AH630

Wear resistance test

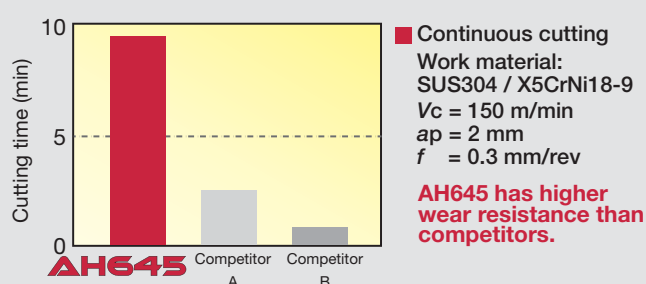


Fracture resistance test

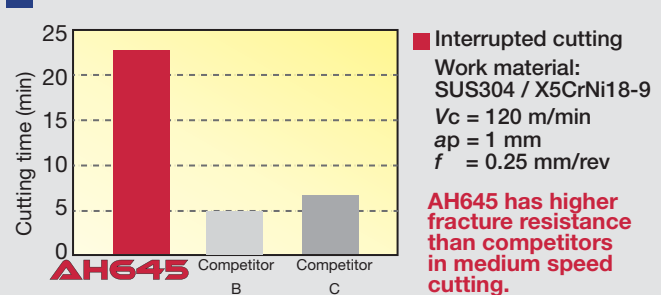


AH645

Wear resistance test



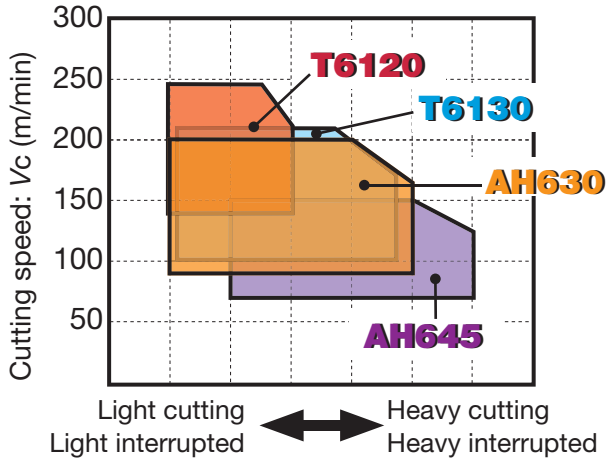
Fracture resistance test



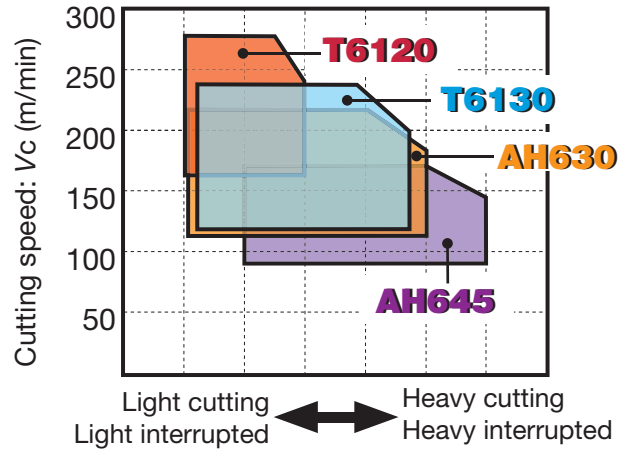
Standard cutting conditions

Standard cutting condition depending on work material

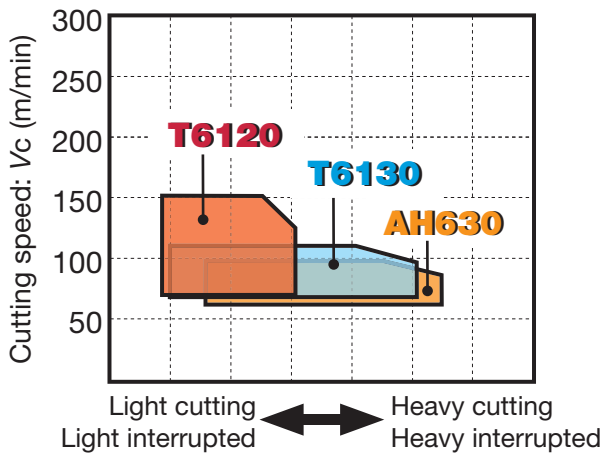
Austenitic stainless steel



Ferritic / martensite stainless steel



Precipitation hardened stainless steel



| Work materials | Grades | Cutting speed: Vc (m/min) |
|---|--------|---------------------------|
| Austenitic SUS304, SUS316 etc. (X5CrNi18-9, X5CrNiMo17-12-2 etc.) *AH630: First choice | T6120 | 140 - 240 |
| | T6130 | 100 - 200 |
| | AH630 | 90 - 190 |
| | AH645 | 70 - 150 |
| Ferrite / Martensite SUS430 / SUS410 etc. (X6Cr17, X12Cr13 etc.) | T6120 | 160 - 280 |
| | T6130 | 120 - 240 |
| | AH630 | 110 - 210 |
| | AH645 | 90 - 170 |
| Precipitation hardened SUS631 etc. (X7CrNiAl17-7 etc.) | T6120 | 80 - 150 |
| | T6130 | 70 - 110 |
| | AH630 | 60 - 90 |

Inserts Negative type

Rhombic, 80°

| Application | Chipbreaker | $f - a_p$ | Cat. No. | Stocked grades | | | | Dimensions (mm) | | | | |
|-------------------------|-------------------------------|-----------------|---------------|----------------|-------|-------|--------|----------------------|---------------------|---------------------------|----------------------------------|-----|
| | Appearance (Cross section) | | | Coated | | | | I.C. dia ϕd | Thick- ness S | Hole dia ϕd_1 | Corner radius r_ϵ | |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | | |
| Finishing | SF | | CNMG090304-SF | ● | ● | ● | | 9.525 | 3.18 | 3.81 | 0.4 | |
| | CNMG090308-SF | | ● | ● | ● | | 0.8 | | | | | |
| | CNMG120404-SF | | ● | ● | ● | | 12.7 | 4.76 | 5.16 | 0.4 | | |
| | * CNMG120408-SF | | ● | ● | ● | | | | | 0.8 | | |
| | CNMG120412-SF | | ● | ● | ● | | | | | 1.2 | | |
| | SS | | CNMG120404-SS | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 | |
| | * CNMG120408-SS | | ● | ● | ● | ● | 0.8 | | | | | |
| | CNMG120412-SS | | ● | ● | ● | ● | 1.2 | | | | | |
| | Medium cutting | SM | | CNMG120404-SM | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | | * CNMG120408-SM | | ● | ● | ● | ● | 0.8 | | | | |
| CNMG120412-SM | | ● | | ● | ● | ● | 1.2 | | | | | |
| SA | | | CNMG120404-SA | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 | |
| * CNMG120408-SA | | | ● | ● | ● | ● | 0.8 | | | | | |
| CNMG120412-SA | | | ● | ● | ● | ● | 1.2 | | | | | |
| Medium to heavy cutting | SH | | CNMG120408-SH | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.8 | |
| | CNMG120412-SH | | | ● | ● | ● | 1.2 | | | | | |
| | CNMG120416-SH | | | ● | ● | ● | 1.6 | | | | | |
| | * CNMG160612-SH | | | ● | ● | ● | 15.875 | 6.35 | 6.35 | 1.2 | | |
| | CNMG160616-SH | | | ● | ● | ● | | | | 1.6 | | |
| | CNMG190612-SH | | | ● | ● | ● | 19.05 | 6.35 | 7.93 | 1.2 | | |
| | CNMG190616-SH | | ● | ● | ● | 1.6 | | | | | | |
| | S | | CNMG120404R-S | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 | |
| | CNMG120404L-S | | | ● | ● | ● | 0.4 | | | | | |
| | * CNMG120408R-S | | | ● | ● | ● | 0.8 | | | | | |
| CNMG120408L-S | | | ● | ● | ● | 0.8 | | | | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

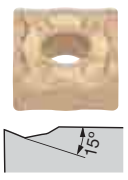
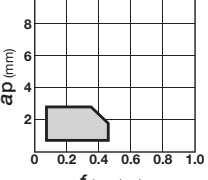

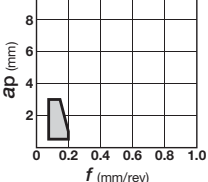
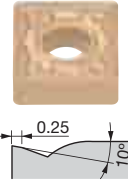
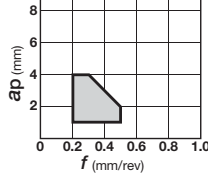
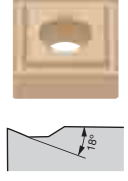
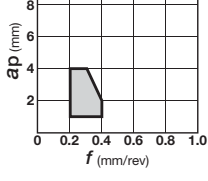
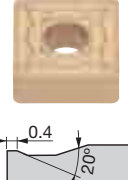
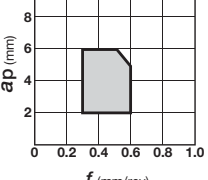

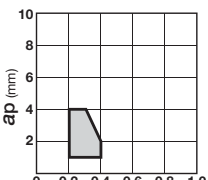
Rhombic, 55°

| Application | Chipbreaker | f - ap | Cat. No. | Stocked grades | | | | Dimensions (mm) | | | |
|-------------------------|-------------------------------|--------|---------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing | SF | | DNMG150404-SF | ● | ● | ● | | 12.7 | 4.76 | 5.16 | 0.4 |
| | * DNMG150408-SF | | ● | ● | ● | | 0.8 | | | | |
| | DNMG150604-SF | | ● | ● | ● | | 12.7 | 6.35 | 5.16 | 0.4 | |
| | DNMG150608-SF | | ● | ● | ● | | | | | 0.8 | |
| | SS | | | DNMG150404-SS | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 |
| | DNMG150408-SS | ● | | ● | ● | ● | 0.8 | | | | |
| | * DNMG150412-SS | ● | | ● | ● | ● | 12.7 | 6.35 | 5.16 | 1.2 | |
| | DNMG150604-SS | ● | | ● | ● | ● | | | | 0.4 | |
| | DNMG150608-SS | ● | | ● | ● | ● | 0.8 | | | | |
| | DNMG150612-SS | ● | ● | ● | ● | 1.2 | | | | | |
| Medium cutting | SM | | DNMG150404-SM | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | * DNMG150408-SM | | ● | ● | ● | ● | 0.8 | | | | |
| | DNMG150412-SM | | ● | ● | ● | ● | 1.2 | | | | |
| | DNMG150604-SM | | ● | ● | ● | ● | 12.7 | 6.35 | 5.16 | 0.4 | |
| | DNMG150608-SM | | ● | ● | ● | ● | | | | 0.8 | |
| | DNMG150612-SM | | ● | ● | ● | ● | | | | 1.2 | |
| Medium to heavy cutting | SH | | DNMG150408-SH | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.8 |
| | * DNMG150412-SH | | | ● | ● | ● | 1.2 | | | | |
| | DNMG150416-SH | | | ● | ● | ● | 1.6 | | | | |
| | DNMG150608-SH | | | ● | ● | ● | 12.7 | 6.35 | 5.16 | 0.8 | |
| | DNMG150612-SH | | | ● | ● | ● | | | | 1.2 | |
| | S | | DNMG150404R-S | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | DNMG150404L-S | | | ● | ● | ● | 0.4 | | | | |
| | * DNMG150408R-S | | | ● | ● | ● | 0.8 | | | | |
| | DNMG150408L-S | | | ● | ● | ● | 12.7 | 6.35 | 5.16 | 0.8 | |
| | DNMG150604R-S | | | ● | ● | ● | | | | 0.4 | |
| DNMG150604L-S | | ● | ● | ● | 0.4 | | | | | | |
| DNMG150608R-S | | ● | ● | ● | 0.8 | | | | | | |
| DNMG150608L-S | | ● | ● | ● | 0.8 | | | | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Square, 90°

| Applica- tion | Chipbreaker Appearance (Cross section) | f - ap | Cat. No. | Stocked grades | | | | Dimensions (mm) | | | | | |
|-------------------------|--|---|---|---|-----------------------|-------|-------|-----------------|---------------------|--------------------|------------------------|------|-----|
| | | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε | | |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | | | |
| Finishing | SF |  |  | SNMG120404-SF | ● | ● | ● | | 12.7 | 4.76 | 5.16 | 0.4 | |
| | | | | *SNMG120408-SF | ● | ● | ● | | | | | 0.8 | |
| | | | | | | | | | | | | | |
| | | SS |  |  | SNMG120404-SS | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | | | | | *SNMG120408-SS | ● | ● | ● | ● | | | | 0.8 |
| | | | | | SNMG120412-SS | ● | ● | ● | ● | | | | 1.2 |
| | | | | | | | | | | | | | |
| Medium cutting | SM |  |  | *SNMG120408-SM | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.8 | |
| | | | | SNMG120412-SM | ● | ● | ● | ● | | | | 1.2 | |
| | | | | | | | | | | | | | |
| | | SA |  |  | *SNMG120404-SA | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | | | | | SNMG120408-SA | ● | ● | ● | ● | | | | 0.8 |
| | | | | | SNMG120412-SA | ● | ● | ● | ● | | | | 1.2 |
| | | | | | | | | | | | | | |
| Medium to heavy cutting | SH |  |  | SNMG120408-SH | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.8 | |
| | | | | SNMG120412-SH | | ● | ● | ● | | | | 1.2 | |
| | | | | | *SNMG150612-SH | | ● | ● | ● | 15.875 | 6.35 | 6.35 | 1.2 |
| | | | | | SNMG150616-SH | | ● | ● | ● | | | | 1.6 |
| | | | | | SNMG190612-SH | | ● | ● | ● | 19.05 | 6.35 | 7.93 | 1.2 |
| | | | | | SNMG190616-SH | | ● | ● | ● | | | | 1.6 |
| | | | | | | | | | | | | | |
| | | S |  |  | SNMG120404R-S | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | | | | SNMG120404L-S | | ● | ● | ● | 0.4 | | | | |
| | | | | *SNMG120408R-S | | ● | ● | ● | 0.8 | | | | |
| | | | | SNMG120408L-S | | ● | ● | ● | 0.8 | | | | |
| | | | | | | | | | | | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Triangular, 60°

| Application | Chipbreaker Appearance (Cross section) | f - ap | Cat. No. | Stocked grades | | | | Dimensions (mm) | | | |
|----------------|--|--------|---------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | | | | Coated | | | | I.C. dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing | SF | | TNMG160404-SF | ● | ● | ● | | 9.525 | 4.76 | 3.81 | 0.4 |
| | *TNMG160408-SF | | ● | ● | ● | | 0.8 | | | | |
| | TNMG160412-SF | | ● | ● | ● | | 1.2 | | | | |
| | SS | | TNMG160404-SS | ● | ● | ● | ● | 9.525 | 4.76 | 3.81 | 0.4 |
| | TNMG160408-SS | | ● | ● | ● | ● | 0.8 | | | | |
| | TNMG160412-SS | | ● | ● | ● | ● | 1.2 | | | | |
| *TNMG220404-SS | ● | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 | | |
| TNMG220408-SS | ● | | ● | ● | ● | | | | 0.8 | | |
| TNMG220412-SS | ● | ● | ● | ● | 1.2 | | | | | | |
| Medium cutting | SM | | TNMG160404-SM | ● | ● | ● | ● | 9.525 | 4.76 | 3.81 | 0.4 |
| | *TNMG160408-SM | | ● | ● | ● | ● | 0.8 | | | | |
| | TNMG160412-SM | | ● | ● | ● | ● | 1.2 | | | | |
| | TNMG220408-SM | | ● | ● | ● | ● | 12.7 | 5.16 | | 0.8 | |
| | TNMG220412-SM | | ● | ● | ● | ● | | | | 1.2 | |
| | SA | | TNMG160404-SA | ● | ● | ● | ● | 9.525 | 4.76 | 3.81 | 0.4 |
| | *TNMG160408-SA | | ● | ● | ● | ● | 0.8 | | | | |
| | TNMG160412-SA | | ● | ● | ● | ● | 1.2 | | | | |
| | TNMG220408-SA | | ● | ● | ● | ● | 12.7 | 5.16 | | 0.8 | |
| | TNMG220412-SA | | ● | ● | ● | ● | | | | 1.2 | |
| | S | | TNMG160404R-S | | ● | ● | ● | 9.525 | 4.76 | 3.81 | 0.4 |
| | TNMG160404L-S | | | ● | ● | ● | 0.4 | | | | |
| | *TNMG160408R-S | | | ● | ● | ● | 0.8 | | | | |
| | TNMG160408L-S | | | ● | ● | ● | 0.8 | | | | |
| | TNMG220404R-S | | | ● | ● | ● | 12.7 | 5.16 | | | 0.4 |
| TNMG220404L-S | | | ● | ● | ● | 0.4 | | | | | |
| TNMG220408R-S | | | ● | ● | ● | 0.8 | | | | | |
| TNMG220408L-S | | ● | ● | ● | 0.8 | | | | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Trigon, 80°

| Applica- tion | Chipbreaker | $f - ap$ | Cat. No. | Stocked grades | | | | Dimensions (mm) | | | |
|-------------------------------|-------------------------------|----------|-----------------|----------------|-------|-------|-------|---------------------|---------------------|--------------------------|----------------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C.dia ϕd | Thick- ness s | Hole dia $\phi d1$ | Corner radius r ϵ |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing | SF | | WNMG060404-SF | ● | ● | ● | | 9.525 | 4.76 | 3.81 | 0.4 |
| | WNMG060408-SF | | ● | ● | ● | | 0.8 | | | | |
| | WNMG080404-SF | | ● | ● | ● | | 12.7 | 4.76 | 5.16 | 0.4 | |
| | * WNMG080408-SF | | ● | ● | ● | | | | | 0.8 | |
| | | | | | | | | | | | |
| Medium cutting | SS | | WNMG080404-SS | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | * WNMG080408-SS | | ● | ● | ● | ● | 0.8 | | | | |
| | WNMG080412-SS | | ● | ● | ● | ● | 1.2 | | | | |
| | SM | | WNMG080404-SM | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | * WNMG080408-SM | | ● | ● | ● | ● | 0.8 | | | | |
| | WNMG080412-SM | | ● | ● | ● | ● | 1.2 | | | | |
| | | | | | | | | | | | |
| Medium to heavy cutting | SA | | * WNMG080408-SA | ● | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.8 |
| | WNMG080412-SA | | ● | ● | ● | ● | 1.2 | | | | |
| | SH | | WNMG080408-SH | | ● | ● | ● | 12.7 | 4.76 | 5.16 | 0.8 |
| | * WNMG080412-SH | | | ● | ● | ● | 1.2 | | | | |
| | | | | | | | | | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Rhombic, 35°

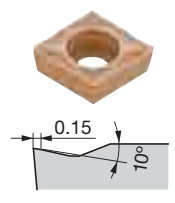
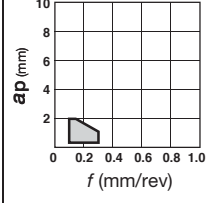
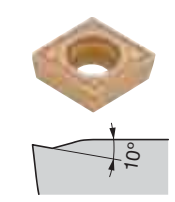
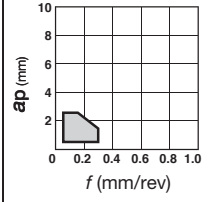
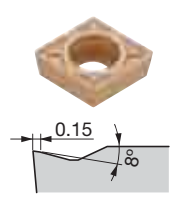
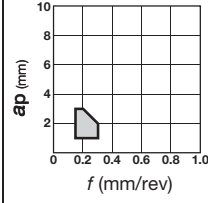
| Applica- tion | Chipbreaker | $f - a_p$ | Cat. No. | Stocked grades | | | | Dimensions (mm) | | | |
|------------------|-------------------------------|-----------|----------------|----------------|-------|-------|-------|----------------------------|---------------------|---------------------------------|---------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C.dia $\varnothing d$ | Thick- ness s | Hole dia $\varnothing d1$ | Corner radius r_E |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing | SF | | VNMG160404-SF | ● | ● | ● | | 9.525 | 4.76 | 3.81 | 0.4 |
| | *VNMG160408-SF | | ● | ● | ● | | 0.8 | | | | |
| | SS | | *VNMG160404-SS | ● | ● | ● | ● | 9.525 | 4.76 | 3.81 | 0.4 |
| | VNMG160408-SS | | ● | ● | ● | ● | 0.8 | | | | |
| | VNMG160412-SS | | ● | ● | ● | ● | 1.2 | | | | |
| | Medium cutting | SM | | VNMG160404-SM | ● | ● | ● | ● | 9.525 | 4.76 | 3.81 |
| *VNMG160408-SM | | ● | | ● | ● | ● | 0.8 | | | | |
| VNMG160412-SM | | ● | | ● | ● | ● | 1.2 | | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

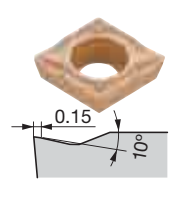
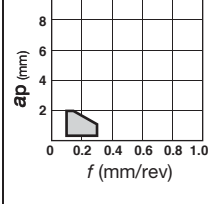
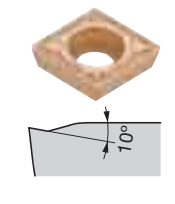
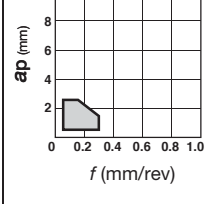
● : Stocked items

Inserts Positive type

Rhombic, 80° (7°)

| Application | Chipbreaker Appearance (Cross section) | f - ap | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|-----------------------------------|--|---|-----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing to light cutting | PSS  |  | CCMT060204-PSS | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.4 |
| | | | CCMT060208-PSS | ● | ● | ● | ● | | | | 0.8 |
| | | | *CCMT09T304-PSS | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 |
| | | | CCMT09T308-PSS | ● | ● | ● | ● | | | | 0.8 |
| | | | CCMT120404-PSS | ● | ● | ● | ● | 12.7 | 4.76 | 5.5 | 0.4 |
| | | | CCMT120408-PSS | ● | ● | ● | ● | | | | 0.8 |
| | | | CCMT120412-PSS | ● | ● | ● | ● | | | | 1.2 |
| Finishing to medium cutting | PS  |  | CCMT060202-PS | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.2 |
| | | | CCMT060204-PS | ● | ● | ● | ● | | | | 0.4 |
| | | | *CCMT060208-PS | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.8 |
| | | | CCMT09T302-PS | ● | ● | ● | ● | | | | 0.2 |
| | | | CCMT09T304-PS | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 |
| | | | CCMT09T308-PS | ● | ● | ● | ● | | | | 0.8 |
| | | | CCMT120404-PS | ● | ● | ● | ● | 12.7 | 4.76 | 5.5 | 0.4 |
| CCMT120408-PS | ● | ● | ● | ● | 0.8 | | | | | | |
| CCMT120412-PS | ● | ● | ● | ● | 1.2 | | | | | | |
| Medium cutting | PM  |  | CCMT060204-PM | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.4 |
| | | | CCMT060208-PM | ● | ● | ● | ● | | | | 0.8 |
| | | | CCMT09T304-PM | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 |
| | | | *CCMT09T308-PM | ● | ● | ● | ● | | | | 0.8 |
| | | | CCMT09T312-PM | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 1.2 |
| | | | CCMT120408-PM | ● | ● | ● | ● | | | | 0.8 |
| | | | CCMT120412-PM | ● | ● | ● | ● | 12.7 | 4.76 | 5.5 | 1.2 |

Rhombic, 80° (11°)

| Application | Chipbreaker Appearance (Cross section) | f - ap | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|-----------------------------------|---|---|-----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing to light cutting | PSS  |  | CPMT080204-PSS | ● | ● | ● | ● | 7.94 | 2.38 | 3.4 | 0.4 |
| | | | CPMT080208-PSS | ● | ● | ● | ● | | | | 0.8 |
| | | | *CPMT090304-PSS | ● | ● | ● | ● | 9.525 | 3.18 | 4.4 | 0.4 |
| | | | CPMT090308-PSS | ● | ● | ● | ● | | | | 0.8 |
| Finishing to medium cutting | PS  |  | CPMT080202-PS | ● | ● | ● | ● | 7.94 | 2.38 | 3.4 | 0.2 |
| | | | CPMT080204-PS | ● | ● | ● | ● | | | | 0.4 |
| | | | CPMT080208-PS | ● | ● | ● | ● | 9.525 | 3.18 | 4.4 | 0.8 |
| | | | *CPMT090304-PS | ● | ● | ● | ● | | | | 0.4 |
| | | | CPMT090308-PS | ● | ● | ● | ● | 0.8 | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Rhombic, 80° (11°)

| Application | Chipbreaker | $f - a_p$ | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|----------------|-------------------------------|-----------|---------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Medium cutting | PM | | CPMT060204-PM | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.4 |
| | CPMT060208-PM | | ● | ● | ● | ● | 0.8 | | | | |
| | *CPMT090304-PM | | ● | ● | ● | ● | 9.525 | 3.18 | 4.4 | 0.4 | |
| | CPMT090308-PM | | ● | ● | ● | ● | | | | 0.8 | |

Rhombic, 55° (7°)

| Application | Chipbreaker | $f - a_p$ | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|-----------------------------|-------------------------------|-----------|----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing to light cutting | PSS | | DCMT070204-PSS | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.4 |
| | DCMT070208-PSS | | ● | ● | ● | ● | 0.8 | | | | |
| | *DCMT11T304-PSS | | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 | |
| | DCMT11T308-PSS | | ● | ● | ● | ● | | | | 0.8 | |
| | DCMT11T312-PSS | | ● | ● | ● | ● | | | | 1.2 | |
| Finishing to medium cutting | PS | | DCMT070202-PS | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.2 |
| | *DCMT070204-PS | | ● | ● | ● | ● | 0.4 | | | | |
| | DCMT11T302-PS | | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.2 | |
| | *DCMT11T304-PS | | ● | ● | ● | ● | | | | 0.4 | |
| | DCMT11T308-PS | | ● | ● | ● | ● | | | | 0.8 | |
| DCMT11T312-PS | ● | ● | ● | ● | 1.2 | | | | | | |
| Medium cutting | PM | | DCMT070204-PM | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.4 |
| | DCMT070208-PM | | ● | ● | ● | ● | 0.8 | | | | |
| | DCMT11T304-PM | | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 | |
| | *DCMT11T308-PM | | ● | ● | ● | ● | | | | 0.8 | |
| | DCMT11T312-PM | | ● | ● | ● | ● | | | | 1.2 | |

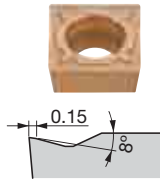
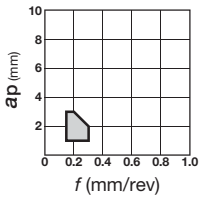
Square, 90° (7°)

| Application | Chipbreaker | $f - a_p$ | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|-----------------------------|-------------------------------|-----------|----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing to medium cutting | PS | | *SCMT09T304-PS | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 |
| | SCMT09T308-PS | | ● | ● | ● | ● | 0.8 | | | | |
| | SCMT120404-PS | | ● | ● | ● | ● | 12.7 | 4.76 | 5.5 | 0.4 | |
| | SCMT120408-PS | | ● | ● | ● | ● | | | | 0.8 | |

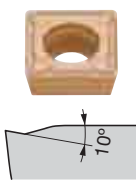
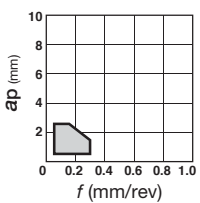
*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

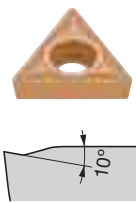
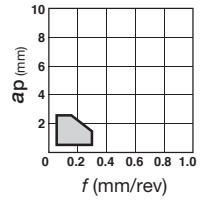
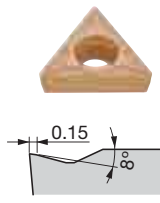
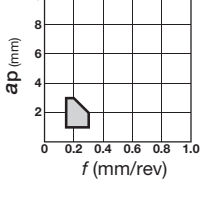
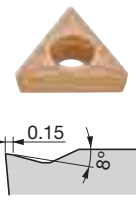
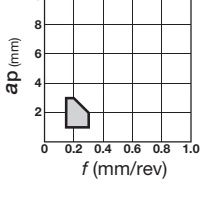
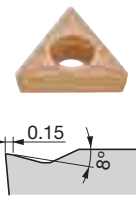
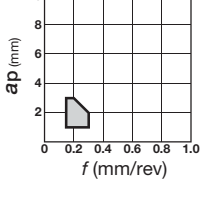
Square, 90° (7°)

| Application | Chipbreaker Appearance (Cross section) | f - ap | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|----------------|---|---|----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | | | | Coated | | | | I.C.dia ød | Thick- ness S | Hole dia ød1 | Corner radius rE |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Medium cutting |  |  | *SCMT09T304-PM | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 |
| | | | SCMT09T308-PM | ● | ● | ● | ● | | | | 0.8 |
| | | | SCMT120408-PM | ● | ● | ● | ● | 12.7 | 4.76 | 5.5 | 0.8 |
| | | | SCMT120412-PM | ● | ● | ● | ● | | | | 1.2 |
| | | | | | | | | | | | |

Square, 90° (11°)

| Application | Chipbreaker Appearance (Cross section) | f - ap | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|-----------------------------|--|--|----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|------------------------|
| | | | | Coated | | | | I.C.dia ød | Thick- ness S | Hole dia ød1 | Corner radius rE |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing to medium cutting |  |  | SPMT090304-PS | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 |
| | | | SPMT090308-PS | ● | ● | ● | ● | | | | 0.8 |
| | | | SPMT120404-PS | ● | ● | ● | ● | 12.7 | 4.76 | 5.5 | 0.4 |
| | | | *SPMT120408-PS | ● | ● | ● | ● | | | | 0.8 |
| | | | | | | | | | | | |

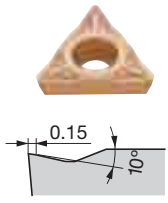
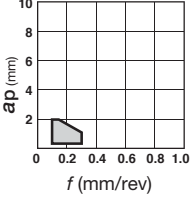
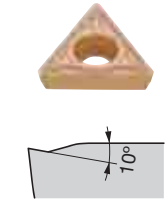
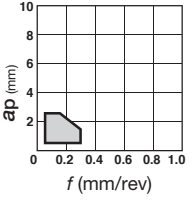
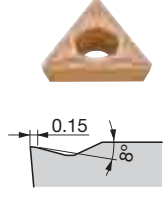
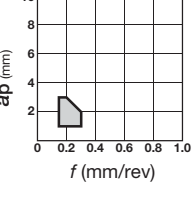
Triangular, 60° (7°)

| Application | Chipbreaker Appearance (Cross section) | f - ap | Cat. No | Stocked grades | | | | Dimensions (mm) | | | | | | |
|-----------------------------|---|---|----------------|---|---|----------------|-------|-----------------|---------------------|--------------------|------------------------|------|-----|-----|
| | | | | Coated | | | | I.C.dia ød | Thick- ness S | Hole dia ød1 | Corner radius rE | | | |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | | | | |
| Finishing to medium cutting |  |  | TCMT110202-PS | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.2 | | | |
| | | | *TCMT110204-PS | ● | ● | ● | ● | | | | 0.4 | | | |
| | | | TCMT110208-PS | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | Medium cutting |  |  | TCMT110302-PS | ● | ● | ● | ● | 6.35 | 3.18 | 2.8 | 0.2 |
| | | | | | | TCMT110304-PS | ● | ● | ● | ● | | | | 0.4 |
| | | | | | | TCMT110308-PS | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.8 |
| | | | | | | TCMT16T302-PS | ● | ● | ● | ● | | | | 0.2 |
| | | | | | | TCMT16T304-PS | ● | ● | ● | ● | | | | 0.4 |
| Medium cutting |  |  | TCMT110202-PM | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.2 | | | |
| | | | TCMT110204-PM | ● | ● | ● | ● | | | | 0.4 | | | |
| | | | TCMT110208-PM | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | Medium cutting |  |  | TCMT110302-PM | ● | ● | ● | ● | 6.35 | 3.18 | 2.8 | 0.2 |
| | | | | | | TCMT110304-PM | ● | ● | ● | ● | | | | 0.4 |
| | | | | | | TCMT110308-PM | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.8 |
| | | | | | | *TCMT16T304-PM | ● | ● | ● | ● | | | | 0.4 |
| | | | | | | TCMT16T308-PM | ● | ● | ● | ● | | | | 0.8 |
| | | | TCMT16T312-PM | ● | ● | ● | ● | | | | 1.2 | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Triangular, 60° (11°)

| Application | Chipbreaker Appearance (Cross section) | f - ap | Cat. No | Stocked grades | | | | Dimensions (mm) | | | | | | |
|----------------------------------|---|---|--------------------------------------|--|--|---------------|-------|-----------------|---------------------|--------------------|------------------------|------|-----|-----|
| | | | | Coated | | | | I.C.dia ød | Thick- ness s | Hole dia ød1 | Corner radius rε | | | |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | | | | |
| Finishing to light cutting |  |  | TPMT090204-PSS | ● | ● | ● | ● | 5.56 | 2.38 | 2.5 | 0.4 | | | |
| | | | TPMT090208-PSS | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | *TPMT110204-PSS | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.4 | | | |
| | | | TPMT110208-PSS | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | TPMT110304-PSS | ● | ● | ● | ● | 6.35 | 3.18 | 3.4 | 0.4 | | | |
| | | | TPMT110308-PSS | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | TPMT130304-PSS | ● | ● | ● | ● | 7.94 | 3.18 | 3.4 | 0.4 | | | |
| | | | TPMT130308-PSS | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | TPMT16T304-PSS | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 | | | |
| | | | TPMT16T308-PSS | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | Finishing to medium cutting |  |  | TPMT090202-PS | ● | ● | ● | ● | 5.56 | 2.38 | 2.5 | 0.2 |
| | | | | | | TPMT090204-PS | ● | ● | ● | ● | | | | 0.4 |
| TPMT090208-PS | ● | ● | | | | ● | ● | 0.8 | | | | | | |
| TPMT110202-PS | ● | ● | | | | ● | ● | 6.35 | 2.38 | 2.8 | 0.2 | | | |
| *TPMT110204-PS | ● | ● | | | | ● | ● | | | | 0.4 | | | |
| TPMT110208-PS | ● | ● | | | | ● | ● | 0.8 | | | | | | |
| TPMT110304-PS | ● | ● | | | | ● | ● | 6.35 | 3.18 | 3.4 | 0.4 | | | |
| TPMT110308-PS | ● | ● | | | | ● | ● | | | | 0.8 | | | |
| TPMT130304-PS | ● | ● | | | | ● | ● | 7.94 | 3.18 | 3.4 | 0.4 | | | |
| TPMT130308-PS | ● | ● | | | | ● | ● | | | | 0.8 | | | |
| TPMT16T304-PS | ● | ● | | | | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 | | | |
| TPMT16T308-PS | ● | ● | | | | ● | ● | | | | 0.8 | | | |
| Medium cutting |  |  | TPMT090204-PM | ● | ● | ● | ● | 5.56 | 2.38 | 2.5 | 0.4 | | | |
| | | | TPMT090208-PM | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | TPMT110204-PM | ● | ● | ● | ● | 6.35 | 2.38 | 2.8 | 0.4 | | | |
| | | | TPMT110208-PM | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | TPMT110304-PM | ● | ● | ● | ● | 6.35 | 3.18 | 3.4 | 0.4 | | | |
| | | | TPMT110308-PM | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | TPMT130304-PM | ● | ● | ● | ● | 7.94 | 3.18 | 3.4 | 0.4 | | | |
| | | | TPMT130308-PM | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | *TPMT16T304-PM | ● | ● | ● | ● | 9.525 | 3.97 | 4.4 | 0.4 | | | |
| | | | TPMT16T308-PM | ● | ● | ● | ● | | | | 0.8 | | | |
| | | | TPMT16T312-PM | ● | ● | ● | ● | | | | 1.2 | | | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Rhombic, 35° (5°)

| Application | Chipbreaker | $f - ap$ | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|--------------------------------------|-------------------------------|----------|----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|----------------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C. dia ød | Thick- ness s | Hole dia ød1 | Corner radius r ϵ |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing to light cutting | PSS | | VBMT110304-PSS | ● | ● | ● | ● | 6.35 | 3.18 | 2.8 | 0.4 |
| | VBMT110308-PSS | | ● | ● | ● | ● | 0.8 | | | | |
| | *VBMT160404-PSS | | ● | ● | ● | ● | 9.525 | 4.76 | 4.4 | 0.4 | |
| | VBMT160408-PSS | | ● | ● | ● | ● | | | | 0.8 | |
| Finishing to medium cutting | PS | | *VBMT110302-PS | ● | ● | ● | ● | 6.35 | 3.18 | 2.8 | 0.2 |
| | VBMT110304-PS | | ● | ● | ● | ● | 0.4 | | | | |
| | VBMT110308-PS | | ● | ● | ● | ● | 0.8 | | | | |
| | VBMT160402-PS | | ● | ● | ● | ● | 9.525 | 4.76 | 4.4 | 0.2 | |
| | VBMT160404-PS | | ● | ● | ● | ● | | | | 0.4 | |
| | VBMT160408-PS | | ● | ● | ● | ● | | | | 0.8 | |

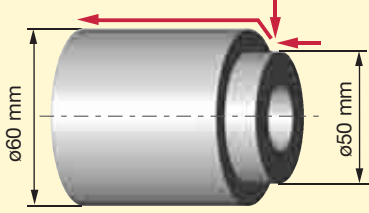
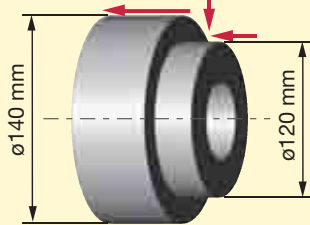
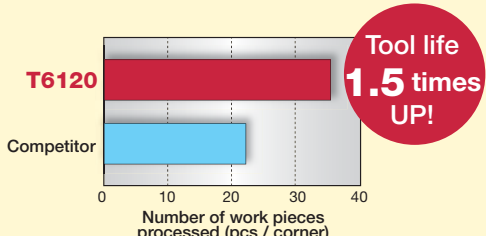
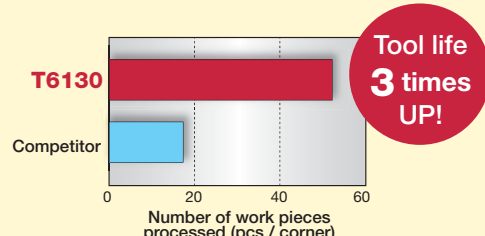
Rhombic, 35° (7°)

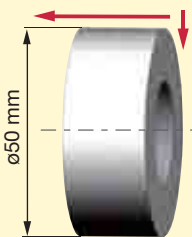
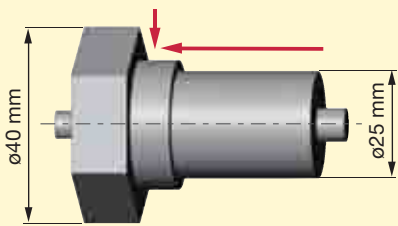
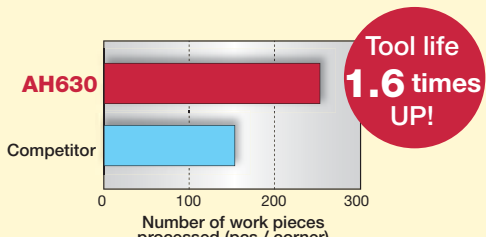
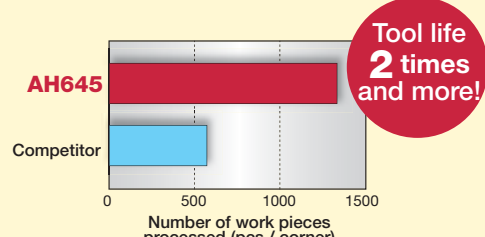
| Application | Chipbreaker | $f - ap$ | Cat. No | Stocked grades | | | | Dimensions (mm) | | | |
|--------------------------------------|-------------------------------|----------|----------------|----------------|-------|-------|-------|-----------------|---------------------|--------------------|----------------------------------|
| | Appearance (Cross section) | | | Coated | | | | I.C. dia ød | Thick- ness s | Hole dia ød1 | Corner radius r ϵ |
| | | | | T6120 | T6130 | AH630 | AH645 | | | | |
| Finishing to light cutting | PSS | | VCMT110304-PSS | ● | ● | ● | ● | 6.35 | 3.18 | 2.8 | 0.4 |
| | VCMT110308-PSS | | ● | ● | ● | ● | 0.8 | | | | |
| | *VCMT160404-PSS | | ● | ● | ● | ● | 9.525 | 4.76 | 4.4 | 0.4 | |
| | VCMT160408-PSS | | ● | ● | ● | ● | | | | 0.8 | |
| Finishing to medium cutting | PS | | VCMT110302-PS | ● | ● | ● | ● | 6.35 | 3.18 | 2.8 | 0.2 |
| | VCMT110304-PS | | ● | ● | ● | ● | 0.4 | | | | |
| | *VCMT110308-PS | | ● | ● | ● | ● | 0.8 | | | | |
| | VCMT160404-PS | | ● | ● | ● | ● | 9.525 | 4.76 | 4.4 | 0.4 | |
| | VCMT160408-PS | | ● | ● | ● | ● | | | | 0.8 | |

*Note: Chipbreaker cross sections are of the inserts marked *

● : Stocked items

Practical examples

| Workpiece type | | Shaft | Machine parts |
|--------------------|------------------------------|--|---|
| Insert | | CNMG120408-SM | WNMG080412-SM |
| Grade | | T6120 | T6130 |
| Work material | | SUS304 / X5CrNi18-9 | SUS303 / X10CrNiS18-9 |
| | |  |  |
| Cutting conditions | Cutting speed: V_c (m/min) | 120 | 125 |
| | Feed: f (mm/rev) | 0.5 | 0.3 |
| | Depth of cut: a_p (mm) | 1.5 | 1.3 |
| | Machining | Continuous | Continuous |
| Coolant | | Wet | Wet |
| Results | |  T6120 has excellent wear resistance, achieving 1.5 times longer tool life than competitor CVD grades. |  T6130 allows better surface finish and 3 times longer tool life than competitor inserts due to its high wear and chipping resistance. |

| Workpiece type | | Shaft | Machine parts |
|--------------------|------------------------------|--|--|
| Insert | | CNMG120408-SM | CNMG120404-SM |
| Grade | | AH630 | AH645 |
| Work material | | SUS304 / X5CrNi18-9 | SUS304 / X5CrNi18-9 |
| | |  |  |
| Cutting conditions | Cutting speed: V_c (m/min) | 150 | 100 |
| | Feed: f (mm/rev) | 0.3 | 0.15 |
| | Depth of cut: a_p (mm) | 2 | 1 ~ 2.5 |
| | Machining | Continuous | Interrupted |
| Coolant | | Wet | Wet |
| Results | |  AH630 has a good balance of wear and chipping resistance, achieving 1.6 times longer tool life than competitor grades. |  AH645 has excellent fracture resistance, achieving 2 times longer tool life than competitor grades. |



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