

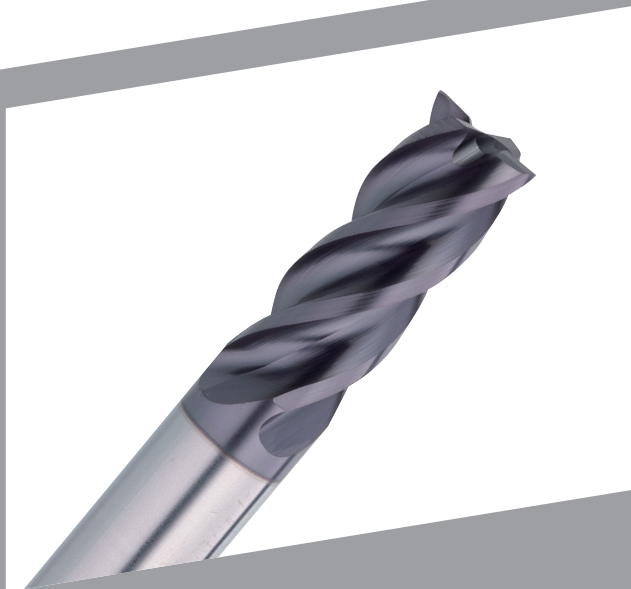


SOLID CARBIDE END MILLS

Popular Product

Fully automatic, the most advance capacity

S428X1

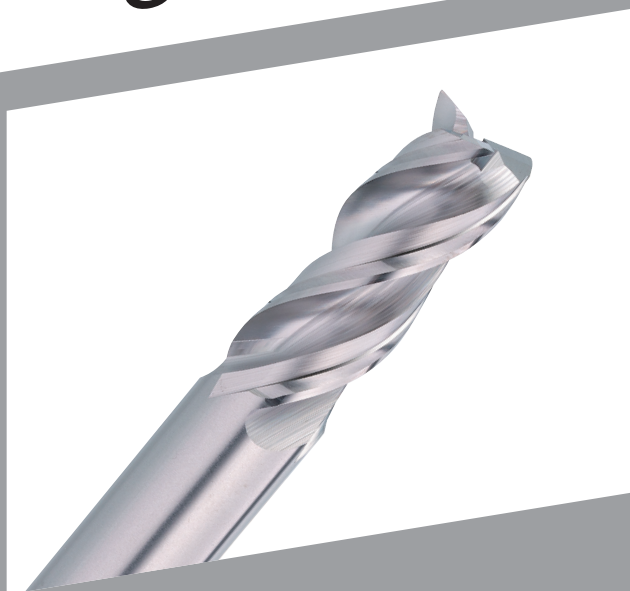


Feature of product

S428X1 Multipurpose end mills with two variable helix geometry, two unequal flutes, a small edge cutting land with the relief angle, able to perform high efficiency cutting as well for unstable cutting conditions.

Various applications from roughing to finishing cutting, drilling, ramping... in different materials.

S450



Feature of product

S450 Strong and rigid Aluminum end mills design with three variable helix and three unequal flutes geometric, improve the efficiency for slotting and with excellent finishing on side milling.

S445HX



Feature of product

S445HX Almighty end mills with three variable helix geometry, three unequal flutes with high chip removal rate, and sharp cutting edge. Suitable for roughing, finishing, drilling, and ramping. Work on any cutting direction with high speed condition.

S645TX









Feature of product

S645TX High Hardness Standard Length End Mills-4 Flutes High efficiency with 45° helix angle for cutting high hardness material. Negative rake angle with AITISIN coating which has excellent wear resistance. It is able to machine pre-hardened and hardened steel up to HRC62.

Index

Page	Appearance	Flute	Code No.	Product Name	Coating Type
------	------------	-------	----------	--------------	--------------













Unequal Flutes

2			S428XI	Super Cut End Mills	AlTiXN
3			S450	Alu Cut End Mills	Blank
4			S445HX	Easy Cut End Mills	AlTiCrN









End Mills-2&4 Flutes

5			S200F	Universal End Mills	TiAlN
5			S630X	Universal End Mills	AlTiXN
5			S630TX	Universal End Mills	AlTiSiN
6			S202F	Universal End Mills	TiAlN
6			S650X	Universal End Mills	AlTiXN
6			S650TX	Universal End Mills	AlTiSiN
7			S204F	Finishing End Mills	TiAlN
7			S640X	Finishing End Mills	AlTiXN
7			S640TX	Finishing End Mills	AlTiSiN
8			S206F	Finishing End Mills	TiAlN
8			S660X	Finishing End Mills	AlTiXN
8			S660TX	Finishing End Mills	AlTiSiN
9			S645TX	High Performance End Mills	AlTiSiN
10			S665TX	High Performance End Mills	AlTiSiN

















Ball Nose

11			S208F	Ball Nose End Mills	TiAlN
11			S618X	Ball Nose End Mills	AlTiXN
11			S618TX	Ball Nose End Mills	AlTiSiN
12			S210F	Ball Nose End Mills	TiAlN
12			S620X	Ball Nose End Mills	AlTiXN
12			S620TX	Ball Nose End Mills	AlTiSiN

Corner Radius

13			B266TX	End Mills With Corner Radius	AlTiSiN
15			B268TX	End Mills With Corner Radius	AlTiSiN
17			B276TX	High Performance End Mills With Corner Radius	AlTiSiN
19			B278TX	High Performance End Mills With Corner Radius	AlTiSiN

HSS

21			S336	Roughing End Mills	Blank
21			S336C	Roughing End Mills	TiCN
22			S337	Roughing End Mills	Blank
22			S337C	Roughing End Mills	TiCN
23			S334	Roughing End Mills	Blank
23			S334C	Roughing End Mills	TiCN
24			S335	Roughing End Mills	Blank
24			S335C	Roughing End Mills	TiCN

Work Materials (☉ The most recommended/◯ recommended)														
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
~30HRC		~48HRC	~56HRC	~68HRC										
◯	◯				◯	◯	◯	◯				◯	◯	◯
							◯							
◯	◯				◯	◯						◯	◯	◯
◯	◯	◯			◯	◯		◯						
◯	◯	◯	◯		◯	◯		◯						
◯	◯	◯			◯	◯			◯					
◯	◯	◯	◯	◯	◯	◯								
◯	◯	◯	◯		◯	◯								
◯	◯	◯			◯	◯								
◯	◯	◯	◯		◯	◯								
◯	◯	◯	◯	◯	◯	◯	◯	◯				◯	◯	◯
◯	◯	◯	◯	◯	◯	◯	◯	◯				◯	◯	◯
◯	◯	◯			◯	◯		◯						
◯	◯	◯	◯		◯	◯								
◯	◯	◯			◯	◯								
◯	◯	◯	◯		◯	◯								
◯	◯	◯			◯	◯								
◯	◯	◯	◯	◯	◯	◯								
◯	◯	◯			◯	◯	◯	◯						
◯	◯	◯	◯	◯	◯	◯	◯	◯						
◯	◯	◯			◯	◯	◯	◯						
◯	◯	◯	◯		◯	◯	◯	◯						
◯	◯	◯			◯	◯	◯	◯						
◯	◯	◯	◯		◯	◯	◯	◯						
◯	◯	◯			◯	◯	◯	◯						

Unequal Flutes

End Mills-2&4 Flutes

Ball Nose

Corner Radius

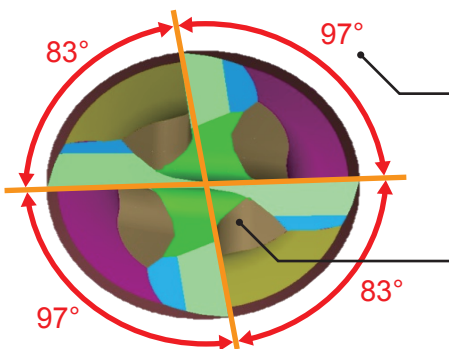
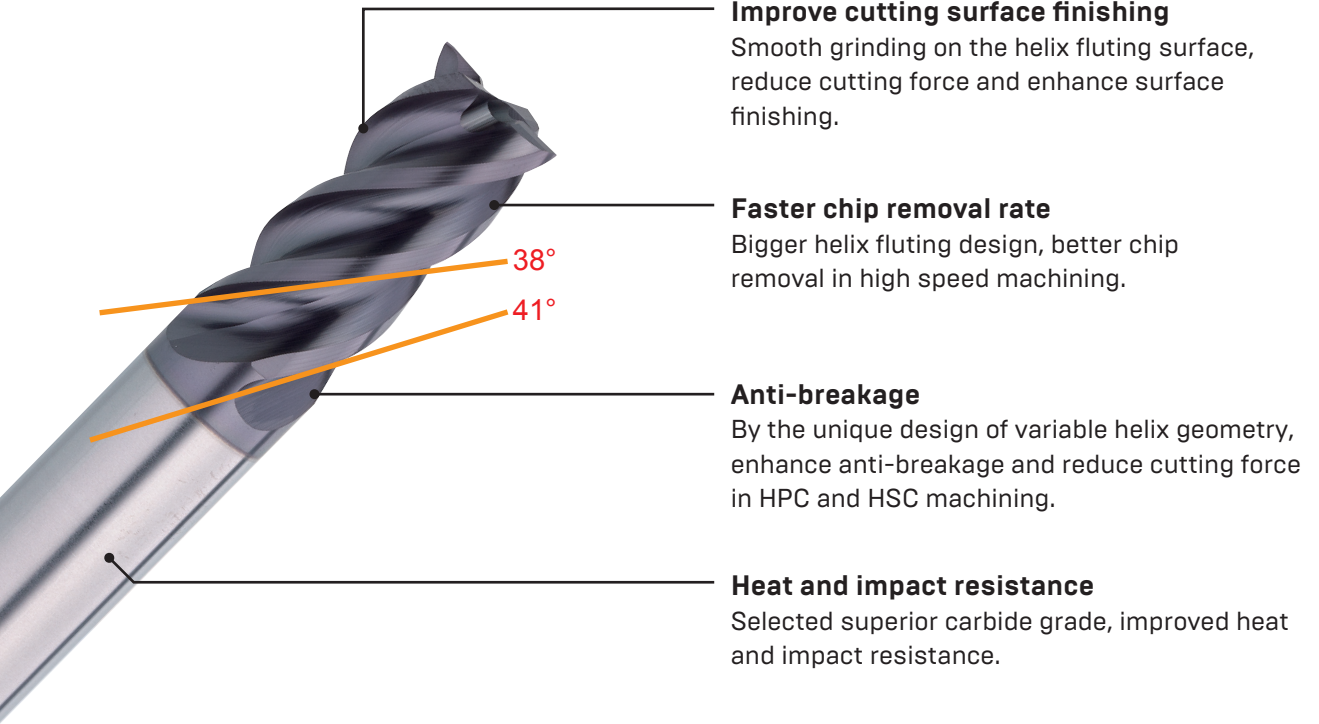
HSS

Technical Data

Simple Cutting Revolution

Improve heat and wear resistance

Enhance cutter tool life by our in house advance coating facilities.



S428X1

Tool Material/ Coating Type	MG Carbide	AITiXN					Type of Operation						
Specification													
Work Materials [◎ The most recommended/ ○ recommended]													
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	-30HRC	-48HRC	-56HRC	-68HRC									
	◎	◎			◎	◎	○	○			○	○	○

※ Feature of product

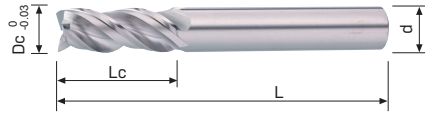
S428X1 Multipurpose end mills with two variable helix geometry, two unequal flutes, a small edge cutting land with the relief angle, able to perform high efficiency cutting as well for unstable cutting conditions.

Various applications from roughing to finishing cutting, drilling, ramping... in different materials.

Code No. S428X1-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S428X1 MG AITiXN
1	3	50	4	●
1.5	5	50	4	●
2	6	50	4	●
2.5	8	50	4	●
3 A	8	50	4	●
4 A	11	50	4	●
3	8	50	6	●
4	11	50	6	●
5	13	50	6	●
6	16	50	6	●
8	20	60	8	●
10	25	75	10	●
12	30	75	12	●
14	32	90	16	●
16	40	100	16	●
18	40	100	20	●
20	40	100	20	●

S450



Tool Material/ Coating Type	MG Carbide	Uncoated Blank					Type of Operation						
Specification	40°	3	N γ20°	90°									
Work Materials [◎ The most recommended/ ○ recommended]													
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC			◎						

※ Feature of product

S450 Strong and rigid Aluminum end mills design with three variable helix and three unequal flutes geometric, improve the efficiency for slotting and with excellent finishing on side milling.

Code No. S450-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S450 MG Blank
1	3	50	4	●
1.5	5	50	4	●
2	6	50	4	●
2.5	8	50	4	●
3A	8	50	4	●
4A	11	50	4	●
3	8	50	6	●
4	11	50	6	●
5	13	50	6	●
6	16	50	6	●
8	20	60	8	●
10	25	75	10	●
12	30	75	12	●
16	40	100	16	●
20	40	100	20	●

S445HX

Easy Cut End Mills

S445HX



Tool Material/ Coating Type	MG Carbide	AlTiCrN					Type of Operation						
Specification													
Work Materials [◎ The most recommended/ ○ recommended]													
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	-30HRC	-48HRC	-56HRC	-68HRC									
	◎	◎			◎	◎					○	○	○

※ Feature of product

S445HX Almighty end mills with three variable helix geometry, three unequal flutes with high chip removal rate, and sharp cutting edge.

Suitable for roughing, finishing, drilling, and ramping. Work on any cutting direction with high speed condition.

Code No. S445HX-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S445HX MG AlTiCrN
1	3	50	4	●
1.5	5	50	4	●
2	6	50	4	●
2.5	8	50	4	●
3 A	8	50	4	●
4 A	11	50	4	●
3	8	50	6	●
4	11	50	6	●
5	13	50	6	●
6	16	50	6	●
8	20	60	8	●
10	25	75	10	●
12	30	75	12	●
14	32	90	16	●
16	40	100	16	●
18	40	100	20	●
20	40	100	20	●

Universal End Mills

S200F / S630X		S630TX										
Tool Material/ Coating Type	MG /UMG Carbide TiAlN AlTiXN AlTiSiN	Type of Operation 										
Specification	35° 2 N 90°											
Work Materials (◎ The most recommended / ○ recommended)												
Carbon Steel	Tool Steel	Pre-hardend Steel		Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel				Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC								
S200F	◎	◎			○	◎		○				
S630X	◎	◎	◎									
S630TX	◎	◎	◎	○								

※ Feature of product

S200F、S630X、S630TX Universal Standard length End Mills-2 Flutes.
 General cutting applications for side milling, slotting, drilling...etc.
 Good wear resistance and lubrication with Nano multilayer coating.

Code No. S200F-Dc / S630X-Dc / S630TX-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S200F MG TiAlN <45HRC	S630X UMG AlTiXN <55HRC	S630TX UMG AlTiSiN <62HRC
1	3	50	4	●	●	●
1.5	5	50	4	●	●	●
2	6	50	4	●	●	●
2.5	8	50	4	●	●	●
3A	8	50	4	●	●	●
4A	11	50	4	●	●	●
3B	8	50	3	●	●	●
3	8	50	6	●	●	●
4	11	50	6	●	●	●
5	13	50	6	●	●	●
6	16	50	6	●	●	●
8	20	60	8	●	●	●
10	25	75	10	●	●	●
12	30	75	12	●	●	●
14	32	90	16	●	●	●
16	40	100	16	●	●	●
18	40	100	20	●	●	●
20	40	100	20	●	●	●

Universal End Mills

S202F / S650X				S650TX								
Tool Material/ Coating Type	MG /UMG Carbide	TiAlN AlTiXN AlTiSiN		Type of Operation								
Specification	35°	2	N		90°							
Work Materials (◎ The most recommended/ ○ recommended)												
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals			Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium
	~30HRC	~48HRC	~56HRC	~68HRC								
S202F	◎	◎			○	◎		○				
S650X	◎	◎	◎									
S650TX	◎	◎	◎	○								

※ Feature of product

S202F、S650X、S650TX Universal Long Length End Mills-2 Flutes.
 General cutting applications for side milling, slotting, drilling...etc.
 Good wear resistance and lubrication with Nano multilayer coating.

Code No. S202F-Dc / S650X-Dc / S650TX-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S202F MG TiAlN <45HRC	S650X UMG AlTiXN <55HRC	S650TX UMG AlTiSiN <62HRC
3A	12	70	4	●	●	●
4A	15	70	4	●	●	●
3	12	70	6	●	●	●
4	15	70	6	●	●	●
5	20	80	6	●	●	●
6	20	80	6	●	●	●
8	25	100	8	●	●	●
10	30	100	10	●	●	●
12	40	110	12	●	●	●
16	50	140	16	●	●	●
20	60	160	20	●	●	●

S204F / S640X		S640TX										
Tool Material/ Coating Type	MG /UMG Carbide	TiAIN AITiXN AITiSiN	Type of Operation 									
Specification	35°	4 N 90°										
Work Materials (◎ The most recommended / ○ recommended)												
Carbon Steel	Tool Steel	Pre-hardend Steel		Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel				Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC								
S204F	◎	◎			○	◎		○				
S640X	◎	◎	◎									
S640TX	◎	◎	◎	○								

※ Feature of product

- S204F、S640X、S640TX Standard length Finishing End Mills-4 Flutes.
- Good quality surface finishing on precision side and surface milling.
- Good wear resistance and lubrication with Nano multilayer coating.

Code No. S204F-Dc / S640X-Dc / S640TX-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S204F MG TiAIN <45HRC	S640X UMG AITiXN <55HRC	S640TX UMG AITiSiN <62HRC
1	3	50	4	●	●	●
1.5	5	50	4	●	●	●
2	6	50	4	●	●	●
2.5	8	50	4	●	●	●
3A	8	50	4	●	●	●
4A	11	50	4	●	●	●
3B	8	50	3	●	●	●
3	8	50	6	●	●	●
4	11	50	6	●	●	●
5	13	50	6	●	●	●
6	16	50	6	●	●	●
8	20	60	8	●	●	●
10	25	75	10	●	●	●
12	30	75	12	●	●	●
14	32	90	16	●	●	●
16	40	100	16	●	●	●
18	40	100	20	●	●	●
20	40	100	20	●	●	●

Finishing End Mills

S206F / S660X				S660TX									
Tool Material/ Coating Type	MG /UMG Carbide	TiAlN AlTiXN AlTiSiN					Type of Operation						
Specification													
Work Materials (◎ The most recommended/ ○ recommended)													
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC									
S206F	◎	◎			○	◎		○					
S660X	◎	◎	◎										
S660TX	◎	◎	◎	○									

※ Feature of product

S206F、S660X、S660TX Finishing Long length End Mills-4 Flutes.
 Good quality surface finishing on precision side and surface milling.
 Good wear resistance and lubrication with Nano multilayer coating.

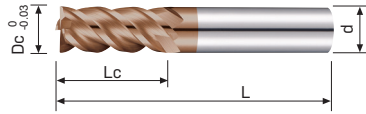
Code No. S206F-Dc / S660X-Dc / S660TX-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S206F MG TiAlN <45HRC	S660X UMG AlTiXN <55HRC	S660TX UMG AlTiSiN <62HRC
3A	12	70	4	●	●	●
4A	15	70	4	●	●	●
3	12	70	6	●	●	●
4	15	70	6	●	●	●
5	20	80	6	●	●	●
6	20	80	6	●	●	●
8	25	100	8	●	●	●
10	30	100	10	●	●	●
12	40	110	12	●	●	●
16	50	140	16	●	●	●
20	60	160	20	●	●	●

S645TX

High Performace End Mills

S645TX



Tool Material/ Coating Type	UMG Carbide	AlTiSiN					Type of Operation								
Specification	45°	4	$\gamma-5^\circ$	90°											
Work Materials [◎ The most recommended/ ○ recommended]															
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials			
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel	
	~30HRC	~48HRC	~56HRC	~68HRC											
	◎	◎	◎	○	◎	◎	○	○				○	○	○	

※ Feature of product

S645TX High Hardness Standard Length End Mills-4 Flutes
 High efficiency with 45° helix angle for cutting high hardness material.
 Negative rake angle with AlTiSiN coating which has excellent wear resistance.
 It is able to machine pre-hardened and hardened steel up to HRC62.

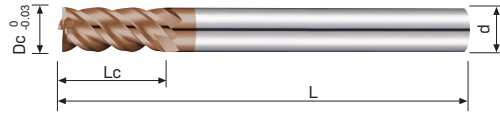
Code No. S645TX-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S645TX UMG AlTiSiN
1	3	50	4	●
1.5	5	50	4	●
2	6	50	4	●
2.5	8	50	4	●
3A	8	50	4	●
4A	11	50	4	●
3	8	50	6	●
4	11	50	6	●
5	13	50	6	●
6	16	50	6	●
8	20	60	8	●
10	25	75	10	●
12	30	75	12	●
16	40	100	16	●
20	40	100	20	●

S665TX

High Performance End Mills

S665TX



Tool Material/ Coating Type	UMG Carbide	AlTiSiN					Type of Operation							
Specification	45°	4	N γ-5°	90°										
Work Materials [◎ The most recommended/ ○ recommended]														
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
	-30HRC	-48HRC	-56HRC	-68HRC										
	◎	◎	◎	○	◎	◎	○	○				○	○	○

※ Feature of product

S665TX High Hardness long Length End Mills-4 Flutes
 High efficiency with 45° helix angle for cutting high hardness material.
 Negative rake land with AlTiSiN coating which has excellent wear resistance.
 It is able to machine pre-hardened and hardened steel up to HRC62.

Code No. S665TX-Dc

Dc 0 -0.03	Lc mm	L mm	d h6	S665TX UMG AlTiSiN
3A	12	70	4	●
4A	15	70	4	●
3	12	70	6	●
4	15	70	6	●
5	20	80	6	●
6	20	80	6	●
8	25	100	8	●
10	30	100	10	●
12	40	110	12	●
16	50	140	16	●
20	60	160	20	●

Ball Nose End Mills

S208F / S618X		S618TX										
Tool Material/ Coating Type	MG /UMG Carbide	TiAIN AITiXN AITiSiN	Type of Operation 									
Specification	30°	2		N								
Work Materials (◎ The most recommended/ ○ recommended)												
Carbon Steel	Tool Steel	Pre-hardend Steel		Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel				Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC								
S208F	◎	◎			○	◎		○				
S618X	◎	◎	◎									
S618TX	◎	◎	◎	○								

※ **Feature of product**

- S208F、S618X、S618TX Standard Length Ball Nose End Mills -2 Flutes.
- Strong ball nose end mills with short helix groove is suitable to machine on various material.
- S shape geometry designed is very rigid for continuous cutting.
- S618TX ball nose with a small edge cutting land can improve tool life and surface finishing.
- Good wear resistance and lubrication with Nano multilayer coating.

Code No. S208F-Dc / S618X-Dc / S618TX-Dc

Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6	S208F MG TiAIN <45HRC	S618X UMG AITiXN <55HRC	S618TX UMG AITiSiN <62HRC
1	0.5R	2	50	4	●	●	●
1.5	0.75R	3	50	4	●	●	●
2	1R	4	50	4	●	●	●
2.5	1.25R	5	50	4	●	●	●
3A	1.5R	6	50	4	●	●	●
4A	2R	8	50	4	●	●	●
3B	1.5R	6	50	3	●	●	●
3	1.5R	6	50	6	●	●	●
4	2R	8	50	6	●	●	●
5	2.5R	10	50	6	●	●	●
6	3R	12	50	6	●	●	●
8	4R	14	60	8	●	●	●
10	5R	18	75	10	●	●	●
12	6R	22	75	12	●	●	●
16	8R	30	100	16	●	●	●
20	10R	38	100	20	●	●	●

Ball Nose End Mills

S210F / S620X

S620TX

Tool Material/ Coating Type	MG /UMG Carbide	TiAlN AlTiXN AlTiSiN					Type of Operation									
Specification																
Work Materials (◎ The most recommended/ ○ recommended)																
Carbon Steel		Tool Steel		Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel		Pre-hardend Steel		Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
		~30HRC		~48HRC	~56HRC	~68HRC										
S210F		◎		◎			○	◎		○						
S620X		◎		◎	◎											
S620TX		◎		◎	◎	○										

※ **Feature of product**

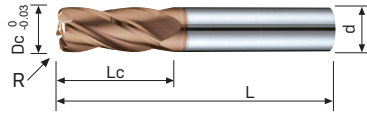
- S210F、S620X、S620TX Long Length Ball Nose End Mills -2 Flutes.
- Strong ball nose end mills with short helix groove is suitable to machine on various material.
- S shape geometry designed is very rigid for continuous cutting.
- S620TX ball nose with a small edge cutting land can improve tool life and surface finishing.
- Good wear resistance and lubrication with Nano multilayer coating.

Code No. S210F-Dc / S620X-Dc / S620TX-Dc

Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6	S210F MG TiAlN <45HRC	S620X UMG AlTiXN <55HRC	S620TX UMG AlTiSiN <62HRC
3A	1.5R	6	70	4	●	●	●
4A	2R	8	70	4	●	●	●
3	1.5R	6	70	6	●	●	●
4	2R	8	70	6	●	●	●
5	2.5R	10	80	6	●	●	●
6	3R	12	80	6	●	●	●
6A	3R	12	100	6	●	●	●
8	4R	14	100	8	●	●	●
10	5R	18	100	10	●	●	●
12	6R	22	110	12	●	●	●
16	8R	30	140	16	●	●	●
20	10R	38	160	20	●	●	●

End Mills With Corner Radius

B266TX



Tool Material/ Coating Type	<div style="display: flex; justify-content: space-around;"> <div style="background-color: yellow; padding: 5px; text-align: center;">UMG Carbide</div> <div style="background-color: yellow; padding: 5px; text-align: center;">AlTiSiN</div> </div>		Type of Operation 											
Specification	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>35°</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>4</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>71°30'</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>R</p> </div> </div>													
Work Materials (◎ The most recommended/ ○ recommended)														
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
	-30HRC	-48HRC	-56HRC	-68HRC										
	◎	◎	◎	○										

※ Feature of product

- B266TX Standard length End Mills with Corner Radius- 4 Flutes.
- Roughing and finishing applications on contour and profile machining.
- Low rake angle and a small edge cutting land with AlTiSiN coating which has excellent wear resistance.
- Excellent surface finishing on profile contour machining, able to cut pre-hardened and hardened steel up to HRC62.

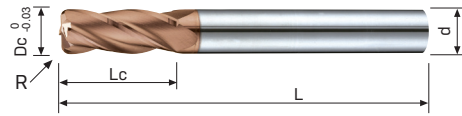
Code No. B266TX-Dc×R

Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6	B266TX UMG AlTiSiN
1	R0.1	3	50	4	●
1	R0.2	3	50	4	●
1	R0.3	3	50	4	●
1.5	R0.1	5	50	4	●
1.5	R0.2	5	50	4	●
1.5	R0.3	5	50	4	●
1.5	R0.5	5	50	4	●
2	R0.1	6	50	4	●
2	R0.2	6	50	4	●
2	R0.3	6	50	4	●
2	R0.5	6	50	4	●
2.5	R0.1	8	50	4	●
2.5	R0.2	8	50	4	●
2.5	R0.3	8	50	4	●
2.5	R0.5	8	50	4	●
3A	R0.1	8	50	4	●
3A	R0.2	8	50	4	●
3A	R0.3	8	50	4	●
3A	R0.5	8	50	4	●

End Mills With Corner Radius

Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6	B266TX UMG AITiSiN
4A	R0.1	11	50	4	●
4A	R0.2	11	50	4	●
4A	R0.3	11	50	4	●
4A	R0.5	11	50	4	●
4A	R1	11	50	4	●
3	R0.1	8	50	6	●
3	R0.2	8	50	6	●
3	R0.3	8	50	6	●
3	R0.5	8	50	6	●
4	R0.1	11	50	6	●
4	R0.2	11	50	6	●
4	R0.3	11	50	6	●
4	R0.5	11	50	6	●
4	R1	11	50	6	●
5	R0.2	13	50	6	●
5	R0.3	13	50	6	●
5	R0.5	13	50	6	●
5	R1	13	50	6	●
6	R0.2	16	50	6	●
6	R0.3	16	50	6	●
6	R0.5	16	50	6	●
6	R1	16	50	6	●
6	R1.5	16	50	6	●
6	R2	16	50	6	●
8	R0.2	20	60	8	●
8	R0.3	20	60	8	●
8	R0.5	20	60	8	●
8	R1	20	60	8	●
8	R1.5	20	60	8	●
8	R2	20	60	8	●
8	R3	20	60	8	●
10	R0.2	25	75	10	●
10	R0.3	25	75	10	●
10	R0.5	25	75	10	●
10	R1	25	75	10	●
10	R1.5	25	75	10	●
10	R2	25	75	10	●
10	R3	25	75	10	●
12	R0.2	30	75	12	●
12	R0.3	30	75	12	●
12	R0.5	30	75	12	●
12	R1	30	75	12	●
12	R1.5	30	75	12	●
12	R2	30	75	12	●
12	R3	30	75	12	●

B268TX



Tool Material/ Coating Type	UMG Carbide	AlTiSiN					加工形態						
Specification	35°	4	71°30'	R									
Work Materials (◎ The most recommended/ ○ recommended)													
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials	
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC									
	◎	◎	◎	○									

※ Feature of product

- B268TX Long length End Mills with Corner Radius- 4 Flutes.
- Roughing and finishing applications on contour and profile machining.
- Low rake angle and a small edge cutting land with AlTiSiN coating which has excellent wear resistance.
- Excellent surface finishing on profile contour machining, able to cut pre-hardened and hardened steel up to HRC62.

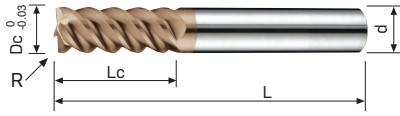
Code No. B268TX-Dc×R

Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6	B268TX UMG AlTiSiN
3	R0.1	10	50	3	●
3	R0.2	10	50	3	●
3	R0.3	10	50	3	●
3	R0.5	10	50	3	●
4	R0.1	15	60	4	●
4	R0.2	15	60	4	●
4	R0.3	15	60	4	●
4	R0.5	15	60	4	●
4	R1	15	60	4	●
6	R0.2	20	80	6	●
6	R0.3	20	80	6	●
6	R0.5	20	80	6	●
6	R1	20	80	6	●
6	R1.5	20	80	6	●
8	R0.2	25	100	8	●
8	R0.3	25	100	8	●
8	R0.5	25	100	8	●
8	R1	25	100	8	●

End Mills With Corner Radius

D_c 0 -0.03	R ± 0.01	L _c mm	L mm	d h6	B268TX UMG AlTiSiN
8	R1.5	25	100	8	•
8	R2	25	100	8	•
10	R0.2	30	100	10	•
10	R0.3	30	100	10	•
10	R0.5	30	100	10	•
10	R1	30	100	10	•
10	R1.5	30	100	10	•
10	R2	30	100	10	•
10	R3	30	110	10	•
12	R0.2	40	110	12	•
12	R0.3	40	110	12	•
12	R0.5	40	110	12	•
12	R1	40	110	12	•
12	R1.5	40	110	12	•
12	R2	40	110	12	•
12	R3	40	110	12	•

B276TX



Tool Material/ Coating Type	SMG Carbide	AlTiSiN					Type of Operation							
Specification	55°	4	$\gamma-10^\circ$	R										
Work Materials (◎ The most recommended/ ○ recommended)														
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
	~30HRC	~48HRC	~56HRC	~68HRC										
		◎	◎	◎										

※ Feature of product

- B276TX Standard length End Mills with Corner Radius- 4 Flutes.
- Finishing application for high-hardness contour and profile machining.
- Negative rake angle and a small edge cutting land with AlTiSiN coating which has excellent wear resistance.
- Excellent surface finishing on profile contour machining, able to cut pre-hardened and hardened steel up to HRC70.

Code No. B276TX-Dc×R

Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6	B276TX SMG AlTiSiN
3	R0.2	8	50	6	●
3	R0.5	8	50	6	●
4	R0.2	11	50	6	●
4	R0.5	11	50	6	●
5	R0.2	13	50	6	●
5	R0.5	13	50	6	●
6	R0.2	16	50	6	●
6	R0.5	16	50	6	●
6	R1	16	50	6	●
6	R1.5	16	50	6	●
8	R0.2	20	60	8	●
8	R0.5	20	60	8	●
8	R1	20	60	8	●
8	R2	20	60	8	●
10	R0.2	25	75	10	●
10	R0.5	25	75	10	●
10	R1	25	75	10	●
10	R2	25	75	10	●

High Performance End Mills With Corner Radius

D_c 0 -0.03	R ±0.01	L _c mm	L mm	d h6	B276TX SMG AlTiSiN
12	R0.2	30	75	12	•
12	R0.5	30	75	12	•
12	R1	30	75	12	•
12	R2	30	75	12	•
16	R0.5	40	100	16	•
16	R1	40	100	16	•
16	R2	40	100	16	•
16	R3	40	100	16	•
20	R0.5	40	100	20	•
20	R1	40	100	20	•
20	R2	40	100	20	•
20	R3	40	100	20	•

B278TX

High Performace End Mills With Corner Radius

B278TX



Tool Material/ Coating Type	SMG Carbide	AlTiSiN	Type of Operation 										
Specification	55°	4						$\gamma-10^\circ$	R				
Work Materials (◎ The most recommended/ ○ recommended)													
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC									
		◎	◎	◎									

※ Feature of product

B278TX Long length End Mills with Corner Radius- 4 Flutes.

Finishing application for high-hardness contour and profile machining.

Negative rake angle and a small edge cutting land with AlTiSiN coating which has excellent wear resistance.

Excellent surface finishing on profile contour machining, able to cut pre-hardened and hardened steel up to HRC70.

Code No. B278TX-Dc×R

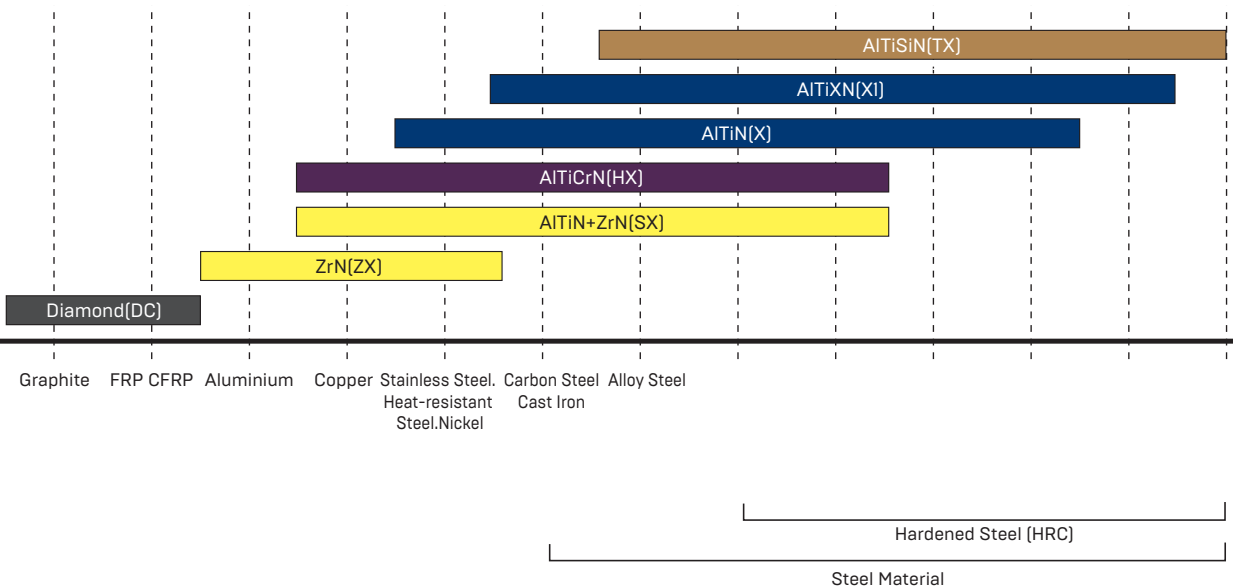
Dc 0 -0.03	R ±0.01	Lc mm	L mm	d h6	B278TX SMG AlTiSiN
6	R0.2	20	80	6	●
6	R0.5	20	80	6	●
6	R1	20	80	6	●
6	R1.5	20	80	6	●
8	R0.2	25	100	8	●
8	R0.5	25	100	8	●
8	R1	25	100	8	●
8	R2	25	100	8	●
10	R0.2	30	100	10	●
10	R0.5	30	100	10	●
10	R1	30	100	10	●
10	R2	30	100	10	●
12	R0.2	40	110	12	●
12	R0.5	40	110	12	●
12	R1	40	110	12	●
12	R2	40	110	12	●
16	R0.5	50	140	16	●
16	R1	50	140	16	●
16	R2	50	140	16	●
16	R3	50	140	16	●
20	R0.5	60	160	20	●
20	R1	60	160	20	●
20	R2	60	160	20	●
20	R3	60	160	20	●

Features of Coating

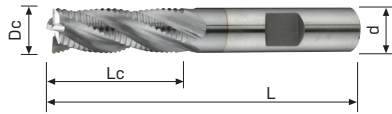
Type	Color	[HV] Hardness	(μm) Thickness	Coefficient of Friction	[$^{\circ}\text{C}$] Heat resistance	Cutting Tools Material	Application
AlTiSiN (TX)	Tan	4300	1~3	0.3	1200	Solid Carbide	Hardened steel HRC<70
AlTiN (X) AlTiXN (XI)	Blue black	4000	1~3	0.6	900	Solid Carbide	Carbon steel, Alloyed steel, Hardened steel, Cast iron HRC<60
AlTiN+ZrN (SX)	Yellow brown	3800	1~4	0.4	800	Solid Carbide	Carbon steel, Alloyed steel, Stainless steel, Cast iron HRC<48
AlTiCrN (HX)	Purple black	3800	1~4	0.25	800	Solid Carbide	Carbon steel, Alloyed steel, Stainless steel, Cast iron HRC<48
ZrN (ZX)	Yellow brown	2800	1~4	0.5	550	Solid Carbide	Aluminium, Copper, Stainless steel, Titanium, Hard-cut material
Diamond (DC)	Black	9000	6~13	0.15	600	Solid Carbide	Graphite
TiN (N)	Golden	2400	1~7	0.35	600	HSS	General steel, Wear parts
TiCN (C)	Blue gray	2800	1~4	0.2	400	HSS	General steel, Wear parts

Usage of each coating for Milling Steel

Cutting Tools Material: Solid Carbide



S336 / S336C



Tool Material/ Coating Type	M42 HSS-CO	Blank TiCN			Type of Operation									
Specification	30°	4-6	HR											
Work Materials [◎ The most recommended/ ○ recommended]														
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
	~30HRC	~48HRC	~56HRC	~68HRC										
S336	◎				○	◎	◎	○						
S336C	◎				○	◎	○	○						

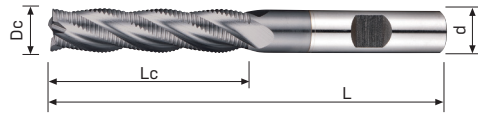
※ Feature of product

S336 \ S336C Standard length HSS Fine Pitch End Mills for roughing - 4 Flutes.
General roughing for hard materials.

Code No. S336-Dc / S336C-Dc

Dc K12	Lc mm	L mm	d h6	S336 M42 Blank	S336C M42 TiCN
6	15	60	6	●	●
8	20	65	8	●	●
10	25	75	10	●	●
12	30	80	12	●	●
14	35	90	12	●	●
16	40	95	16	●	●
18	40	105	16	●	●
20	45	110	20	●	●
22	45	110	20	●	●
25	50	120	25	●	●
30	55	140	32	●	●
32	60	145	32	●	●

S337 / S337C



Tool Material/ Coating Type	M42 HSS-CO	Blank TiCN			Type of Operation								
Specification	30°	4-6	HR										
Work Materials [◎ The most recommended / ○ recommended]													
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals				Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel
	~30HRC	~48HRC	~56HRC	~68HRC									
S337	◎				○	◎	◎	○					
S337C	◎				○	◎	○	○					

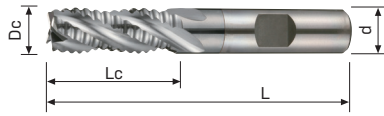
※ Feature of product

S337 \ S337C Long length HSS Fine Pitch End Mills for Roughing - 4 Flutes.
General roughing for hard materials.

Code No. S337-Dc / S337C-Dc

Dc K12	Lc mm	L mm	d h6	S337 M42 Blank	S337C M42 TiCN
10	45	100	10	●	●
12	53	110	12	●	●
14	53	110	12	●	●
16	63	125	16	●	●
18	63	125	16	●	●
20	75	140	20	●	●
25	90	160	25	●	●
32	106	180	32	●	●

S334 / S334C



Tool Material/ Coating Type	M42 HSS-CO	Blank TiCN			Type of Operation									
Specification	30°	4-6												
Work Materials [◎ The most recommended/ ○ recommended]														
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
	~30HRC	~48HRC	~56HRC	~68HRC										
S334	◎				○	◎	◎	○						
S334C	◎				○	◎	○	○						

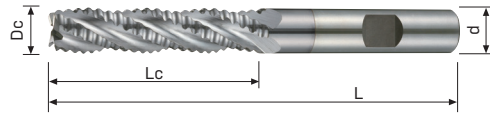
※ Feature of product

S334 \ S334C Standard length HSS Coarse Pitch End Mills for Roughing- 4 flutes.
General roughing for general soft materials.

Code No. S334-Dc / S334C-Dc

Dc K12	Lc mm	L mm	d h6	S334 M42 Blank	S334C M42 TiCN
6	15	60	6	●	●
8	20	65	8	●	●
10	25	75	10	●	●
12	30	80	12	●	●
14	35	90	12	●	●
16	40	95	16	●	●
18	40	105	16	●	●
20	45	110	20	●	●
22	45	110	20	●	●
25	50	120	25	●	●
30	55	140	32	●	●
32	60	145	32	●	●

S335 / S335C



Tool Material/ Coating Type	M42 HSS-CO	Blank TiCN			Type of Operation									
Specification	30°	4-6												
Work Materials [◎ The most recommended/ ○ recommended]														
Carbon Steel	Tool Steel	Pre-hardend Steel			Stainless Steel	Cast Steel	Nonferrous Metals					Aerospace Materials		
Alloy Steel	Pre-hardend Steel	Hardened Steel					Aluminium	Copper	Plastics	Composite Material	Graphite	Titanium	Nickel	Heat-resistant Steel
	~30HRC	~48HRC	~56HRC	~68HRC										
S335	◎				○	◎	◎	○						
S335C	◎				○	◎	○	○						

※ Feature of product

S335 \ S335C Long length HSS Coarse Pitch End Mills for roughing- 4 Flutes.
General roughing for general soft materials.

Code No. S335-Dc / S335C-Dc

Dc K12	Lc mm	L mm	d h6	S335 M42 Blank	S335C M42 TiCN
10	45	100	10	●	●
12	53	110	12	●	●
14	53	110	12	●	●
16	63	125	16	●	●
18	63	125	16	●	●
20	75	140	20	●	●
25	90	160	25	●	●
32	106	180	32	●	●

Hardness Conversion Table

HRC	HB	HV10	N/mm ²
	71	75	240
	76	80	255
	81	85	270
	86	90	285
	90	95	305
	95	100	320
	100	105	335
	105	110	350
	109	115	370
	114	120	385
	119	125	400
	124	130	415
	128	135	430
	133	140	450
	138	145	465
	143	150	480
	147	155	495
	152	160	510
	157	165	530
	162	170	545
	166	175	560
	171	180	575
	176	185	595
	181	190	610
	185	195	625
	190	200	640
	195	205	660
	199	210	675
	204	215	690
	209	220	705
	214	225	720
	219	230	740
	223	235	755
	228	240	770
	233	245	785
22	238	250	800
23	242	255	820
24	247	260	835
25	255	268	860
26	258	272	870
27	266	280	900

HRC	HB	HV10	N/mm ²
28	273	287	920
29	278	293	940
30	287	302	970
31	295	310	995
32	301	317	1020
33	311	327	1050
34	319	336	1080
35	328	345	1110
36	337	355	1140
37	346	364	1170
38	354	373	1200
39	363	382	1230
40	372	392	1260
41	383	403	1300
42	393	413	1330
43	402	423	1360
44	413	434	1400
45	424	446	1440
46	435	458	1480
47	449	473	1530
48	460	484	1570
49	472	497	1620
50	488	514	1680
51	501	527	1730
52	517	544	1790
53	532	560	1845
54	549	578	1910
55	567	596	1980
56	584	615	2050
57	607	639	2140
58	622	655	
59		675	
60		698	
61		720	
62		745	
63		773	
64		800	
65		829	
66		864	
67		900	
68		940	

Table of Cutting Formula

Metric MM	MM	English INCH	INCH
$Vc = \frac{\pi \times Dc \times N}{1000}$		$Vc = \frac{\pi \times Dc \times N}{12}$	
$N = \frac{Vc \times 1000}{\pi \times Dc}$		$N = \frac{Vc \times 12}{\pi \times Dc}$	
$Vf = N \times Z \times fz$		$Vf = N \times Z \times fz$	
$T = \frac{L}{Vf}$		$T = \frac{L}{Vf}$	
Vc= Cutting Speed	m/min	Vc= Cutting Speed	inch/min
Dc= Cutter Diameter	mm	Dc= Cutter Diameter	inch
N = RPM	rev/min	N = RPM	rev/min
Vf= Feed Speed	mm/min	Vf= Feed Speed	inch/min
fz= Feed Per Tooth	mm/tooth	fz= Feed Per Tooth	inch/tooth
fn= Feed Per Revolution	mm/rev	fn= Feed Per Revolution	inch/rev
Z = Number of Flutes	Z	Z = Number of Flutes	Z
T = Time of Cut In Minutes	mm	T = Time of Cut In Minutes	inch
L = Cut Length	mm	L = Cut Length	inch
Ap= Axial depth of cut	mm	Ap= Axial depth of cut	inch
Ae= Radial depth of cut	mm	Ae= Radial depth of cut	inch

