TRI-CARB®
High Performance Carbide End Mills

SGS®

Improved productivity in Milling Stainless Steel, Nickel, and Titanium Alloys

Approaching High-Strength and Heat Resisting Materials

Heat resisting alloys and stainless steels are designed to perform in the most demanding conditions and provide mechanical strength, corrosion resistance and oxidation resistance. The performance factors designed into these materials contribute to the difficulties encountered in machining. Titanium alloys also have a much lower modulus producing tool deflection and machining problems.

To effectively machine these materials, SGS has developed a tool to overcome the mechanical resistance of the metal and the heat generated in the deformation and frictional wear between the metal and the tool.

The SGS Tri-Carb®, manufactured from lab-certified carbide, has been designed to provide twice the amount of shear available from conventional end mills to overcome the strength, work hardening and high impact resistance of these metals. The amount of heat produced cutting these alloys requires an effective high temperature coating barrier between the metal and the tool. Tri-Carb® is designed with Ti-NAMITE-A (AlTiN), the most effective coating in resisting high temperature conditions and the galling nature of these alloys.

Benefits

- Increased Productivity
- Improved Surface Finish
- Longer Tool Life
- Reduced Need For Coolant
- More Accurate Cutting

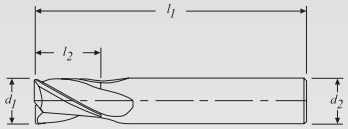
Features

- Optional Shank Neck
- Faced Hook - High Hardness - Stub Length
- Enhanced Corner Strength - Application Specific Carbide - Corner Radius
- Ti-NAMITE-A (AlTiN) Coated
- Stub Length - Maximum Rigidity - High Shear Geometry - High Transverse Rupture Strength

HIGH PERFORMANCE

Fractional

Tri-Carb® - Series 65 - 3 Flute

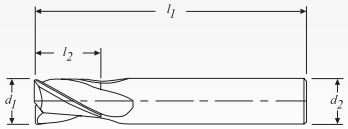


Cutting Diameter d_1	Length of Cut l_2	Overall Length l_1	Shank Diameter d_2	Corner Radius	Ti-NAMITE A (ALtiN) EDP No.
1/8	1/4	1-1/2	1/8	.010	91200
3/16	5/16	2	3/16	.010	91201
1/4	3/8	2-1/2	1/4	.010	91202
5/16	7/16	2-1/2	5/16	.010	91203
3/8	1/2	2-1/2	3/8	.011	91204
1/2	5/8	3	1/2	.015	91205
5/8	3/4	3-1/2	5/8	.019	91206
3/4	1	4	3/4	.023	91207
1	1-1/4	4	1	.030	91208

TOLERANCES
d_1 = +0.000 / -0.002
d_2 = -0.0001 / -0.0004

Metric

Tri-Carb® - Series 65M - 3 Flute

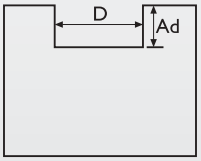


Cutting Diameter d_1	Length of Cut l_2	Overall Length l_1	Shank Diameter d_2	Corner Radius	Ti-NAMITE A (ALtiN) EDP No.
3	6	38	3	0,25	91300
4	8	50	4	0,25	91301
5	8	50	6	0,25	91302
6	9	63	6	0,25	91303
8	11	63	8	0,25	91304
10	13	69	10	0,30	91305
12	15	75	12	0,36	91306
16	19	89	16	0,48	91307
20	26	100	20	0,61	91308

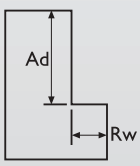
TOLERANCES
d_1 = 3 - 6 = +0,000/-0,03mm
>6 - 10 = +0,000/ -0,04mm
>10 - 20 = +0,000/ -0,05mm
d_2 = +0,000/ -0,01mm

Speed and Feed Recommendations

Diameter (D)		Alloy Steel		Titanium		Inconel		Stainless	
		≤ 275 Bhn		≤ 300 Bhn		≤ 300 Bhn		≤ 275 Bhn	
		350 sfm		300 sfm		80 sfm		300 sfm	
		105 m / min		90 m / min		24 m / min		90 m / min	
		Feed Rate – Per Tooth							
in	mm	in	mm	in	mm	in	mm	in	mm
1/8	3	.0004	.010	.0003	.007	.0002	.005	.0003	.007
	4		.015		.010		.007		.010
3/16	5	.0009	.023	.0005	.013	.0004	.010	.0004	.013
1/4	6	.0012	.030	.0009	.023	.0006	.015	.0006	.018
5/16	8	.0014	.035	.0012	.030	.0010	.025	.0009	.025
3/8	10	.0018	.045	.0015	.038	.0012	.030	.0011	.033
1/2	12	.0023	.058	.0019	.048	.0016	.040	.0017	.043
5/8	16	.0026	.066	.0024	.060	.0020	.050	.0022	.055
3/4	20	.0029	.073	.0026	.066	.0024	.060	.0025	.064
1		.0032	.081	.0035	.088	.0025	.064	.0033	.084



Axial Depth ≤ .5 x Diameter



Radial Width ≤ .5 x Diameter
Axial Depth ≤ 1 x Diameter

rpm = sfm x 3.82 / tool diameter
rpm = (m/min x 1000) / (3.14 x tool diameter)
feed per minute = feed per tooth x no. of teeth x rpm