

Hardstone  
Efficient  
Cutting tools  
硬石, 高效切削刀具



## 不锈钢车削刀片系列 INSERTS FOR STAINLESS STEEL MACHINING



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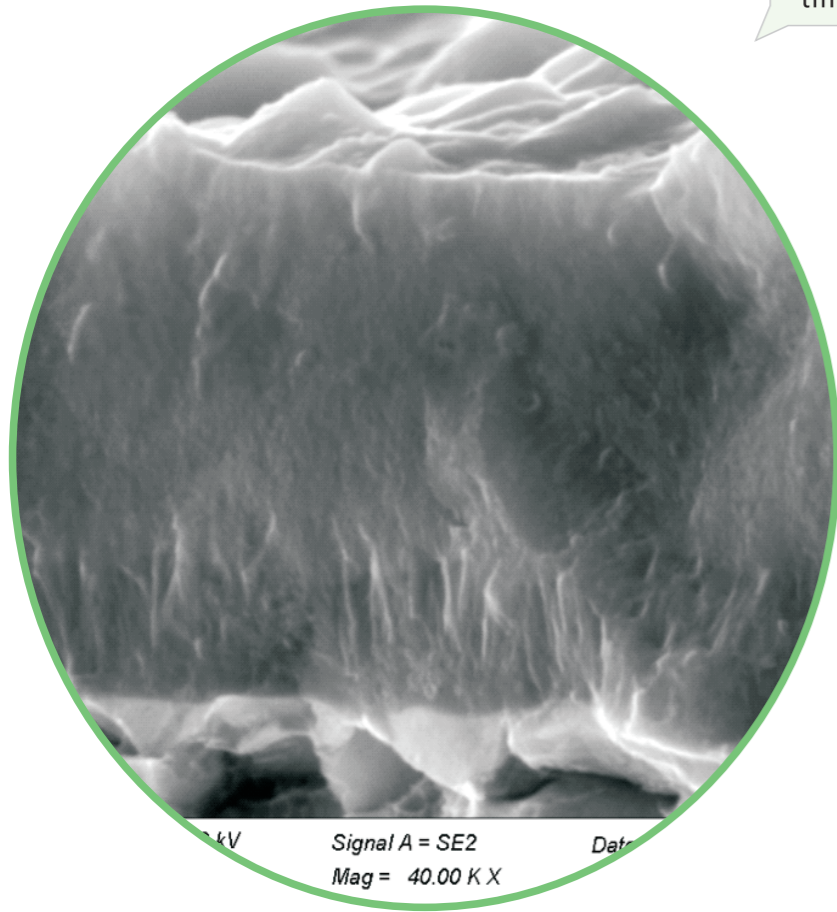
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株洲华锐精密工具股份有限公司  
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WS7225



1

The new coating process containing Si+ technology improves the high temperature hardness, at the same time, it keeps superior universal.

2

Ultra-fine grain for coating structure, it reduces the friction coefficient of coating surface effectively.

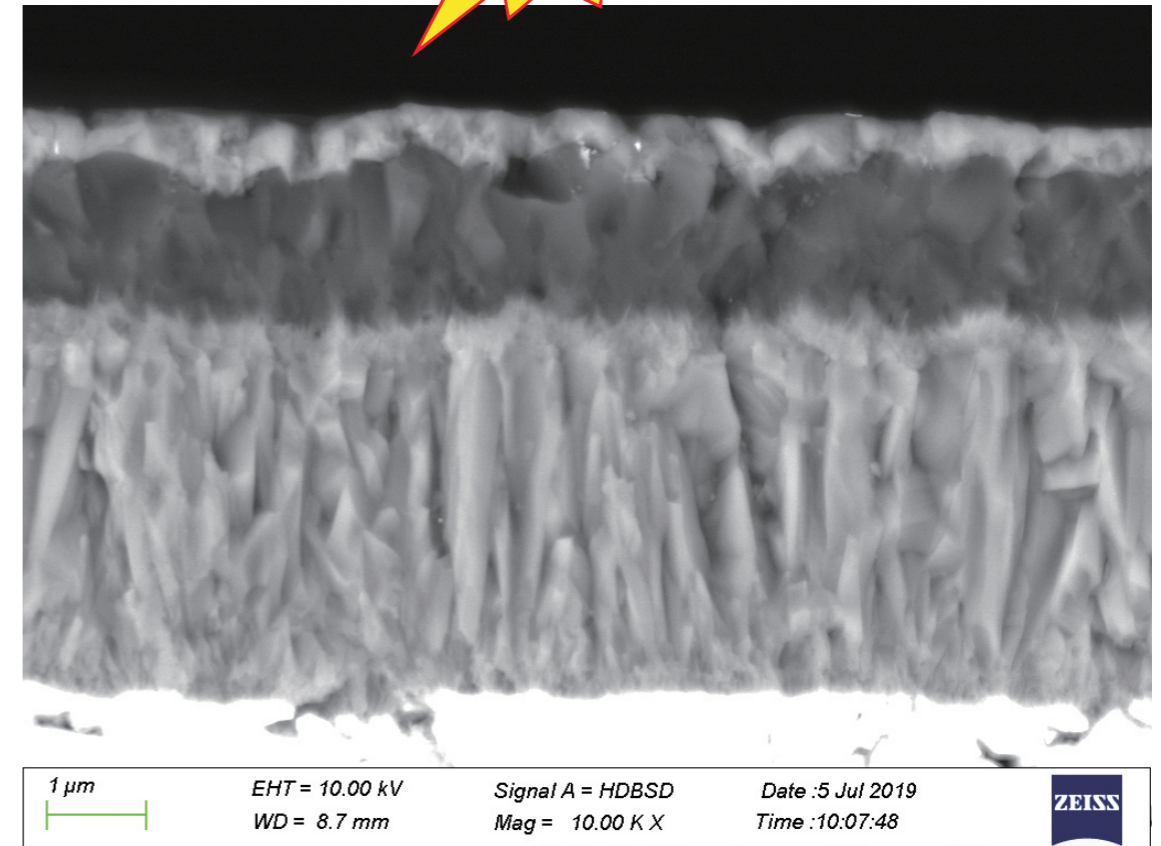
3

With new post treatment process, making the product surface be smoothly.

4

Suitable for turning of stainless steel, It has the advantage of wear-resistant and good chip removal.

WS7120



1

Multi-layer coating structure can effectively block vertical extension of the coating crack and avoid disbonding. Also the new aftertreatment process of coating features better surface finish, which is suitable for roughing of stainless steel at high speed.

2

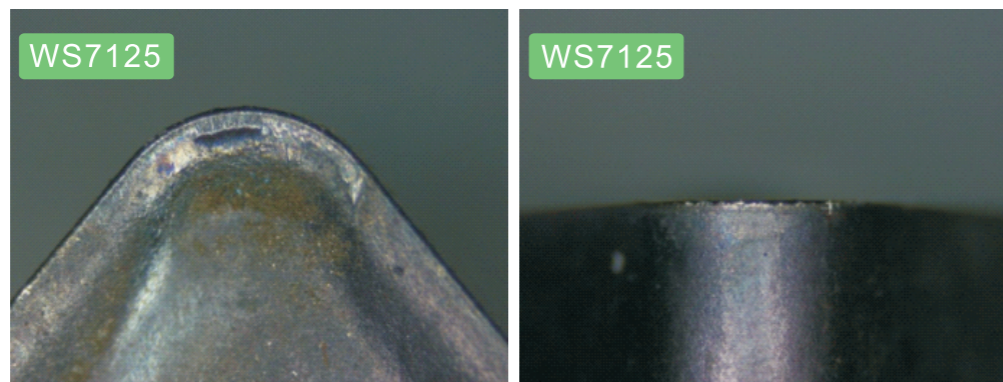
The functional layer of new CVD coating is K-Al<sub>2</sub>O<sub>3</sub> improving coating's adhesion and reduces hot crack of coating, which is suitable for turning of stainless steel. Matched refined aftertreatment of coating features better surface finish.



WS7125/WS7225

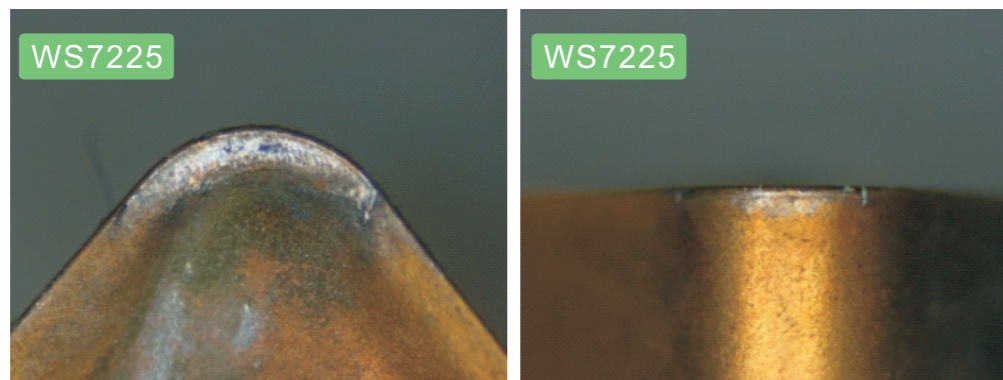
WS7225  
Application case 1

Insert type	WNMG080408-BM	
Workpiece	201 stainless steel	
Spindle speed (r/min)	576	736
Cutting rate Vc(m/min)	250	300
Cutting depth ap(mm)	0.5	0.5
Feed fz(mm/t)	0.1	0.15
Cutting time (min)	20	9
Cutting Condition	Dry cutting	



1. Less crater wear.
2. Less breakage of cutting edge.
3. Improving the surface quality of workpiece.

Roughness : WS7125\_Ra1.00μm WS7225\_Ra0.91μm



WS7225  
Application case 2

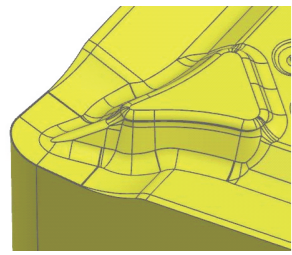
Insert type	WNMG080408-BM	
Workpiece	304 stainless steel	
Spindle speed (r/min)	496	640
Cutting rate Vc(m/min)	180	220
Cutting depth ap(mm)	0.5	0.5
Feed fz(mm/t)	0.2	0.1
Cutting time (min)	~30	~22
Cutting Condition	Dry cutting	



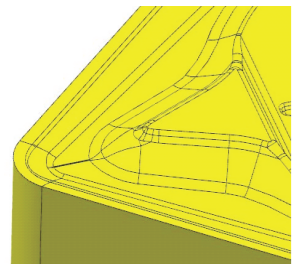
- WS7125 → WS7225
1. Less crater wear.
  2. Less breakage of cutting edge.



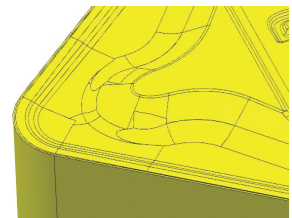
## Chipbreaker introduction



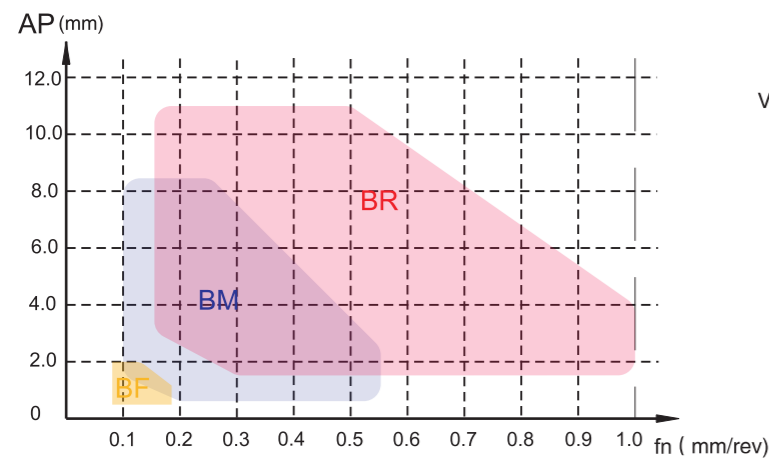
- BF**
- ⊙ BF Chipbreaker used for finishing and semi-finishing machining.
  - ⊙ The sharp cutting edge with smaller cutting resistance.
  - ⊙ It has good chip removal performance even machining small cutting depth.
  - ⊙ The special treatment for the cutting edge can reduce the production of built-up edge.



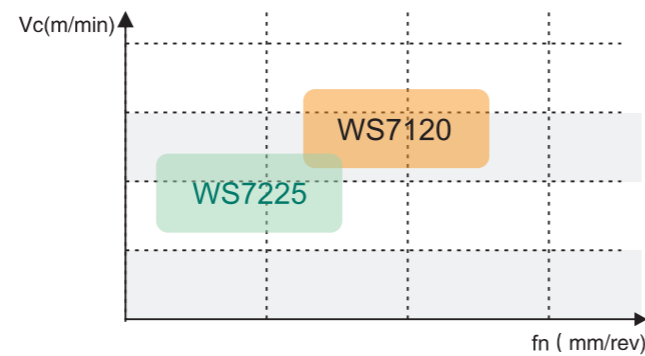
- BM**
- ⊙ BM Chipbreaker used for semi-finishing and rough machining.
  - ⊙ It has the characteristics of sharpness and hardness for cutting edge, which can achieved wider range of machining.
  - ⊙ Good chipping removal performance with lower cutting resistance.



- BR**
- ⊙ Optimized convex plate of chip breaking.
  - ⊙ Well-proportioned cutting edge passivation.
  - ⊙ The solid cutting edge is suitable for rough and intermittent cutting.
  - ⊙ The large space for chipping can easily face and handle rough and high feed rates machining.



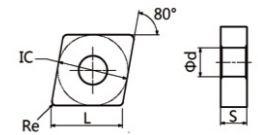
Machining range of Chipbreaker



Machining range of Grade

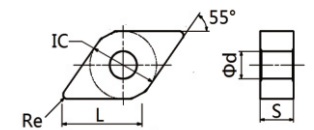
## Type Series

80° CN□□ with hole



Insert Shape	Designation	Specification (mm)					Grade		
		L	IC	S	ød	Re	CVD coating		PVD coating
							WS7120	WS7125	WS7225
	CNMG120404-BF	12.9	12.7	4.76	5.16	0.4	△	○	●
	CNMG120408-BF	12.9	12.7	4.76	5.16	0.8	△	○	●
	CNMG120404-BM	12.9	12.7	4.76	5.16	0.4	△	○	●
	CNMG120408-BM	12.9	12.7	4.76	5.16	0.8	△	○	●
	CNMG120412-BM	12.9	12.7	4.76	5.16	1.2	△	○	●
	CNMG120408-BR	12.9	12.7	4.76	5.16	0.8	△	○	●
	CNMG120412-BR	12.9	12.7	4.76	5.16	1.2	△	○	●
	CNMG190616-BR	19.3	19.05	6.35	7.94	1.6	△	○	●

55° DN□□ with hole

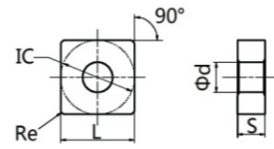


Insert Shape	Designation	Specification (mm)					Grade		
		L	IC	S	ød	Re	CVD coating		PVD coating
							WS7120	WS7125	WS7225
	DNMG150404-BF	15.5	12.7	4.76	5.16	0.4	△	○	●
	DNMG150408-BF	15.5	12.7	4.76	5.16	0.8	△	○	●
	DNMG150404-BM	15.5	12.7	4.76	5.16	0.4	△	○	●
	DNMG150408-BM	15.5	12.7	4.76	5.16	0.8	△	○	●
	DNMG150412-BM	15.5	12.7	4.76	5.16	1.2	△	○	●
	DNMG150604-BM	15.5	12.7	6.35	5.16	0.4	△	○	●
	DNMG150608-BM	15.5	12.7	6.35	5.16	0.8	△	○	●
	DNMG150612-BM	15.5	12.7	6.35	5.16	1.2	△	○	●

Note : ○ Make to order ● Recommended grade △ Accept reservation

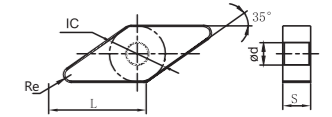


90° SN□□ with hole



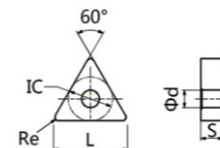
Insert Shape	Designation	Specification (mm)					Grade		
		L	IC	S	ød	Re	CVD coating		PVD coating
							WS7120	WS7125	WS7225
	SNMG120404-BF	12.7	12.7	4.76	5.16	0.4	△	○	●
	SNMG120408-BF	12.7	12.7	4.76	5.16	0.8	△	○	●
	SNMG120404-BM	12.7	12.7	4.76	5.16	0.4	△	○	●
	SNMG120408-BM	12.7	12.7	4.76	5.16	0.8	△	○	●
	SNMG120412-BM	12.7	12.7	4.76	5.16	1.2	△	○	●
	SNMG120408-BR	12.7	12.7	4.76	5.16	0.8	△	○	●
	SNMG120412-BR	12.7	12.7	4.76	5.16	1.2	△	○	●

35° VN□□ with hole



Insert Shape	Designation	Specification (mm)					Grade		
		L	IC	S	ød	Re	CVD coating		PVD coating
							WS7120	WS7125	WS7225
	VNMG160404-BF	16.6	9.525	4.76	3.81	0.4	△	○	●
	VNMG160408-BF	16.6	9.525	4.76	3.81	0.8	△	○	●
	VNMG160404-BM	16.6	9.525	4.76	3.81	0.4	△	○	●
	VNMG160408-BM	16.6	9.525	4.76	3.81	0.8	△	○	●
	VNMG160412-BM	16.6	9.525	4.76	3.81	1.2	△	○	●

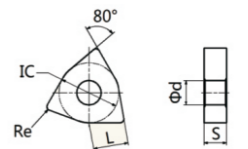
60° TN□□ with hole



Insert Shape	Designation	Specification (mm)					Grade		
		L	IC	S	ød	Re	CVD coating		PVD coating
							WS7120	WS7125	WS7225
	TNMG160404-BF	16.5	9.525	4.76	3.81	0.4	△	○	●
	TNMG160408-BF	16.5	9.525	4.76	3.81	0.8	△	○	●
	TNMG160404-BM	16.5	9.525	4.76	3.81	0.4	△	○	●
	TNMG160408-BM	16.5	9.525	4.76	3.81	0.8	△	○	●
	TNMG160412-BM	16.5	9.525	4.76	3.81	1.2	△	○	●
	TNMG160408-BR	16.5	9.525	4.76	3.81	0.8	△	○	●
	TNMG160412-BR	16.5	9.525	4.76	3.81	1.2	△	○	●

Note : ○ Make to order ● Recommended grade △ Accept reservation

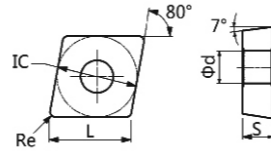
80° WN□□ with hole



Insert Shape	Designation	Specification (mm)					Grade		
		L	IC	S	ød	Re	CVD coating		PVD coating
							WS7120	WS7125	WS7225
	WNMG080404-BF	8.7	12.7	4.76	5.16	0.4	△	○	●
	WNMG080408-BF	8.7	12.7	4.76	5.16	0.8	△	○	●
	WNMG06T312-BM	6.6	9.525	3.97	3.81	1.2	△	○	●
	WNMG060412-BM	6.6	9.525	4.76	3.81	1.2	△	○	●
	WNMG080404-BM	8.7	12.7	4.76	5.16	0.4	△	○	●
	WNMG080408-BM	8.7	12.7	4.76	5.16	0.8	△	○	●
	WNMG080412-BM	8.7	12.7	4.76	5.16	1.2	△	○	●
	WNMG080408-BR	8.7	12.7	4.76	5.16	0.8	△	○	●
	WNMG080412-BR	8.7	12.7	4.76	5.16	1.2	△	○	●

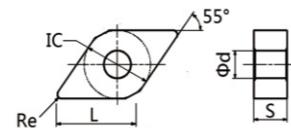
Note : ○ Make to order ● Recommended grade △ Accept reservation

80° CC□□ with hole



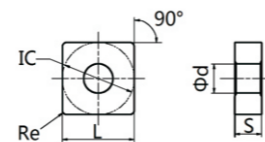
Insert Shape	Designation	Specification (mm)					Grade
		L	IC	S	ød	Re	PVD coating
							WS7225
	CCMT060204-TM	6.40	6.35	2.38	2.8	0.4	●
	CCMT060208-TM	6.40	6.35	2.38	2.8	0.8	●
	CCMT09T304-TM	9.70	9.525	3.97	4.4	0.4	●
	CCMT09T308-TM	9.70	9.525	3.97	4.4	0.8	●
	CCMT120404-TM	12.90	12.7	4.76	5.56	0.4	●
	CCMT120408-TM	12.90	12.7	4.76	5.56	0.8	●
	CCMT120412-TM	12.90	12.7	4.76	5.56	1.2	●

55° DC□□ with hole



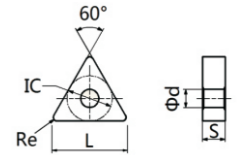
Insert Shape	Designation	Specification (mm)					Grade
		L	IC	S	ød	Re	PVD coating
							WS7225
	DCMT070204-TM	7.80	6.35	2.38	2.8	0.4	●
	DCMT070208-TM	7.80	6.35	2.38	2.8	0.8	●
	DCMT11T304-TM	11.60	9.525	3.97	4.4	0.4	●
	DCMT11T308-TM	11.60	9.525	3.97	4.4	0.8	●
	DCMT11T312-TM	11.60	9.525	3.97	4.4	1.2	●

90° SC□□ with hole



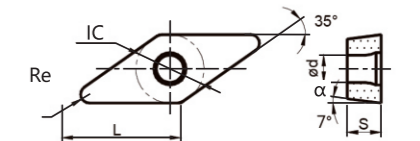
Insert Shape	Designation	Specification (mm)					Grade
		L	IC	S	ød	Re	PVD coating
							WS7225
	SCMT09T304-TM	9.53	9.525	3.97	4.4	0.4	●
	SCMT09T308-TM	9.53	9.525	3.97	4.4	0.8	●
	SCMT120404-TM	12.70	12.7	4.76	5.56	0.4	●
	SCMT120408-TM	12.70	12.7	4.76	5.56	0.8	●
	SCMT120412-TM	12.70	12.7	4.76	5.56	1.2	●

60° TC□□ with hole



Insert Shape	Designation	Specification (mm)					Grade
		L	IC	S	ød	Re	PVD coating
							WS7225
	TCMT110204-TM	11.00	6.35	2.38	2.8	0.4	●
	TCMT110208-TM	11.00	6.35	2.38	2.8	0.8	●
	TCMT16T304-TM	16.50	9.525	4.76	4.4	0.4	●
	TCMT16T308-TM	16.50	9.525	4.76	4.4	0.8	●
	TCMT16T312-TM	16.50	9.525	4.76	4.4	1.2	●

35° V□□□ with hole



Insert Shape	Designation	Specification (mm)					Grade	
		L	IC	S	ød	Re	α	PVD coating
							WS7225	
	VBMT110304-TM	11.10	6.35	3.18	2.8	0.4	5	●
	VBMT110308-TM	11.10	6.35	3.18	2.8	0.8	5	●
	VBMT160404-TM	16.60	9.525	4.76	3.81	0.4	5	●
	VBMT160408-TM	16.60	9.525	4.76	3.81	0.8	5	●
	VBMT160412-TM	16.60	9.525	4.76	3.81	1.2	5	●
	VCMT110304-TM	11.10	6.35	3.18	2.8	0.4	7	●
	VCMT110308-TM	11.10	6.35	3.18	2.8	0.8	7	●
	VCMT160404-TM	16.60	9.525	4.76	3.81	0.4	7	●
	VCMT160408-TM	16.60	9.525	4.76	3.81	0.8	7	●

Note : ○ Make to order ● Recommended grade △ Accept reservation



## Application case for stainless steel machining

- Workpiece:SUS304
- Cutting condition: $V_c=220\text{m/min}$ , $f=0.14\text{mm/r}$ , $a_p=0.1\text{mm}$  ( $R_a\leq 0.8$ )
- Insert type:WNUMG080408-BF WS7225

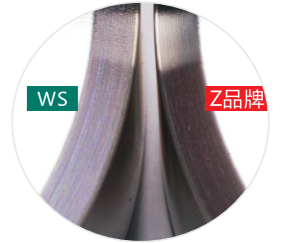


The design of BF chipbreaker without cutting land,it has the character of sharp cutting edges, large and wide hookangle, small cutting vibration, and suitable for finish machining with high surface quality requirements.

Cutting property	
WNUMG080408-BF WS7225	242pcs/edge
Brand A	212 pcs/edge

Increase 20%

- Workpiece:SUS304
- Cutting condition: $V_c=210\text{m/min}$ , $f=0.1\text{mm/r}$ , $a_p=0.1\text{mm}$  ( $R_a\leq 0.8$ )
- Insert type:WNUMG080408-BF WS7225



BF chipbreaker has a higher quality surface finish than others.

Cutting property	
WNUMG080408-BF WS7225	740pcs/edge
Brand A	450pcs/edge

Increase 40%

- Workpiece:SUS304
- Cutting condition: $V_c=150\sim 243\text{m/min}$ , $f=0.2\text{mm/r}$ , $a_p=0.8\text{mm}$
- Insert type:WNUMG080408-BM WS7225

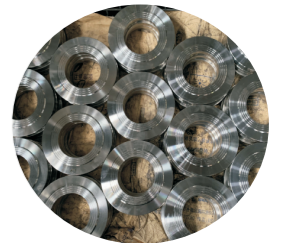


BM chipbreaker has the advantage of sharp cutting edge,wide hook angle,reduced built-up edge, and strong anti-adhesive of new grade WS7225,the insert life has been improved obviously.

Cutting property	
WNUMG080408-BM WS7225	125pcs/edge
Brand A	73pcs/edge

Increase 40%

- Workpiece:SUS316
- Cutting condition: $V_c=211\text{m/min}$ , $f=0.23\sim 0.35\text{mm/r}$ , $a_p=1.0\sim 1.2\text{mm}$
- Insert type:WNUMG080408-BM WS7225



BM chipbreaker belongs to universal chipbreaker and shows good performance under various processing conditions.

Cutting property	
WNUMG080408-BM WS7225	20pcs/edge
Brand A	17pcs/edge

Increase 20%

