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New Products Brochure
2023



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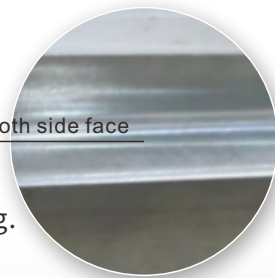
New High Precision Square Shoulder Milling Tool

BXKT_

Beeze series multiple function square shoulder milling tools;

- ✓ Suitable for a variety of milling processing;
- ✓ Micro shape design of cutting edge with drum shape modification;
- ✓ main cutting edge structure adopts large helix angle design;
- ✓ high perpendicularity and excellent surface quality;
- ✓ High precision indexable milling head couple with carbide tool holder to solve vibration problem of long suspension cutting.

Straight and smooth side face



drum shape modification



large helix angle main cutting edge



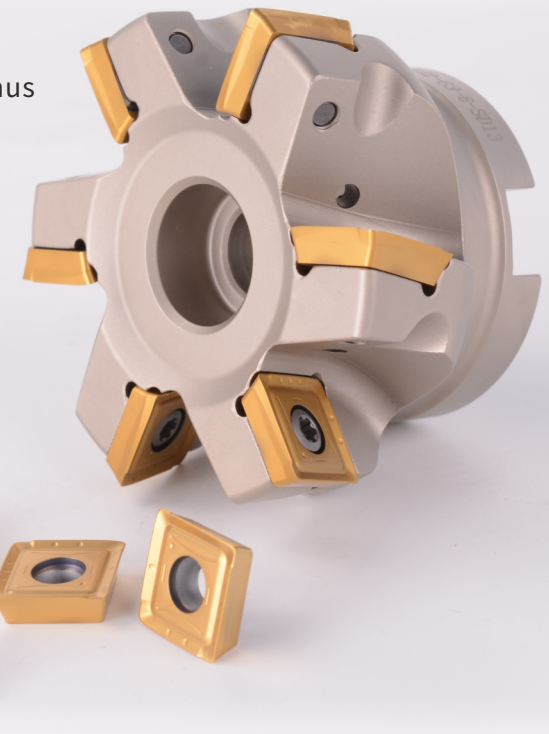
OKT

New High Precision Square Shoulder Milling Tool

SDKT_

Tornado series square shoulder milling tools

- ✓ Wide range Cutting diameter : $\phi 40$ - $\phi 200$ mm;
- ✓ Positive rake face design gives smooth and light cutting;
- ✓ Under 80mm diameter cutter loaded inner cooling system thus improve cutting tool life time;
- ✓ High precision cutting edge design to provide ultra high perpendicularity and excellent surface quality;
- ✓ Maximum cutting depth up to 10mm.



inner cooling system

positive rake face

large cutting depth

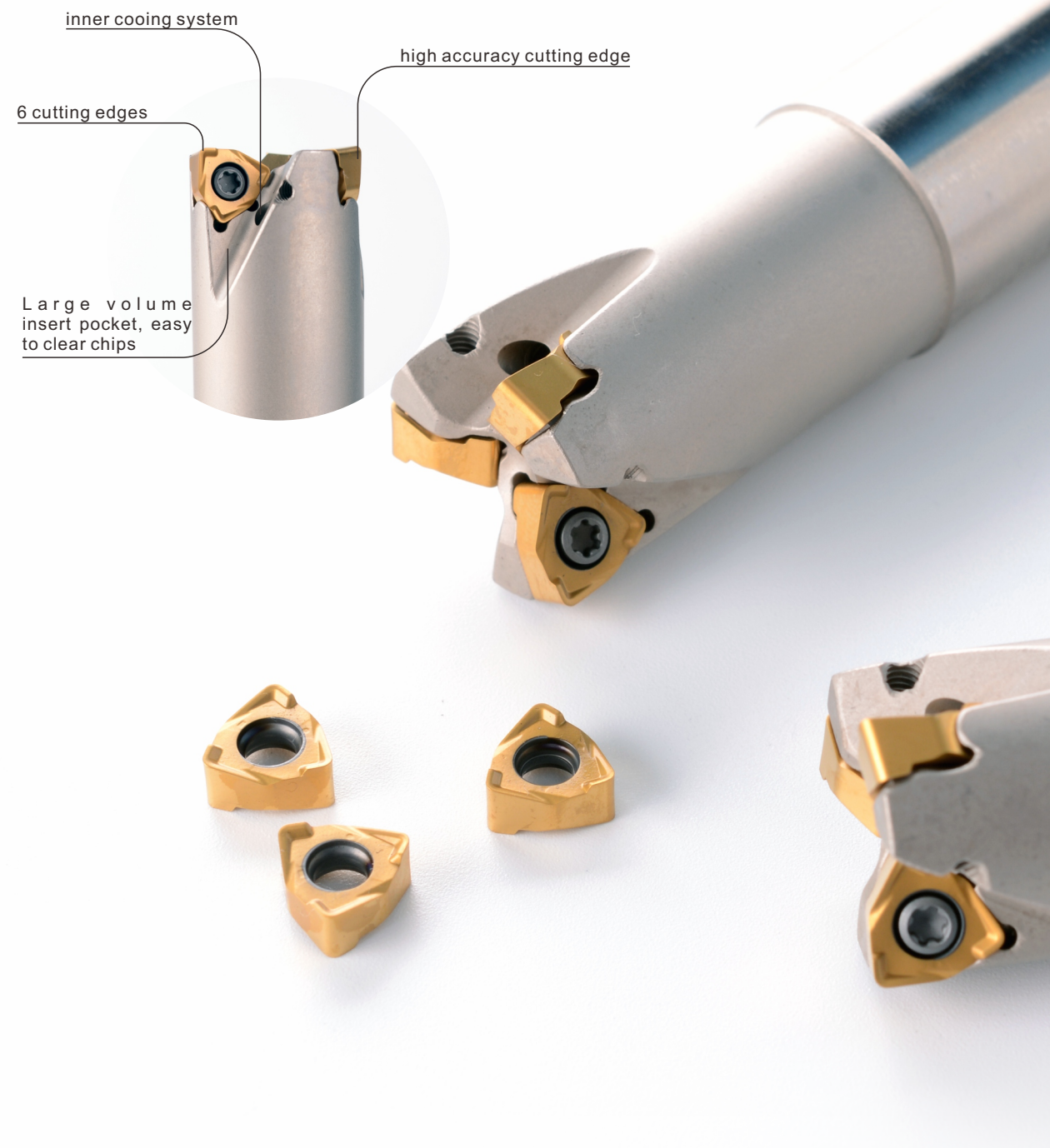
high accuracy cutting edge



WNM(G)X_

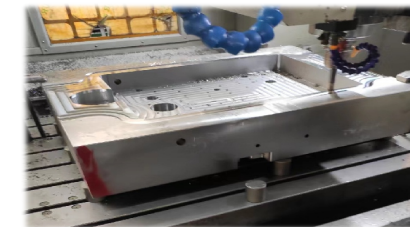
series of square shoulder milling cutter

- ✓ Wide cutting diameter range: $\phi 20$ - $\phi 200$ mm;
- ✓ High precision cutting edge design to provide high perpendicularity;
- ✓ Large volume insert pocket, easy to clear chips;
- ✓ 6 cutting edges, Ultra-high economy;
- ✓ Under 100mm diameter cutter with inner cooling system, the coolant flows directly into the cutting position.

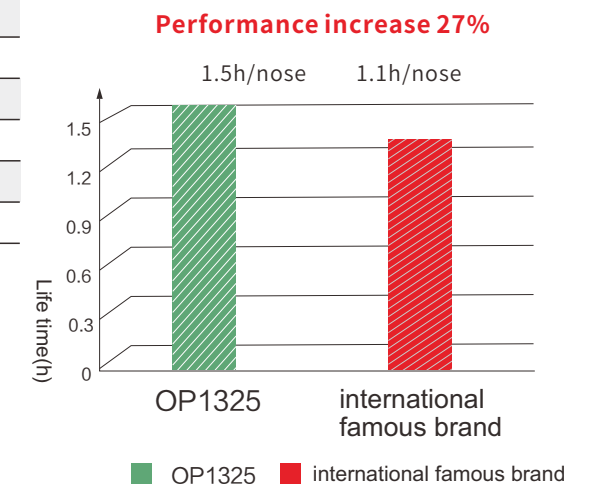


Application case #1: Mold base milling

| | |
|-------------------|--|
| workpiece name | mould base |
| tool code | BXKT11T308PER-OM/SP9325 |
| | competitor: international famous brand |
| work material | 45 |
| Vc | 300m/min |
| fz | 0.2mm/fz |
| Ap | 3mm |
| Cutting condition | dry cutting |



indexable head: FM901F-M12-26-3-BX11
Insert: BXKT11T308PER-OM/SP9325

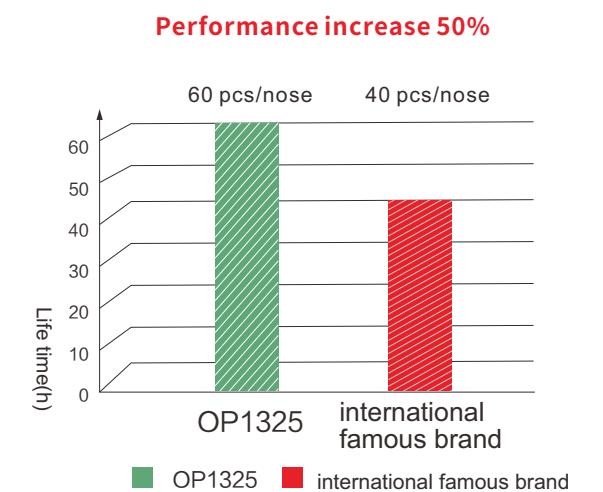


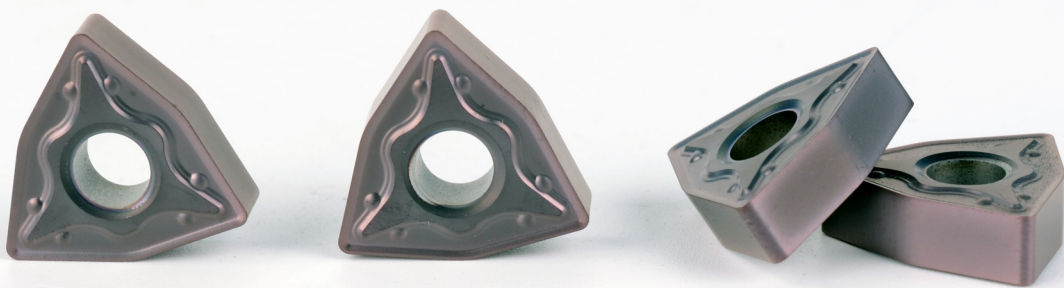
Application case 2: turbo shell milling

| | |
|-------------------|--|
| workpiece name | turbo shell |
| tool code | WNMX040308R-OM/SP9325 |
| | competitor: international famous brand |
| work material | 1.4837 |
| Vc | 150 m/min |
| fz | 0.2mm/fz |
| Ap | Ap=3mm |
| Cutting condition | dry cutting |



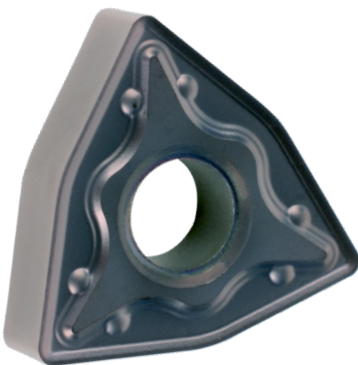
tool holder: FM903-P32-32-4-WN04-150
Insert: WNMX040308R-OM/SP9325





*PVD stainless steel
new grade for turning machining*

OP1415



**Performance is
improved by 30%**

**Innovation highlight 1: Special layer structure with
refractory metal element X**

The denser the coating cylindrical crystals are, the smaller the
intercrystal gap is;
The oxidation resistance and plastic deformation resistance are
effectively improved.



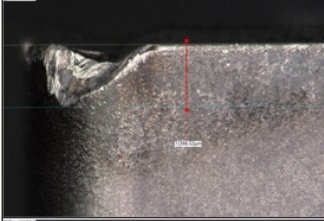

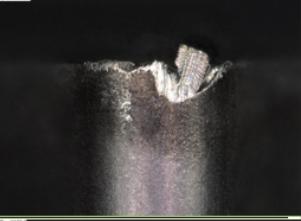
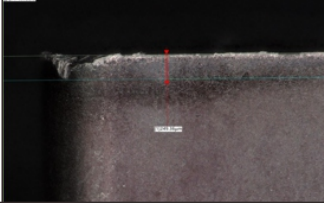
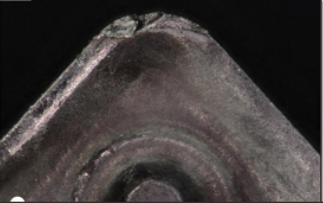
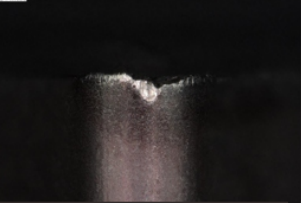
OP1415



Competing product

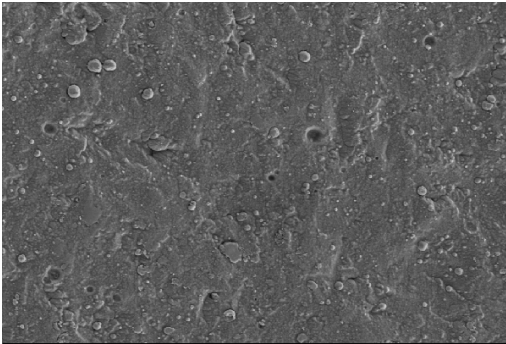
The refractory X element is dispersed into AlTiN lattice, which significantly improves the high temperature performance of the coating. At the same time, special surface treatment is adopted to make the coating have the characteristics of low friction coefficient. Especially suitable for processing stainless steel and the materials which are difficult to be processed.

| Coating structure | Coating performance |
|---|--|
| New AlTiN/TiXN composite structure design | Crack propagation resistance and improve impact resistance |
| Maintain AIP technology AlTi-base coating | High compactness and oxidation resistance |

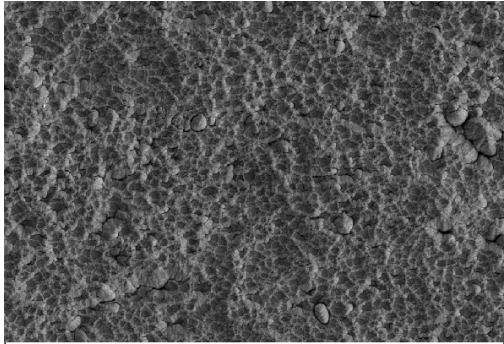
| Impact resistance comparison | VB abrasion loss | Clearance face | Rake face | Cutting edge |
|------------------------------|--------------------------------------|--|--|--|
| | One overseas company VB: 386.52um |  |  |  |
| | 35% OP1415 VB: 249.36um |  |  |  |

Innovation highlight 2: Coating surface quality

The lower the roughness of the coating surface is, the more effectively the
resistance and heat generated during cutting can be reduced, and the
service life of the tool can be improved.



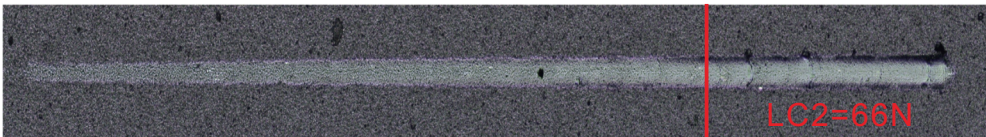
OP1415



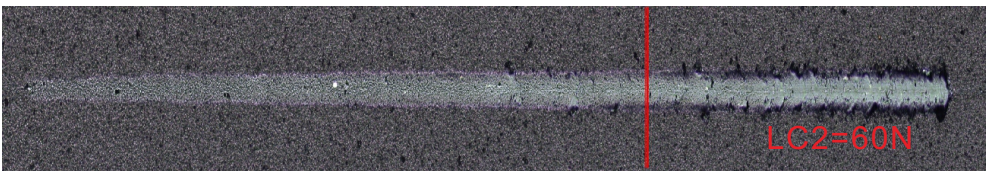
Competing product

Innovation highlight 2: Combination

The stronger the combination between the film layer and the substrate is, the more it can reduce the abnormal cracking, and improve the service life of the tool.



OP1415

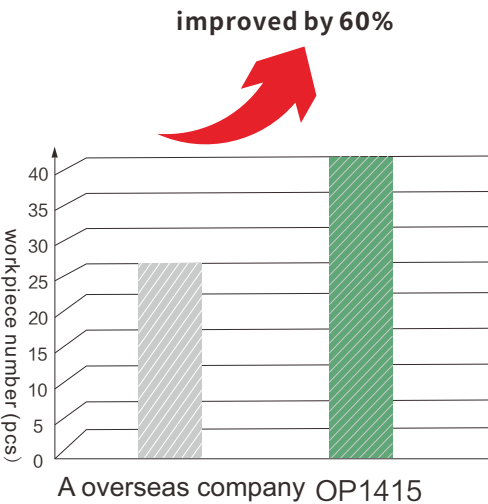


Competing product

Application case 1

Stainless steel flange machining (continuous)

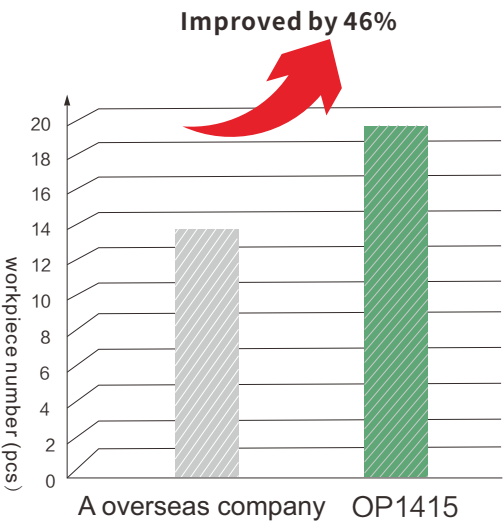
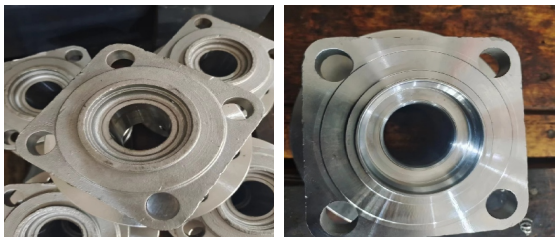
| | |
|----------------------|----------------|
| OKE insert: | WNMG080408-OMM |
| workpiece material : | SUS304 |
| Vc: | 200m/min |
| F: | 0.25mm/r |
| ap: | 1.0-2.0mm |
| Cooling type: | Fluid cooling |



Application case 2

Stainless steel flange ball valve machining (continuous)

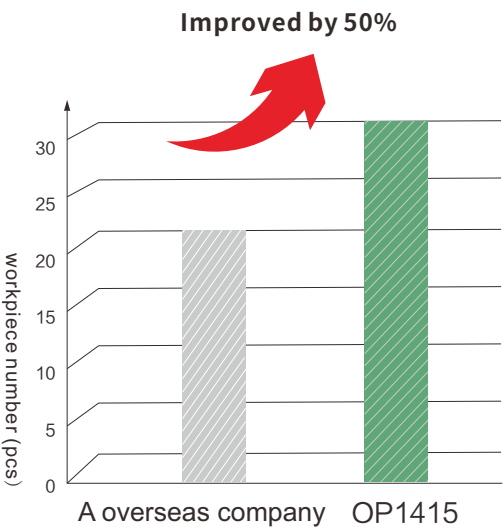
| | |
|----------------------|----------------|
| OKE insert: | WNMG080408-OMM |
| workpiece material : | SUS316 |
| Vc: | 76-165m/min |
| F: | 0.15mm/r |
| ap: | 1.0-2.0mm |
| Cooling type: | Fluid cooling |



Application case 3

Stainless steel bearing rod ends bearing (strong intermittent)

| | |
|----------------------|----------------|
| OKE insert: | WNMG080408-OMM |
| workpiece material : | GJB2294 |
| Vc: | 67m/min |
| F: | 0.2mm/r |
| ap: | 1.0mm |
| Cooling type: | Fluid cooling |





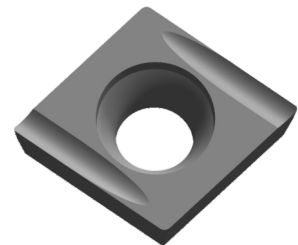
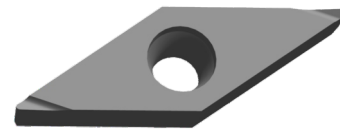
Cutting Tools for Small Parts Machining

Front sweep tool

Precision small parts processing
4 types of cutting tools (front sweep, back sweep, cutting, grooving);
Stable product performance, used for automatic processing

JF chipbreaker

Better chip handling capacity, suitable for small cutting depth, large feed processing conditions
Excellent cutting effect to obtain good workpiece surface quality

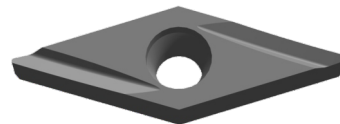


JU chipbreaker

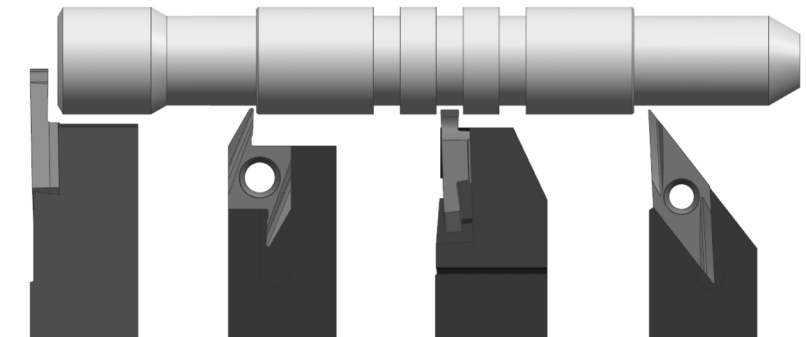
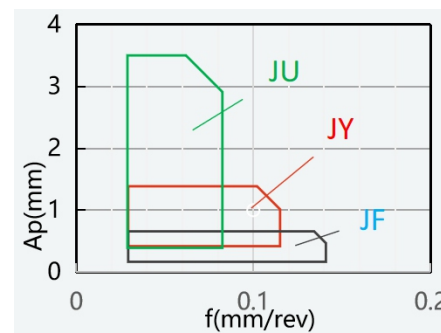
Sharp cutting edge, small resistance, can be used for slender shaft processing
Long cutting edge, the maximum cutting depth is 4mm, high processing efficiency, can meet the demand of "one size fits all"

JY chipbreaker

Wide chipbreaker can ensure smooth cutting
Excellent chip handling capability can improve tool life and chip performance



Recommended machining parameter



Back sweep tool

| Picture and appearance | Item | Tip radius RE | Recommended range of processing |
|------------------------|--------------------------|---------------|---------------------------------|
| | ABS15R4005 ABS15R4015 | 0.05 0.15 | |
| | ABW15R4005 ABW15R4015 | 0.05 0.15 | |

Parting and Grooving tools

| Parting tools (TKF series) | Grooving tools (GBA series) | Grooving tools (TGF series) |
|----------------------------|-----------------------------|-----------------------------|
|----------------------------|-----------------------------|-----------------------------|



Cutting width:0.5-2

Maximum machining diameter:16

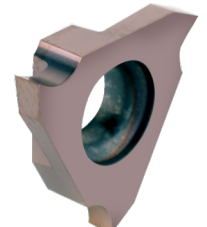
tip R Angle:0.05



Cutting width:1.25-4.8

Maximum machining diameter 5

tip R Angle:0.1、0.2、0.3、0.4



Cutting width:0.5-2.5

Maximum machining diameter 2.5

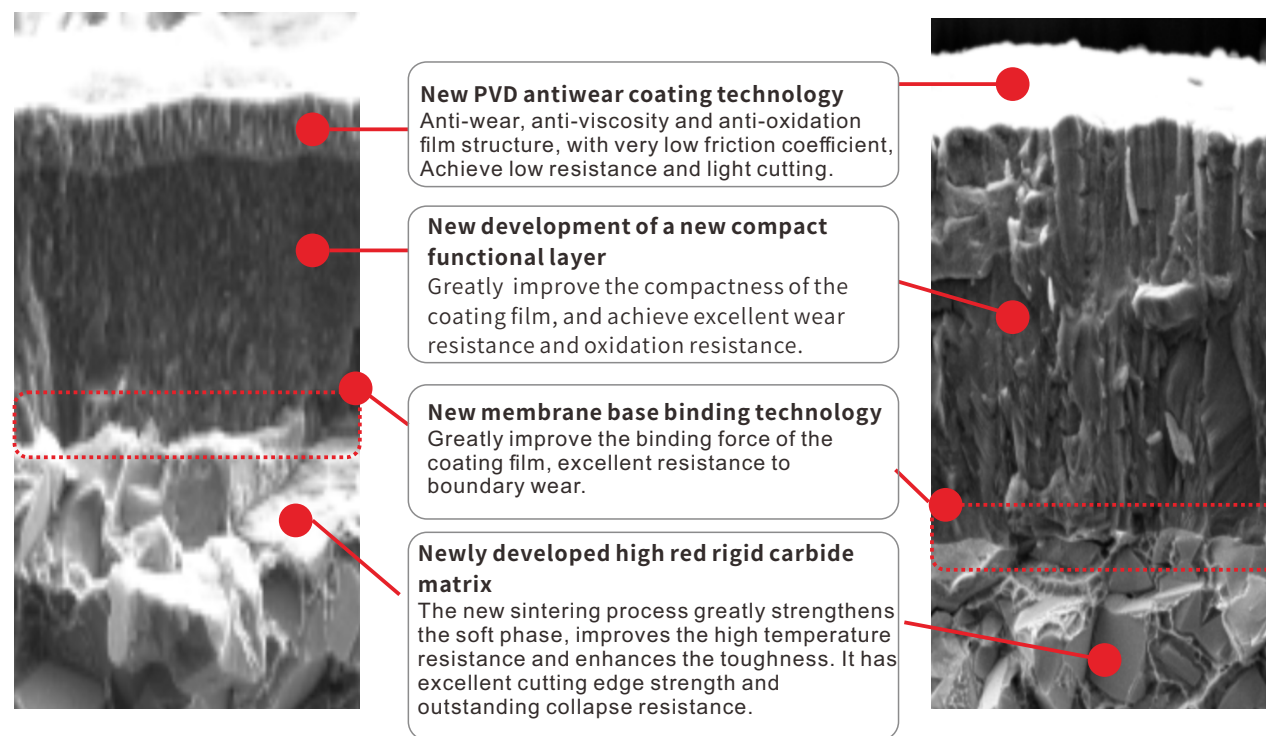
tip R Angle 0.1



New Cutting Tools for Heat-resistant Alloys

-OP6 series

Grade characteristics



Professional chipbreaker design

Finishing

-SMM

Large front Angle three-dimensional groove design;
Sharp edge, low cutting force;
High effective working temperature and work hardening and other machining difficulties.



Semi-finishing

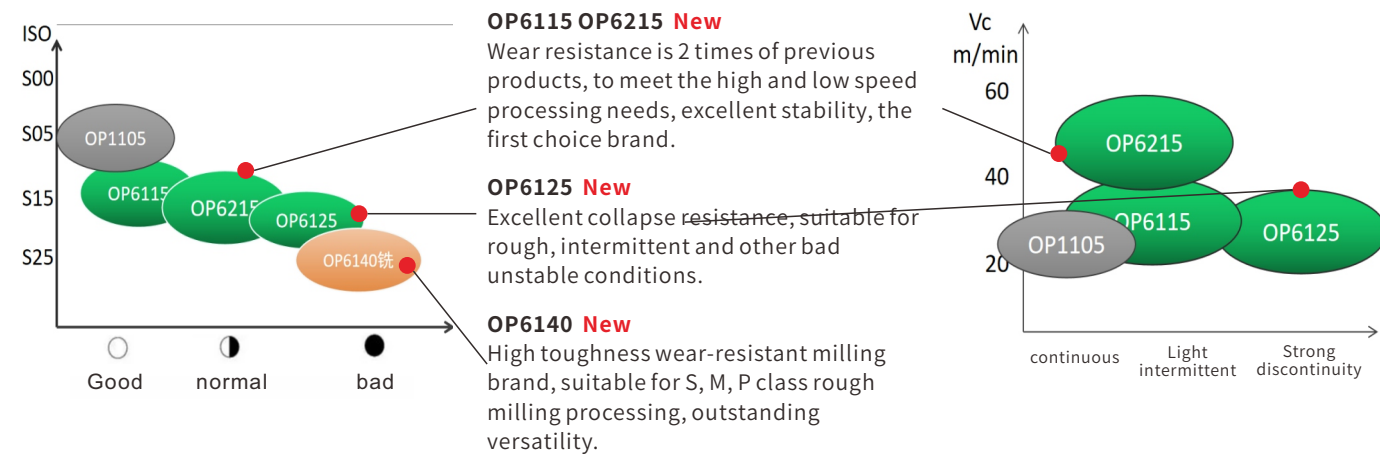


-OSM

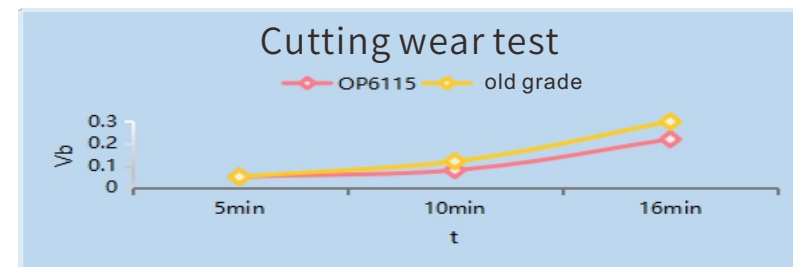
Effectively control chip curling and discharge;
Sharp edge, light cutting;
Suitable cutting edge strength, extend cutting life.



Grade application range

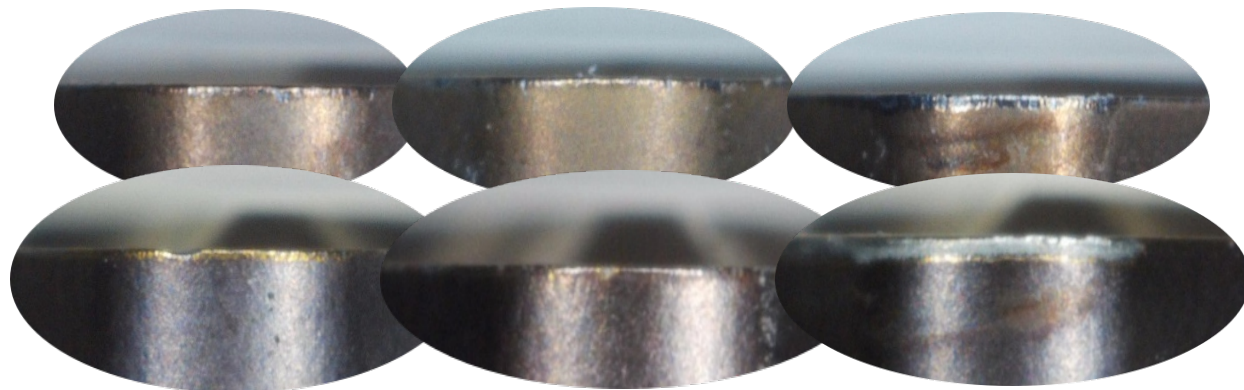


OP6 series grade test

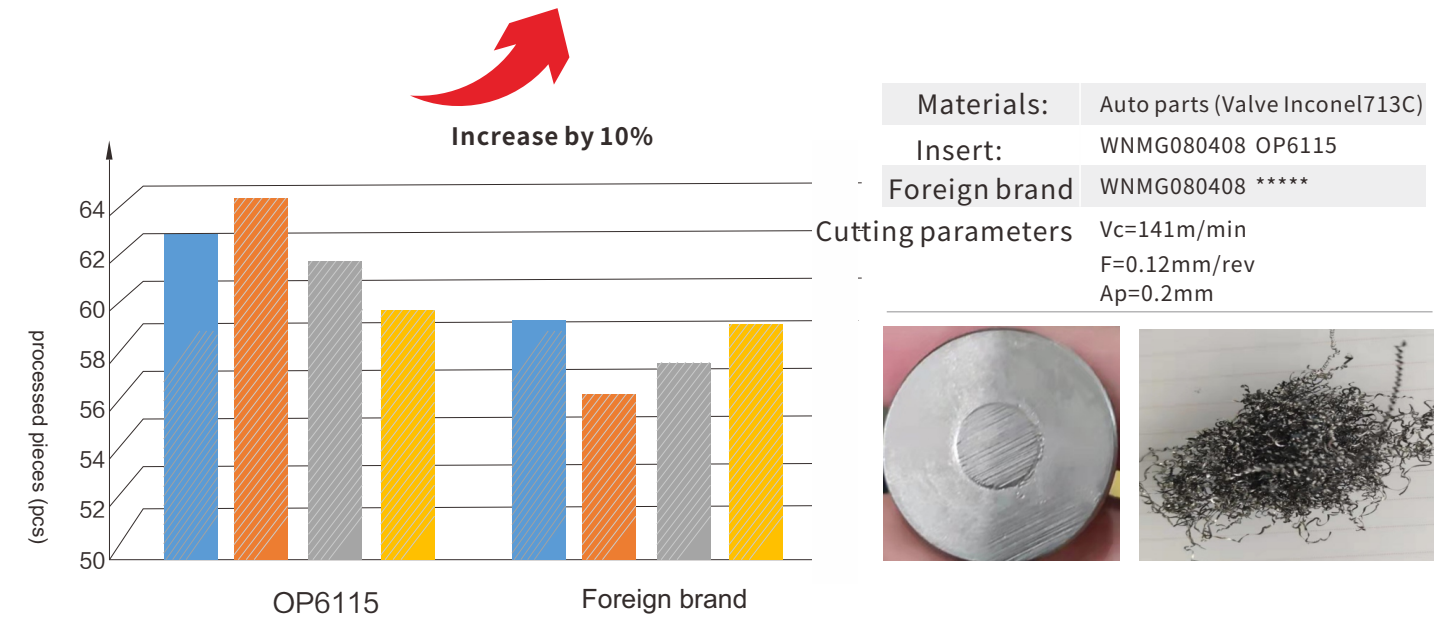


Outstanding wear resistance

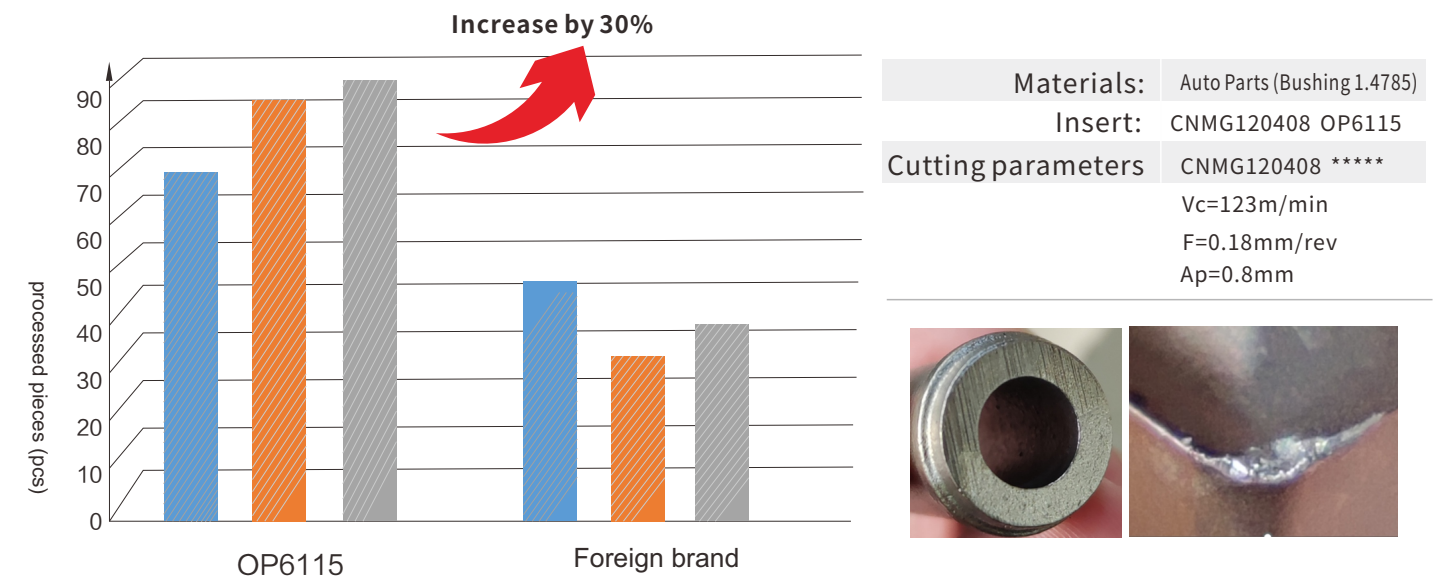
Materials: Laboratory materials (GH4169)
Insert: CNMG120408-OSM
Cutting parameters: Vc=35m/min
F=0.1mm/rev
Ap=1.5mm



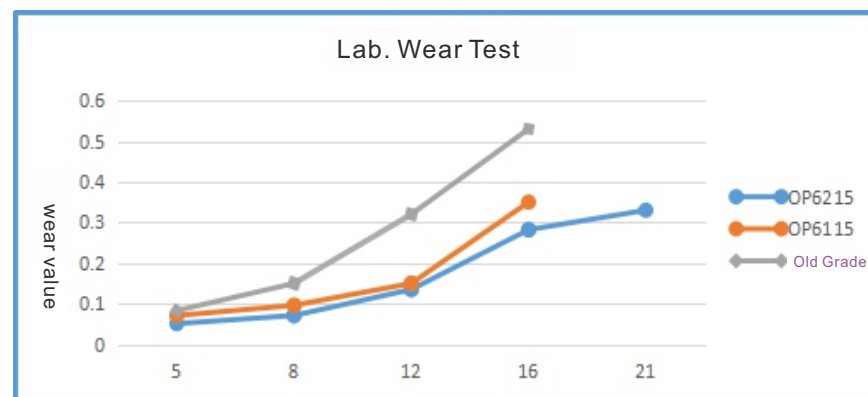
Cutting case 1



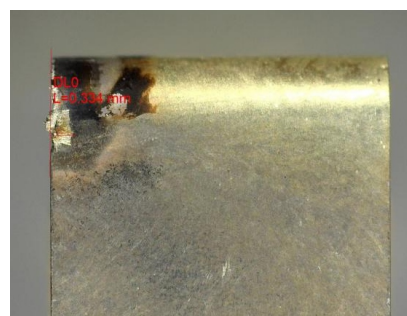
Cutting case 2



OP6215 Performance Test



Material: Material (GH4169)
Insert: CNMG120408-SMM
Cutting Parameter: Vc=60m/min
 F=0.1mm/rev
 Ap=1.5mm



OP6215



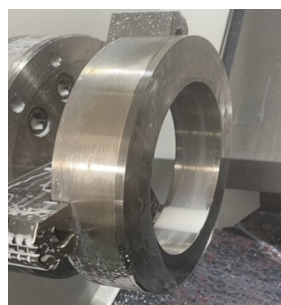
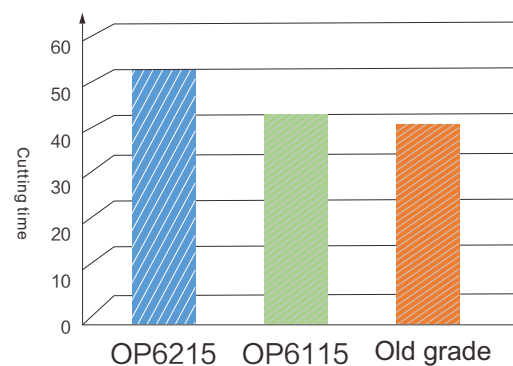
OP6115



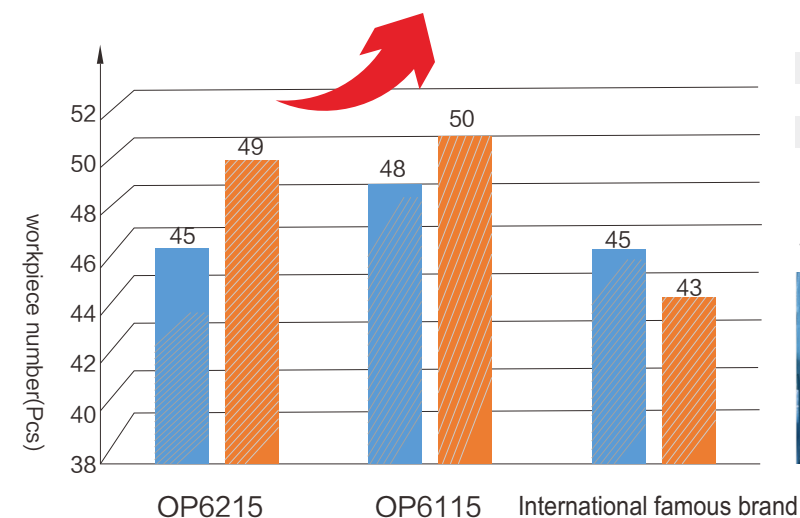
Old Grade

Application Case 1

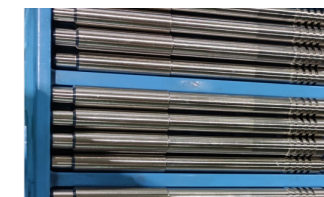
Material: Aerospace (Seal cover GH4169)
Insert: CNMG120408-SMM OP6215/OP6115
International famous brand: CNMG120408 *****
Cutting Parameter: Vc=62m/min
 F=0.15mm/rev
 Ap=0.6mm



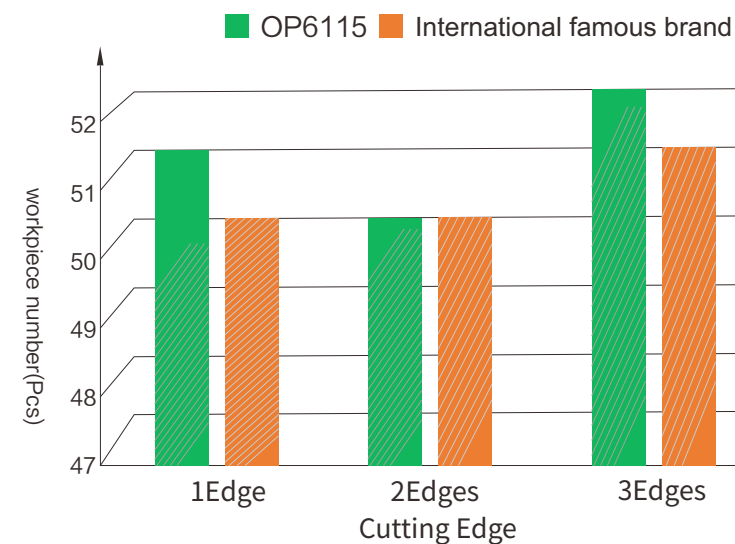
Application Case 2



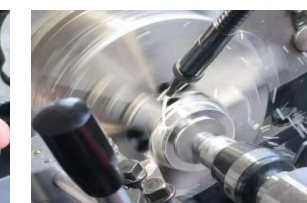
Material: Automobile Parts (Axle 2.4952)
Insert: WNMG080408-SMM OP6215/OP6115
International famous brand: WNMG080408 *****
Cutting Parameter: Vc=126m/min
 F=0.1mm/rev
 Ap=0.43mm



OP6125 Performance Test

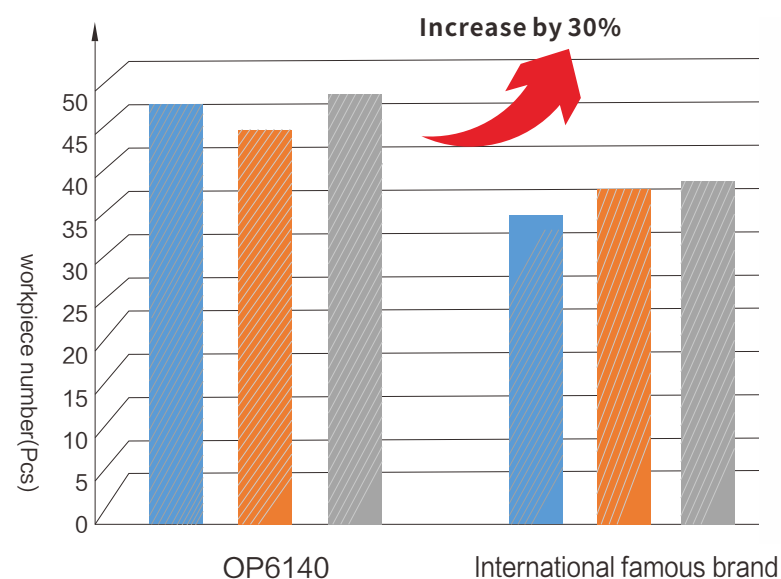


Material: Military workpiece (Bearing Sleeve Ti-alloy TC11)
Insert: OKE CNMG120408 OP6115
International famous brand: CNMG120408 *****
Cutting Parameter: Vc=28m/min
 F=0.05mm/rev
 Ap=4.5mm



OP6140 Performance Test

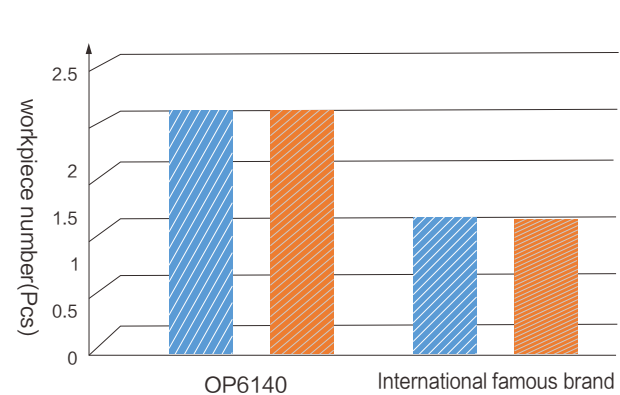
Application Case 1



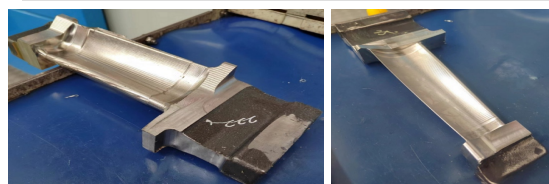
Material: Auto parts (exhaust pipe)
Insert: ONMU070508-OM OP6140
Cutting Parameter: Vc=158m/min
F=0.15mm
Ap=2.0-2.5mm



Application Case 2



Material: turbine blade (10Cr9MoW2VNB)NB
刀Insert: PHT1204MO-SM OP6140
International famous brand: RPHT1204MO *****
Cutting Parameter: Vc=80mm/min
F=0.16mm/z
Ap=0.5 mm
Ae=20-30mm



Solid Carbide End Mill



OMPQ versatile end mill series

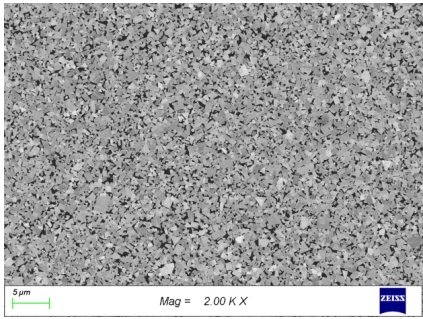
Tool diameter range 1mm~20mm;
The newly upgraded chip-breaker design improves the strength and rigidity of the peripheral edge, and the performance is more comprehensive, suitable for rough machining to finish machining;
It is suitable for steel and cast iron materials below HRC45.



Features

- 1 The latest high-temperature and wear-resistant coating with a new formula of OKE808 cemented carbide substrate can adapt to more working conditions;
oke808 is produced by sub-fine grain (0.8μm) tungsten carbide, which is a very versatile grade.
The main features of the grade:
The overall performance is superior, and it can be applied to a wide range of processing.

| | |
|----------------------|------------------------|
| Grade | OKE808 |
| Hardness | 1580HV30 91.8HRA |
| Compression strength | 3700MPa |
| Fracture toughness | 8.5Pa.m ^{1/2} |
| Cobalt content | 10 |
| Average grain size | 0.8μm |

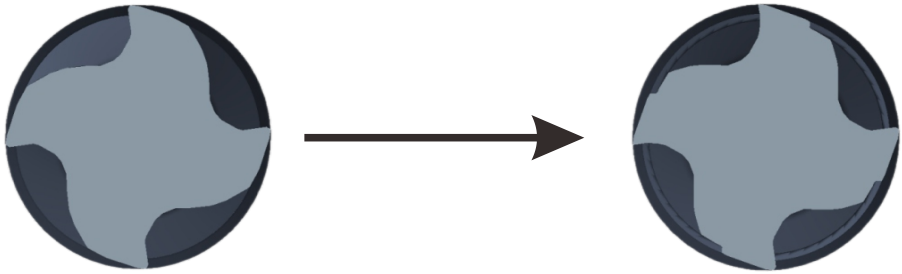


- 2 The peripheral edge is designed with a curved back surface structure that takes both edge strength and wear resistance into account, improving tool life



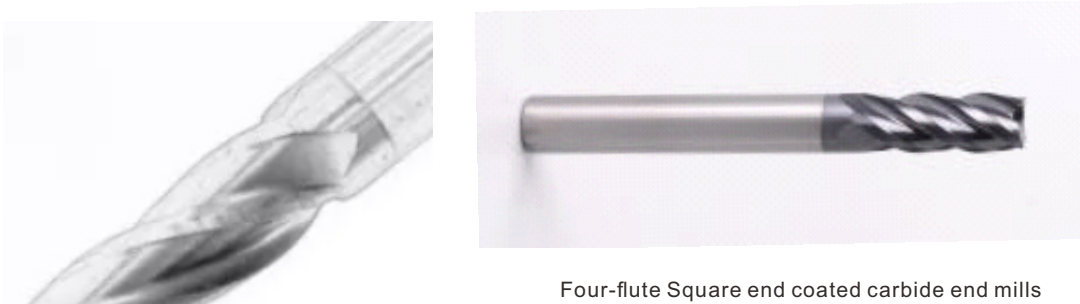
Chip-breaker Features

The newly upgraded geometry not only ensures sufficient chip space, but also improves the strength and rigidity of the peripheral edge, suitable for finishing to rough machining, and the performance of the tool is more comprehensive.



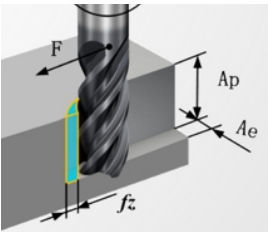
Cutting application case 1

OMPQ-4E-080 General use cutting



Four-flute Square end coated carbide end mills

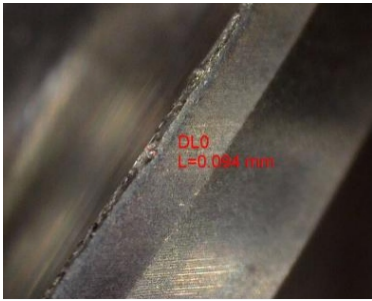
Cutting application case



| | |
|--|----------|
| N:7500 r/min F:2500 mm/min | |
| AP:10mm | AE:0.5mm |
| Cutting Method:Side milling Cooling:with coolant liquid | |
| Machine:Taiwan Quick JetM-1612 | |
| Workpiece information:NAK80 (40°HRC) | |



OMPQ-4E-080



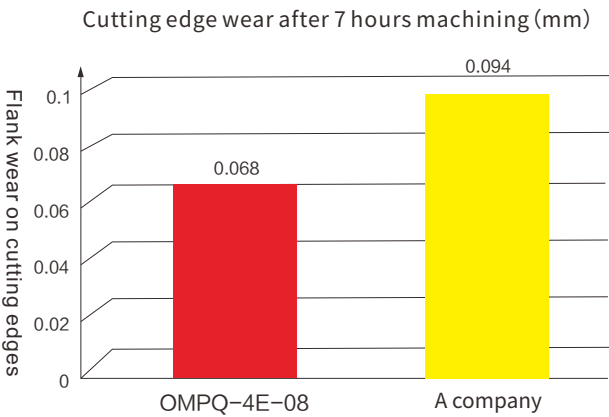
A company product



Picture for workpiece machining



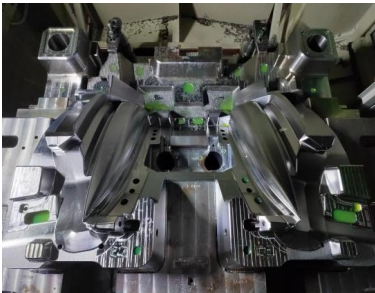
Picture for finished workpiece



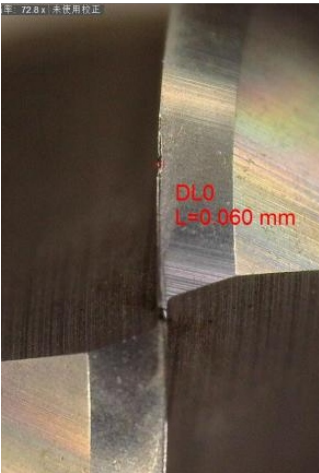
Cutting application case 2

OMPQ-2B-080R4.0 General use cutting

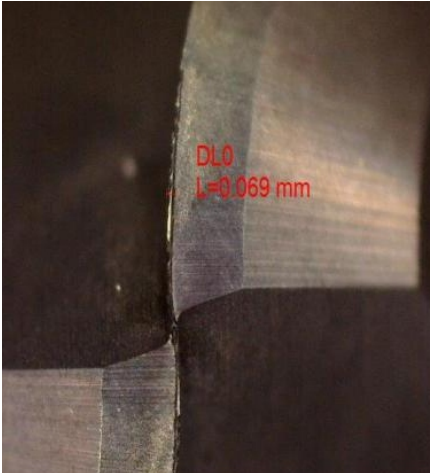
| | |
|--|---------------|
| N:8000 r/min | F:3000 mm/min |
| AP:0.1mm | AE:0.2mm |
| Milling type:profiling milling Cooling type:with coolant liquid | |
| Machine:Taiwan Quick JetM-1612 | |
| Workpiece information: NAK80 (40°HRC) | |



Workpiece picture

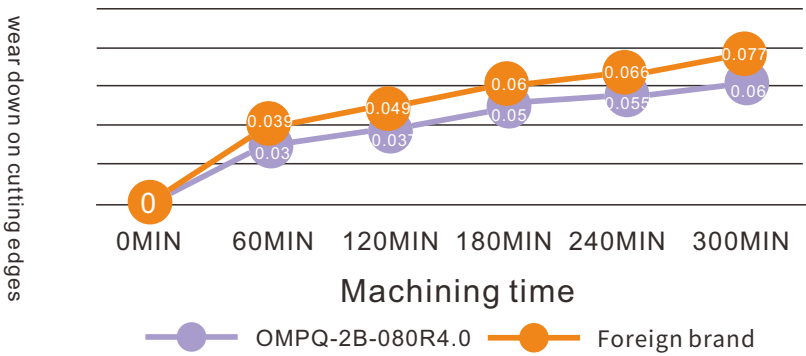


OMPQ-2B-080R4.0



Foreign brand

line graph for wear of carbide end mill



OMPX series-high performance general use carbide end mills

DC range: (1mm~20mm) ; Irregular helix flutes design help prevent vibration; It is an high performance carbide end mills, which is suitable for general use materials: steel 、 cast iron、stainless steel 、Titanium alloy roughing to finishing machining and even in high feed & deep cutting depth .



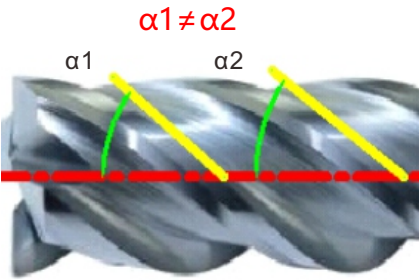
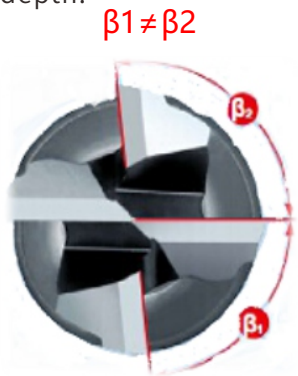
Series composition

| Type | Flute Quantity | Shape | DC (mm) |
|---------|----------------|-------|---------|
| OMPX-4E | 4 | | Φ1~Φ20 |
| OMPX-4R | 4 | | Φ1~Φ12 |
| OMPX-2B | 2 | | Φ1~Φ20 |

Product features

OMPX-4E Square end carbide end mills

- 1、High bending resistance and high temperature impact resistance performance fine grain size of substrate;
- 2、Wear and heat resistant AlTiN coatings increase tool life in a wide range of processed materials.
- 3、Irregular helix flutes and angle design prevent vibration, it can be widely used for machining cast iron、mould steel 、stainless steel 、Titanium alloy and other difficult cutting material to prevent vibration, which contributes to high efficiency machining in high feed 、high speed and deep cutting depth.



Cutting application case

Type: OMPX-4E-060
Workpiece material: Pre-hardened plastic mould steel
Cutting Parameters: N= 6366r/min
F=1014mm/min
Ap=1.5mm
Ae=6mm
Milling type: Slotting
Cooling type:Gas Cooling



OMPX-4E-060

A company product

B company product

OMPX-4R round angle end mill

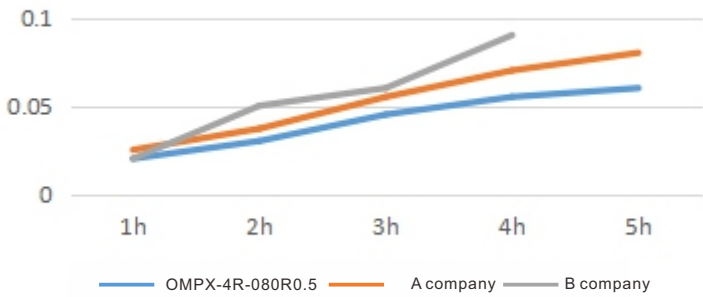
The curved edge design not only guarantees the accuracy of the R angle, but also the continuous change design of the arc edge, which improves the strength of the cutting edge and tool life.



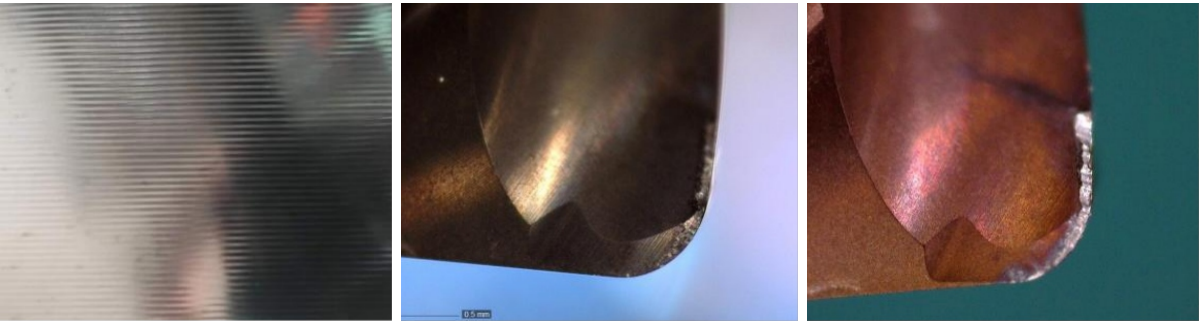
Cutting application case

Type: OMPX-4R-080R0.5
Workpiece material: NAK80 (HRC40)
Cutting Parameters: N= 4000r/min
F=1120mm/min
Ap=1mm
Ae=0.8mm
Milling type: side milling
Cooling type: Gas Cooling

Side milling comparison between OMPX and competing products



Workpiece surface quality



OMPX-4R-080R0.5

A company product

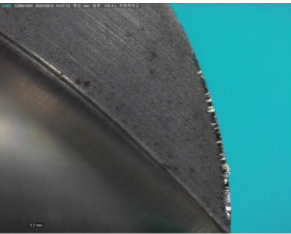
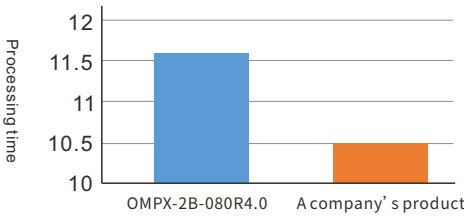
OMPX-2B Ball nose end mill

- ①The combination of new coating and super hard substrate improves the heat resistance and wear resistance of the tool;
- ②The design of the curved edge enhances the strength of the edge, reduces the cutting resistance of the edge, and improves the wear resistance and collapse resistance;
- ③Special design of Ball head clearance angle improves the discharge of chips.

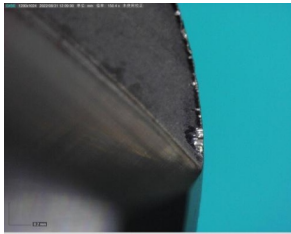


Application case

End Mill type: OMPX-2B-080R4.0
Material: P20H (HRC36)
Cutting Parameter: N= 8000r/min
F=3040mm/min
Ap=0.1mm
Ae=0.3mm
Milling method: profiling milling
Cooling type: air cooling



OMPX-2B-080R4.0



A company product

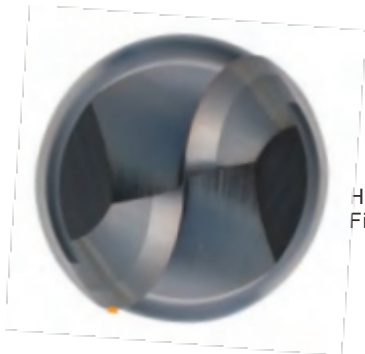
OMH hardened steel processing series

Suitable for semi-finishing and finishing hardened steel and alloy steel below HRC52;
High-rigidity tool structure design effectively reduces vibration during tool processing;
The high-strength, high-toughness base material and the new high-hard special coating can effectively improve the service life of the tool and make the the processed workpiece have better surface quality of the processed.

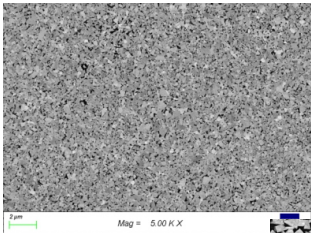


New ultra-fine grain cemented carbide substrate

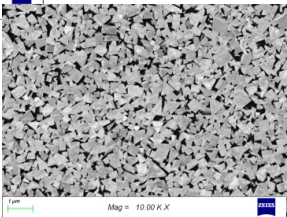
Ultra-fine cemented carbide substrate, WC particle size is only 0.2μm;
Ultra-high hardness matrix material, micro hardness > 2050HV;
Super high strength and toughness, tensile strength > 4200N/MM.



High rigidity and high strength edge structure design;
Fine surface treatment of edge.



OKE-800Substrate



OKE-890Substrate

Application case

Holder type: BT40
Processed material: S136H(H)
Overhang of tool: 31mm
Size of workpiece: 210×230
N: 4000r/min
F: 1000mm/min
AP: 0.1mm
Ae: 8mm



Comparison of
Competitive Products and
Test Tool



Image of processed workpiece

| | OMH-4E-080 | Competitive Products | Competitive Products 2 |
|---|------------|----------------------|------------------------|
| Appearance of the used end tooth of tool morphology | | | |
| Appearance of the used peripheral edge of tool morphology | | | |
| Comparison of using time with the original tool | 200% | 100% | 166% |

Test conclusion:
1. OMH-4E-080 has the longer service life of the customer's current tool.
2. OMH-4E-080 is better than the foreign brand.

OMHH High hardness steel machining milling cutter series

It is suitable for semi-finishing and finishing of workpiece material hardness HRC53-65 high hardness steel;
Special cutting edge design , excellent coating , it can realize rough machining, semi-finishing of hardened steel, and efficient processing of hardened steel;
Universal 2-edged ball end mill with excellent coating, it can be widely used in efficient profiling processing of hardened steel;Multi-edged, high-performance steel design for high-speed finishing of workpieces.



Application case 1

The flank wear of processing for two hours

Apply: Quenched steel SKD11

Material hardness: 61HRC

Tool model: OMHH-2B-080R4.0

Machining machine tools: Vertical machining center

Work material: SKD11(HRC61)

Cutting data: N=5650r/min F=1130mm/min

Ap=0.18mm Ae=0.32mm

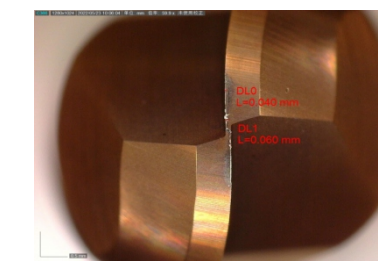
Milling method: End milling

Cooling method: Air-cooled

Test results: OMHH ball nose milling cutter life increased by more than 50%.



Company A wears out 0.091



OMHH-2B flank wear 0.06

Application case 2

Work material: SKD11 hardness HRC61

Machining machine tools: Makino F5 three-axis simultaneous machining center

Tool model: OMHH-4E-040/Company A/Company B

Processing method: Side milling

Cooling method: Air-cooled

Processing parameters:

N: 2652r/min

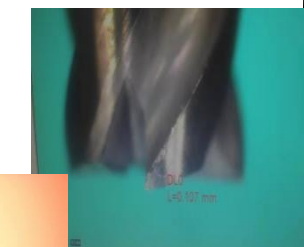
F: 678mm/min

AP: 4mm

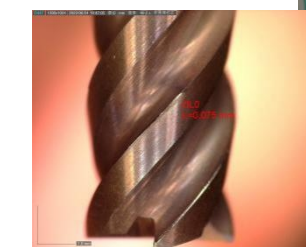
AE: 0.12mm



Company A's product is processed for 180min, the flank face is worn after the bottom edge 0.106



Company B's product is processed for 180min, the flank face is worn after the bottom edge 0.107



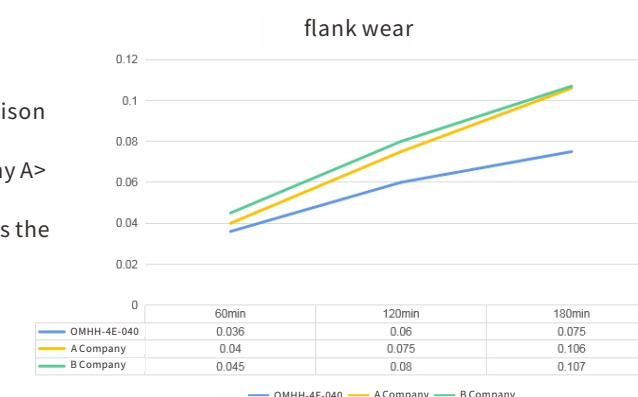
Our products are processed for 180min, the flank face is worn after the bottom edge 0.075

Experimental conclusions

According to the above data, the test picture comparison and analysis:

● Performance comparison: OMHH-4E-040 > Company A > Company B

● The performance of our tool OMHH-4E-040 exceeds the performance of Company A by about 45%.



OPD General processing of drill series

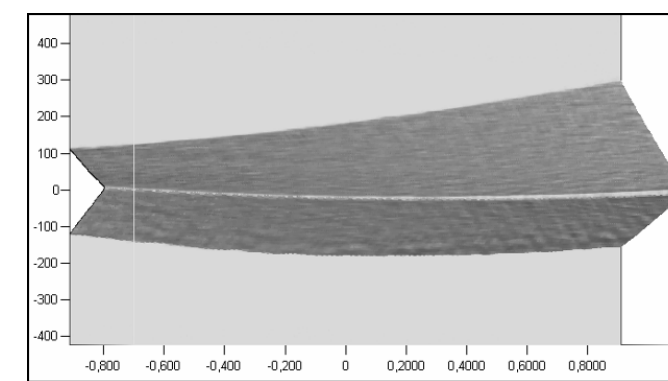
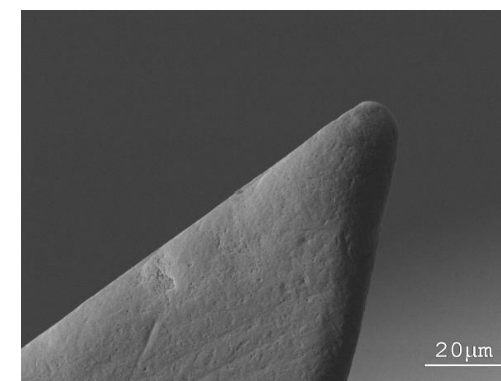
Internal-external cooling fried dough twist drill, whose diameter range is from 3mm to 20mm, the depth of hole is from 3D to 5D. Adopting new groove shape, decreasing cutting resistance and improve the drill strength, which deal well with the iron chip. Applying to the processing of steel and iron.



| Cooling style | Type | Blade diameter (mm) | Hole depth (L/D) |
|------------------|-------------|---------------------|------------------|
| External cooling | ODP-03EXXXX | Φ3~Φ20 | ~3 |
| | ODP-05EXXXX | | ~5 |
| Internal cooling | ODP-03IXXXX | Φ3~Φ20 | ~3 |
| | ODP-05IXXXX | | ~5 |

Characteristic Description

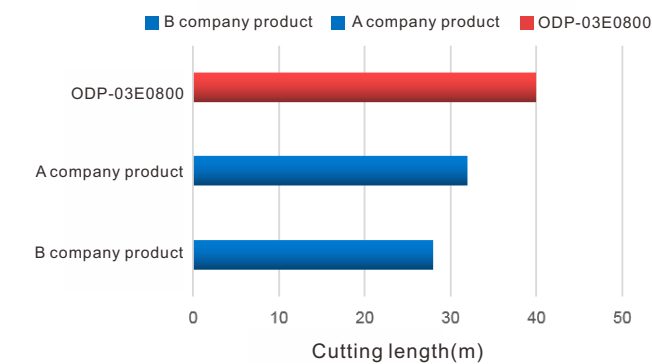
1. Special AlCr-based coating of brand-new general drills, which has good rub resistance/heat resistance and solubility resistance;
2. Adopting new groove shape, decreasing cutting resistance and improve the drill strength, which deal well with the iron chip, has strong applicability;
3. Realizing of high efficiency processing, increase producing ability significantly.



Good edge treatment, improvement of processing surface quality, reduced processing grain, reduction of tool sticking, increasing time in continuous processing, improvement of tool service life.

Cutting example

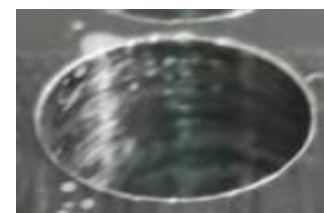
Tool Type:ODP-03E0800
Workpiece material:42CrMo
Cutting parameter:N= 3980r/min
Fn= 0.10mm/r
Id= 24mm
Cooling method:Internal cooling (soap)
Tool Holder:HSK63A-HCM-20



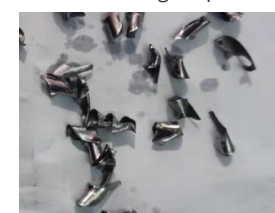
ODP-03E0800



Cutting chip



Other company products



Cutting chip

