

EMUGE



SOLUTIONS FOR INCONEL[®]
AND OTHER NICKEL ALLOYS

By Far the Best Solution in the Industry for Drilling Inconel 718

In test after test, Emuge customer data has proven the superior performance of Emuge EF-Drills in Nickel Alloys, and especially Inconel 718. As the case study examples on pages 4 and 5 illustrate, increases in tool life, productivity and savings of up to 100% have been documented!

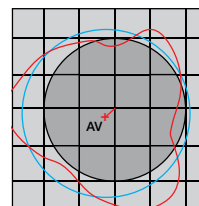
Features

- **Unique sub-micro grain carbide** grade for longer cutting edge life
- **Double margin design** for increased stability in the cut
- **Advanced TiALN based coating** for heat and wear resistance
- **Proprietary flute and web construction** for optimized chip evacuation
- **Coolant-Fed** design for increased performance
- **Shank tolerance of h6** for hydraulic chucks or Emuge FPC Chucks

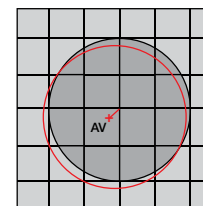
EF-Drills do not require pre-spotting operations and eliminate peck cycles, saving cycle time and production costs.

Rounder Holes:

- Double margin design produces better hole quality and tap performance
- Double margins improve guiding and add stability during breakout



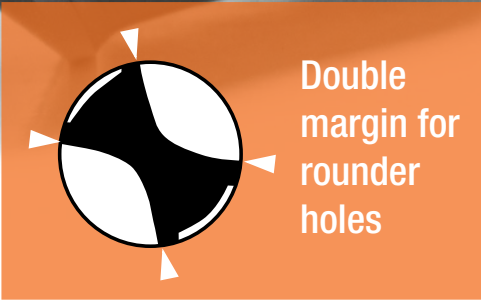
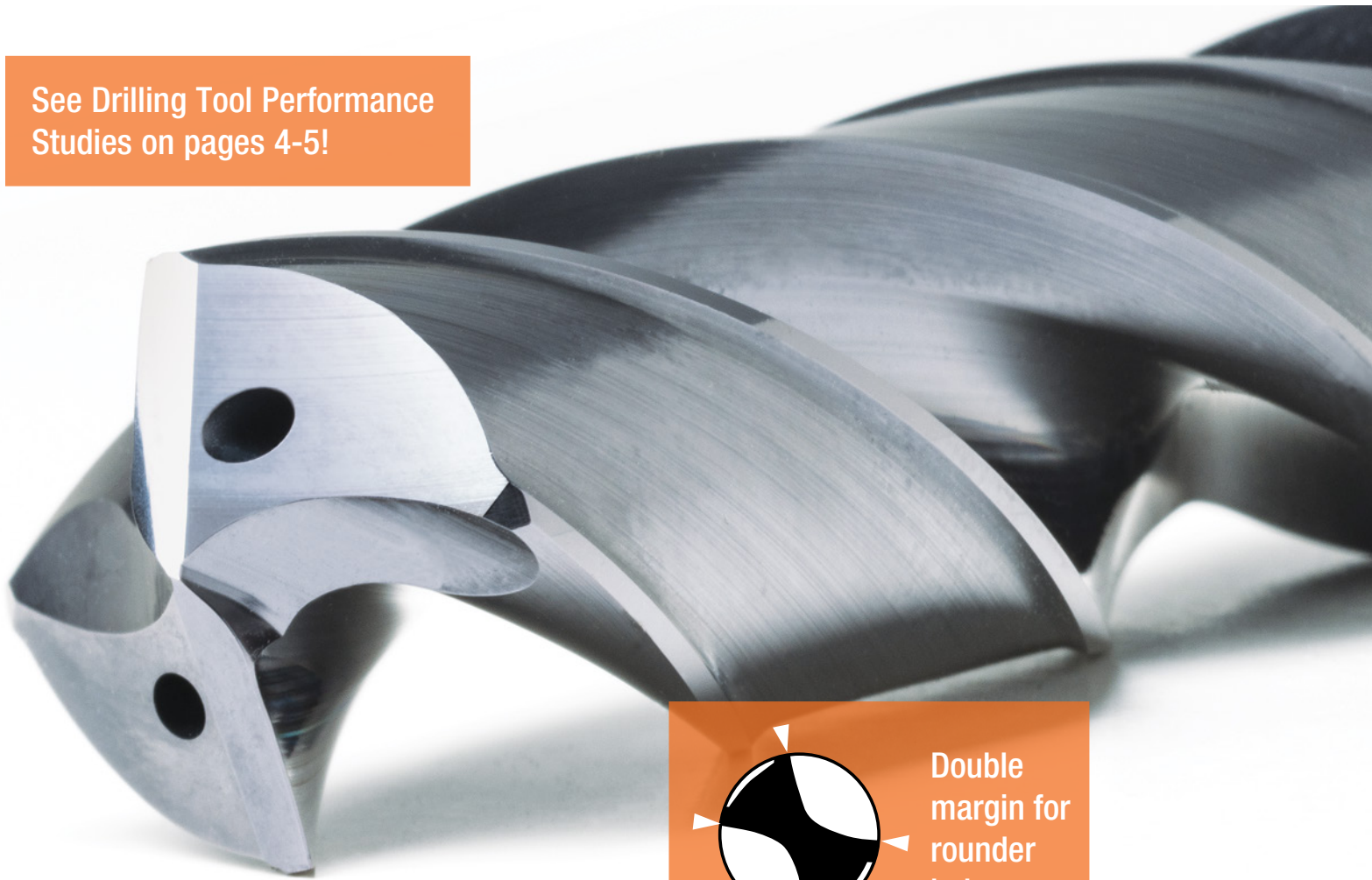
HSS & HSSE
Drilling



EMUGE Carbide
EF-Drilling straighter / rounder holes

- **Unique Geometry**
- **Unique Carbide Grade**
- **Emuge PVD Coating**
- **Superior Performance in Nickel Alloys**

See Drilling Tool Performance Studies on pages 4-5!



Unique Flute Construction

- Enables uniform chip removal throughout the hole

Eliminate Operations

- Chisel edge, self-centering design means one-shot ops with no spot or peck drilling

Higher Penetration

- 3 to 5+ times the penetration rate with less torque and power consumption than regular carbide drills

More Cutting Edge Support

- 4 facet point design

Enhanced Shank Design

- Conical slotted end for optimized coolant flow and reliable tool setting



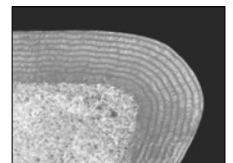
Make Short, Consistent 6 & 9 Chips

- Short, consistent chips provide quick evacuation and eliminate bird nesting



Longer Life

- Special carbide grade and multi-layered PVD coating for superb heat and wear resistance
- Highly polished coating surface maximizes chip flow



MORE HOLES WITH FEWER TOOLS =

INCONEL DRILLING TOOL PERFORMANCE STUDIES

Emuge vs. Competitors

Reams of customer test data have verified the superior performance of Emuge EF-Drills in Nickel Alloys and especially Inconel 718. Increases in tool life, productivity and savings of up to 100% have been documented! Here are a few examples.

99%
Savings!

OBJECTIVE:

Find consistent tap drill for 1/4-20 thread, 0.6" deep. Maximize tap and drill life.

Tool and Material Data		
Material	Nickel Alloy - 718 Inconel	
Manufacturer	Emuge	Competitor
Part Number	TA2045240520	—
Tool Price	\$117.20	\$110.00
Parts Data		
Holes in Job	200	200
Holes per Tool	120	1
Total Tools	2	200
Size and Feed Rate Data		
Feed Rate (IPM)	3.8	3.8
Feed Rate (IPR)	0.0031	0.0031
Depth of Cut (in)	0.6	0.6
Drill Diameter (mm)	5.2	5.2
Cost Data		
Total Tool Cost	\$234.40	\$22,000.00
Tool Change Cost	\$8.00	\$1,658.00
Total Cost of Job	\$294.79	\$23,710.39
Test Results		
Job Savings	\$23,415.50	
Savings per Part	\$234.16	
Percent Savings, Total Cost of Job	99%	

Comments: Competitive drill broke on the first hole

83%
Savings!

OBJECTIVE:

Supply a drill that will consistently outlast the competition and supply hole with no taper.

Tool and Material Data		
Material	Nickel Alloy - 718 Inconel	
Manufacturer	Emuge	Competitor
Part Number	TA2033440675	—
Tool Price	\$109.00	\$105.00
Parts Data		
Holes in Job	14,000	14,000
Holes per Tool	128	16
Total Tools	109	875
Size and Feed Rate Data		
Feed Rate (IPM)	2.2	2.5
Feed Rate (IPR)	0.0025	0.0025
Depth of Cut (in)	0.6	0.6
Drill Diameter (mm)	6.75	6.75
Cost Data		
Total Tool Cost	\$11,881.00	\$91,875.00
Total Machining Cost	\$10,145.27	\$8,695.93
Tool Change Cost	\$810.00	\$6,555.00
Regrinds per Tool Cost	\$40.00	\$40.00
Regrinds Total Cost	\$13,160.00	\$105,000.00
Total Cost of Job	\$33,996.27	\$212,125.95
Test Results		
Job Savings	\$176,129.68	
Savings per Part	\$3,522.59	
Percent Savings, Total Cost of Job	83%	

SIGNIFICANT SAVINGS!

OBJECTIVE:

Evaluate Emuge EF-Drill in tough Inconel material with one shot feed, no peck cycle.

54% Savings!

Tool and Material Data

Material	Nickel Alloy - Inconel 718	
Manufacturer	Emuge	Competitor
Part Number	TA2145240410	—
Tool Price	\$129.00	\$50.00

Parts Data

Holes in Job	100	100
Holes per Tool	90	10
Total Tools	2	10

Size and Feed Rate Data

Feed Rate (IPM)	4.0	1.7
Feed Rate (IPR)	0.0017	0.0010
Depth of Cut (in)	0.3	0.3
Drill Diameter (mm)	4.1	4.1

Cost Data

Total Tool Cost	\$257.00	\$500.00
Tool Change Cost	\$25.00	\$225.00
Total Cost of Job	\$382.00	\$825.00

Test Results

Job Savings	\$443.00	
Savings per Part	\$4.43	
Percent Savings, Total Cost of Job	54%	

Comments: Emuge Drill ran perfect hole size for 90 holes





High Performance Solid Carbide EF-Drills

Size Range: 0.1102 - 0.2130



Coolant-Fed • HA – Cylindrical Shank Style



Nominal Size Ø d, m7						Shank Ø d ₂ h6	3 x D HA Shank EDP No.	5 x D HA Shank EDP No.
Inch	Fraction	Wire letter	mm					
0.1102			2.800	#6-32UNC	M3	6	TA203344.0280	TA213344.0280
0.1142			2.900	#6-32UNJC	#5-40UNC	6	TA203344.0290	TA213344.0290
0.1150			2.920		#5-44UNF	6	TA203344.0292	TA213344.0292
0.1181			3.000	#6-40UNF		6	TA203344.0300	TA213344.0300
0.1220			3.100	STI-#4-40		6	TA203344.0310	TA213344.0310
0.1240			3.150	M3.5 x 0.35	#6-32UNC	6	TA203344.0315	TA213344.0315
0.1250	1/8		3.175			6	TA203344.0318	TA213344.0318
0.1260			3.200	BSW 5/32-32	#6-40UNF	6	TA203344.0320	TA213344.0320
0.1280			3.250		M3.5	6	TA203344.0325	TA213344.0325
0.1299			3.300	M4		6	TA203344.0330	TA213344.0330
0.1331			3.380		M3.5 x 0.35	6	TA203344.0338	TA213344.0338
0.1339			3.400	MJ4 x 0.7		6	TA203344.0340	TA213344.0340
0.1378			3.500	#8-32UNC		6	TA203344.0350	TA213344.0350
0.1406	9/64	#28	3.571			6	TA203344.0357	TA213344.0357
0.1417			3.600	#8-36UNJF		6	TA203344.0360	TA213344.0360
0.1457			3.700	M4.5	M4	6	TA203344.0370	TA213344.0370
0.1496		#25	3.800	STI-#6-32	#8-32UNC	6	TA203344.0380	TA213344.0380
0.1516			3.850		#8-36UNF	6	TA203344.0385	TA213344.0385
0.1535			3.900	#10-24UNC		6	TA203344.0390	TA213344.0390
0.1563	5/32		3.970			6	TA203344.0397	TA213344.0397
0.1575			4.000	M4.5 x 0.5		6	TA203344.0400	TA213344.0400
0.1590		#21	4.038			6	TA203344.0404	TA213344.0404
0.1614			4.100	#10-32UNF		6	TA203344.0410	TA213344.0410
0.1654			4.200	M5, STI-M4	M4.5	6	TA203344.0420	TA213344.0420
0.1693		#18	4.300	MJ5 x 0.8		6	TA203344.0430	TA213344.0430
0.1713			4.350		#10-24UNC	6	TA203344.0435	TA213344.0435
0.1719	11/64		4.366			6	TA203344.0437	TA213344.0437
0.1732			4.400	M5 x 0.75		6	TA203344.0440	TA213344.0440
0.1752			4.450		#10-32UNF	6	TA203344.0445	TA213344.0445
0.1772			4.500	#12-24UNC		6	TA203344.0450	TA213344.0450
0.1811			4.600	#12-28UNF		6	TA203344.0460	TA213344.0460
0.1831			4.650	#12-24UNJC	M5	6	TA203344.0465	TA213344.0465
0.1850		#13	4.700	LK-UNC#12-24		6	TA203344.0470	TA213344.0470
0.1875	3/16		4.763	#12-28UNJF		6	TA203344.0476	TA213344.0476
0.1890		#12	4.800	#12-32UNEF	M5 x 0.5, STI-M5	6	TA203344.0480	TA213344.0480
0.1929			4.900			6	TA203344.0490	TA213344.0490
0.1969			5.000	M6	#12-24UNC	6	TA203344.0500	TA213344.0500
0.2008			5.100	MJ6 x 1	#12-28UNF	6	TA203344.0510	TA213344.0510
0.2010		#7	5.106			6	TA203344.0511	TA213344.0511
0.2031	13/64		5.159			6	TA203344.0516	TA213344.0516
0.2047			5.200	1/4-20UNC		6	TA203344.0520	TA213344.0520
0.2087			5.300	1/4-20UNJC		6	TA203344.0530	TA213344.0530
0.2126			5.400			6	TA203344.0540	TA213344.0540
0.2130		#3	5.410			6	TA203344.0541	TA213344.0541

High Performance Solid Carbide EF-Drills

Size Range: 0.2165 - 0.3425



Coolant-Fed • HA – Cylindrical Shank Style



Nominal Size ø d, m7						Shank ø d ₂ h6	3 x D HA Shank EDP No.	5 x D HA Shank EDP No.
Inch	Fraction	Wire letter	mm					
0.2165			5.500	1/4-28 UNF		6	TA203344.0550	TA213344.0550
0.2187	7/32		5.556	1/4-28 UNJF		6	TA203344.0556	TA213344.0556
0.2205			5.600	1/4-32 UNEF	M6	6	TA203344.0560	TA213344.0560
0.2264			5.750		1/4-20 UNC	6	TA203344.0575	TA213344.0575
0.2283			5.800		M6 x 0.5	6	TA203344.0580	TA213344.0580
0.2323			5.900			6	TA203344.0590	TA213344.0590
0.2344	15/64		5.954		1/4-28 UNF	6	TA203344.0595	TA213344.0595
0.2362			6.000	M7, Rd8 x 1/10		6	TA203344.0600	TA213344.0600
0.2402			6.100	MJ7 x 1		8	TA203344.0610	TA213344.0610
0.2441			6.200	M7 x 0.75		8	TA203344.0620	TA213344.0620
0.2480			6.300	M7 x 0.5, STI-M6		8	TA203344.0630	TA213344.0630
0.2500	1/4	E	6.350	1/16-27 NPSF		8	TA203344.0635	TA213344.0635
0.2520			6.400			8	TA203344.0640	TA213344.0640
0.2559			6.500	BSW 5/16-18		8	TA203344.0650	TA213344.0650
0.2570		F	6.528			8	TA203344.0653	TA213344.0653
0.2598			6.600	5/16-18 UNC	M7	8	TA203344.0660	TA213344.0660
0.2638			6.700	5/16-18 UNJC	M7 x 0.75	8	TA203344.0670	TA213344.0670
0.2656	17/64		6.746			8	TA203344.0675	TA213344.0675
0.2677			6.800	M8, G 1/16		8	TA203344.0680	TA213344.0680
0.2717			6.900	5/16-24 UNF		8	TA203344.0690	TA213344.0690
0.2756			7.000	5/16-24 UNJF		8	TA203344.0700	TA213344.0700
0.2795			7.100	MJ8 x 1		8	TA203344.0710	TA213344.0710
0.2813	9/32	K	7.145			8	TA203344.0715	TA213344.0715
0.2835			7.200	5/16-32 UNEF		8	TA203344.0720	TA213344.0720
0.2854			7.250		5/16-18 UNC	8	TA203344.0725	TA213344.0725
0.2874			7.300			8	TA203344.0730	TA213344.0730
0.2913			7.400			8	TA203344.0740	TA213344.0740
0.2933			7.450		5/16-24 UNF, M8	8	TA203344.0745	TA213344.0745
0.2953			7.500	M8 x 0.5		8	TA203344.0750	TA213344.0750
0.2969	19/64		7.541			8	TA203344.0754	TA213344.0754
0.2992			7.600	Tr 9 x 1.5	M8 x 1, STI-M8	8	TA203344.0760	TA213344.0760
0.3031			7.700		M8 x 0.75	8	TA203344.0770	TA213344.0770
0.3071			7.800	M9		8	TA203344.0780	TA213344.0780
0.3110			7.900	BSW 3/8-16		8	TA203344.0790	TA213344.0790
0.3125	5/16		7.938			8	TA203344.0794	TA213344.0794
0.3150			8.000	3/8-16 UNC		8	TA203344.0800	TA213344.0800
0.3189			8.100	3/8-16 UNJC		10	TA203344.0810	TA213344.0810
0.3228			8.200	M9 x 0.75		10	TA203344.0820	TA213344.0820
0.3268			8.300	LK-UNC 3/8-16		10	TA203344.0830	TA213344.0830
0.3281	21/64		8.334			10	TA203344.0833	TA213344.0833
0.3307			8.400	STI-5/16-18		10	TA203344.0840	TA213344.0840
0.3346			8.500	3/8-24 UNF, M10		10	TA203344.0850	TA213344.0850
0.3386			8.600	3/8-24 UNJF	M9 x 1	10	TA203344.0860	TA213344.0860
0.3425			8.700	3/8-32 UNEF	M9 x 0.75	10	TA203344.0870	TA213344.0870

High Performance Solid Carbide EF-Drills

Size Range: 0.3438 - 0.4646



Coolant-Fed • HA – Cylindrical Shank Style



Nominal Size ø d ₁ m7						Shank ø d ₂ h6	3 x D HA Shank EDP No.	5 x D HA Shank EDP No.
Inch	Fraction	Wire letter	mm					
0.3438	11/32		8.733	1/8-27NPSC		10	TA203344.0873	TA213344.0873
0.3465			8.800	M10 x 1.25	3/8-16UNC	10	TA203344.0880	TA213344.0880
0.3504			8.900	MJ10 x 1.25		10	TA203344.0890	TA213344.0890
0.3543			9.000	M10 x 1		10	TA203344.0900	TA213344.0900
0.3563			9.050		3/8-24UNF	10	TA203344.0905	TA213344.0905
0.3583			9.100	1/8-27NPSM		10	TA203344.0910	TA213344.0910
0.3594	23/64		9.129			10	TA203344.0913	TA213344.0913
0.3622			9.200	M10 x 0.75		10	TA203344.0920	TA213344.0920
0.3642			9.250			10	TA203344.0925	TA213344.0925
0.3661			9.300			10	TA203344.0930	TA213344.0930
0.3681			9.350		M10	10	TA203344.0935	TA213344.0935
0.3701			9.400	7/16-14UNC		10	TA203344.0940	TA213344.0940
0.3740			9.500	7/16-14UNJC	STI-M10	10	TA203344.0950	TA213344.0950
0.3750	3/8		9.525			10	TA203344.0953	TA213344.0953
0.3780			9.600		M10 x 1	10	TA203344.0960	TA213344.0960
0.3819			9.700	LK-UNC7/16-14	M10 x 0.75	10	TA203344.0970	TA213344.0970
0.3858			9.800	STI-3/8-24		10	TA203344.0980	TA213344.0980
0.3898			9.900	7/16-20UNF		10	TA203344.0990	TA213344.0990
0.3906	25/64		9.921			10	TA203344.0992	TA213344.0992
0.3937			10.000	7/16-20UNJF		10	TA203344.1000	TA213344.1000
0.3976			10.100			12	TA203344.1010	TA213344.1010
0.4016			10.200	7/16-28UNEF		12	TA203344.1020	TA213344.1020
0.4035			10.250		7/16-14UNC	12	TA203344.1025	TA213344.1025
0.4055			10.300			12	TA203344.1030	TA213344.1030
0.4063	13/32		10.320			12	TA203344.1032	TA213344.1032
0.4134			10.500	M12 x 1.5		12	TA203344.1050	TA213344.1050
0.4154			10.550		7/16-20UNF	12	TA203344.1055	TA213344.1055
0.4213			10.700	LK-M12		12	TA203344.1070	TA213344.1070
0.4219	27/64		10.716	1/2-13UNC		12	TA203344.1072	TA213344.1072
0.4252			10.800	M12 x 1.25		12	TA203344.1080	TA213344.1080
0.4291			10.900	1/2-13UNJC		12	TA203344.1090	TA213344.1090
0.4331			11.000	M12 x 1		12	TA203344.1100	TA213344.1100
0.4370			11.100	BSF1/2-16		12	TA203344.1110	TA213344.1110
0.4375	7/16		11.113	LK-UNC1/2-13		12	TA203344.1111	TA213344.1111
0.4409			11.200			12	TA203344.1120	TA213344.1120
0.4429			11.250	M12 x 0.75	M12	12	TA203344.1125	TA213344.1125
0.4469			11.350	Pg7	M12 x 1.5	12	TA203344.1135	TA213344.1135
0.4488			11.400	1/4-18NPSC		12	TA203344.1140	TA213344.1140
0.4508			11.450		M12 x 1.25	12	TA203344.1145	TA213344.1145
0.4528			11.500	1/2-20UNF		12	TA203344.1150	TA213344.1150
0.4531	29/64		11.509			12	TA203344.1151	TA213344.1151
0.4567			11.600	1/2-20UNJF	M12 x 1	12	TA203344.1160	TA213344.1160
0.4606			11.700			12	TA203344.1170	TA213344.1170
0.4646			11.800	1/2-28UNEF	1/2-13UNC	12	TA203344.1180	TA213344.1180

High Performance Solid Carbide EF-Drills

Size Range: 0.4685 - 0.7874



Coolant-Fed • HA – Cylindrical Shank Style

Nominal Size ø d, m7						Shank ø d ₂ h6	3 x D HA Shank EDP No.	5 x D HA Shank EDP No.
Inch	Fraction	Wire letter	mm					
0.4685			11.900			12	TA203344.1190	TA213344.1190
0.4688	15/32		11.908			12	TA203344.1191	TA213344.1191
0.4724			12.000	M14		12	TA203344.1200	TA213344.1200
0.4783			12.150		1/2-20 UNF	12	TA203344.1215	TA213344.1215
0.4803			12.200	Tr 14 x 2		14	TA203344.1220	TA213344.1220
0.4844	31/64		12.304	9/16-12 UNC		14	TA203344.1230	TA213344.1230
0.4921			12.500	M14 x 1.5		14	TA203344.1250	TA213344.1250
0.4941			12.550		G1/4-19	14	TA203344.1255	TA213344.1255
0.5000	1/2		12.700	LK-UNC9/16-12		14	TA203344.1270	TA213344.1270
0.5039			12.800	M14 x 1.25		14	TA203344.1280	TA213344.1280
0.5118			13.000	9/16-18 UNJF		14	TA203344.1300	TA213344.1300
0.5157			13.100	STI-1/2-20	M14	14	TA203344.1310	TA213344.1310
0.5236			13.300	9/16-24 UNEF	9/16-12 UNC	14	TA203344.1330	TA213344.1330
0.5256			13.350		M14 x 1.5	14	TA203344.1335	TA213344.1335
0.5295			13.450		M14 x 1.25	14	TA203344.1345	TA213344.1345
0.5313	17/32		13.495	5/8-11 UNC		14	TA203344.1349	TA213344.1349
0.5315			13.500			14	TA203344.1350	TA213344.1350
0.5374			13.650	5/8-11 UNJC	9/16-18 UNF	14	TA203344.1365	TA213344.1365
0.5394			13.700			14	TA203344.1370	TA213344.1370
0.5469	35/64		13.891			14	TA203344.1389	TA213344.1389
0.5512			14.000	M16, M15 x 1		14	TA203344.1400	TA213344.1400
0.5551			14.100			16	TA203344.1410	TA213344.1410
0.5625	9/16		14.288			16	TA203344.1429	TA213344.1429
0.5709			14.500	5/8-18 UNF		16	TA203344.1450	TA213344.1450
0.5748			14.600	5/8-18 UNJF	M15 x 1	16	TA203344.1460	TA213344.1460
0.5781	37/64		14.684	3/8-18 NPSC		16	TA203344.1468	TA213344.1468
0.5827			14.800		5/8-11 UNC	16	TA203344.1480	TA213344.1480
0.5906			15.000	M16 x 1		16	TA203344.1500	TA213344.1500
0.5938	19/32		15.083			16	TA203344.1508	TA213344.1508
0.5945			15.100		M16	16	TA203344.1510	TA213344.1510
0.6102			15.500	M18		16	TA203344.1550	TA213344.1550
0.6142			15.600		M16 x 1	16	TA203344.1560	TA213344.1560
0.6250	5/8		15.875			16	TA203344.1588	TA213344.1588
0.6299			16.000	M18 x 2		16	TA203344.1600	TA213344.1600
0.6406	41/64		16.272			18	TA203344.1627	TA213344.1627
0.6496			16.500	STI-5/8-11		18	TA203344.1650	TA213344.1650
0.6563	21/32		16.669	3/4-10 UNC		18	TA203344.1667	TA213344.1667
0.6693			17.000	M18 x 1		18	TA203344.1700	TA213344.1700
0.6875	11/16		17.463			18	TA203344.1746	TA213344.1746
0.6890			17.500	3/4-16 UNF, M20		18	TA203344.1750	TA213344.1750
0.7087			18.000	M20 x 2, LK-M16		18	TA203344.1800	TA213344.1800
0.7480			19.000	M20 x 1		20	TA203344.1900	TA213344.1900
0.7500	3/4		19.050			20	TA203344.1905	TA213344.1905
0.7874			20.000	M22 x 2	G1/2-14	20	TA203344.2000	TA213344.2000

Ideal for Nickel-Based Super Alloys, Wrought and Cast Nickel Alloys >25-46 HRC



DF-NI Premium Cobalt Taps with 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.

DF-NI Taps with VHC Technology provide 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.

- **TiCN coated** for enhanced wear resistance.
- **Special relief geometry in chamfer and thread section** to overcome the high hardness and extreme elastic memory of precipitation hardened nickel alloys.
- **Modified bottoming chamfer** (2-3 threads) provide reduced torque and increased tool life.
- **3BX class of fit** for internal UNJ threading applications.
- **Premium HSS-E** with exceptional heat and wear resistance.
- **DIN length** for improved chip clearance in hard-to-reach applications. ANSI shanks on inch tools.
- **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.
- **STI thread sizes** for jet engine components.



Spiral Flute Semi-Bottoming Taps

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

UNC – BLIND HOLE

Size	T.P.I.	No. 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

UNF – BLIND HOLE

Size	T.P.I.	No. 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

UNF – BLIND HOLE - STI for Jet Engine Parts

Size	T.P.I.	No. 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



6HX Class of Fit • DIN Length / DIN Shank

METRIC – BLIND HOLE

Size	No. 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

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



C-NI Premium Cobalt Taps

with Advanced Left-Hand Helical Flute Form

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.

- **LH helical flute form with special rake and relief to optimize chip evacuation.**
- **Special relief geometry in chamfer and thread section** to overcome the high hardness and extreme elastic memory of precipitation hardened nickel alloys.
- **Premium HSS-E** with exceptional heat and wear resistance.
- **TiCN coated** for enhanced wear resistance.
- **3BX class of fit** for internal UNJ threading applications.
- **DIN length** for improved chip clearance in hard-to-reach applications. ANSI shanks on inch tools.
- **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.

Ideal for Nickel-Based Super Alloys, Wrought and Cast Nickel Alloys >25-46 HRC



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

Left-Hand Spiral Flute Plug Taps

UNC – THROUGH HOLE

Size	T.P.I.	No. 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

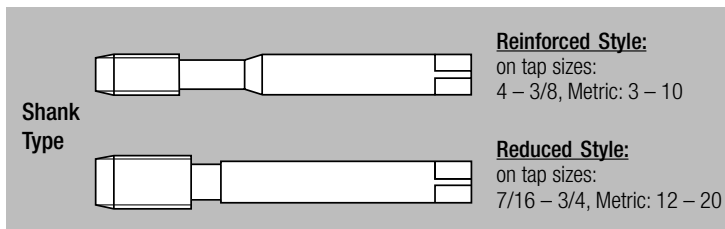
UNF – THROUGH HOLE

Size	T.P.I.	No. 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 • DIN Length / DIN Shank

METRIC – THROUGH HOLE

Size	No. 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



THREADS-ALL™ Solid Carbide Thread Mills

Z-GF Style

- 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.
- TiCN coated for enhanced wear resistance.

Easy Machining of Difficult Materials

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.**

Z-GF THREAD MILLS – 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							
MINIATURE SIZES																
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
EXPANDED SIZES																
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

Ask about our TiNox-Cut™ Solid Carbide End Mills

For Aerospace Machining and Other Demanding Milling Applications

The Emuge TiNox-Cut family of solid carbide end mills are specifically designed for tough aerospace milling applications. Roughing and finishing designs, as well as specific geometries for advanced trochoidal milling strategies, are available.

- **Variable helix angle / spacing and special edge prep** for high performance milling
- **Coolant-Fed** designs for optimum chip evacuation
- **Proprietary PVD coatings** for heat and wear resistance
- **Unique chip breaking cutting edge design** on the trochoidal series with increased flute engagement lengths

High Performance End Mills for Materials such as Inconel, titanium and stainless steel

EMUGE

Ask about our convenient NEW EF Drill-C Chamfer Tool Program.

Combination carbide drill-chamfer tools, **many sizes available from stock or order customized lengths in less than 4 weeks!**

- Tools are coolant-fed, 4 margin design with TiALN-T14 coating
- Full range of sizes in 2XD and 3.5XD lengths
- Save time – one tool handles two operations in a wide range of materials
- 90° chamfer style
- Cut or Form thread diameters



Scan code for emuge.com/products/drills/ef-c-drills
Emuge's simple, fast, online selection tool.

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Emuge Corp. has been the product technology and performance leader in their field for nearly 100 years. Emuge manufactures an extensive line of taps, drills, thread mills, end mills, toolholders, clamping devices and other rotary cutting tools, over 10,000 items sold through distributors worldwide.