Member IMC Group
Tungaloy

TurnLine

For more information

New Grade series for Cast Iron Machining

# T500D SERIES
# T500 SERIES

Tungaloy Report No. 574-G

## 2 New Outstanding Grade Series, T500 + T500D
## The Complete Cast Iron Solution



TUNGALOY ADDFORCE ACCELERATED LINES

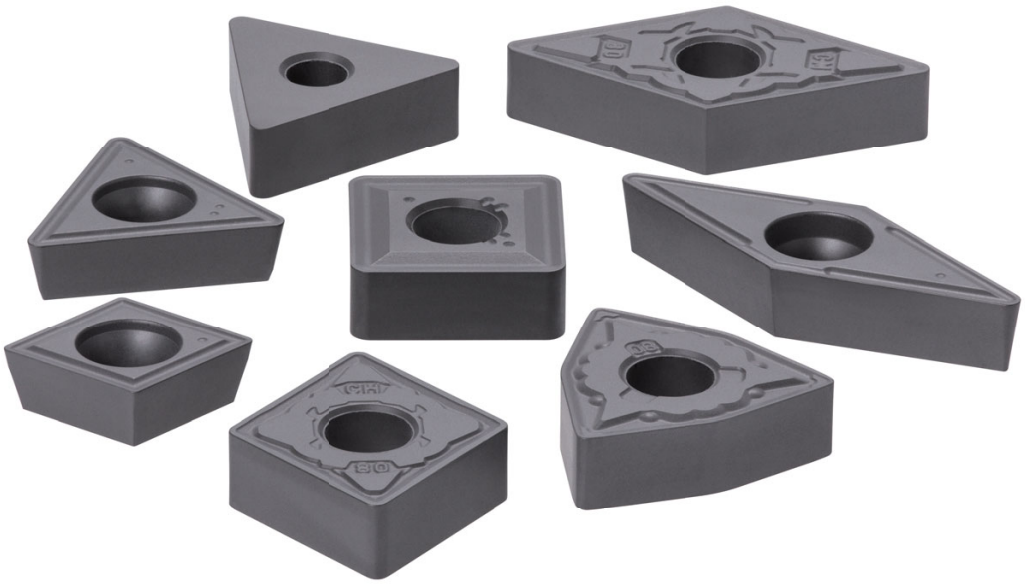


TUNGALOY ADDFORCE TURN

ACCELERATED TURNING & THREADING

New

# T500D SERIES
# T500 SERIES



Complete CVD grade lineup for cast iron turning
Optimized for both ductile and gray cast iron

New

T500D SERIES

Questions?
Ask Gabby!
Tungaloy AI Assistant

# Introducing T505D and T515D for Ductile Cast Iron Turning

Advanced coating technology delivers an optimal balance of wear and fracture resistance.

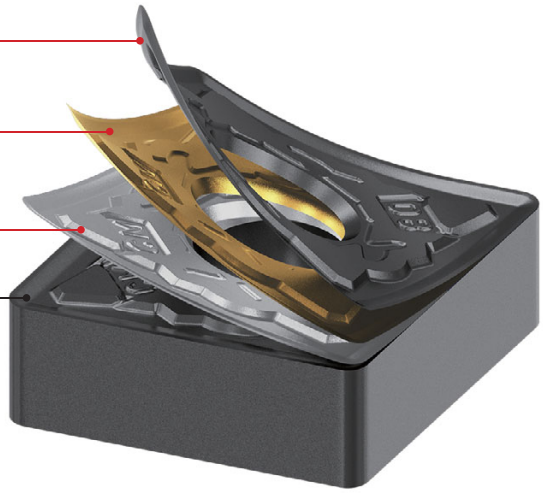
PREMIUMTEC Surface treatment

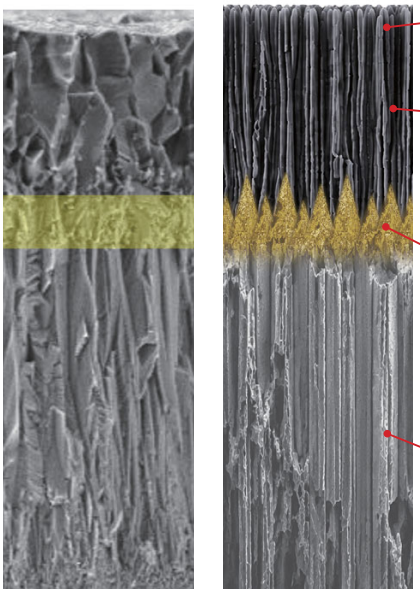
Fine Columnar $Al_2O_3$ layer

High-Adhesion Bonding Layer

Thick Columnar TiCN Layer

Specially designed substrate





PREMIUMTEC

**Unique surface treatment**
- Smooth surface reduces chip welding.

**Fine Columnar $Al_2O_3$ layer**
- 1.4 times thicker fine columnar $Al_2O_3$ layer delivers excellent welding and chipping resistance.

**High-Adhesion Bonding Layer**
- 2 times thicker high-adhesion bonding layer.
- Strong bonding between $Al_2O_3$ and TiCN layers.
- Excellent delamination and chipping resistance.

**Thick Columnar TiCN Layer**
- 1.1 times thicker columnar TiCN layer.
- Excellent wear and chipping resistance.

## 1 Improved Welding & Chipping Resistance

New T500D SERIES

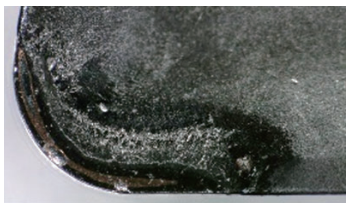
PREMIUMTEC
Smooth surface



Fine Columnar $Al_2O_3$ layer

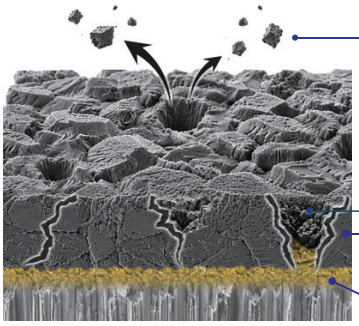
High-Adhesion Bonding layer

Suppresses chip welding
Suppresses crack propagation and chipping



Stable machining

Conventional

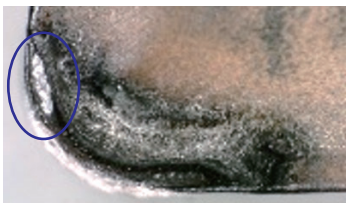


Chipping

$Al_2O_3$ Layer

Bonding Layer

Chip welding occurs
Crack propagation leads to chipping



Unstable machining

## 2 Improved Wear Resistance

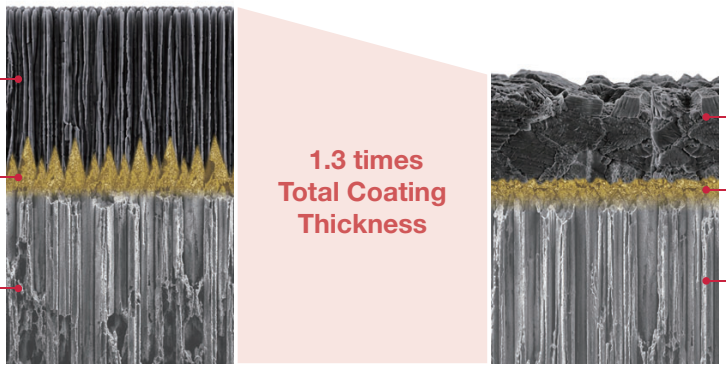
New T500D SERIES

Conventional

Fine Columnar $Al_2O_3$ layer

High-Adhesion Bonding layer

Thick Columnar TiCN Layer



1.3 times Total Coating Thickness

$Al_2O_3$ Layer

Bonding layer

TiCN layer

Excellent Flank Wear Resistance
Achieves Extended Tool Life



Lower Flank Wear

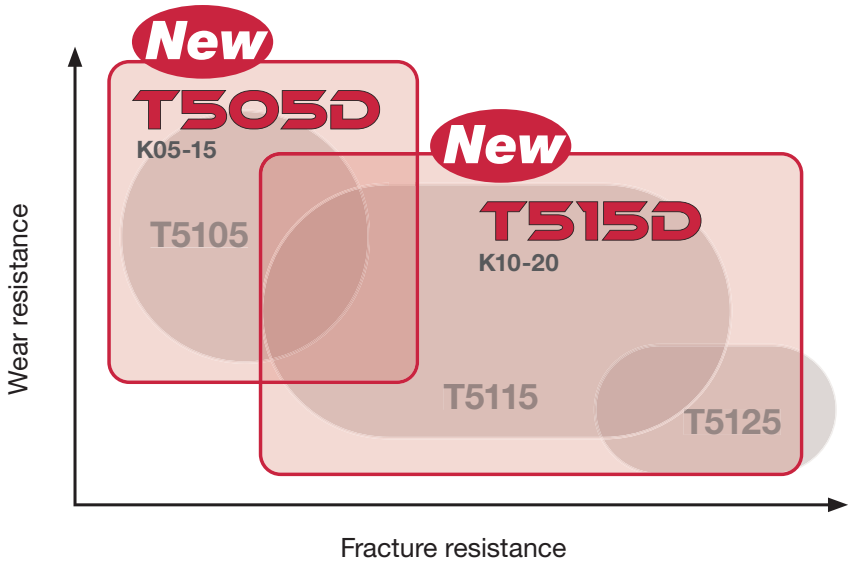


Greater Flank Wear

New

# T500D SERIES

## FCD / GGG Grades for Ductile Cast Iron Turning




### T505D



**FCD: K05-15**

High Speed machining

- Excellent wear resistance for high-speed turning of ductile cast iron.

### T515D



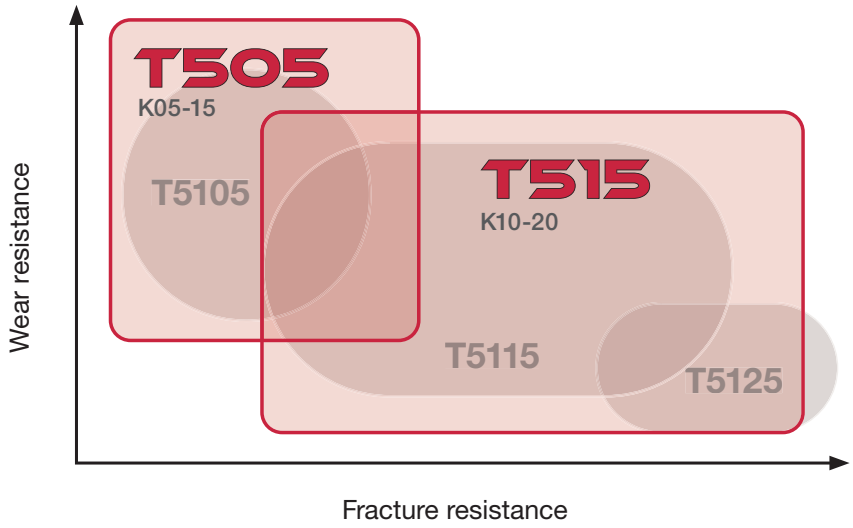
**FCD: K10-20**

1st recommendation grade for ductile cast iron machining.

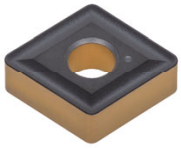
- Well-balanced wear and fracture resistance for a wide range of ductile cast iron applications.

# T500 SERIES

## FC / GG Grades for Gray Cast Iron Turning




### T505



**FC: K05-15**

High Speed machining

- Excellent wear resistance for high-speed turning of gray cast iron.

### T515



**FC: K10-20**

1st recommendation grade for Gray cast iron machining

- Well-balanced wear and fracture resistance for a wide range of Gray cast iron applications.



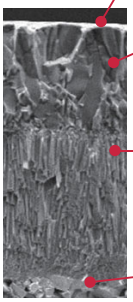
**PREMIUMTEC**

**Unique surface treatment**
Smooth surface reduces chipping and chip welding.

**Hard Outer Layer**
Hard outer layer delivers excellent flank wear resistance.

**Ultra-Thick Coating**
Tungaloy's thickest coating, 1.5 times the conventional thickness, delivers excellent wear resistance.

**High Thermal Conductivity Substrate**
High thermal conductivity dissipates cutting heat for excellent wear and fracture resistance at high speeds.



**PREMIUMTEC**

**Unique surface treatment**
Smooth surface reduces chipping and chip welding.

**Thick $Al_2O_3$ layer**
Thick $Al_2O_3$ layer delivers excellent welding and wear resistance.

**C-rich TiCN layer**
Unique C-rich TiCN layer delivers excellent wear resistance.

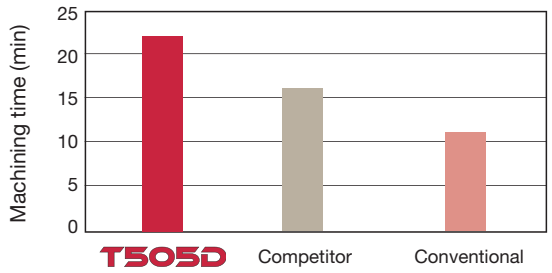
**Specially Designed Substrate**
Specially designed substrate with excellent coating adhesion delivers excellent chipping and fracture resistance.

New

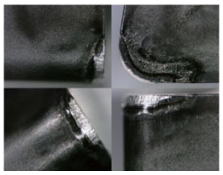
# T500D SERIES

## CUTTING PERFORMANCE

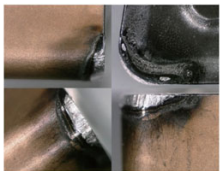
### K FCD600 / GGG60




**T505D achieves a tool life more than 1.4 times longer in ductile cast iron machining, thanks to its superior wear resistance!**



T505D
22 minutes later



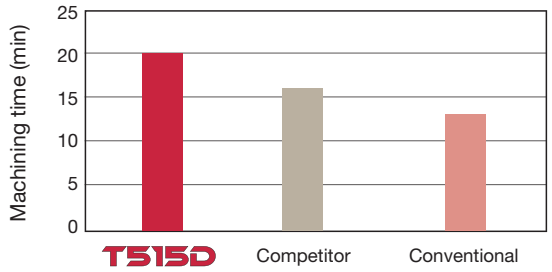
Competitor
16 minutes later



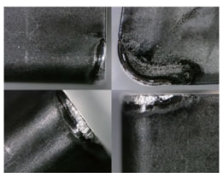
Conventional
11 minutes later

| | |
|---|---|
| Insert | : CNMG120408 |
| Cutting speed | : *Vc* = 200 m/min |
| Feed | : *f* = 0.3 mm/rev |
| Depth of cut | : *ap* = 1.5 mm |
| Machining | : Continuous cutting |
| Coolant | : Wet |

### K FCD600 / GGG60




**T515D achieves a tool life more than 1.2 times longer in ductile cast iron machining, thanks to its superior wear resistance!**



T515D
20 minutes later



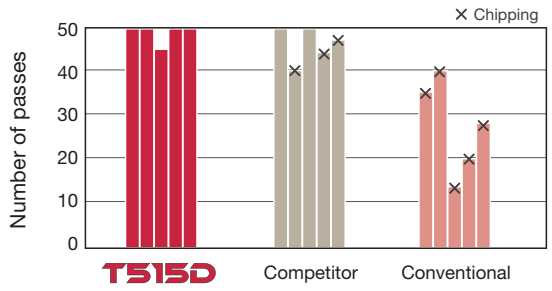
Competitor
16 minutes later



Conventional
13 minutes later

| | |
|---|---|
| Insert | : CNMG120408 |
| Cutting speed | : *Vc* = 200 m/min |
| Feed | : *f* = 0.3 mm/rev |
| Depth of cut | : *ap* = 1.5 mm |
| Machining | : Continuous cutting |
| Coolant | : Wet |

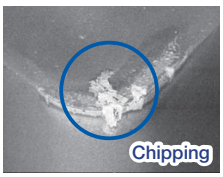
### K FCD600 / GGG60



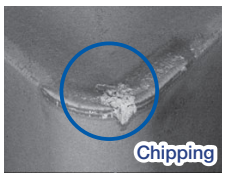

**T515D delivers excellent fracture resistance in ductile cast iron machining!**




T515D
50 passes




Competitor
40 passes

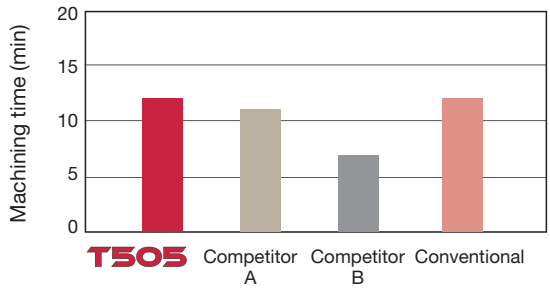



Conventional
20 passes

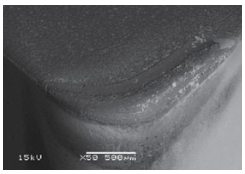
| | |
|---|---|
| Insert | : CNMG120408 |
| Cutting speed | : *Vc* = 150 m/min |
| Feed | : *f* = 0.35 mm/rev |
| Depth of cut | : *ap* = 1.5 mm |
| Machining | : Interrupted cutting |
| Coolant | : Wet |

# T500 SERIES

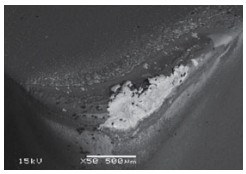
## FC200 / GG20



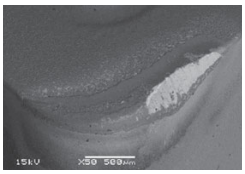

**T505 offers superior wear resistance in gray cast iron machining, achieving a lifespan more than 1.6 times longer!**



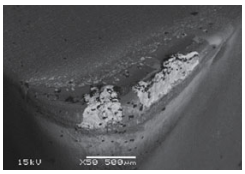
**T505**
**12 minutes later**



**Competitor A**
**11 minutes later**



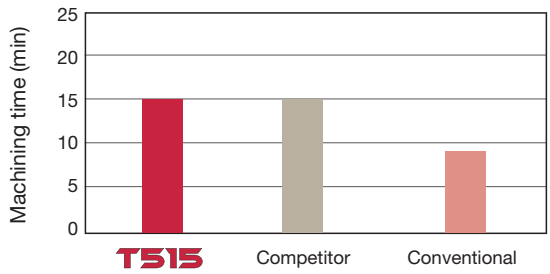
**Competitor B**
**7 minutes later**



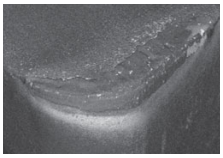
Conventional
12 minutes later

| | |
|---|---|
| Insert | : CNMG120408 |
| Cutting speed | : *Vc* = 700 m/min |
| Feed | : *f* = 0.3 mm/rev |
| Depth of cut | : *ap* = 2 mm |
| Machining | : Continuous cutting |
| Coolant | : Wet |

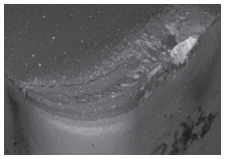
## FC200 / GG20



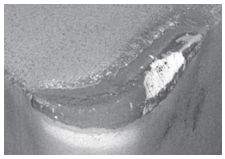

**T515 offers superior wear resistance in gray cast iron machining, achieving a lifespan more than 1.3 times longer!**



**T515**
**15 minutes later**



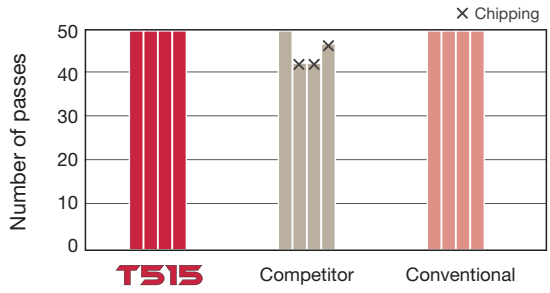
**Competitor**
**15 minutes later**



**Conventional**
**9 minutes later**

| | |
|---|---|
| Insert | : CNMG120408 |
| Cutting speed | : *Vc* = 700 m/min |
| Feed | : *f* = 0.3 mm/rev |
| Depth of cut | : *ap* = 2 mm |
| Machining | : Continuous cutting |
| Coolant | : Wet |

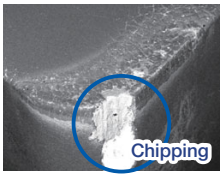
## FC200 / GG20



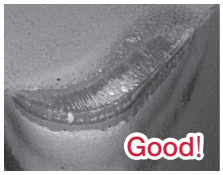

**T515 delivers excellent fracture resistance in gray cast iron machining!**




**T515**
**40 passes**




**Competitor**
**32 passes**




**Conventional**
**40 passes**

| | |
|---|---|
| Insert | : CNMG120408 |
| Cutting speed | : *Vc* = 400 m/min |
| Feed | : *f* = 0.35 mm/rev |
| Depth of cut | : *ap* = 2 mm |
| Machining | : Continuous cutting |
| Coolant | : Wet |

New

# T500D SERIES
# T500 SERIES

## SELECTION SYSTEM

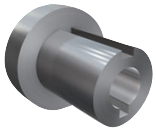
For high speed machining
For improving wear

1st recommendation

**K**

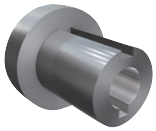
| | | | | |
|---|---|---|---|---|
| K05 | For Ductile cast iron **T505D** / For Gray cast iron **T505** | Chipping and fractures ⇒ / ⇐ Wear improvement | K15 | For Ductile cast iron **T515D** / For Gray cast iron **T515** |
| | | Chipping and fractures ⇒ / ⇐ Wear improvement | K25 | For interrupted machining **T5125** Option T6215 |

## Ductile cast iron


| | Continuous | Light interrupted | Heavy interrupted |
|---|---|---|---|
| Finishing | Basic **All-round T505D** → Fracture: All-round **T515D**; Burr occurrence: CF **T505D** | Basic **All-round T515D** → Wear: All-round **T505D**; Fracture: CH **T515D**; Burr occurrence: CF **T505D** | Basic **CH T515D** → Wear: All-round **T505D**; Fracture: CH **T5125**; Burr occurrence: All-round **T515D** |
| Medium cutting | Basic **All-round T505D** → Fracture: All-round **T515D**; Burr occurrence: CF **T505D** | Basic **All-round T515D** → Wear: All-round **T505D**; Fracture: CH **T515D**; Burr occurrence: CF **T505D** | Basic **CH T515D** → Wear: All-round **T505D**; Fracture: CH **T5125**; Burr occurrence: All-round **T515D** |
| Medium to heavy cutting | Basic **All-round T515D** → Wear: All-round **T505D**; Fracture: CH **T515D**; Burr occurrence: CF **T505D** | Basic **All-round T515D** → Wear: All-round **T505D**; Fracture: CH **T515D**; Burr occurrence: CF **T505D** | Basic **CH T515D** → Wear: All-round **T505D**; Fracture: CH **T5125**; Burr occurrence: All-round **T515D** |

## Gray cast iron


| | Continuous | Light interrupted | Heavy interrupted |
|---|---|---|---|
| Finishing | Basic: All-round T505 → Fracture: All-round T515; Burr occurrence: CF T505 | Basic: All-round T515 → Wear: All-round T505; Fracture: CH T515; Burr occurrence: CF T505 | Basic: CH T515 → Wear: All-round T505; Fracture: CH T5125; Burr occurrence: All-round T515 |
| Medium cutting | Basic: All-round T505 → Fracture: All-round T515; Burr occurrence: CF T505 | Basic: All-round T515 → Wear: All-round T505; Fracture: CH T515; Burr occurrence: CF T505 | Basic: CH T515 → Wear: All-round T505; Fracture: CH T5125; Burr occurrence: All-round T515 |
| Medium to heavy cutting | Basic: All-round T515 → Wear: All-round T505; Fracture: CH T515; Burr occurrence: CF T505 | Basic: All-round T515 → Wear: All-round T505; Fracture: CH T515; Burr occurrence: CF T505 | Basic: CH T515 → Wear: All-round T505; Fracture: CH T5125; Burr occurrence: All-round T515 |

## STANDARD CUTTING CONDITIONS

### Negative insert

| ISO | Operation | Chipbreaker | Grades | Corner radius RE (mm) | Depth of cut *ap* (mm) | Feed *f* (mm/rev) | Cutting speed: *Vc* (m/min) Ductile cast iron | Cutting speed: *Vc* (m/min) Gray cast iron |
|---|---|---|---|---|---|---|---|---|
| K | Finishing | CF | T505 | 0.4 | 0.5 - 2 | 0.05 - 0.2 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 0.5 - 2 | 0.1 - 0.35 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 0.5 - 2 | 0.1 - 0.4 | 180 - 400 | 180 - 700 |
| | | | T515 | 0.4 | 0.5 - 2 | 0.05 - 0.2 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.5 - 2 | 0.1 - 0.35 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.5 - 2 | 0.1 - 0.4 | 150 - 300 | 150 - 700 |
| | | | New T505D | 0.4 | 0.5 - 2 | 0.05 - 0.2 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 0.5 - 2 | 0.1 - 0.35 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 0.5 - 2 | 0.1 - 0.4 | 180 - 400 | 180 - 700 |
| | | | New T515D | 0.4 | 0.5 - 2 | 0.05 - 0.2 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.5 - 2 | 0.1 - 0.35 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.5 - 2 | 0.1 - 0.4 | 150 - 300 | 150 - 700 |
| | Medium cutting | CM | T505 | 0.4 | 1 - 5 | 0.1 - 0.25 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 1 - 5 | 0.15 - 0.4 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 1 - 5 | 0.15 - 0.5 | 180 - 400 | 180 - 700 |
| | | | T515 | 0.4 | 1 - 5 | 0.1 - 0.25 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 1 - 5 | 0.15 - 0.4 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 1 - 5 | 0.15 - 0.5 | 150 - 300 | 150 - 700 |
| | | | New T505D | 0.4 | 1 - 5 | 0.1 - 0.25 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 1 - 5 | 0.15 - 0.4 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 1 - 5 | 0.15 - 0.5 | 180 - 400 | 180 - 700 |
| | | | New T515D | 0.4 | 1 - 5 | 0.1 - 0.25 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 1 - 5 | 0.15 - 0.4 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 1 - 5 | 0.15 - 0.5 | 150 - 300 | 150 - 700 |
| | | | T5125 | 0.4 | 1 - 5 | 0.1 - 0.25 | 120 - 250 | 120 - 300 |
| | | | | 0.8 | 1 - 5 | 0.15 - 0.4 | 120 - 250 | 120 - 300 |
| | | | | 1.2 | 1 - 5 | 0.15 - 0.5 | 120 - 250 | 120 - 300 |
| | | All-round | T505 | 0.4 | 1 - 6 | 0.2 - 0.3 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 1 - 6 | 0.2 - 0.5 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 1 - 6 | 0.2 - 0.5 | 180 - 400 | 180 - 700 |
| | | | | 1.6 | 1 - 6 | 0.3 - 0.5 | 180 - 400 | 180 - 700 |
| | | | T515 | 0.4 | 1 - 6 | 0.2 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 1 - 6 | 0.2 - 0.5 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 1 - 6 | 0.2 - 0.5 | 150 - 300 | 150 - 700 |
| | | | | 1.6 | 1 - 6 | 0.3 - 0.5 | 150 - 300 | 150 - 700 |
| | | | New T505D | 0.4 | 1 - 6 | 0.2 - 0.3 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 1 - 6 | 0.2 - 0.5 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 1 - 6 | 0.2 - 0.5 | 180 - 400 | 180 - 700 |
| | | | | 1.6 | 1 - 6 | 0.3 - 0.5 | 180 - 400 | 180 - 700 |
| | | | New T515D | 0.4 | 1 - 6 | 0.2 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 1 - 6 | 0.2 - 0.5 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 1 - 6 | 0.2 - 0.5 | 150 - 300 | 150 - 700 |
| | | | | 1.6 | 1 - 6 | 0.3 - 0.5 | 150 - 300 | 150 - 700 |
| | | | T5125 | 0.4 | 1 - 6 | 0.2 - 0.3 | 120 - 250 | 120 - 300 |
| | | | | 0.8 | 1 - 6 | 0.2 - 0.5 | 120 - 250 | 120 - 300 |
| | | | | 1.2 | 1 - 6 | 0.2 - 0.5 | 120 - 250 | 120 - 300 |
| | | | | 1.6 | 1 - 6 | 0.3 - 0.5 | 120 - 250 | 120 - 300 |

## Negative insert

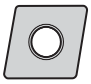
| ISO | Operation | Chipbreaker | Grades | Corner radius RE (mm) | Depth of cut *ap* (mm) | Feed *f* (mm/rev) | Cutting speed: *Vc* (m/min) Ductile cast iron | Cutting speed: *Vc* (m/min) Gray cast iron |
|---|---|---|---|---|---|---|---|---|
| K | Finishing to medium cutting | Flat | T505 | 0.4 | 0.05 - 2 | 0.1 - 0.3 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.2 - 0.45 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 0.05 - 2 | 0.3 - 0.8 | 180 - 400 | 180 - 700 |
| | | | | 1.6 | 0.05 - 2 | 0.3 - 0.8 | 180 - 400 | 180 - 700 |
| | | | T515 | 0.4 | 0.05 - 2 | 0.1 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.2 - 0.45 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.05 - 2 | 0.3 - 0.8 | 150 - 300 | 150 - 700 |
| | | | | 1.6 | 0.05 - 2 | 0.3 - 0.8 | 150 - 300 | 150 - 700 |
| | | | New T505D | 0.4 | 0.05 - 2 | 0.1 - 0.3 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.2 - 0.45 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 0.05 - 2 | 0.3 - 0.8 | 180 - 400 | 180 - 700 |
| | | | | 1.6 | 0.05 - 2 | 0.3 - 0.8 | 180 - 400 | 180 - 700 |
| | | | New T515D | 0.4 | 0.05 - 2 | 0.1 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.2 - 0.45 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.05 - 2 | 0.3 - 0.8 | 150 - 300 | 150 - 700 |
| | | | | 1.6 | 0.05 - 2 | 0.3 - 0.8 | 150 - 300 | 150 - 700 |
| | | | T5125 | 0.4 | 0.05 - 2 | 0.1 - 0.3 | 120 - 250 | 120 - 300 |
| | | | | 0.8 | 0.05 - 2 | 0.2 - 0.45 | 120 - 250 | 120 - 300 |
| | | | | 1.2 | 0.05 - 2 | 0.3 - 0.8 | 120 - 250 | 120 - 300 |
| | | | | 1.6 | 0.05 - 2 | 0.3 - 0.8 | 120 - 250 | 120 - 300 |
| | Medium to heavy cutting | CH | T505 | 0.4 | 2 - 6 | 0.1 - 0.3 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 2 - 6 | 0.2 - 0.45 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 2 - 6 | 0.2 - 0.6 | 180 - 400 | 180 - 700 |
| | | | T515 | 0.4 | 2 - 6 | 0.1 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 2 - 6 | 0.2 - 0.45 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 2 - 6 | 0.2 - 0.6 | 150 - 300 | 150 - 700 |
| | | | New T505D | 0.4 | 2 - 6 | 0.1 - 0.3 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 2 - 6 | 0.2 - 0.45 | 180 - 400 | 180 - 700 |
| | | | | 1.2 | 2 - 6 | 0.2 - 0.6 | 180 - 400 | 180 - 700 |
| | | | New T515D | 0.4 | 2 - 6 | 0.1 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 2 - 6 | 0.2 - 0.45 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 2 - 6 | 0.2 - 0.6 | 150 - 300 | 150 - 700 |
| | | | T5125 | 0.4 | 2 - 6 | 0.1 - 0.3 | 120 - 250 | 120 - 300 |
| | | | | 0.8 | 2 - 6 | 0.2 - 0.45 | 120 - 250 | 120 - 300 |
| | | | | 1.2 | 2 - 6 | 0.2 - 0.6 | 120 - 250 | 120 - 300 |
| | Medium cutting (wiper) | SW | T515 | 0.8 | 0.5 - 2 | 0.3 - 0.6 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.5 - 2 | 0.5 - 0.8 | 150 - 300 | 150 - 700 |
| | | | New T515D | 0.8 | 0.5 - 2 | 0.3 - 0.6 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.5 - 2 | 0.5 - 0.8 | 150 - 300 | 150 - 700 |

## Positive insert

| ISO | Operation | Chipbreaker | Grades | Corner radius RE (mm) | Depth of cut *ap* (mm) | Feed *f* (mm/rev) | Cutting speed: *Vc* (m/min) Ductile cast iron | Cutting speed: *Vc* (m/min) Gray cast iron |
|---|---|---|---|---|---|---|---|---|
| K | Finishing to medium cutting | CM | T505 | 0.4 | 0.05 - 2 | 0.05 - 0.2 | 180 - 400 | 180 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.05 - 0.3 | 180 - 400 | 180 - 700 |
| | | | T515 | 0.4 | 0.05 - 2 | 0.05 - 0.2 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.05 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.05 - 2 | 0.05 - 0.3 | 150 - 300 | 150 - 700 |
| | | | New T515D | 0.4 | 0.05 - 2 | 0.05 - 0.2 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.05 - 0.3 | 150 - 300 | 150 - 700 |
| | | | | 1.2 | 0.05 - 2 | 0.05 - 0.3 | 150 - 300 | 150 - 700 |
| | | Flat | T515 | 0.4 | 0.05 - 2 | 0.05 - 0.2 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.05 - 0.3 | 150 - 300 | 150 - 700 |
| | | | New T515D | 0.4 | 0.05 - 2 | 0.05 - 0.2 | 150 - 300 | 150 - 700 |
| | | | | 0.8 | 0.05 - 2 | 0.05 - 0.3 | 150 - 300 | 150 - 700 |

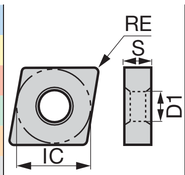
● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

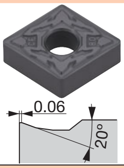
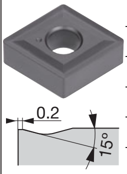
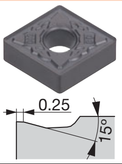
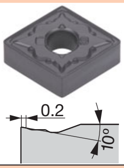
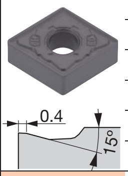
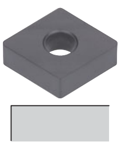
# CN



Rhombic, 80° with hole

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| P | Steel | | | | | | |
| M | Stainless | | | | | | |
| K | Cast iron | ● | ●◐ | ● | ●◐ | ● | ◐ | ✠ |
| N | Non-ferrous | | | | | | |
| S | Superalloy | | | | | | |
| H | Hard material | | | | | | |




| Application | Chipbreaker | Designation | T505D (New) | T515D (New) | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Coated | | | | | | | Dimension (mm) | | | |
| Finishing | CF  0.06, 20° | CNMG120404-CF | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | CNMG120408-CF | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | CNMG120412-CF | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | | 1.2 | 12.7 | 4.76 | 5.16 |
| Medium cutting | All-round  0.2, 15° | CNMG120404 | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 0.4 | 12.7 | 4.76 | 5.16 |
| | | CNMG120408 | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | CNMG120412 | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | CNMG120416 | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 1.6 | 12.7 | 4.76 | 5.16 |
| | | CNMG160608 | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | ● | 0.8 | 15.875 | 6.35 | 6.35 |
| | | CNMG160612 | 🔴 | 🔴 | 🔴 | ● | ▲ | ▲ | ● | 1.2 | 15.875 | 6.35 | 6.35 |
| | | CNMG160616 | 🔴 | 🔴 | | ● | | ▲ | | 1.6 | 15.875 | 6.35 | 6.35 |
| | | CNMG190612 | | 🔴 | | ● | | ▲ | ● | 1.2 | 19.05 | 6.35 | 7.93 |
| | | CNMG190616 | | 🔴 | | ● | | ▲ | ● | 1.6 | 19.05 | 6.35 | 7.93 |
| | CM  0.25, 15° | CNMG120404-CM | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 0.4 | 12.7 | 4.76 | 5.16 |
| | | CNMG120408-CM | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | CNMG120412-CM | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | CNMG160608-CM | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 0.8 | 15.875 | 6.35 | 6.35 |
| | | CNMG160612-CM | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 1.2 | 15.875 | 6.35 | 6.35 |
| Medium cutting (wiper) | SW  0.2, 10° | CNMG090408E-SW | | 🔴 | | 🔴 | | ▲ | | 0.8 | 9.525 | 4.76 | 3.81 |
| | | CNMG090412E-SW | | 🔴 | | 🔴 | | ▲ | | 1.2 | 9.525 | 4.76 | 3.81 |
| | | CNMG120408-SW | | 🔴 | | ● | | ▲ | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | CNMG120412-SW | | 🔴 | | ● | | ▲ | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | *Wiper | | | | | | | | | | | |
| Medium to heavy cutting | CH  0.4, 15° | CNMG120404-CH | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | ● | 0.4 | 12.7 | 4.76 | 5.16 |
| | | CNMG120408-CH | 🔴 | 🔴 | 🔴 | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | CNMG120412-CH | 🔴 | 🔴 | 🔴 | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | CNMG160612-CH | | 🔴 | | 🔴 | | ▲ | ● | 1.2 | 15.875 | 6.35 | 6.35 |
| | | CNMG160616-CH | | 🔴 | | 🔴 | | ▲ | ● | 1.6 | 15.875 | 6.35 | 6.35 |
| | | CNMG190612-CH | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | ● | 1.2 | 19.05 | 6.35 | 7.93 |
| | | CNMG190616-CH | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | ● | 1.6 | 19.05 | 6.35 | 7.93 |
| Finishing to medium cutting | -  | CNMA090404E | | | | ● | | | | 0.4 | 9.525 | 4.76 | 3.81 |
| | | CNMA090408E | | | | ● | | | | 0.8 | 9.525 | 4.76 | 3.81 |
| | | CNMA090412E | | | | ● | | | | 1.2 | 9.525 | 4.76 | 3.81 |
| | | CNMA090416E | | | | ● | | | | 1.6 | 9.525 | 4.76 | 3.81 |
| | | CNMA120404 | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | ● | 0.4 | 12.7 | 4.76 | 5.16 |
| | | CNMA120408 | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | CNMA120412 | 🔴 | 🔴 | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | CNMA120416 | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | ▲ | ● | 1.6 | 12.7 | 4.76 | 5.16 |
| | | CNMA160608 | 🔴 | 🔴 | 🔴 | 🔴 | ▲ | | ● | 0.8 | 15.875 | 6.35 | 6.35 |
| | | CNMA160612 | 🔴 | 🔴 | 🔴 | ● | ▲ | ▲ | ● | 1.2 | 15.875 | 6.35 | 6.35 |
| | | CNMA160616 | | 🔴 | | ● | | | | 1.6 | 15.875 | 6.35 | 6.35 |
| | | CNMA190612 | | 🔴 | | ● | | ▲ | ● | 1.2 | 19.05 | 6.35 | 7.93 |
| | | CNMA190616 | 🔴 | 🔴 | 🔴 | ● | | | ● | 1.6 | 19.05 | 6.35 | 7.93 |

* Please see below about the adjustment of the machining program for rounding or taper machining by using SW/FW.
Please contact our sales representatives if you have any questions.

🔴 : New product
● : Line up
▲: To be discontinued

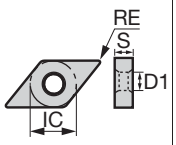
● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

# DN



Rhombic, 55° with hole

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ◐ ● ◐ ● ◐ ✣ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | | RE | IC | S | D1 |
| Finishing | CF | DNMG150404-CF | ● | ● | ● | ● | ▲ | ▲ | | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | DNMG150408-CF | ● | ● | ● | ● | ▲ | ▲ | | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | DNMG150412-CF | ● | ● | ● | ● | ▲ | ▲ | | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | DNMG150604-CF | ● | ● | ● | ● | ▲ | ▲ | | | 0.4 | 12.7 | 6.35 | 5.16 |
| | | DNMG150608-CF | ● | ● | ● | ● | ▲ | ▲ | | | 0.8 | 12.7 | 6.35 | 5.16 |
| | | DNMG150612-CF | ● | ● | ● | ● | ▲ | ▲ | | | 1.2 | 12.7 | 6.35 | 5.16 |
| Finishing to medium cutting | All-round | DNMG110404 | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.4 | 9.525 | 4.76 | 3.81 |
| | | DNMG110408 | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.8 | 9.525 | 4.76 | 3.81 |
| | | DNMG150404 | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | DNMG150408 | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | DNMG150412 | ● | ● | ● | ● | ▲ | ▲ | ● | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | DNMG150416 | | ● | | ● | | ▲ | | | 1.6 | 12.7 | 4.76 | 5.16 |
| | | DNMG150604 | ● | ● | ● | ● | ▲ | ▲ | | | 0.4 | 12.7 | 6.35 | 5.16 |
| | | DNMG150608 | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.8 | 12.7 | 6.35 | 5.16 |
| | | DNMG150612 | ● | ● | ● | ● | | ▲ | ● | | 1.2 | 12.7 | 6.35 | 5.16 |
| Medium cutting | CM | DNMG150404-CM | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | DNMG150408-CM | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | DNMG150412-CM | ● | ● | ● | ● | ▲ | ▲ | ● | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | DNMG150604-CM | ● | ● | ● | ● | | ▲ | ● | | 0.4 | 12.7 | 6.35 | 5.16 |
| | | DNMG150608-CM | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.8 | 12.7 | 6.35 | 5.16 |
| | | DNMG150612-CM | ● | ● | ● | ● | ▲ | ▲ | ● | | 1.2 | 12.7 | 6.35 | 5.16 |
| Medium to heavy cutting | CH | DNMG150404-CH | | ● | | ● | | ▲ | ● | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | DNMG150408-CH | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | DNMG150412-CH | | ● | | ● | | ▲ | ● | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | DNMG150608-CH | ● | ● | ● | ● | | ▲ | ● | | 0.8 | 12.7 | 6.35 | 5.16 |
| | | DNMG150612-CH | ● | ● | ● | ● | ▲ | | | | 1.2 | 12.7 | 6.35 | 5.16 |
| Finishing to medium cutting | - | DNMA110404E | | | | ● | | | | | 0.4 | 9.525 | 4.76 | 3.81 |
| | | DNMA110408E | | | | ● | | | | | 0.8 | 9.525 | 4.76 | 3.81 |
| | | DNMA110412E | | | | ● | | | | | 1.2 | 9.525 | 4.76 | 3.81 |
| | | DNMA150404 | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | DNMA150408 | ● | ● | ● | ● | ▲ | ▲ | ● | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | DNMA150412 | ● | ● | ● | ● | ▲ | ▲ | ● | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | DNMA150604 | | | ● | ● | | | | | 0.4 | 12.7 | 6.35 | 5.16 |
| | | DNMA150608 | ● | ● | ● | ● | ▲ | ▲ | | | 0.8 | 12.7 | 6.35 | 5.16 |
| | | DNMA150612 | ● | ● | ● | ● | ▲ | ▲ | ● | | 1.2 | 12.7 | 6.35 | 5.16 |

● : New product
● : Line up
▲: To be discontinued

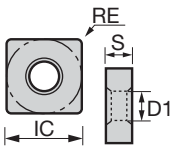
● : Continuous cutting
ⓒ : Light interrupted cutting
✠ : Heavy interrupted cutting

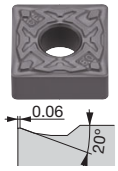
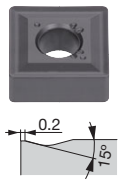
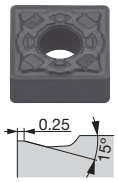
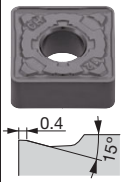
# SN



Square with hole

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✠ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
| Finishing | CF | SNMG120408-CF | ● | ● | ● | ● | ▲ | ▲ | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | SNMG12012-CF | ● | ● | ● | ● | ▲ | ▲ | | 1.2 | 12.7 | 4.76 | 5.16 |
| | |   | | | | | | | | | | | |
| Medium cutting | All-round | SNMG120404 | ● | ● | ● | ● | ▲ | ▲ | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | SNMG12040**8** | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | SNMG12041**2** | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | SNMG12041**6** | ● | ● | ● | ● | ▲ | ▲ | | 1.6 | 12.7 | 4.76 | 5.16 |
| | | SNMG12042**0** | | ● | | ● | | ▲ | ● | 2 | 12.7 | 4.76 | 5.16 |
| | | SNMG150612 | | | | ● | | | | 1.2 | 15.875 | 6.35 | 6.35 |
| | | SNMG15061**6** | | | | ● | | | | 1.6 | 15.875 | 6.35 | 6.35 |
| | | SNMG190612 | | ● | | ● | | ▲ | ● | 1.2 | 19.05 | 6.35 | 7.93 |
| | | SNMG19061**6** | ● | ● | ● | ● | ▲ | ▲ | ● | 1.6 | 19.05 | 6.35 | 7.93 |
| | |   | | | | | | | | | | | |
| | CM | SNMG120408-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | SNMG12041**2**-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | |   | | | | | | | | | | | |
| Medium to heavy cutting | CH | SNMG120408-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | SNMG12041**2**-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | SNMG12041**6**-CH | | ● | | ● | | ▲ | ● | 1.6 | 12.7 | 4.76 | 5.16 |
| | |   | | | | | | | | | | | |
| Finishing to medium cutting | - | SNMA090308 | ● | | ● | | ▲ | | | 0.8 | 9.525 | 3.18 | 3.81 |
| | | SNMA120404 | ● | ● | ● | ● | ▲ | ▲ | | 0.4 | 12.7 | 4.76 | 5.16 |
| | | SNMA12040**8** | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | SNMA12041**2** | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | SNMA12041**6** | ● | ● | ● | ● | ▲ | ▲ | ● | 1.6 | 12.7 | 4.76 | 5.16 |
| | |  | | | | | | | | | | | |

● : New product
● : Line up
▲: To be discontinued

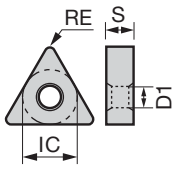
● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

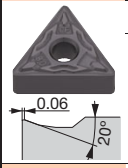
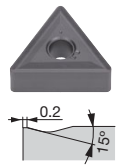
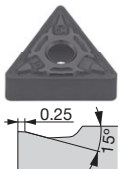
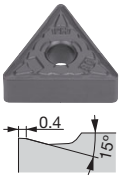
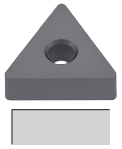
# TN



Triangular with hole

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ◐ ● ◐ ● ◐ ✣ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
| Finishing | CF | TNMG160404-CF | ● | ● | ● | ● | ▲ | ▲ | | 0.4 | 9.525 | 4.76 | 3.81 |
| | | TNMG160408-CF | ● | ● | ● | ● | ▲ | ▲ | | 0.8 | 9.525 | 4.76 | 3.81 |
| |  | | | | | | | | | | | | |
| Medium cutting | All-round | TNMG110304 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 6.35 | 3.18 | 2.26 |
| | | TNMG110308 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 6.35 | 3.18 | 2.26 |
| | | TNMG160404 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 9.525 | 4.76 | 3.81 |
| | | TNMG160408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |
| | | TNMG160412 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 9.525 | 4.76 | 3.81 |
| |  | TNMG160416 | | | | ● | | | ● | 1.6 | 9.525 | 4.76 | 3.81 |
| | | TNMG220408 | | ● | | ● | | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | TNMG220412 | | ● | | ● | | | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | TNMG220416 | | ● | | ● | | ▲ | | 1.6 | 12.7 | 4.76 | 5.16 |
| | CM | TNMG160404-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 9.525 | 4.76 | 3.81 |
| | | TNMG160408-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |
| | | TNMG160412-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 9.525 | 4.76 | 3.81 |
| | | TNMG220408-CM | | ● | ● | ● | | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| |  | TNMG220412-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| Medium to heavy cutting | CH | TNMG160404-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 9.525 | 4.76 | 3.81 |
| | | TNMG160408-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |
| | | TNMG160412-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 9.525 | 4.76 | 3.81 |
| | | TNMG220408-CH | | | | ● | | | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| |  | TNMG220412-CH | ● | ● | ● | ● | ▲ | ▲ | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | TNMG220416-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 1.6 | 12.7 | 4.76 | 5.16 |
| Finishing to medium cutting | - | TNMA110404E | | | | ● | | | | 0.4 | 6.35 | 4.76 | 2.26 |
| | | TNMA110408E | | | | ● | | | | 0.8 | 6.35 | 4.76 | 2.26 |
| | | TNMA110412E | | | | ● | | | | 1.2 | 6.35 | 4.76 | 2.26 |
| | | TNMA160404 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 9.525 | 4.76 | 3.81 |
| | | TNMA160408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |
| | | TNMA160412 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 9.525 | 4.76 | 3.81 |
| | | TNMA160416 | ● | ● | ● | ● | ▲ | ▲ | | 1.6 | 9.525 | 4.76 | 3.81 |
| |  | TNMA160420 | ● | ● | ● | ● | ▲ | ▲ | ● | 2 | 9.525 | 4.76 | 3.81 |
| | | TNMA220404 | | ● | | ● | | ▲ | ● | 0.4 | 12.7 | 4.76 | 5.16 |
| | | TNMA220408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | TNMA220412 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | TNMA220416 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.6 | 12.7 | 4.76 | 5.16 |

● : New product
● : Line up
▲: To be discontinued

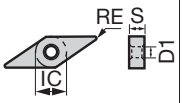
● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

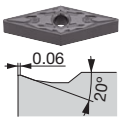
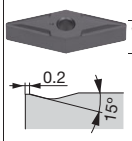
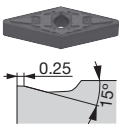
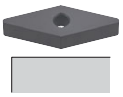
# VN



Rhombic, 35° with hole

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ɔ ● ●ɔ ● ɔ ✣ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
| Finishing | CF | VNMG160404-CF | ● | ● | ● | ● | ▲ | ▲ | | 0.4 | 9.525 | 4.76 | 3.81 |
| |  | VNMG160408-CF | ● | ● | ● | ● | ▲ | ▲ | | 0.8 | 9.525 | 4.76 | 3.81 |
| Medium cutting | All-round | VNMG160404 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 9.525 | 4.76 | 3.81 |
| |  | VNMG160408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |
| | | VNMG160412 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 9.525 | 4.76 | 3.81 |
| | CM | VNMG160408-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |
| |  | VNMG160412-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 9.525 | 4.76 | 3.81 |
| Finishing to medium cutting | - | VNMA120404E | | | | ● | | | | 0.4 | 7.15 | 4.76 | 3.81 |
| |  | VNMA120408E | | | | ● | | | | 0.8 | 7.15 | 4.76 | 3.81 |
| | | VNMA160404 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 9.525 | 4.76 | 3.81 |
| | | VNMA160408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |

● : New product
● : Line up
▲: To be discontinued

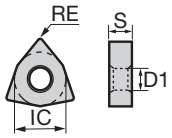
● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

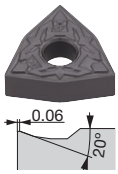
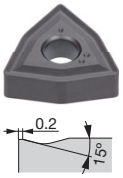
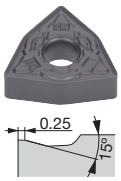
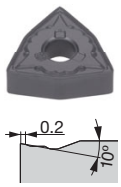
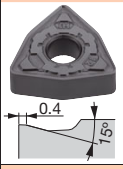
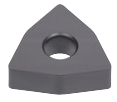
# WN



Trigon, 80°
with hole

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✣ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
| Finishing | CF | WNMG080404-CF | ● | ● | ● | ● | ▲ | ▲ | | 0.4 | 12.7 | 4.76 | 5.16 |
| |  | WNMG080408-CF | ● | ● | ● | ● | ▲ | ▲ | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | WNMG080412-CF | ● | ● | ● | ● | ▲ | ▲ | | 1.2 | 12.7 | 4.76 | 5.16 |
| Medium cutting | All-round | WNMG060404 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 9.525 | 4.76 | 3.81 |
| |  | WNMG060408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 9.525 | 4.76 | 3.81 |
| | | WNMG080404 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 12.7 | 4.76 | 5.16 |
| | | WNMG080408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | WNMG080412 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | WNMG080416 | ● | ● | ● | ● | ▲ | ▲ | | 1.6 | 12.7 | 4.76 | 5.16 |
| | CM | WNMG080404-CM | ● | ● | ● | ● | | ▲ | | 0.4 | 12.7 | 4.76 | 5.16 |
| |  | WNMG080408-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | WNMG080412-CM | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| Finishing cutting (wiper) | SW | WNMG060408E-SW | | ● | | ● | | ▲ | | 0.8 | 9.525 | 4.76 | 3.81 |
| |  | WNMG060412E-SW | | ● | | ● | | ▲ | | 1.2 | 9.525 | 4.76 | 3.81 |
| | | WNMG080408-SW | | ● | | ● | | ▲ | | 0.8 | 12.7 | 4.76 | 5.16 |
| | | WNMG080412-SW | | ● | | ● | | ▲ | | 1.2 | 12.7 | 4.76 | 5.16 |
| | | *Wiper | | | | | | | | | | | |
| Medium to heavy cutting | CH | WNMG080408-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| |  | WNMG080412-CH | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| Finishing to medium cutting | - | WNMA060404E | | | | ● | | | | 0.4 | 9.525 | 4.76 | 3.81 |
| |  | WNMA060408E | | | | ● | | | | 0.8 | 9.525 | 4.76 | 3.81 |
| | | WNMA060412E | | | | ● | | | | 1.2 | 9.525 | 4.76 | 3.81 |
| | | WNMA060416E | | | | ● | | | | 1.6 | 9.525 | 4.76 | 3.81 |
| | | WNMA080404 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.4 | 12.7 | 4.76 | 5.16 |
| | | WNMA080408 | ● | ● | ● | ● | ▲ | ▲ | ● | 0.8 | 12.7 | 4.76 | 5.16 |
| | | WNMA080412 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.2 | 12.7 | 4.76 | 5.16 |
| | | WNMA080416 | ● | ● | ● | ● | ▲ | ▲ | ● | 1.6 | 12.7 | 4.76 | 5.16 |

* Please see below about the adjustment of the machining program for rounding or taper machining by using SW/FW.
Please contact our sales representatives if you have any questions.

● : New product
● : Line up
▲: To be discontinued

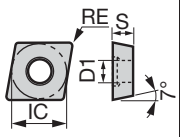
● : Continuous cutting
ⓒ : Light interrupted cutting
✠ : Heavy interrupted cutting

# CC



**Rhombic, 80° with hole Positive 7°**

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✠ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
| Finishing to medium cutting | CM | CCMT060204-CM | | ● | ● | ● | | ▲ | | 0.4 | 6.35 | 2.38 | 2.8 |
| | | CCMT060208-CM | | ● | ● | ● | | ▲ | | 0.8 | 6.35 | 2.38 | 2.8 |
| | | CCMT09T304-CM | | ● | ● | ● | | ▲ | | 0.4 | 9.525 | 3.97 | 4.4 |
| | | CCMT09T308-CM | | ● | ● | ● | | ▲ | | 0.8 | 9.525 | 3.97 | 4.4 |
| | | CCMT09T312-CM | | ● | | ● | | ▲ | | 1.2 | 9.525 | 3.97 | 4.4 |
| | | CCMT120404-CM | | ● | | ● | | ▲ | | 0.4 | 12.7 | 4.76 | 5.5 |
| | | CCMT120408-CM | | ● | | ● | | ▲ | | 0.8 | 12.7 | 4.76 | 5.5 |
| | - | CCMW060204 | | ● | | ● | | ▲ | | 0.4 | 6.35 | 2.38 | 2.8 |
| | | CCMW060208 | | ● | | ● | | ▲ | | 0.8 | 6.35 | 2.38 | 2.8 |
| | | CCMW09T304 | | ● | | ● | | ▲ | | 0.4 | 9.525 | 3.97 | 4.4 |
| | | CCMW09T308 | | ● | | ● | | ▲ | | 0.8 | 9.525 | 3.97 | 4.4 |

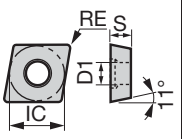
● : New product
● : Line up
▲: To be discontinued

# CP



**Rhombic, 80° with hole Positive 11°**

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✠ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
| Finishing to medium cutting | CM | CPMT060204-CM | | ● | | ● | | ▲ | | 0.4 | 6.35 | 2.38 | 2.8 |
| | | CPMT060208-CM | | ● | | ● | | ▲ | | 0.8 | 6.35 | 2.38 | 2.8 |
| | | CPMT080204-CM | | ● | | ● | | ▲ | | 0.4 | 7.94 | 2.38 | 3.4 |
| | | CPMT080208-CM | | ● | | ● | | ▲ | | 0.8 | 7.94 | 2.38 | 3.4 |
| | | CPMT090304-CM | | ● | ● | ● | | ▲ | | 0.4 | 9.525 | 3.18 | 4.4 |
| | | CPMT090308-CM | | ● | ● | ● | | ▲ | | 0.8 | 9.525 | 3.18 | 4.4 |
| | | CPMT09T304-CM | | ● | ● | ● | | ▲ | | 0.4 | 9.525 | 3.97 | 4.4 |
| | | CPMT09T308-CM | | ● | ● | ● | | ▲ | | 0.8 | 9.525 | 3.97 | 4.4 |
| | | CPMT09T312-CM | | ● | | ● | | ▲ | | 1.2 | 9.525 | 3.97 | 4.4 |
| | | CPMT120408-CM | | ● | | ● | | ▲ | | 0.8 | 12.7 | 4.76 | 5.5 |
| | | CPMT120412-CM | | ● | | ● | | ▲ | | 1.2 | 12.7 | 4.76 | 5.5 |
| | - | CPMW080204 | | ● | | ● | | ▲ | | 0.4 | 7.94 | 2.38 | 3.4 |
| | | CPMW080208 | | ● | | ● | | ▲ | | 0.8 | 7.94 | 2.38 | 3.4 |
| | | CPMW090304 | | ● | | ● | | ▲ | | 0.4 | 9.525 | 3.18 | 4.4 |
| | | CPMW090308 | | ● | | ● | | ▲ | | 0.8 | 9.525 | 3.18 | 4.4 |

● : New product
● : Line up
▲: To be discontinued

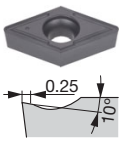
● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

# DC

**Rhombic, 55° with hole Positive 7°**



| | | T505D | T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Steel | ● | ◐ | ● | ◐ | ● | ◐ | ✠ | | | | |
| M | Stainless | | | | | | | | | | | |
| K | Cast iron | | | | | | | | | | | |
| N | Non-ferrous | | | | | | | | | | | |
| S | Superalloy | | | | | | | | | | | |
| H | Hard material | | | | | | | | | | | |
| Application | Chipbreaker | Designation | New | New | Coated | | | | Dimension (mm) | | | |
| Finishing to medium cutting | CM | DCMT070204-CM | | ● | | ● | | ▲ | 0.4 | 6.35 | 2.38 | 2.8 |
| | | DCMT070208-CM | | ● | | ● | | ▲ | 0.8 | 6.35 | 2.38 | 2.8 |
| | | DCMT11T304-CM | | ● | ● | ● | | ▲ | 0.4 | 9.525 | 3.97 | 4.4 |
| | | DCMT11T308-CM | | ● | ● | ● | | ▲ | 0.8 | 9.525 | 3.97 | 4.4 |
| | | DCMT11T312-CM | | ● | | ● | | ▲ | 1.2 | 9.525 | 3.97 | 4.4 |
| | - | DCMW070204 | | ● | | ● | | ▲ | 0.4 | 6.35 | 2.38 | 2.8 |
| | | DCMW070208 | | ● | | ● | | ▲ | 0.8 | 6.35 | 2.38 | 2.8 |
| | | DCMW11T304 | | ● | | ● | | ▲ | 0.4 | 9.525 | 3.97 | 4.4 |
| | | DCMW11T308 | | ● | | ● | | ▲ | 0.8 | 9.525 | 3.97 | 4.4 |



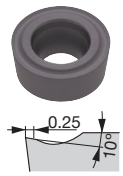

● : New product
● : Line up
▲: To be discontinued

# RC

**Round, with hole Positive 7°**



| | | T505D | T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | Steel | ● | ◐ | ● | ◐ | ● | ◐ | ✠ | | | | |
| M | Stainless | | | | | | | | | | | |
| K | Cast iron | | | | | | | | | | | |
| N | Non-ferrous | | | | | | | | | | | |
| S | Superalloy | | | | | | | | | | | |
| H | Hard material | | | | | | | | | | | |
| Application | Chipbreaker | Designation | New | New | Coated | | | | Dimension (mm) | | | |
| Finishing to medium cutting | CM | RCMT0502M0-CM | | ● | | ● | | ▲ | - | 5 | 2.38 | 2.5 |
| | | RCMT0602M0-CM | | ● | | ● | | ▲ | - | 6 | 2.38 | 2.8 |
| | | RCMT0803M0-CM | | ● | | ● | | ▲ | - | 8 | 3.18 | 3.4 |



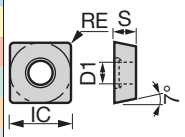

● : New product
▲: To be discontinued

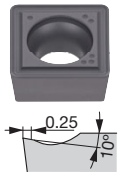
● : Continuous cutting
ⓒ : Light interrupted cutting
✠ : Heavy interrupted cutting

# SC

**Square with hole Positive 7°**

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✠ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | | RE | IC | S | D1 |
| Finishing to medium cutting | CM | SCMT09T304-CM | | ● | ● | ● | | ▲ | | | 0.4 | 9.525 | 3.97 | 4.4 |
| |  | SCMT09T308-CM | | ● | ● | ● | | ▲ | | | 0.8 | 9.525 | 3.97 | 4.4 |
| | | SCMT09T312-CM | | ● | | ● | | ▲ | | | 1.2 | 9.525 | 3.97 | 4.4 |
| | | SCMT120404-CM | | ● | ● | ● | | ▲ | | | 0.4 | 12.7 | 4.76 | 5.5 |
| | | SCMT120408-CM | | ● | ● | ● | | ▲ | | | 0.8 | 12.7 | 4.76 | 5.5 |
| |  | | | | | | | | | | | | | |

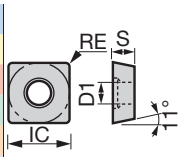


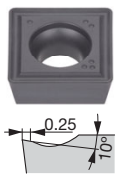
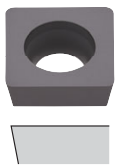
● : New product
● : Line up
▲: To be discontinued

# SP

**Square with hole Positive 11°**

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✠ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | | RE | IC | S | D1 |
| Finishing to medium cutting | CM | SPMT090304-CM | | ● | | ● | | ▲ | | | 0.4 | 9.525 | 3.18 | 4.4 |
| |  | SPMT090308-CM | | ● | | ● | | ▲ | | | 0.8 | 9.525 | 3.18 | 4.4 |
| | | SPMT120404-CM | | ● | ● | ● | | ▲ | | | 0.4 | 12.7 | 4.76 | 5.5 |
| | | SPMT120408-CM | | ● | ● | ● | | ▲ | | | 0.8 | 12.7 | 4.76 | 5.5 |
| |  | | | | | | | | | | | | | |
| | - | SPMW090304 | | ● | | ● | | ▲ | | | 0.4 | 9.525 | 3.18 | 4.4 |
| |  | SPMW090308 | | ● | | ● | | ▲ | | | 0.8 | 9.525 | 3.18 | 4.4 |
| | | SPMW120404 | | ● | | ● | | ▲ | | | 0.4 | 12.7 | 4.76 | 5.5 |
| | | SPMW120408 | | ● | | ● | | ▲ | | | 0.8 | 12.7 | 4.76 | 5.5 |
| |  | | | | | | | | | | | | | |



● : New product
● : Line up
▲: To be discontinued

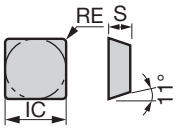
● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

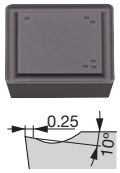
# SP



**Square without hole Positive 11°**

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ◐ ● ◐ ● ◐ ✠ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | | RE | IC | S | D1 |
| Finishing to medium cutting | CM | SPMR090304-CM | | ● | | ● | | ▲ | | | 0.4 | 9.525 | 3.18 | - |
| |  | SPMR090308-CM | | ● | | ● | | ▲ | | | 0.8 | 9.525 | 3.18 | - |
| | | SPMR120304-CM | | ● | | ● | | ▲ | | | 0.4 | 12.7 | 3.18 | - |
| | | SPMR120308-CM | | ● | | ● | | ▲ | | | 0.8 | 12.7 | 3.18 | - |
| | | SPMR120312-CM | | ● | | ● | | ▲ | | | 1.2 | 12.7 | 3.18 | - |
| |  | | | | | | | | | | | | | |
| | - | SPMN090304 | | ● | | ● | | ▲ | | | 0.4 | 9.525 | 3.18 | - |
| | | SPMN090308 | | ● | | ● | | ▲ | | | 0.8 | 9.525 | 3.18 | - |
| |  | SPMN120304 | | ● | | ● | | ▲ | | | 0.4 | 12.7 | 3.18 | - |
| | | SPMN120308 | | ● | | ● | | ▲ | | | 0.8 | 12.7 | 3.18 | - |
| | | SPMN120312 | | ● | | ● | | ▲ | | | 1.2 | 12.7 | 3.18 | - |
| | | SPMN120408 | | ● | | ● | | ▲ | | | 0.8 | 12.7 | 4.76 | - |
| | | SPMN120412 | | ● | | ● | | ▲ | | | 1.2 | 12.7 | 4.76 | - |

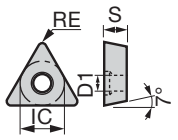
● : New product
▲: To be discontinued

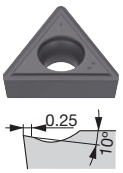
# TC



**Triangular with hole Positive 7°**

| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ◐ ● ◐ ● ◐ ✠ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | Coated | | | | | | | | Dimension (mm) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | | RE | IC | S | D1 |
| Finishing to medium cutting | CM | TCMT090204-CM | | ● | | ● | | ▲ | | | 0.4 | 5.56 | 2.38 | 2.5 |
| |  | TCMT090208-CM | | ● | | ● | | ▲ | | | 0.8 | 5.56 | 2.38 | 2.5 |
| | | TCMT110204-CM | | ● | | ● | | ▲ | | | 0.4 | 6.35 | 2.38 | 2.8 |
| | | TCMT110208-CM | | ● | | ● | | ▲ | | | 0.8 | 6.35 | 2.38 | 2.8 |
| | | TCMT110304-CM | | ● | | ● | | ▲ | | | 0.4 | 6.35 | 3.18 | 2.8 |
| | | TCMT110308-CM | | ● | | ● | | ▲ | | | 0.8 | 6.35 | 3.18 | 2.8 |
| | | TCMT16T304-CM | | ● | ● | ● | | ▲ | | | 0.4 | 9.525 | 3.97 | 4.4 |
| | | TCMT16T308-CM | | ● | ● | ● | | ▲ | | | 0.8 | 9.525 | 3.97 | 4.4 |
| | | TCMT16T312-CM | | ● | ● | ● | | ▲ | | | 1.2 | 9.525 | 3.97 | 4.4 |

● : New product
● : Line up
▲: To be discontinued

● : Continuous cutting
ɔ : Light interrupted cutting
✠ : Heavy interrupted cutting

# TP



**Triangular with hole Positive 11°**

| | | T505D | T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New | New | | | | | | | | | Dimension (mm) | | | |
| Application | Chipbreaker | Designation | Coated | | | | | | | | | | | | | |
| Finishing to medium cutting | CM | TPMT090204-CM | | ● | | ● | | ▲ | | | | | 0.4 | 5.56 | 2.38 | 2.5 |
| | | TPMT090208-CM | | ● | | ● | | ▲ | | | | | 0.8 | 5.56 | 2.38 | 2.5 |
| | | TPMT110204-CM | | ● | | ● | | ▲ | | | | | 0.4 | 6.35 | 2.38 | 2.8 |
| | | TPMT110208-CM | | ● | | ● | | ▲ | | | | | 0.8 | 6.35 | 2.38 | 2.8 |
| | | TPMT110304-CM | | ● | | ● | | ▲ | | | | | 0.4 | 6.35 | 3.18 | 3.4 |
| | | TPMT110308-CM | | ● | | ● | | ▲ | | | | | 0.8 | 6.35 | 3.18 | 3.4 |
| | | TPMT130304-CM | | ● | | ● | | ▲ | | | | | 0.4 | 7.94 | 3.18 | 3.4 |
| | | TPMT130308-CM | | ● | | ● | | ▲ | | | | | 0.8 | 7.94 | 3.18 | 3.4 |
| | | TPMT16T304-CM | | ● | ● | ● | | ▲ | | | | | 0.4 | 9.525 | 3.97 | 4.4 |
| | | TPMT16T308-CM | | ● | ● | ● | | ▲ | | | | | 0.8 | 9.525 | 3.97 | 4.4 |
| | | TPMT16T312-CM | | ● | ● | ● | | ▲ | | | | | 1.2 | 9.525 | 3.97 | 4.4 |
| | - | TPMW110204 | | ● | | ● | | ▲ | | | | | 0.4 | 6.35 | 2.38 | 2.8 |
| | | TPMW110208 | | ● | | ● | | ▲ | | | | | 0.8 | 6.35 | 2.38 | 2.8 |
| | | TPMW130304 | | ● | | ● | | ▲ | | | | | 0.4 | 7.94 | 3.18 | 3.4 |
| | | TPMW130308 | | ● | | ● | | ▲ | | | | | 0.8 | 7.94 | 3.18 | 3.4 |
| | | TPMW16T304 | | ● | | ● | | ▲ | | | | | 0.4 | 9.525 | 3.97 | 4.4 |
| | | TPMW16T308 | | ● | | ● | | ▲ | | | | | 0.8 | 9.525 | 3.97 | 4.4 |

● : New product
● : Line up
▲: To be discontinued

# TP



**Triangular without hole Positive 11°**

| | | T505D | T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | New | New | | | | | | | | | Dimension (mm) | | | |
| Application | Chipbreaker | Designation | Coated | | | | | | | | | | | | | |
| Finishing to medium cutting | CM | TPMR110304-CM | | ● | | ● | | ▲ | | | | | 0.4 | 6.35 | 3.18 | - |
| | | TPMR110308-CM | | ● | | ● | | ▲ | | | | | 0.8 | 6.35 | 3.18 | - |
| | | TPMR160304-CM | | ● | | ● | | ▲ | | | | | 0.4 | 9.525 | 3.18 | - |
| | | TPMR160308-CM | | ● | | ● | | ▲ | | | | | 0.8 | 9.525 | 3.18 | - |
| | | TPMR160312-CM | | ● | | ● | | ▲ | | | | | 1.2 | 9.525 | 3.18 | - |
| | - | TPMN110304 | | ● | | ● | | ▲ | | | | | 0.4 | 6.35 | 3.18 | - |
| | | TPMN110308 | | ● | | ● | | ▲ | | | | | 0.8 | 6.35 | 3.18 | - |
| | | TPMN160304 | | ● | | ● | | ▲ | | | | | 0.4 | 9.525 | 3.18 | - |
| | | TPMN160308 | | ● | | ● | | ▲ | | | | | 0.8 | 9.525 | 3.18 | - |
| | | TPMN160312 | | ● | | ● | | ▲ | | | | | 1.2 | 9.525 | 3.18 | - |

● : New product
▲: To be discontinued

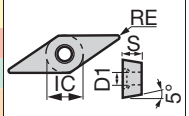
● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

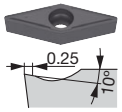
# VB

**Rhombic, 35° with hole Positive 5°**



| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✣ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |




| Application | Chipbreaker | Designation | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Coated | | | | | | | Dimension (mm) | | | |
| Finishing to medium cutting | CM | VBMT110304-CM | | ● | | ● | | ▲ | | 0.4 | 6.35 | 3.18 | 2.8 |
| |  | VBMT110308-CM | | ● | | ● | | ▲ | | 0.8 | 6.35 | 3.18 | 2.8 |
| | | VBMT160404-CM | | ● | ● | ● | | ▲ | | 0.4 | 9.525 | 4.76 | 4.4 |
| | | VBMT160408-CM | | ● | ● | ● | | ▲ | | 0.8 | 9.525 | 4.76 | 4.4 |
| | | VBMT160412-CM | | ● | ● | ● | | ▲ | | 1.2 | 9.525 | 4.76 | 4.4 |



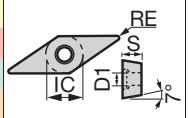
● : New product
● : Line up
▲: To be discontinued

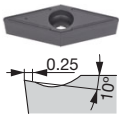
# VC

**Rhombic, 35° with hole Positive 7°**



| | | |
|---|---|---|
| P | Steel | |
| M | Stainless | |
| K | Cast iron | ● ●ⓒ ● ●ⓒ ● ⓒ ✣ |
| N | Non-ferrous | |
| S | Superalloy | |
| H | Hard material | |

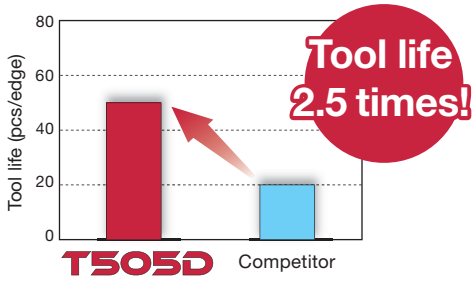
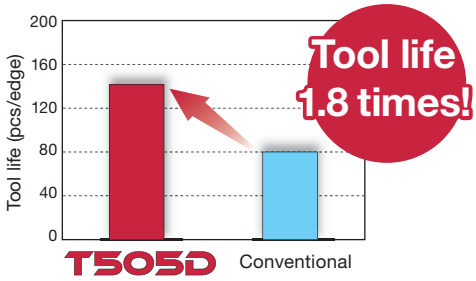


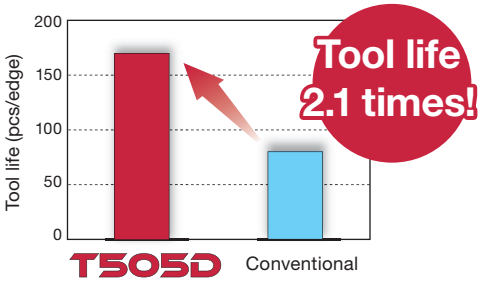
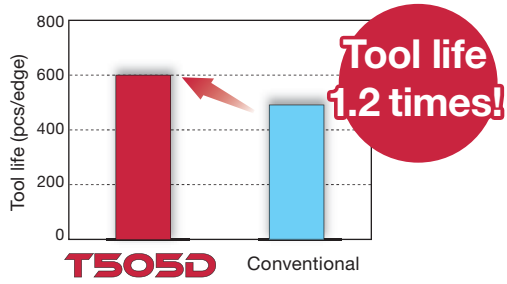

| Application | Chipbreaker | Designation | New T505D | New T515D | T505 | T515 | T5105 | T5115 | T5125 | RE | IC | S | D1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Coated | | | | | | | Dimension (mm) | | | |
| Finishing to medium cutting | CM | VCMT080204-CM | | ● | | ● | | ▲ | | 0.4 | 4.76 | 2.38 | 2.3 |
| |  | VCMT160404-CM | | ● | ● | ● | | ▲ | | 0.4 | 9.525 | 4.76 | 4.4 |
| | | VCMT160408-CM | | ● | ● | ● | | ▲ | | 0.8 | 9.525 | 4.76 | 4.4 |
| | | VCMT160412-CM | | ● | | ● | | ▲ | | 1.2 | 9.525 | 4.76 | 4.4 |

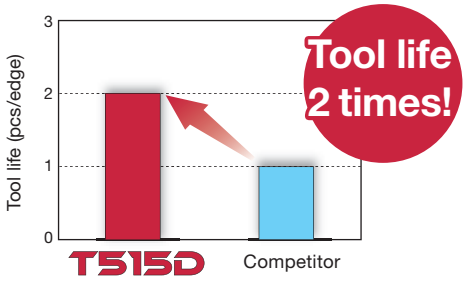
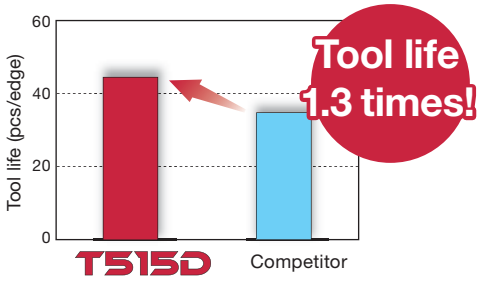


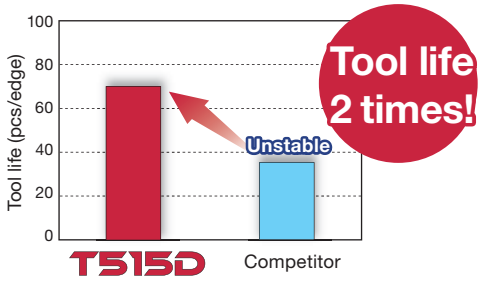
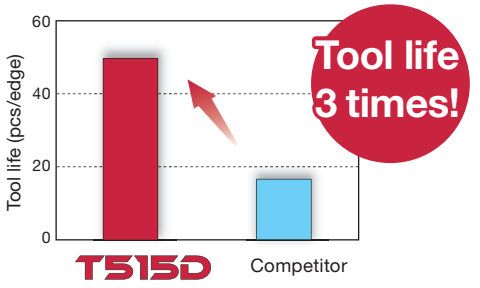
● : New product
● : Line up
▲: To be discontinued

## PRACTICAL EXAMPLES

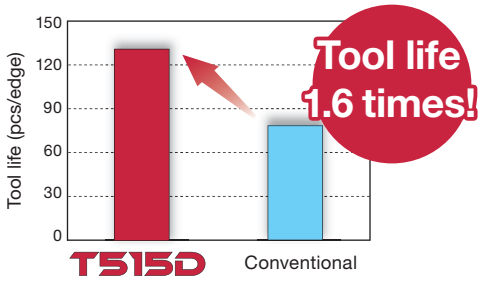
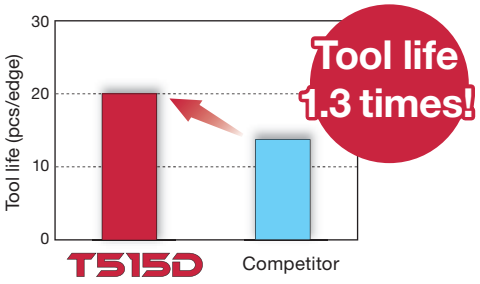
| | | | |
|---|---|---|---|
| Workpiece type | | New Automotive parts | New Cam shaft |
| Insert | | TNMA160408 | DNMG150408 |
| Grade | | T505D | T505D |
| Workpiece material | | FCD400 / GGG40 | FCD700 / GGG70 |
| | |  K |  K |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 300 | 220 |
| | Feed : *f* (mm/rev) | 0.2 | 0.35 |
| | Depth of cut : *ap* (mm) | 0.5 | 0.8 |
| | Machining | External and face turning | External turning |
| | Coolant | Wet | Wet |
| Results | |   |   |
| | | **T505D** delivers excellent wear resistance at *Vc* = 300 m/min, achieving 2.5 times the tool life of the competitor. | **T505D** delivers excellent wear resistance in camshaft turning, achieving 1.8 times the tool life of the conventional grade. |

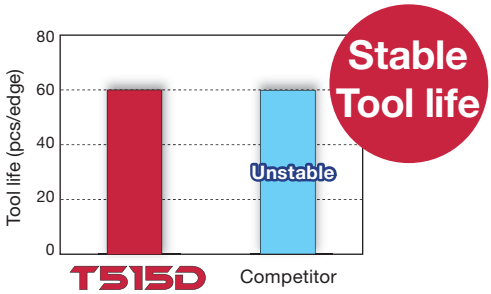
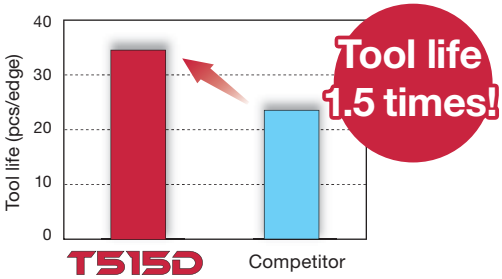
| | | | |
|---|---|---|---|
| Workpiece type | | New Axle Hub | New Steering knuckle |
| Insert | | CNMG120412-CM | TPMT16T312-CM |
| Grade | | T505D | T505D |
| Workpiece material | | FCD450 / GGG45 | FCD400 / GGG40 |
| | |  K |  K |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 230 | 260 |
| | Feed : *f* (mm/rev) | 0.2 | 0.2 |
| | Depth of cut : *ap* (mm) | 0.2 | - |
| | Machining | External and face turning | Boring |
| | Coolant | Wet | Wet |
| Results | |   |   |
| | | While the conventional grade suffers from chipping, **T505D** maintains stable machining and achieves 2.1 times the tool life. | While the conventional grade is limited by chipping, **T505D** delivers stable performance in boring and achieves 1.2 times the tool life. |

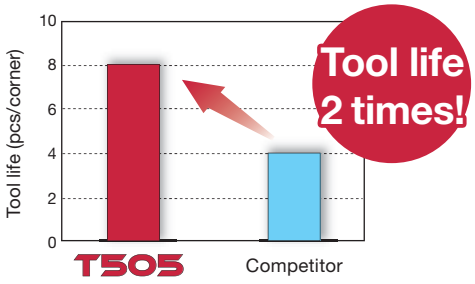
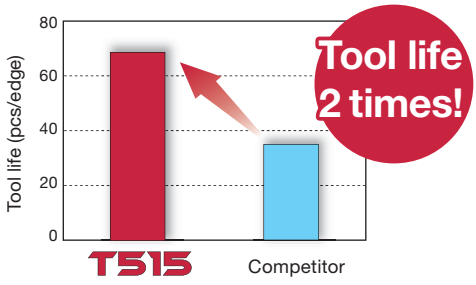
| Workpiece type | | New Clutch parts | New Hub parts |
|---|---|---|---|
| Insert | | WNMA080412 | WNMG080412 |
| Grade | | T515D | T515D |
| Workpiece material | | FCD400 / GGG40 | FCD400 / GGG40 |
| | |  K |  K |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 380 | 340 |
| | Feed : *f* (mm/rev) | 0.08 | 0.35 |
| | Depth of cut : *ap* (mm) | 0.8 | 3.5 |
| | Machining | Face Turning (For finishing) | External & Face Turning |
| | Coolant | Wet | Wet |
| Results | |   **T515D** delivers stable performance in finishing, achieving twice the tool life of the competitor. |   **T515D** delivers stable machining performance even at high depths of cut, achieving 1.3 times longer tool life than the competitor's grade. |

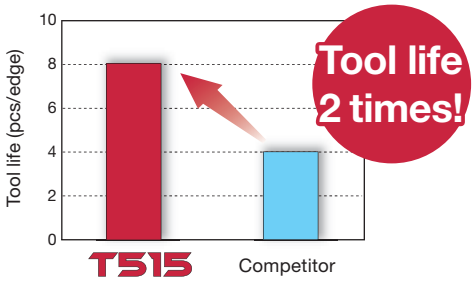
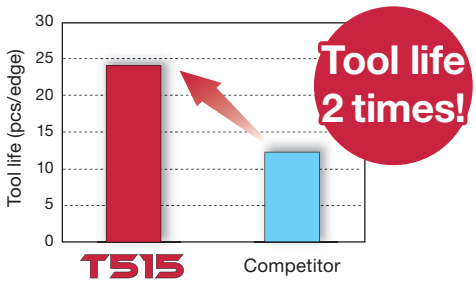
| Workpiece type | | New Differential shell | New Differential Case |
|---|---|---|---|
| Insert | | WNMG080408 | CNMG120412-CM |
| Grade | | T515D | T515D |
| Workpiece material | | FCD600 / GGG60 | Ductile cast iron |
| | |  K |  K |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 240 | 180 |
| | Feed : *f* (mm/rev) | 0.32 | 0.25 |
| | Depth of cut : *ap* (mm) | 0.3 - 1.5 | 2 |
| | Machining | External & Face Turning | External turning |
| | Coolant | Wet | Wet |
| Results | |   **T515D** reduces the tool life variation seen with the competitor, providing stable machining and twice the tool life. |   **T515D** delivers excellent machining stability, achieving three times the tool life of the competitor. |

## PRACTICAL EXAMPLES

| | | | |
|---|---|---|---|
| Workpiece type | | New Brake flange | New Robot parts |
| Insert | | CNMG120412-CM | WNMG080408-CM |
| Grade | | T515D | T515D |
| Workpiece material | | FCD450 / GGG45 | FCD450 / GGG45 |
| | |  K |  K |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 130 | 300 |
| | Feed : *f* (mm/rev) | 0.2 | 0.25 |
| | Depth of cut : *ap* (mm) | 3 | 1.5 |
| | Machining | Internal and face turning | External turning |
| | Coolant | Wet | Wet |
| Results | |   |   |
| | | **T515D** delivers stable machining performance even at high depths of cut, achieving 1.6 times longer tool life than the conventional grade. | **T515D** delivers stable performance even at *Vc* = 300 m/min, achieving 1.3 times the tool life of the competitor. |

| | | | |
|---|---|---|---|
| Workpiece type | | New Ring parts | New Cylinder parts |
| Insert | | WNMG080412 | CNMG120412-CM |
| Grade | | T515D | T515D |
| Workpiece material | | FCD800 / GGG80 | FCD800 / GGG80 |
| | |  K |  K |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 150 | 100 |
| | Feed : *f* (mm/rev) | 0.35 | 0.13 |
| | Depth of cut : *ap* (mm) | 2 | 1.5 |
| | Machining | External turning | External turning |
| | Coolant | Wet | Wet |
| Results | |   |   |
| | | **T515D** reduces the tool-life variation seen with the competitor, providing consistent tool life. | **T515D** delivers excellent chipping resistance and stable machining, achieving 1.5 times the tool life of the competitor. |

| Workpiece type | | Fly wheel | Differential case |
|---|---|---|---|
| Insert | | CNMG120408 | TCMT16T308-CM |
| Grade | | T505 | T515 |
| Workpiece material | | FC300 / GG30 | FC |
| | |  |  |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 200 | 190 |
| | Feed : *f* (mm/rev) | 0.25 | 0.3 |
| | Depth of cut : *ap* (mm) | 3 | 2 |
| | Machining | Internal and face turning | Internal turning |
| | Coolant | Wet | Wet |
| Results | |  **T505** delivers excellent wear resistance, achieving twice the tool life of the competitor. |  **T515** delivers excellent wear resistance in internal turning, achieving twice the tool life of the competitor. |

| Workpiece type | | Machine | Machine |
|---|---|---|---|
| Insert | | CNMG160612 | CNMG120412 |
| Grade | | T515 | T515 |
| Workpiece material | | FC | FC |
| | |  |  |
| Cutting conditions | Cutting speed: *Vc* (m/min) | 180 | 100 |
| | Feed : *f* (mm/rev) | 0.4 | 0.4 |
| | Depth of cut : *ap* (mm) | 4 mm x 3 passes | 1.75 |
| | Machining | Face turning | External and face turning |
| | Coolant | Wet | Wet |
| Results | |  **T515** delivers excellent chipping resistance even at high depths of cut, achieving 2 times longer tool life than the competitor's grade. |  **T515** delivers excellent wear resistance and stable performance in external and face turning, achieving twice the tool life of the competitor. |

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