

***Complete Solutions  
for Today's***

**Nickel /  
Super Alloy  
Challenges**

*Including Taps with*

**NEW VHC**  
TECHNOLOGY

**NEW** Advanced  
Left-Hand Flute

**EMUGE**

HIGH PERFORMANCE TOOLS

# NEW EMUGE

## Nickel Alloy Tools Program

### Efficient, Economical Threading of Nickel-Based Alloys

Featuring Advanced Geometry and New VHC Technology.



Emuge has introduced a comprehensive line of high-performance tools for threading demanding nickel alloy materials. Ranging from taps with unique new geometry designs to reliable solid carbide thread mills, the answers to your nickel-based challenges on Aerospace, Powergen and Oil Industry machining start here.

**NEW DF-NI Taps with VHC Technology**, a specially ground relief geometry in the primary cutting zone, that generates a smaller and tightly rolled chip formation. The resulting benefit is enhanced chip control to prevent the damaging effects of chips jamming in the tap teeth on both forward and reverse.

**NEW C-NI Taps with Advanced Left-Hand Helical Flute Form** and chamfer geometry combine to optimize chip evacuation in the forward direction and add strength to the cutting teeth for enhanced tool life and process security.

- TiCN coated for enhanced wear resistance.
- Modified bottoming chamfer (2-3 threads on VHC Taps) provide reduced torque and increased tool life.
- 3BX class of fit for internal UNJ threading applications.
- DIN length available for improved chip clearance in hard-to-reach applications.
- For optimal results, run on a CNC machine with a synchronous spindle utilizing a tap holder with minimal compensation such as Emuge Softsynchro® and Emuge Tapping Fluid.
- A full line of sizes from no. 4 to ¾".
- Available in UNC, UNF and Metric, 87 sku's in total.



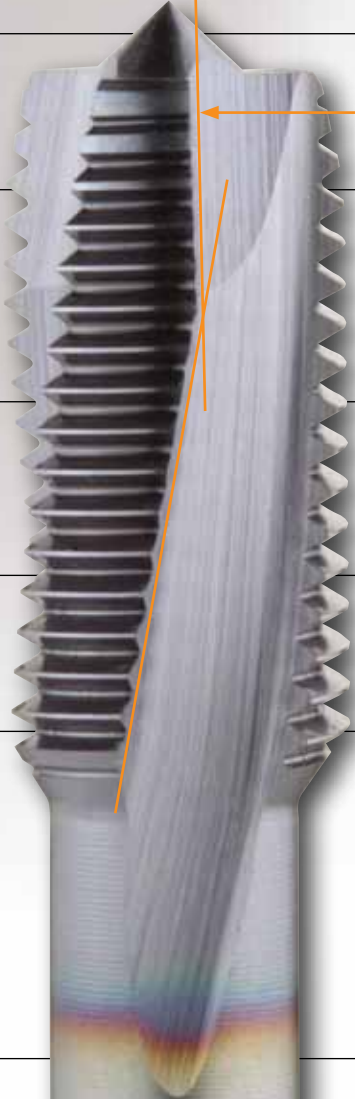

DF-NI Tap

C-NI Tap

# Innovative geometry benefits

## Ideal For Nickel-Based Super Alloys, Wrought and Cast Nickel Alloys $\leq 46Rc$

Nickel alloys are nasty to machine, but with Emuge's **Industry-First** Variable Helix Correction and Advanced Left-Hand Helical Flute designs, your nickel problems are a thing of the past!

DF-NI Taps with <b>VHC TECHNOLOGY</b>		C-NI Taps with <b>Advanced LH Helical Flute Form</b>
	<p>10° RH spiral flute with VHC in chamfer section</p>	
	<p>LH helical flute form with special rake and relief to optimize chip evacuation</p>	
	<p>Premium HSS-E with exceptional heat and wear resistance</p>	
	<p>STI thread sizes for jet engine components</p>	
	<p>Special relief geometry in chamfer and thread section to overcome the high hardness and extreme elastic memory of precipitation hardened nickel alloys</p>	

# Spiral Flute Semi-Bottoming Taps

**EMUGE**

Rekord DF-NI Style with VHC Technology



TiCN Coating • R10 Helix • 3BX Class of Fit • C / 2-3 Chamfer Length

UNC / BLIND HOLE						
Size	T.P.I.	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
4	40	2	0.141	0.110	2.205	BU35J4115003
5	40	2	0.141	0.110	2.205	BU35J4115004
6	32	3	0.141	0.110	2.205	BU35J4115005
8	32	3	0.168	0.131	2.480	BU35J4115006
10	24	3	0.194	0.152	2.756	BU35J4115007
1/4	20	3	0.255	0.191	3.150	BU35J4115009
5/16	18	3	0.318	0.238	3.543	BU35J4115010
3/8	16	3	0.381	0.286	3.937	BU35J4115011
7/16	14	3	0.323	0.242	3.937	CU35J4115012
1/2	13	3	0.367	0.275	4.331	CU35J4115013
9/16	12	3	0.429	0.322	4.331	CU35J4115014
5/8	11	3	0.480	0.360	4.331	CU35J4115015
3/4	10	3	0.590	0.442	4.921	CU35J4115016

6HX Class of Fit

METRIC / BLIND HOLE					
Size	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
3 x 0.5	2	3.5	2.7	56	B438J4010030
4 x 0.7	3	4.5	3.4	63	B438J4010040
5 x 0.8	3	6	4.9	70	B438J4010050
6 x 1	3	6	4.9	80	B438J4010060
8 x 1.25	3	8	6.2	90	B438J4010080
10 x 1.5	3	10	8	100	B438J4010100
12 x 1.75	3	9	7	110	C438J4010112
16 x 2	3	12	9	110	C438J4010116
20 x 2.5	3	16	12	140	C438J4010120

UNF / BLIND HOLE						
Size	T.P.I.	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
10	32	3	0.194	0.152	2.756	BU35J4115041
1/4	28	3	0.255	0.191	3.150	BU35J4115043
5/16	24	3	0.318	0.238	3.543	BU35J4115044
3/8	24	3	0.381	0.286	3.937	BU35J4115045
7/16	20	3	0.323	0.242	3.937	CU35J4115046
1/2	20	3	0.367	0.275	3.937	CU35J4115047
9/16	18	3	0.429	0.322	3.937	CU35J4115048
5/8	18	3	0.480	0.360	3.937	CU35J4115049
3/4	16	4	0.590	0.442	4.331	CU35J4115050

3BX Class of Fit

UNF / BLIND HOLE - STI for Jet Engine Parts						
Size	T.P.I.	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
10	32	3	0.255	0.191	3.150	BU35J4115637
1/4	28	3	0.318	0.238	3.543	BU35J4115639
5/16	24	3	0.381	0.286	3.937	BU35J4115640
3/8	24	3	0.323	0.242	3.937	CU35J4115641
7/16	20	3	0.367	0.275	3.937	CU35J4115642

Refer to back cover for Materials / Application Reference Table.

DIN Shank Type

**Reinforced Style:**  
on tap sizes:  
4 – 3/8, STI: 10 – 5/16,  
Metric: 3 – 10

**Reduced Style:**  
on tap sizes:  
7/16 – 3/4, STI: 3/8 – 7/16  
Metric: 12 – 20

# Left-Hand Spiral Plug Taps



## Rekord C-NI Style with Advanced Left-Hand Helical Flute Form



TiCN Coating • L8 Helix • 3BX Class of Fit • D / 4-5 Chamfer Length

UNC / THROUGH HOLE						
Size	T.P.I.	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
4	40	2	0.141	0.110	2.205	BU30J4115003
5	40	2	0.141	0.110	2.205	BU30J4115004
6	32	3	0.141	0.110	2.205	BU30J4115005
8	32	3	0.168	0.131	2.480	BU30J4115006
10	24	3	0.194	0.152	2.756	BU30J4115007
1/4	20	3	0.255	0.191	3.150	BU30J4115009
5/16	18	3	0.318	0.238	3.543	BU30J4115010
3/8	16	3	0.381	0.286	3.937	BU30J4115011
7/16	14	3	0.323	0.242	3.937	CU30J4115012
1/2	13	3	0.367	0.275	4.331	CU30J4115013
9/16	12	3	0.429	0.322	4.331	CU30J4115014
5/8	11	3	0.480	0.360	4.331	CU30J4115015
3/4	10	3	0.590	0.442	4.921	CU30J4115016

UNF / THROUGH HOLE						
Size	T.P.I.	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
10	32	3	0.194	0.152	2.756	BU30J4115041
1/4	28	3	0.255	0.191	3.150	BU30J4115043
5/16	24	3	0.318	0.238	3.543	BU30J4115044
3/8	24	3	0.381	0.286	3.937	BU30J4115045
7/16	20	3	0.323	0.242	3.937	CU30J4115046
1/2	20	3	0.367	0.275	3.937	CU30J4115047
9/16	18	3	0.429	0.322	3.937	CU30J4115048
5/8	18	3	0.480	0.360	3.937	CU30J4115049
3/4	16	4	0.590	0.442	4.331	CU30J4115050

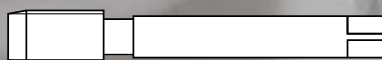
6HX Class of Fit

METRIC / THROUGH HOLE					
Size	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
3 x 0.5	2	3.5	2.7	56	B030J4010030
4 x 0.7	3	4.5	3.4	63	B030J4010040
5 x 0.8	3	6	4.9	70	B030J4010050
6 x 1	3	6	4.9	80	B030J4010060
8 x 1.25	3	8	6.2	90	B030J4010080
10 x 1.5	3	10	8	100	B030J4010100
12 x 1.75	3	9	7	110	C030J4010112
16 x 2	3	12	9	110	C030J4010116
20 x 2.5	3	16	12	140	C030J4010120

DIN Shank Type



**Reinforced Style:**  
on tap sizes:  
4 – 3/8, Metric: 3 – 10



**Reduced Style:**  
on tap sizes:  
7/16 – 3/4, Metric: 12 – 20

Refer to back cover for Materials / Application Reference Table.

# Pipe Taps - NPT /NPTF



Rekord KEG-NI Style *with VHC Technology*



TiCN Coating • R10 Helix • C / 2-3 Chamfer Length • ANSI Length, ANSI Shank

NPT Taper Pipe					
Thread Size	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
1/16 - 27	3	0.3125	0.2340	2.13	AW79J4005763
1/8 - 27	3	0.4375	0.3280	2.13	AW79J4005764
1/4 - 18	3	0.5625	0.4210	2.44	AW79J4005765
3/8 - 18	4	0.7000	0.5310	2.56	AW79J4005766
1/2 - 14	4	0.6875	0.5150	3.13	AW79J4005767
3/4 - 14	4	0.9063	0.6790	3.25	AW79J4005768
1 - 11 1/2	4	1.1250	0.8430	3.75	AW79J4005769
1 1/4 - 11 1/2	6	1.3125	0.9840	4.00	AW79J4005770
1 1/2 - 11 1/2	6	1.5000	1.1250	4.25	AW79J4005771
2 - 11 1/2	6	1.8750	1.4060	4.50	AW79J4005772

NPTF Taper Pipe					
Thread Size	# Flutes	Shank Dia.	Square Width	OAL	EDP No.
1/16 - 27	3	0.3125	0.2340	2.13	AW79J4005782
1/8 - 27	3	0.4375	0.3280	2.13	AW79J4005783
1/4 - 18	3	0.5625	0.4210	2.44	AW79J4005784
3/8 - 18	4	0.7000	0.5310	2.56	AW79J4005785
1/2 - 14	4	0.6875	0.5150	3.13	AW79J4005786
3/4 - 14	4	0.9063	0.6790	3.25	AW79J4005787
1 - 11 1/2	4	1.1250	0.8430	3.75	AW79J4005788
1 1/4 - 11 1/2	6	1.3125	0.9840	4.00	AW79J4005789
1 1/2 - 11 1/2	6	1.5000	1.1250	4.25	AW79J4005790
2 - 11 1/2	6	1.8750	1.4060	4.50	AW79J4005791

**Revolutionary NEW Pipe Tap design with VHC Technology for tapping NPT and NPTF taper pipe threads in nickel-based super alloys.**

### VHC Technology Benefits:

- Tap has specially ground relief geometry in the primary cutting zone.
- Generates a smaller and tightly rolled chip formation.
- The resulting benefit is enhanced chip control to prevent the damaging effects of chips jamming in the tap teeth on both forward and reverse.

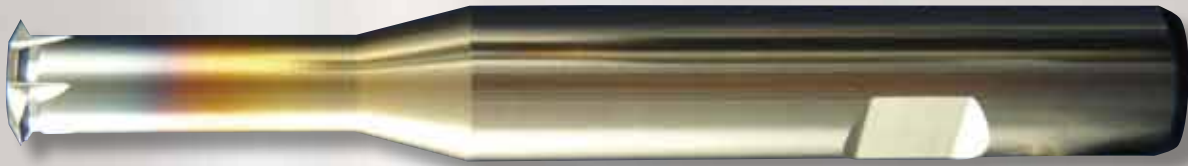


Refer to back cover for Materials / Application Reference Table.

# Solid Carbide Thread Mills



## THREADS-ALL™ Z-GF Style



TiCN Coating

### Z-GF THREAD MILLS IN MINIATURE AND EXPANDED SIZES

Tool Size	Thread Size									Cutter Dia.	Cut Length	No. Flutes	OAL	Shank Dia.	Shank Type	EDP No.
	UNC	UNF	STI UNC	STI UNF	UNEF	UNJC	UNJF	M	MJ							
<b>MINIATURE SIZES</b>																
0	-	0-80	-	-	-	-	0-80	1.6 x .35	1.6 x .35	0.045	0.125	1	1 5/8	1/8	HA	GFS137065033
1	1-64	1-72	-	-	-	1-64	1-72	2 x .4	2 x .4	0.056	0.146	3	1 5/8	1/8	HA	GFS237065000
2	2-56	2-64	1-64	-	-	2-56	2-64	2.5 x .45	2.5 x .45	0.064	0.172	3	1 5/8	1/8	HA	GFS237065001
4	4-40	4-48	2-56	-	-	4-40	4-48	-	-	0.081	0.224	3	1 5/8	1/8	HA	GFS237065003
STI 4	-	-	4-40	4-48	-	-	-	-	-	0.117	0.295	3	1 5/8	1/8	HA	GFS237065611
5	5-40	5-44	-	-	-	5-40	5-44	3 x .5	3 x .5	0.095	0.250	3	1 5/8	1/8	HA	GFS237065004
6	6-32	6-40	-	-	-	6-32	6-40	-	-	0.100	0.276	3	1 5/8	1/8	HA	GFS237065005
STI 6	-	-	6-32	6-40	-	-	-	5 x .8	5 x .8	0.143	0.364	3	2 1/2	1/4	HB	GFS231065613
8	8-32	8-36	-	-	-	8-32	8-36	4 x .7	4 x .7	0.124	0.328	3	1 5/8	1/8	HA	GFS237065006
STI 8	-	-	8-32	8-36	1/4-32	-	-	-	-	0.167	0.415	3	2 1/2	1/4	HB	GFS231065614
<b>EXPANDED SIZES</b>																
10 •	10-24	10-32	10-24	10-32	-	10-24	10-32	-	-	0.136	0.380	3	2 1/2	1/4	HB	GFS231065007
1/4 •	1/4-20	1/4-28	1/4-20	1/4-28	5/16-32	1/4-20	1/4-28	6 x 1	6 x 1	0.185	0.500	3	2 1/2	1/4	HB	GFS231065009
5/16 •	5/16-18	5/16-24	5/16-18	5/16-24	3/8-32	5/16-18	5/16-24	8 x 1.25	8 x 1.25	0.242	0.625	4	2 1/2	1/4	HB	GFS331065010
3/8 •	3/8-16	3/8-24	3/8-16	3/8-24	7/16-28	3/8-16	3/8-24	10 x 1.5	10 x 1.5	0.301	0.750	5	2 1/2	5/16	HB	GFS331065011
7/16 •	7/16-14	7/16-20	7/16-14	7/16-20	1/2-28	7/16-14	7/16-20	12 x 1.75	12 x 1.75	0.354	0.875	5	3	3/8	HB	GFS331065012
1/2 •	1/2-13	1/2-20	1/2-13	1/2-20	5/8-24	1/2-13	1/2-20	14 x 2	14 x 2	0.407	1.00	5	3 3/4	1/2	HB	GFS331065013
5/8 •	5/8-11	5/8-18	5/8-11	5/8-18	3/4-20	5/8-11	5/8-18	16 x 2	16 x 2	0.512	1.25	5	3 3/4	1/2	HB	GFS331065015
3/4 •	3/4-10	3/4-16	3/4-10	3/4-16	7/8-20	3/4-10	3/4-16	20 x 2.5	20 x 2.5	0.630	1.50	6	4 1/4	5/8	HB	GFS331065016

• With external flood coolant only • With external flood coolant or axial internal coolant hole (MINIATURE SIZES EXTERNAL COOLANT ONLY)

Shank Types: HA-Straight shank without clamping flat, HB-Straight shank with Weldon clamping flat

- Easy machining of difficult materials.
- One tool for through and blind holes.
- Pitch diameter can be easily controlled.
- Full bottom threading to within 1 pitch.
- STI threads can be easily produced.
- Produces excellent thread finish and gaging.

### Expanded Sizes:

- Requiring only 8 stock standard tool sizes, #10 • 1/4 • 5/16 • 3/8 • 7/16 • 1/2 • 5/8 • 3/4, **it is now possible to produce 100+ commonly produced screw thread designations.**
- **THREADS-ALL tools provide total control over pitch diameter limits** including 2B • 3B • 3BG • and all oversize variants.

Refer to back cover for Materials / Application Reference Table.

# Solid Carbide Thread Mills



## SHUR-THREAD™ GFI-IKZ Style with Internal Coolant



TiCN Coating

INCH GFI - IKZ						
Size	Cutter Dia.	Cut Length	# Flutes	OAL	Shank Dia.	EDP No.
#10 - 24	0.136	0.395	3	2 1/2	1/4	GFR351065007
#10 - 32	0.150	0.390	3	2 1/2	1/4	GFR351065041
1/4 - 20	0.185	0.524	3	2 1/2	1/4	GFR351065009
1/4 - 28	0.203	0.517	3	2 1/2	1/4	GFR351065043
5/16 - 18	0.242	0.637	3	2 1/2	1/4	GFR351065010
5/16 - 24	0.246	0.644	3	2 1/2	1/4	GFR351065044
3/8 - 16	0.301	0.780	3	2 1/2	5/16	GFR351065011
3/8 - 24	0.309	0.769	3	2 1/2	5/16	GFR351605045
7/16 - 14	0.354	0.891	3	3	3/8	GFR351065012
7/16 - 20	0.371	0.874	3	3	3/8	GFR351065046
1/2 - 13	0.371	1.036	3	3	3/8	GFR351065013
1/2 - 20	0.371	1.023	3	3	3/8	GFR351065047
9/16 & 5/8 - 18	0.496	1.138	4	3 3/4	1/2	GFR351065048
5/8 - 11	0.496	1.316	4	3 3/4	1/2	GFR351065015
3/4 - 10	0.621	1.548	4	4 1/4	5/8	GFR351065016
3/4 - 16	0.621	1.530	4	4 1/4	5/8	GFR351065050

INCH GFI - IKZ (continued)						
Size	Cutter Dia.	Cut Length	# Flutes	OAL	Shank Dia.	EDP No.
7/8 - 9	0.621	1.829	4	4 1/4	5/8	GFR351065017
7/8 - 14 & 1 - 14	0.621	1.817	4	4 1/4	5/8	GFR351065051
1 - 8 & 1 1/8 - 8	0.746	2.058	4	4 3/4	3/4	GFR351065018

METRIC GFI - IKZ						
Size	Cutter Dia.	Cut Length	# Flutes	OAL	Shank Dia.	EDP No.
6 x 1.0	0.189	0.491	3	63.50	6.35	GFR351060060
8 x 1.25	0.246	0.663	3	63.50	6.35	GFR351060080
10 x 1.5	0.309	0.796	3	63.50	7.94	GFR351060100
12 x 1.75	0.371	0.997	3	76.20	9.53	GFR351060112
14 x 2.0	0.457	1.140	4	95.25	12.70	GFR351060114
16 x 2.0	0.496	1.280	4	95.25	12.70	GFR351060116
20 x 2.5	0.621	1.595	4	107.95	15.88	GFR351060120
24 x 3.0	0.746	1.920	4	120.65	19.05	GFR351060124

**Exceptional balance of performance benefits and price are achieved by combining select design elements:**

- Premium micro-grain carbide with state-of-the-art grinding techniques.
- Specially engineered multiple-spiral flutes eliminate chatter.
- Large cutter diameter with high profile correction ensures true-to-gauge threads.
- Extended milling portion allows for length-of-cut to 2xD.
- Enlarged flute space for efficient chip evacuation.
- End mill type shank with clamping flat for secure tool holding.
- TiCN coated for long tool life.
- Produce threads 1 1/8" and under in a wide range of soft and pre-hardened steels to 58 Rc, stainless steels, aluminum, cast iron, titanium, inconel, and all difficult to machine exotics.



Refer to back cover for Materials / Application Reference Table.



# Solid Carbide Thread Mills



**GFI Style** for Taper Pipe



TiCN Coating

NPT Taper Pipe					
Thread Size	# Flutes	Shank Dia.	Cutter Dia.	OAL	EDP No.
1/16 - 27	3	5/16	0.232	2 1/4	<b>GFT531065763</b>
1/8 - 27	3	5/16	0.301	2 1/4	<b>GFT531065764</b>
1/4 - 18	4	1/2	0.400	3 1/4	<b>GFT531165765</b>
3/8 - 18	4	1/2	0.439	3 1/4	<b>GFT531165766</b>
1/2 - 3/4 - 14	4	5/8	0.561	3 1/2	<b>GFT531369678</b>
1-2 - 11 1/2	5	3/4	0.772	3 3/4	<b>GFT531569679</b>

NPTF Taper Pipe					
Thread Size	# Flutes	Shank Dia.	Cutter Dia.	OAL	EDP No.
1/16 - 27	3	5/16	0.232	2 1/4	<b>GFT531065782</b>
1/8 - 27	3	5/16	0.301	2 1/4	<b>GFT531065783</b>
1/4 - 18	4	1/2	0.400	3 1/4	<b>GFT531165784</b>
3/8 - 18	4	1/2	0.439	3 1/4	<b>GFT531165785</b>
1/2 - 14	4	5/8	0.561	3 1/2	<b>GFT531365786</b>
3/4 - 14	4	5/8	0.561	3 1/2	<b>GFT531365787</b>
1-2 - 11 1/2	5	3/4	0.772	3 3/4	<b>GFT531569684</b>

Emuge's advanced NPT and NPTF thread mills are manufactured with a premium micro-grain carbide substrate, TiCN coated, and finished ground with precise cutting geometry to ensure long tool life, low cycle times, and superior finished threads in all materials up to 58 Rc.

- **Multiple flute design with precise symmetrical spacing and constant rake angle** optimizes cutting performance and thread quality.
- **Ground with high profile correction ratio** which allows for enlarged cutter diameter to eliminate tool deflection and improve chip removal.
- **Precision ground shank with clamping flat** provides simple and secure tool holding solution. Shanks are ground to standard inch diameters.
- **Produces precise threads and excellent surface quality** on thread flanks for consistently tight, leak-free joints.

Refer to back cover for Materials / Application Reference Table.

# Tapping Fluid

## Try Emuge Tapping Fluid.

- Ideal for difficult applications and exotic alloys.
- Promotes clean cutting and smooth finish, aiding accuracy.
- Extends tool life.
- Unlike other fluids, Emuge Tapping Fluid is non-toxic.
- Emuge Tapping Fluid is available in 4 and 16 oz. bottles, 1 gallon jugs, 5 gallon buckets and 55 gallon drums.

Visit [Emuge.com](http://Emuge.com) for more information.



## Materials / Application Reference Table

### Nickel-Based Alloys - wrought and cast

<b>Non-hardenable &lt;25 HRC</b>		<b>Non-hardenable &gt;25 HRC</b>	
Ni-Cu-alloys	Ni-Cr-Mo alloys	<b>Precipitation hardenable &gt;25-46 HRC</b>	
	Ni-Fe-Cr alloys	Ni-Fe-Cr alloys	
	Ni-Cr-Co alloys	Ni-Cr-Co alloys	
		Ni-Cr-Mo alloys	
<b>Examples</b>			
Monel 400	Hastelloy C	Inconel 718 / Inconel 625	
Monel 401	Hastelloy X	Incoloy 901 / Incoloy 903	
Monel 404	Incoloy 804	Waspaloy / Astralloy / Hastelloy	
Monel R 405	Incoloy 825	Rene 41	
	Inconel 600	Udimet 500 / Udimet 700	
	Inconel 625	Nimonic 90 / Nimonic 95	



Emuge Corp.  
Headquarters,  
West Boylston, MA



# EMUGE

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