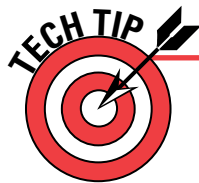


**Style HD-4C • HSS, Double End, 4-Flute, Center Cutting (continued)**  
 formerly style 582

Cutting Diameter	Decimal Equiv.	Metric Equiv.	Shank Diameter		Length of Cut		Overall Length		No. of Flutes	Bright	Order Number	
			in	mm	in	mm	in	mm			TiN	TiCN
3/4	.7500	19.05	.750	19.05	1.625	41.28	5.625	142.88	4	C41223	C33091	C33132
25/32	.7812	19.84	.875	22.23	1.875	47.63	6.125	155.58	4	C33053	C33092	–
13/16	.8125	20.64	.875	22.23	1.875	47.63	6.125	155.58	4	C33054	C33093	C33134
27/32	.8438	21.43	.875	22.23	1.875	47.63	6.125	155.58	4	C33055	C33094	C33135
7/8	.8750	22.23	.875	22.23	1.875	47.63	6.125	155.58	4	C41227	C33095	C33136
29/32	.9062	23.02	1.000	25.40	1.875	47.63	6.375	161.93	4	C33056	C33096	C33137
15/16	.9375	23.81	1.000	25.40	1.875	47.63	6.375	161.93	4	C33057	C33097	–
31/32	.9688	24.61	1.000	25.40	1.875	47.63	6.375	161.93	4	C33058	C33098	–
1	1.0000	25.40	1.000	25.40	1.875	47.63	6.375	161.93	4	C41231	C33099	C33140



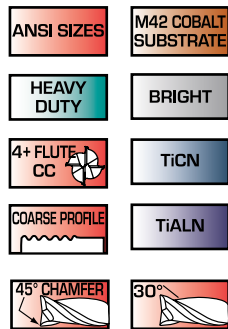
**End Mill Finishes and Their Applications**

- Cleveland's cutting tools with TiN or TiCN coatings provide exceptional performance benefits. Coatings are matched with designs which are intended for aggressive material removal with significant increases in tool life and machining rates.
  - Coatings reduce heat and abrasion to increase tool life.
  - The increased lubricity of the coating surface reduces material adhesion and built-up edge, enabling even higher feed rates.
  - Coatings reduce the amount of torque required for machining to allow more efficient use of equipment.
  - Increase machining speeds to achieve optimum performance when using Cleveland coatings.
- Straw finish
  - bronze color
  - for general machining
  - operate at conventional cobalt speeds and heavier feed rates.
- TiN (titanium nitride) coating
  - gold color
  - intended for aggressive machining
  - increase machining speed 25% to 30% versus bright speeds
- TiCN (titanium carbonitride) coating
  - blue-gray color
  - for very aggressive machining of stainless steels and non-ferrous materials
  - extremely hard, wear resistant
  - increase machining speeds 35% to 50% versus bright speeds
- TiAlN (titanium aluminum nitride) coating
  - violet/blue-gray color
  - for aggressive machining of stainless steels, high alloy carbon steels, nickel-based high-temperature alloys, and titanium alloys
  - increase machining speeds 75% to 100% versus bright speeds.

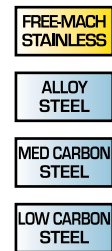
# General Application End Mills Cobalt Roughers

Style RG8, RG8-TC, RG8-TA • Multi-Flute, Center Cutting, Coarse Profile  
formerly style 506

## FEATURES



## APPLICATIONS



- High red hardness for high heat conditions.
- Heavy cross-section for high rigidity.
- Center cutting design for rapid plunge cutting



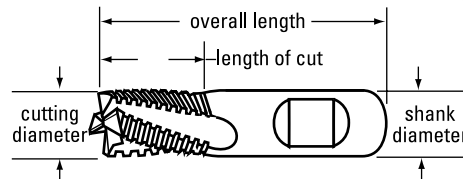
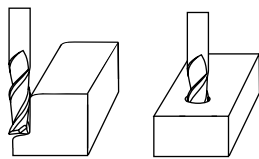
Style RG8 Bright



Style RG8-TC TiCN-coated



Style RG8-TA TiAlN-coated



Cutting Diameter	Decimal Equiv.	Metric Equiv.	Shank Diameter		Length of Cut		Overall Length		No. of Flutes	Order Number		
			in	mm	in	mm	in	mm		Bright	TiCN	TiAlN
3/16	.1875	4.76	.375	9.53	.500	12.70	2.375	60.33	4	C30709	-	-
1/4	.2500	6.35	.375	9.53	.250	6.35	2.063	52.39	3	C31173	C31291	-
1/4	.2500	6.35	.375	9.53	.625	15.88	2.438	61.91	4	C31174	C31292	-
1/4	.2500	6.35	.375	9.53	1.250	31.75	3.125	79.38	4	C31175	-	-
5/16	.3125	7.94	.375	9.53	.750	19.05	2.500	63.50	4	C31176	C31293	-
3/8	.3750	9.53	.375	9.53	.375	9.53	2.156	54.77	4	C31177	C31294	C31065
3/8	.3750	9.53	.375	9.53	.750	19.05	2.500	63.50	4	C31178	C31295	C31067
3/8	.3750	9.53	.375	9.53	1.500	38.10	3.250	82.55	4	C31179	C31296	-
7/16	.4375	11.11	.500	12.70	1.250	31.75	3.250	82.55	4	C30710	-	-
1/2	.5000	12.70	.500	12.70	.500	12.70	2.500	63.50	4	C31180	C31297	C31069
1/2	.5000	12.70	.500	12.70	1.250	31.75	3.250	82.55	4	C31181	C31298	C31070
1/2	.5000	12.70	.500	12.70	2.000	50.80	4.000	101.60	4	C31182	C31299	C31109
1/2	.5000	12.70	.500	12.70	3.000	76.20	5.000	127.00	4	C30732	-	-
5/8	.6250	15.88	.625	15.88	.625	15.88	2.750	69.85	4	C31183	C31300	C31071
5/8	.6250	15.88	.625	15.88	1.625	41.28	3.750	95.25	4	C31184	C31301	C31072
5/8	.6250	15.88	.625	15.88	2.500	63.50	4.625	117.48	4	C31190	C31302	-
3/4	.7500	19.05	.750	19.05	.750	19.05	2.875	73.03	4	C31193	C31303	C31074
3/4	.7500	19.05	.750	19.05	1.625	41.28	3.875	98.43	4	C31194	C31304	C31075
3/4	.7500	19.05	.750	19.05	3.000	76.20	5.250	133.35	4	C31195	C31305	-
1	1.0000	25.40	1.000	25.40	1.000	25.40	3.500	88.90	5	C31202	C31309	C31073
1	1.0000	25.40	1.000	25.40	2.000	50.80	4.500	114.30	5	C31197	C31306	C31076
1	1.0000	25.40	1.000	25.40	3.000	76.20	5.500	139.70	5	C31198	C31307	C31111
1	1.0000	25.40	1.000	25.40	4.000	101.60	6.500	165.10	5	C31199	C31308	-
1-1/4	1.2500	31.75	1.250	31.75	2.000	50.80	4.500	114.30	6	C31203	C31310	C31078
1-1/4	1.2500	31.75	1.250	31.75	3.000	76.20	5.500	139.70	6	C31204	C31311	C31112
1-1/4	1.2500	31.75	1.250	31.75	4.000	101.60	6.500	165.10	6	C31205	-	-
1-1/2	1.5000	38.10	1.250	31.75	3.000	76.20	5.500	139.70	6	C31206	-	-
2	2.0000	50.80	2.000	50.80	3.000	76.20	6.750	171.45	6	C31207	C31312	-
2	2.0000	50.80	2.000	50.80	4.000	101.60	7.750	196.85	6	C31208	C31313	-
2	2.0000	50.80	2.000	50.80	6.000	152.40	9.750	247.65	6	C31209	C31314	-

DRILLING

HOLE FINISHING

THREADING

MILLING

OTHER TOOLS