M1200

Specifically engineered to deliver consistent performance in demanding milling applications!

Up to 50% longer tool life!

NEW! High Feed Face Mill

12 true cutting edges
lower your cost per edge!

Use less horsepower -
And gain up to 30% in productivity!

Easy to use -
One screw enables fast, accurate indexing!

MaxiCool through coolant enabled!
(Coolant through arbors also available)

NEW! 1/2" I.C. Inserts!

WIN WITH WIDIA™

WIDIA

Victory™ M1200 Face Mill Series

M1200 | M1200 High-Feed | M1200 Mini

Twelve cutting edges per insert — run quieter at higher speeds and feeds, using far less power versus ANY competetive double-sided platform.

Productivity: Exceptional chip forming and evacuation in any material.
Performance: Superb surface finishes.
Value: Extraordinary tool life — in all workpieces and cutting conditions.

M1200 High-Feed

- Feed rates up to .098" per tooth.
- 15º lead angle enables superior chip-thinning.

M1200 Mini

- Ideal for low depth of cut work.
- Axial depth of cut up to .138".

WIDIA VICTORY
Win with Widia™

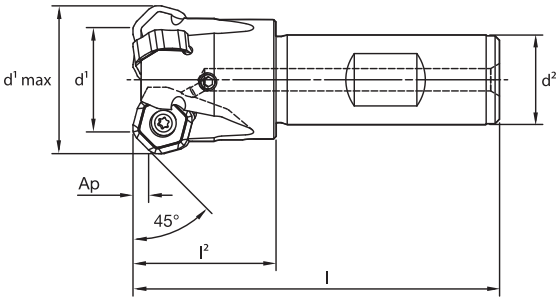
M1200

Milling Cutters using 1/2" I.C. Inserts

Specifically engineered to deliver consistent performance in demanding milling applications!

New Addition!

1/2" I.C. Inserts



Mini End Mills using 1/2" I.C. Inserts

Designation	Dia d¹	d²	d¹ Max	l	l²	Ap	Flutes	Insert	Insert Screw	Wrench
M1200MINI-1.00HN2EM	1.000	.750	1.34	3.28	1.25	.138	2	HNGJ-0704_ HNPJ-0704_ XNGJ-0704_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200MINI-1.00HN3EM	1.000	.750	1.34	3.28	1.25	.138	3			
M1200MINI-1.25HN3EM	1.250	1.000	1.59	3.78	1.50	.138	3			
M1200MINI-1.25HN4EM	1.250	1.000	1.59	3.78	1.50	.138	4			

Remember to use COPASLIP® anti-seize compound on all insert screws

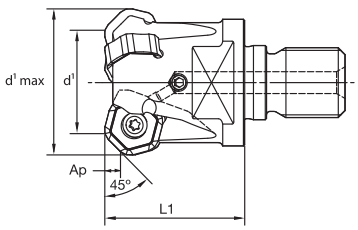
Mini End Mills - Extended Length Cylindrical Shank using 1/2" I.C. Inserts

Designation	Dia d¹	d²	d¹ Max	l	Ap	Flutes	Insert	Insert Screw	Wrench
M1200MINI-1.00HN2EM-L	1.000	.750	1.34	4.80	.138	2	HNGJ-0704_ HNPJ-0704_ XNGJ-0704_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200MINI-1.00HN2EM-XL	1.000	1.000	1.34	8.00	.138	2			
M1200MINI-1.00HN3EM-L	1.000	.750	1.34	4.80	.138	3			
M1200MINI-1.00HN3EM-XL	1.000	1.000	1.34	8.00	.138	3			
M1200MINI-1.25HN3EM-L	1.250	1.000	1.59	5.20	.138	3			
M1200MINI-1.25HN4EM-L	1.250	1.000	1.59	5.20	.138	4			

Remember to use COPASLIP® anti-seize compound on all insert screws

New Addition!

1/2" I.C. Inserts



Mini Screw-On Milling Cutters using 1/2" I.C. Inserts

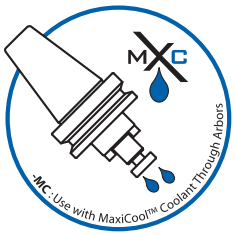
Designation	Dia D¹	D¹ Max	L1	Ap	Thread	Flutes	Insert	Insert Screw	Wrench
M1200MINI-1.00HN2TS	1.000	1.34	1.25	.138	M16	2	HNGJ-0704_ HNPJ-0704_ XNGJ-0704_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200MINI-1.00HN3TS	1.000	1.34	1.25	.138	M16	3			
M1200MINI-1.25HN3TS	1.250	1.59	1.50	.138	M16	3			
M1200MINI-1.25HN4TS	1.250	1.59	1.50	.138	M16	4			
M1200MINI-1.50HN4TS	1.500	1.84	1.50	.138	M16	4			
M1200MINI-1.50HN5TS	1.500	1.84	1.50	.138	M16	5			

Remember to use COPASLIP® anti-seize compound on all insert screws

M1200 Cutting Data

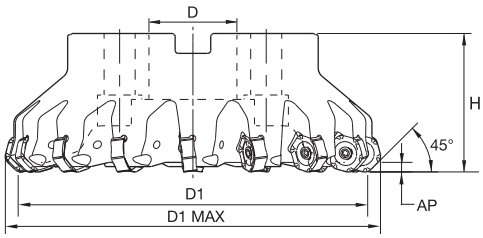
M1200

Milling Cutters using 1/2" I.C. Inserts



New Addition!

1/2" I.C. Inserts



Mini Extra Coarse Pitch Face Mills using 1/2" I.C. Inserts

Designation	Dia D¹	D	D¹ Max	H	AP	Flutes	Insert	Insert Screw	Wrench
M1200MINI-20HN4E	2.000	.750	2.34	1.58	.138	4	HNGJ-0704_ HNPJ-0704_ XNGJ-0704_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200MINI-25HN4E	2.500	.750	2.84	1.58	.138	4			
M1200MINI-30HN5E	3.000	1.000	3.34	1.75	.138	5			
M1200MINI-40HN6E	4.000	1.500	4.34	1.75	.138	6			

Remember to use COPASLIP® anti-seize compound on all insert screws

Mini Coarse Pitch Face Mills using 1/2" I.C. Inserts

Designation	Dia D¹	D	D¹ Max	H	AP	Flutes	Insert	Insert Screw	Wrench
M1200MINI-20HN5C	2.000	.750	2.34	1.58	.138	5	HNGJ-0704_ HNPJ-0704_ XNGJ-0704_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200MINI-25HN6C	2.500	.750	2.84	1.58	.138	6			
M1200MINI-30HN8C	3.000	1.000	3.34	1.75	.138	8			
M1200MINI-40HN9C	4.000	1.500	4.34	1.75	.138	9			

Remember to use COPASLIP® anti-seize compound on all insert screws

Mini Fine Pitch Face Mills using 1/2" I.C. Inserts

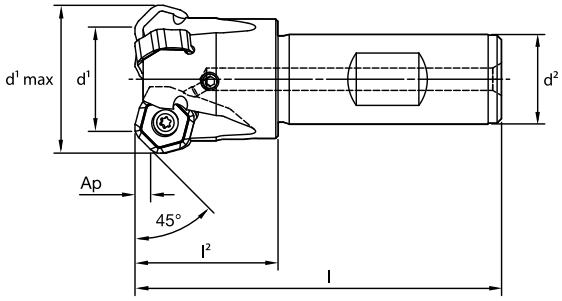
Designation	Dia D¹	D	D¹ Max	H	AP	Flutes	Insert	Insert Screw	Wrench
M1200MINI-20HN6M	2.000	.750	2.34	1.58	.138	6	HNGJ-0704_ HNPJ-0704_ XNGJ-0704_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200MINI-25HN8M	2.500	.750	2.84	1.58	.138	8			
M1200MINI-30HN10M	3.000	1.000	3.34	1.75	.138	10			
M1200MINI-40HN12M	4.000	1.500	4.34	1.75	.138	12			

Remember to use COPASLIP® anti-seize compound on all insert screws

M1200

Milling Cutters using 5/8" I.C. Inserts

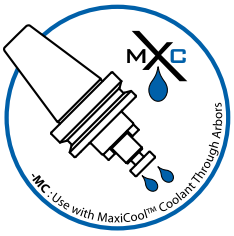
5/8"
I.C. Inserts



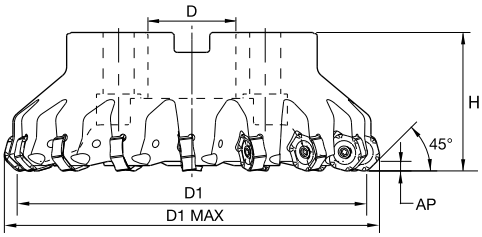
End Mills using 5/8" I.C. Inserts

Designation	Dia d¹	d²	d¹ Max	l	l²	Ap	Flutes	Insert	Insert Screw	Wrench
M1200-15HN3C	1.500	1.250	1.934	4.21	1.97	.175	4	HNGJ-0905_ HNPJ-0905_ XNGJ-0905_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)

Remember to use COPASLIP® anti-seize compound on all insert screws



5/8"
I.C. Inserts



Extra Coarse Face Mills using 5/8" I.C. Inserts

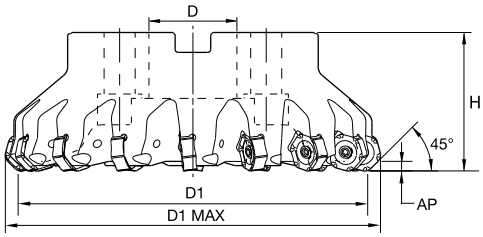
Designation	D¹	D	D¹ max	H	AP	flutes	Insert	Insert Screw	Wrench
M1200-25HN4E	2.500	.750	2.93	1.57	.177	4	HNGJ-0905_ HNPJ-0905_ XNGJ-0905_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200-30HN5E	3.000	1.000	3.43	1.75	.177	5			
M1200-40HN6E	4.000	1.250	4.43	1.75	.177	6			
M1200-40HN6EX	4.000	1.500	4.43	1.75	.177	6			
M1200-50HN8E	5.000	1.500	5.43	2.38	.177	8			
M1200-60HN0E	6.000	2.000	6.43	2.38	.177	9			
M1200-80HN10E*	8.000	2.500	8.43	2.38	.177	10			
M1200-10HN12E*	10.000	2.500	10.43	2.38	.177	12			
M1200-12HN14E*	12.000	2.500	12.43	3.15	.177	14			
* Cutter supplied with 4 holes on a 4" bolt circle									

Remember to use COPASLIP® anti-seize compound on all insert screws

M1200

Milling Cutters using 5/8" I.C. Inserts

5/8" I.C. Inserts



Coarse Pitch Face Mills using 5/8" I.C. Inserts

Designation	D[1]	D	D[1] max	H	AP	flutes	Insert	Insert Screw	Wrench
M1200-20HN4C	2.000	.750	2.43	1.57	.177	4	HNGJ-0905_ HNPJ-0905_ XNGJ-0905_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200-25HN6C	2.500	.750	2.93	1.57	.177	6			
M1200-30HN6C	3.000	1.000	3.43	1.75	.177	6			
M1200-40HN8C	4.000	1.250	4.43	1.75	.177	8			
M1200-50HN10C	5.000	1.500	5.43	2.38	.177	10			
M1200-60HN12C	6.000	2.000	6.43	2.38	.177	12			
M1200-80HN16C*	8.000	2.500	8.43	2.38	.177	16			
M1200-10HN20C*	10.000	2.500	10.43	2.38	.177	20			
M1200-12HN24C*	12.000	2.500	12.43	3.15	.177	24			
* Cutter supplied with 4 holes on a 4" bolt circle									

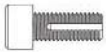
Remember to use COPASLIP® anti-seize compound on all insert screws

Fine Pitch Face Mills using 5/8" I.C. Inserts

Designation	D[1]	D	D[1] max	H	AP	flutes	Insert	Insert Screw	Wrench
M1200-20HN5M	2.000	.750	2.43	1.57	.177	5	HNGJ-0905_ HNPJ-0905_ XNGJ-0905_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200-25HN7M	2.500	.750	2.93	1.57	.177	7			
M1200-30HN9M	3.000	1.000	3.43	1.75	.177	9			
M1200-40HN11M	4.000	1.250	4.43	1.75	.177	11			
M1200-40HN11C	4.000	1.500	4.43	1.75	.177	11			
M1200-50HN14M	5.000	1.500	5.43	2.38	.177	14			
M1200-60HN16M	6.000	2.000	6.43	2.38	.177	16			

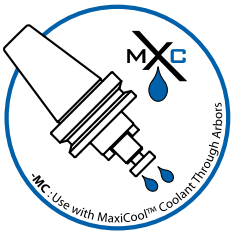
Remember to use COPASLIP® anti-seize compound on all insert screws

Spare Parts for M1200 Face Mills

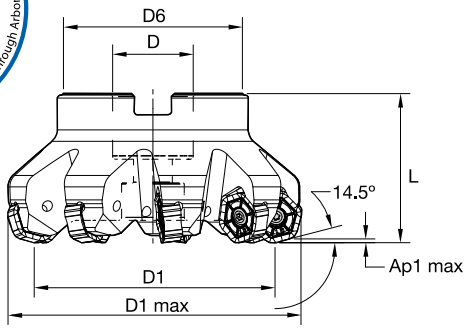
Face Mill Diameter (D1)	slotted screw 	fastening screw 	coolant cap 
2.000	214.61.024	--	--
2.500	214.61.024	--	--
3.000	214.61.028	--	--
4.000	--	214.61.095	--
5.000	--	214.61.105	214.61.118
6.000	--	214.61.106	214.61.119

M1200

High Feed Milling Cutters



5/8" I.C. Inserts

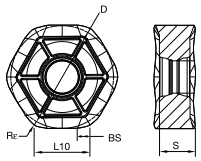


High Feed Face Mills

Designation	D¹	D	D¹ max	D6	H	AP	flutes	Insert	Insert Screw	Wrench
M1200HF-20HN4C	2.000	.750	2.70	1.593	1.58	.087	4	HNGJ-0905_ HNPJ-0905_ XNGJ-0905_	214.60.345	214.80.824 (S/D) 214.80.012 (F/T)
M1200HF-25HN5C	2.500	.750	3.20	1.986	1.58	.087	5			
M1200HF-30HN6C	3.000	1.000	3.70	2.189	1.75	.087	6			
M1200HF-40HN8C	4.000	1.500	4.70	3.661	1.75	.087	8			
M1200HF-50HN9C	5.000	1.500	5.70	3.652	2.38	.087	9			
M1200HF-60HN12C	6.000	2.000	6.70	4.722	2.38	.087	12			

Remember to use COPASLIP® anti-seize compound on all insert screws

-LD -GD -HD -LDJ



HNGJ - M1200 Inserts

Designation	Cutting Edges	D	S	L10	BS	R	Coated								Uncoated				
							TN5515	TN6501	TN6505	TN6510	TN6520	TN6525	TN6540	TN7535			THM-U		
For Light Duty Machining																			
HNGJ-0704-ANEN-LD	12	.500	.176	.268	.064	.047	●		●	●	●	●	●						
HNGJ-070432-ANEN-LD			.176		--	.126				●		●	●						
HNGJ-0905-ANEN-LD	12	.625	.220	.338	.071	.047	●				●	●	●	●					
For General Duty Machining																			
HNGJ-0905-ANSN-GD	12	.625	.220	.338	.071	.047	●				●	●	●	●					
For Heavy Duty Machining																			
HNGJ-0905-ANSN-HD	12	.625	.220	.338	.065	.047	●				●	●	●						
HNGJ-090543-ANSN-HD				.334		.171					●	●	●						
For Aluminum Machining																			
HNGJ-0704-ANFN-LDJ	12	.500	.176	.268	.064	.047		●									●		
HNGJ-0905-ANFN-LDJ	12	.625	.220	.338	.071	.047		●									●		

M1200

Inserts for M1200 Milling Cutters

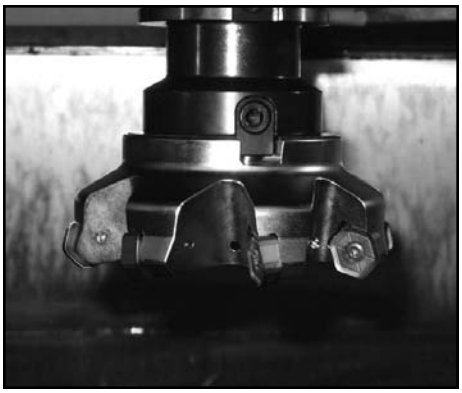
-LD Honed edge preparation used in light machining.

-GD Medium T-land and honed edge preparation used in medium machining. Good first choice for general-purpose use.

-HD 0° to negative T-land and hone edge preparation used in heavy machining. Good first choice for heavy feeds and severely interrupted cuts.

-3W Chamfer-protected edge preparation. Identifies “Wiper” inserts that allow for a finer finish and are used in combination with -GD geometry inserts to permit roughing and finishing in one pass.

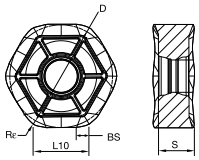
-LDJ Wiper insert geometry used in conjunction with HNGJ-...LDJ insert to permit roughing and finishing in one pass. Specifically for aluminum.



Up to 50% Longer Tool Life!

-GD

-HD

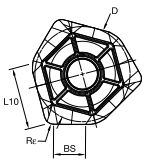


HNPJ - M1200 Inserts

Designation	Cutting Edges	D	S	L10	BS	R	TN5515	TN6505	TN6510	TN6520	TN6525	TN6540	TN7535			THM-U		
							Coated									Uncoated		
For General Duty Machining																		
HNPJ-0704-ANSN-GD	12	.500	.176	.269	.050	.047	●		●	●		●	●					
HNPJ-0905-ANSN-GD	12	.625	.220	.338	.071	.047	●			●		●	●					
For Heavy Duty Machining																		
HNPJ-0704-ANSN-HD	12	.500	.176	.269	.049	.047	●	●	●	●	●	●						
HNPJ-070432-ANSN-HD					--	.126		●	●	●	●	●						
HNPJ-0905-ANSN-HD	12	.625	.220	.334	.065	.047	●			●		●						
HNPJ-090543-ANSN-HD				.338	--	.171				●		●						

-LD3W

-LDJ3W



XNGJ - M1200 Inserts

Designation	Cutting Edges	D	S	L10	BS	R	TN5515	TN6501	TN6510	TN6520	TN6525	TN6540	TN7535			THM-U		
							Coated									Uncoated		
For Light Duty Machining, with Wiper																		
XNGJ-0704-ANEN-LD3W	3*	.500	.176	.267	.267	.051	●		●	●	●	●						
For General Duty Machining, with Wiper																		
XNGJ-0905-ANSN-GD3W	3*	.625	.220	.377	.230	.063			●	●	●	●						
For Aluminum Machining, with Wiper																		
XNGJ-0905-ANFN-LDJ3W	3*	.625	.220	.377	.230	.063		●								●		

* 3 RH and 3 LH cutting edges

Cutting Data

for M1200 Mini Milling Cutters using 1/2" I.C. Inserts

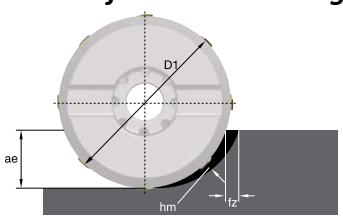
ANSI ISO 513	Cutting Data for M1200 Milling Cutters					COATED									UNCOATED		
	Cutter		Carbide Insert			TN6525			TN6540			TN7535			THM-U		
						feed per tooth *(inch)											
	M1200 Mini Milling Cutters Using 1/2" I.C. Inserts		HNGJ-07- LDJ			-	-	-	-	-	-	-	-	-	.0024	**.004**	.012
			HNGJ-07, HNPJ-07- LD			.003	**.005**	.010	.004	**.007**	.013	.004	**.006**	.012	-	-	-
			HNGJ-07, HNPJ-07- GD			.004	**.007**	.011	.005	**.009**	.015	.005	**.008**	.014	-	-	-
			HNGJ-07, HNPJ-07- HD			.006	**.008**	.020	.008	**.011**	.026	.007	**.010**	.024	-	-	-
P	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)											
	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	1150	**890**	750	950	720	620	1180	**920**	790	-	-	-
		≥ 0.25% C	annealed	190	2	790	**590**	520	660	490	430	820	**620**	540	-	-	-
		< 0.55% C	heat-treated	250	3	660	**490**	430	560	430	360	690	**520**	460	-	-	-
		≥ 0.55% C	annealed	220	4	690	**520**	430	560	430	360	710	**540**	460	-	-	-
			heat-treated	300	5	560	**430**	360	460	330	300	590	**430**	360	-	-	-
	Low alloy steel and cast steel		annealed	200	6	750	**560**	460	620	460	390	790	**590**	490	-	-	-
			heat-treated	275	7	560	**430**	390	460	360	330	590	**460**	390	-	-	-
			heat-treated	300	8	490	**390**	330	430	330	260	520	**390**	330	-	-	-
			heat-treated	350	9	430	**330**	260	360	260	200	460	**330**	260	-	-	-
	High alloy steel, cast steel & tool steel		annealed	200	10	560	**460**	430	460	390	330	590	**480**	430	-	-	-
			heat-treated	325	11	390	**300**	230	330	230	200	390	**300**	230	-	-	-
	400 series stainless		FE / MA	200	12	720	**560**	460	590	460	390	750	**570**	490	-	-	-
			MA	240	13.1	620	**460**	390	520	390	330	660	**480**	390	-	-	-
			MA / PH	330	13.2	310	**230**	200	260	200	160	330	**250**	200	-	-	-
M	300 Series		AU	180	14.1	620	**390**	300	520	**330**	230	660	**390**	300	-	-	-
	Stainless		DU	230	14.2	490	**300**	230	430	**260**	200	520	**310**	230	-	-	-
	Duplex		S-AU	200	14.3	390	**230**	160	330	**200**	130	390	**230**	180	-	-	-
	Stainless		AU-PH	330	14.4	330	**200**	130	260	**160**	130	330	**200**	150	-	-	-
K	Grey cast iron		ferrit./pearl.	180	15	-	-	-	-	-	-	-	-	-	-	-	-
			pearlitic	260	16	-	-	-	-	-	-	-	-	-	-	-	-
	Nodular cast iron		ferritic	160	17	790	**590**	520	660	**490**	430	820	**620**	540	-	-	-
			pearlitic	250	18	660	**490**	430	560	**430**	360	690	**520**	460	-	-	-
	Malleable cast iron		ferritic	130	19	-	-	-	-	-	-	-	-	-	-	-	-
			pearlitic	230	20	-	-	-	-	-	-	-	-	-	-	-	-
N	Wrought		Non AG	60	21	-	-	-	-	-	-	-	-	-	5910	**3120**	1940
			AG	100	22	-	-	-	-	-	-	-	-	-	2890	**1640**	1330
	Cast aluminum alloys		Non Ag	75	23	-	-	-	-	-	-	-	-	-	5250	**2820**	1770
		Si ≤ 12%	AG	90	24	-	-	-	-	-	-	-	-	-	3120	**1940**	1480
		Si ≥ 12%		130	25	-	-	-	-	-	-	-	-	-	2230	**1480**	1030
	Copper & Copper alloys	Pb > 1%		110	26	-	-	-	-	-	-	-	-	-	2200	**1640**	1020
				90	27	-	-	-	-	-	-	-	-	-	2300	**2000**	1640
				100	28	-	-	-	-	-	-	-	-	-	2460	**2170**	1770
	Non Metals				29	-	-	-	-	-	--	-	-	-	2460	**2130**	1740
					30	-	-	-	-	-	-	-	-	-	2300	**2150**	1640
S	High Temp		G	200	31	-	-	-	200	**160**	150	-	-	-	-	-	-
	Alloy FE		AG	280	32	-	-	-	160	**130**	110	-	-	-	-	-	-
	High Temp		G	250	33	-	-	-	110	**80**	70	-	-	-	-	-	-
	Alloy		AG	350	34	-	-	-	100	**70**	50	-	-	-	-	-	-
	Ni / Co		GO	320	35	-	-	-	100	**70**	50	-	-	-	-	-	-
	Titanium alloys				36	-	-	-	260	**160**	130	-	-	-	-	-	-
	TiAL6V4		AG		37	-	-	-	230	**150**	110	-	-	-	-	-	-

Cutting Data

for M1200 Mini Milling Cutters using 1/2" I.C. Inserts

ANSI ISO 513	Cutting Data for M1200 Milling Cutters				COATED															
	Cutter		Carbide Insert		TN5515			TN6501			TH6505			TN6510			TN6520			
					feed per tooth *(inch)															
	M1200 Mini Milling Cutters Using 1/2" I.C. Inserts		HNGJ-07- LDJ		-	-	-	.003	**.004**	.012	-	-	-	-	-	-	-	-	-	-
			HNGJ-07, HNPJ-07- LD		.003	**.006**	.010	-	-	-	.003	**.004**	.010	.004	**.007**	.011	.004	**.007**	.011	
			HNGJ-07, HNPJ-07- GD		.005	**.008**	.014	-	-	-	-	-	-	.005	**.009**	.015	.006	**.009**	.016	
			HNGJ-07, HNPJ-07- HD		.007	**.010**	.022	-	-	-	-	-	-	.008	**.011**	.024	.008	**.011**	.024	
	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)														
P	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	-	-	-	-	-	-	1510	**1150**	980	-	-	-	-	-	-
		≥ 0.25% C	annealed	190	2	-	-	-	-	-	-	1020	**750**	690	-	-	-	-	-	-
		< 0.55% C	heat-treated	250	3	-	-	-	-	-	-	850	**660**	560	-	-	-	-	-	-
		≥ 0.55% C	annealed	220	4	-	-	-	-	-	-	890	**690**	560	-	-	-	-	-	-
			heat-treated	300	5	-	-	-	-	-	-	720	**560**	460	-	-	-	-	-	-
	Low alloy steel and cast steel		annealed	200	6	-	-	-	-	-	-	980	**720**	590	-	-	-	-	-	-
			heat-treated	275	7	-	-	-	-	-	-	720	**560**	520	-	-	-	-	-	-
			heat-treated	300	8	-	-	-	-	-	-	660	**520**	430	-	-	-	-	-	-
			heat-treated	350	9	-	-	-	-	-	-	560	**430**	330	-	-	-	-	-	-
	High alloy steel, cast steel & tool steel		annealed	200	10	-	-	-	-	-	-	720	**590**	560	-	-	-	-	-	-
			heat-treated	325	11	-	-	-	-	-	-	520	**390**	300	-	-	-	-	-	-
	400 series stainless		FE / MA	200	12	-	-	-	-	-	-	950	**720**	590	-	-	-	-	-	-
			MA	240	13.1	-	-	-	-	-	-	820	**590**	520	-	-	-	-	-	-
			MA / PH	330	13.2	-	-	-	-	-	-	430	**300**	260	-	-	-	-	-	-
M	300 Series		AU	180	14.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stainless		DU	230	14.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Duplex		S-AU	200	14.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Stainless		AU-PH	330	14.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
K	Grey cast iron		ferrit./pearl.	180	15	1740	**1280**	920	-	-	-	-	-	-	1570	1150	820	1250	920	660
			pearlitic	260	16	1350	**1020**	750	-	-	-	-	-	-	1210	920	690	980	720	560
	Nodular cast iron		ferritic	160	17	1510	**1020**	750	-	-	-	1020	**750**	690	1380	**920**	690	1120	**720**	560
			pearlitic	250	18	980	**720**	560	-	-	-	850	**660**	560	890	**660**	490	720	**520**	390
	Malleable cast iron		ferritic	130	19	1210	**950**	720	-	-	-	-	-	-	1120	850	660	890	690	520
			pearlitic	230	20	1020	**750**	590	-	-	-	-	-	-	920	690	520	720	560	430
N	Wrought		Non AG	60	21	-	-	-	6560	**3440**	2130	-	-	-	-	-	-	-	-	-
			AG	100	22	-	-	-	3220	**1800**	1480	-	-	-	-	-	-	-	-	-
	Cast aluminum alloys		Non Ag	75	23	-	-	-	5910	**3120**	1970	-	-	-	-	-	-	-	-	-
		Si ≤ 12%	AG	90	24	-	-	-	3440	**2130**	1640	-	-	-	-	-	-	-	-	-
		Si ≥ 12%		130	25	-	-	-	2460	**1640**	1150	-	-	-	-	-	-	-	-	-
	Copper & Copper alloys	Pb > 1%		110	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				90	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				100	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Non Metals				29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Factors for M1200 Milling Cutters:



$$hm = fz \cdot \sqrt{\frac{ae}{D1}}$$

$$fz = hm \cdot \sqrt{\frac{D1}{ae}}$$

First choice starting speed (vc) are in bold type. Use corresponding feed (fz).

fz and vc are valid for ae ≥ 0.4 D1.

For smaller ae, fz and vc should be multiplied by the following factors:

ae / D1	0.1	0.2	0.3	0.4
fz - Factor	2	1.5	1.3	1
fc - Factor	1.4	1.3	1.2	1.1

Cutting Data

for M1200 Milling Cutters using 5/8" I.C. Inserts

ANSI ISO 513	Cutting Data for M1200 Milling Cutters					COATED									UNCOATED		
	Cutter		Carbide Insert			TN6525			TN6540			TN7535			THM-U		
						feed per tooth *(inch)											
	M1200 Milling Cutters using 5/8" I.C. Inserts		HNGJ-09- LDJ			-	-	-	-	-	-	-	-	-	.003	.005	.012
			HNGJ-09, HNPJ-09- LD			.004	.007	.013	.005	.009	.017	.005	.008	.016	-	-	-
			HNGJ-09, HNPJ-09- GD			.005	.008	.016	.007	.011	.022	.006	.010	.020	-	-	-
			HNGJ-09, HNPJ-09- HD			.007	.010	.020	.009	.013	.026	.008	.012	.024	-	-	-
P	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)											
	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	1150	890	750	950	720	620	1180	920	790	-	-	-
		≥ 0.25% C	annealed	190	2	790	590	520	660	490	430	820	620	540	-	-	-
		< 0.55% C	heat-treated	250	3	660	490	430	560	430	360	690	520	460	-	-	-
		≥ 0.55% C	annealed	220	4	690	520	430	560	430	360	710	540	460	-	-	-
			heat-treated	300	5	560	430	360	460	330	300	590	430	360	-	-	-
	Low alloy steel and cast steel		annealed	200	6	750	560	460	620	460	390	790	590	490	-	-	-
			heat-treated	275	7	560	430	390	460	360	330	590	460	390	-	-	-
			heat-treated	300	8	490	390	330	430	330	260	520	390	330	-	-	-
			heat-treated	350	9	430	330	260	360	260	200	460	330	260	-	-	-
	High alloy steel, cast steel & tool steel		annealed	200	10	560	460	430	460	390	330	590	480	430	-	-	-
			heat-treated	325	11	390	300	230	330	230	200	390	300	230	-	-	-
	400 series stainless		FE / MA	200	12	720	560	460	590	460	390	750	570	490	-	-	-
			MA	240	13.1	620	460	390	520	390	330	660	480	390	-	-	-
			MA / PH	330	13.2	310	230	200	260	200	160	330	250	200	-	-	-
M	300 Series		AU	180	14.1	620	390	300	520	330	230	660	390	300	-	-	-
	Stainless		DU	230	14.2	490	300	230	430	260	200	520	310	230	-	-	-
	Duplex		S-AU	200	14.3	390	230	160	330	200	130	390	230	180	-	-	-
	Stainless		AU-PH	330	14.4	330	200	130	260	160	130	330	200	150	-	-	-
K	Grey cast iron		ferrit./pearl.	180	15	-	-	-	-	-	-	-	-	-	-	-	-
			pearlitic	260	16	-	-	-	-	-	-	-	-	-	-	-	-
	Nodular cast iron		ferritic	160	17	790	590	520	660	490	430	820	620	540	-	-	-
			pearlitic	250	18	660	490	430	560	430	360	690	520	460	-	-	-
	Malleable cast iron		ferritic	130	19	-	-	-	-	-	-	-	-	-	-	-	-
			pearlitic	230	20	-	-	-	-	-	-	-	-	-	-	-	-
N	Wrought		Non AG	60	21	-	-	-	-	-	-	-	-	-	5910	3120	1940
			AG	100	22	-	-	-	-	-	-	-	-	-	2890	1640	1330
	Cast aluminum alloys		Non Ag	75	23	-	-	-	-	-	-	-	-	-	5250	2820	1770
		Si ≤ 12%	AG	90	24	-	-	-	-	-	-	-	-	-	3120	1940	1480
		Si ≥ 12%		130	25	-	-	-	-	-	-	-	-	-	2230	1480	1030
	Copper & Copper alloys	Pb > 1%		110	26	-	-	-	-	-	-	-	-	-	2200	1640	1020
				90	27	-	-	-	-	-	-	-	-	-	2300	2000	1640
				100	28	-	-	-	-	-	-	-	-	-	2460	2170	1770
	Non Metals				29	-	-	-	-	-	--	-	-	-	2460	2130	1740
					30	-	-	-	-	-	-	-	-	-	2300	2150	1640
S	High Temp		G	200	31	-	-	-	200	160	150	-	-	-	-	-	-
	Alloy FE		AG	280	32	-	-	-	160	130	110	-	-	-	-	-	-
	High Temp		G	250	33	-	-	-	110	80	70	-	-	-	-	-	-
	Alloy		AG	350	34	-	-	-	100	70	50	-	-	-	-	-	-
	Ni / Co		GO	320	35	-	-	-	100	70	50	-	-	-	-	-	-
	Titanium alloys				36	-	-	-	260	160	130	-	-	-	-	-	-
	TiAL6V4		AG		37	-	-	-	230	150	110	-	-	-	-	-	-

Cutting Data

for M1200 Milling Cutters using 5/8" I.C. Inserts

ANSI ISO 513	Cutting Data for M1200 Milling Cutters					COATED											
	Cutter		Carbide Insert			TN5515			TN6501			TN6510			TN6520		
						feed per tooth *(inch)											
	M1200 Milling Cutters using 5/8" I.C. Inserts		HNGJ-09- LDJ			-	-	-	.003	**.005**	.012	-	-	-	-	-	-
			HNGJ-09, HNPJ-09- LD			.005	**.008**	.016	-	-	-	.005	**.009**	.017	.006	**.009**	.019
			HNGJ-09, HNPJ-09- GD			.006	**.010**	.020	-	-	-	.007	**.011**	.022	.007	**.011**	.023
			HNGJ-09, HNPJ-09- HD			.008	**.012**	.024	-	-	-	.009	**.013**	.026	.009	**.014**	.027
	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)											
P	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	-	-	-	-	-	-	-	-	-	-	-	-
		≥ 0.25% C	annealed	190	2	-	-	-	-	-	-	-	-	-	-	-	-
		< 0.55% C	heat-treated	250	3	-	-	-	-	-	-	-	-	-	-	-	-
		≥ 0.55% C	annealed	220	4	-	-	-	-	-	-	-	-	-	-	-	-
			heat-treated	300	5	-	-	-	-	-	-	-	-	-	-	-	-
	Low alloy steel and cast steel		annealed	200	6	-	-	-	-	-	-	-	-	-	-	-	-
			heat-treated	275	7	-	-	-	-	-	-	-	-	-	-	-	-
			heat-treated	300	8	-	-	-	-	-	-	-	-	-	-	-	-
			heat-treated	350	9	-	-	-	-	-	-	-	-	-	-	-	-
	High alloy steel, cast steel & tool steel		annealed	200	10	-	-	-	-	-	-	-	-	-	-	-	-
			heat-treated	325	11	-	-	-	-	-	-	-	-	-	-	-	-
	400 series stainless		FE / MA	200	12	-	-	-	-	-	-	-	-	-	-	-	-
			MA	240	13.1	-	-	-	-	-	-	-	-	-	-	-	-
			MA / PH	330	13.2	-	-	-	-	-	-	-	-	-	-	-	-
M	300 Series		AU	180	14.1	-	-	-	-	-	-	-	-	-	-	-	-
	Stainless		DU	230	14.2	-	-	-	-	-	-	-	-	-	-	-	-
	Duplex		S-AU	200	14.3	-	-	-	-	-	-	-	-	-	-	-	-
	Stainless		AU-PH	330	14.4	-	-	-	-	-	-	-	-	-	-	-	-
K	Grey cast iron		ferrit./pearl.	180	15	1740	**1280**	920	-	-	-	1570	**1150**	820	1250	920	660
			pearlitic	260	16	1350	**1020**	750	-	-	-	1210	**920**	690	980	720	560
	Nodular cast iron		ferritic	160	17	1510	**1020**	750	-	-	-	1380	**920**	690	1120	**720**	560
			pearlitic	250	18	980	**720**	560	-	-	-	890	**660**	490	720	**520**	390
	Malleable cast iron		ferritic	130	19	1210	**950**	720	-	-	-	1120	**850**	660	890	690	520
			pearlitic	230	20	1020	**750**	590	-	-	-	920	**690**	520	720	560	430
N	Wrought		Non AG	60	21	-	-	-	6560	**3440**	2130	-	-	-	-	-	-
			AG	100	22	-	-	-	3220	**1800**	1480	-	-	-	-	-	-
	Cast aluminum alloys		Non Ag	75	23	-	-	-	5910	**3120**	1970	-	-	-	-	-	-
		Si ≤ 12%	AG	90	24	-	-	-	3440	**2130**	1640	-	-	-	-	-	-
		Si ≥ 12%		130	25	-	-	-	2460	**1640**	1150	-	-	-	-	-	-
	Copper & Copper alloys	Pb > 1%		110	26	-	-	-	-	-	-	-	-	-	-	-	-
				90	27	-	-	-	-	-	-	-	-	-	-	-	-
				100	28	-	-	-	-	-	-	-	-	-	-	-	-
	Non Metals				29	-	-	-	-	-	-	-	-	-	-	-	-
					30	-	-	-	-	-	-	-	-	-	-	-	-
S	High Temp		G	200	31												
	Alloy FE		AG	280	32												
	High Temp		G	250	33												
	Alloy		AG	350	34												
	Ni / Co		GO	320	35												
	Titanium alloys				36												
	TiAL6V4		AG		37												

Cutting Data

for M1200 High Feed Milling Cutters using 5/8" I.C. Inserts

ANSI ISO 513	Cutting Data for M1200 Milling Cutters					COATED						UNCOATED		
	Cutter		Carbide Insert			TN6540			TN7535			THM-U		
						feed per tooth *(inch)								
	M1200 High Feed Milling Cutters using 5/8" I.C. Inserts		- LDJ			-	-	-	-	-	-	.008	.018	.039
			- LD			.016	.030	.061	.014	.026	.055	-	-	-
			- GD			.022	.039	.079	.020	.034	.071	-	-	-
			- HD			.028	.051	.110	.026	.047	.098	-	-	-
	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)								
P	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	950	720	620	1180	920	790	-	-	-
		≥ 0.25% C	annealed	190	2	660	490	430	820	620	540	-	-	-
		< 0.55% C	heat-treated	250	3	560	430	360	690	520	460	-	-	-
		≥ 0.55% C	annealed	220	4	560	430	360	710	540	460	-	-	-
			heat-treated	300	5	460	330	300	590	430	360	-	-	-
	Low alloy steel and cast steel		annealed	200	6	620	460	390	790	590	490	-	-	-
			heat-treated	275	7	460	360	330	590	460	390	-	-	-
			heat-treated	300	8	430	330	260	520	390	330	-	-	-
			heat-treated	350	9	360	260	200	460	330	260	-	-	-
	High alloy steel, cast steel & tool steel		annealed	200	10	460	390	330	590	480	430	-	-	-
			heat-treated	325	11	330	230	200	390	300	230	-	-	-
	400 series stainless		FE / MA	200	12	590	460	390	750	570	490	-	-	-
			MA	240	13.1	520	390	330	660	480	390	-	-	-
			MA / PH	330	13.2	260	200	160	330	250	200	-	-	-
M	300 Series		AU	180	14.1	520	330	230	660	390	300	-	-	-
	Stainless		DU	230	14.2	430	260	200	520	310	230	-	-	-
	Duplex		S-AU	200	14.3	330	200	130	390	230	180	-	-	-
	Stainless		AU-PH	330	14.4	260	160	130	330	200	150	-	-	-
K	Grey cast iron		ferrit./pearl.	180	15	-	-	-	-	-	-	-	-	-
			pearlitic	260	16	-	-	-	-	-	-	-	-	-
	Nodular cast iron		ferritic	160	17	660	490	430	820	620	540	-	-	-
			pearlitic	250	18	560	430	360	690	520	460	-	-	-
	Malleable cast iron		ferritic	130	19	-	-	-	-	-	-	-	-	-
			pearlitic	230	20	-	-	-	-	-	-	-	-	-
N	Wrought		Non AG	60	21	-	-	-	-	-	-	5910	3120	1940
			AG	100	22	-	-	-	-	-	-	2890	1640	1330
	Cast aluminum alloys		Non Ag	75	23	-	-	-	-	-	-	5250	2820	1770
		Si ≤ 12%	AG	90	24	-	-	-	-	-	-	3120	1940	1480
		Si ≥ 12%		130	25	-	-	-	-	-	-	2230	1480	1030
	Copper & Copper alloys	Pb > 1%		110	26	-	-	-	-	-	-	2200	1640	1020
				90	27	-	-	-	-	-	-	2300	2000	1640
				100	28	-	-	-	-	-	-	2460	2170	1770
	Non Metals				29	-	-	-	-	-	-	2460	2130	1740
					30	-	-	-	-	-	-	2300	2150	1640
S	High Temp		G	200	31	200	160	150	-	-	-	-	-	-
	Alloy FE		AG	280	32	160	130	110	-	-	-	-	-	-
	High Temp		G	250	33	110	80	70	-	-	-	-	-	-
	Alloy		AG	350	34	100	70	50	-	-	-	-	-	-
	Ni / Co		GO	320	35	100	70	50	-	-	-	-	-	-
	Titanium alloys				36	260	160	130	-	-	-	-	-	-
	TiAL6V4		AG		37	230	150	110	-	-	-	-	-	-

Cutting Data

for M1200 High Feed Milling Cutters using 5/8" I.C. Inserts

ANSI ISO 513	Cutting Data for M1200 Milling Cutters					COATED															
	Cutter		Carbide Insert			TN5515			TN6501			TN6510			TN6520			TN6525		
						feed per tooth *(inch)															
	M1200 High Feed Milling Cutters using 5/8" I.C. Inserts		- LDJ			-	-	-	.008	**.018**	.039	-	-	-	-	-	-	-	-	-
			- LD			.014	**.026**	.055	-	-	-	.016	**.028**	.061	.016	**.030**	.059	.012	**.022**	.047
			- GD			.020	**.034**	.071	-	-	-	.022	**.037**	.077	.024	**.039**	.079	.016	**.030**	.060
			- HD			.026	**.047**	.098	-	-	-	.028	**.051**	.108	.030	**.053**	.110	.022	**.039**	.079
	Work Material		Condition	Hardness HB	Mat. Gr.	vc *(sfm)															
P	Carbon steel, Unalloyed steel, cast steel and free cutting steel	< 0.25% C	annealed	125	1	-	-	-	-	-	-	-	-	-	-	-	-	1150	**890**	750
		≥ 0.25% C	annealed	190	2	-	-	-	-	-	-	-	-	-	-	-	-	790	**590**	520
		< 0.55% C	heat-treated	250	3	-	-	-	-	-	-	-	-	-	-	-	-	660	**490**	430
		≥ 0.55% C	annealed	220	4	-	-	-	-	-	-	-	-	-	-	-	-	690	**520**	430
			heat-treated	300	5	-	-	-	-	-	-	-	-	-	-	-	-	560	**430**	360
	Low alloy steel and cast steel		annealed	200	6	-	-	-	-	-	-	-	-	-	-	-	-	750	**560**	460
			heat-treated	275	7	-	-	-	-	-	-	-	-	-	-	-	-	560	**430**	390
			heat-treated	300	8	-	-	-	-	-	-	-	-	-	-	-	-	490	**390**	330
			heat-treated	350	9	-	-	-	-	-	-	-	-	-	-	-	-	430	**330**	260
	High alloy steel, cast steel & tool steel		annealed	200	10	-	-	-	-	-	-	-	-	-	-	-	-	560	**460**	430
			heat-treated	325	11	-	-	-	-	-	-	-	-	-	-	-	-	390	**300**	230
	400 series stainless		FE / MA	200	12	-	-	-	-	-	-	-	-	-	-	-	-	720	**560**	460
			MA	240	13.1	-	-	-	-	-	-	-	-	-	-	-	-	620	**460**	390
			MA / PH	330	13.2	-	-	-	-	-	-	-	-	-	-	-	-	310	**230**	200
M	300 Series		AU	180	14.1	-	-	-	-	-	-	-	-	-	-	-	-	620	**390**	300
	Stainless		DU	230	14.2	-	-	-	-	-	-	-	-	-	-	-	-	490	**300**	230
	Duplex		S-AU	200	14.3	-	-	-	-	-	-	-	-	-	-	-	-	390	**230**	160
	Stainless		AU-PH	330	14.4	-	-	-	-	-	-	-	-	-	-	-	-	330	**200**	130
K	Grey cast iron		ferrit./pearl.	180	15	1740	**1280**	920	-	-	-	1570	**1150**	820	1250	920	660	-	-	-
			pearlitic	260	16	1350	**1020**	750	-	-	-	1210	**920**	690	980	720	560	-	-	-
	Nodular cast iron		ferritic	160	17	1510	**1020**	750	-	-	-	1380	**920**	690	1120	**720**	560	790	**590**	520
			pearlitic	250	18	980	**720**	560	-	-	-	890	**660**	490	720	**520**	390	660	**490**	430
	Malleable cast iron		ferritic	130	19	1210	**950**	720	-	-	-	1120	**850**	660	890	690	520	-	-	-
			pearlitic	230	20	1020	**750**	590	-	-	-	920	**690**	520	720	560	430	-	-	-
N	Wrought		Non AG	60	21	-	-	-	6560	**3440**	2130	-	-	-	-	-	-	-	-	-
			AG	100	22	-	-	-	3220	**1800**	1480	-	-	-	-	-	-	-	-	-
	Cast aluminum alloys		Non Ag	75	23	-	-	-	5910	**3120**	1970	-	-	-	-	-	-	-	-	-
		Si ≤ 12%	AG	90	24	-	-	-	3440	**2130**	1640	-	-	-	-	-	-	-	-	-
		Si ≥ 12%		130	25	-	-	-	2460	**1640**	1150	-	-	-	-	-	-	-	-	-
	Copper & Copper alloys	Pb > 1%		110	26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				90	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
				100	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Non Metals				29	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
					30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
S	High Temp		G	200	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Alloy FE		AG	280	32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	High Temp		G	250	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Alloy		AG	350	34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Ni / Co		GO	320	35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Titanium alloys				36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	TiAL6V4		AG		37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-