

Solid Carbide High Performance

Roughing & Hard Material Finishing End Mills



The main features of these new high performance end mill ranges include:

- Innovative new geometries designed in conjunction with our international development partners who have decades of design and development experience in the carbide tooling industry. The benefit is a range of state-of-the-art carbide cutting tools with superior performance.
- Chamfer and dubbing features to reinforce cutting tool corners for extended wear life and reduced cutting tool forces at higher speeds.
- Oerlikon Balzers XTREME coatings which further improve operational performance and wear life.
- Sub-micron grain size of the European origin carbide substrate (0.2-0.4 µm for the hard material finishers, and 0.8 µm for the roughers), with 9% Cobalt content.
- Shank tolerances to h6.
- The high performance rougher ranges consist of regular length, coarse and fine pitch, knuckle and flat crest forms, most with XTREME coating (only product group O3C is uncoated, suitable for aluminium machining applications).
- High performance finishers for hard steel applications include: Regular length square end (O3G), regular length (O3I) and long series (O3J) ball nose variants, all with XTREME coating.
- Designed to work standard over the 4mm to 20mm diameter range.

In combination, these features result in an extremely high performance carbide cutting tool range, which compete favourably with current global state-of-the-art solid carbide cutting tool designs. In some applications these new solid carbide end mills have outperformed competitive products by up to four times. High stock removal rates at high speeds and feeds, excellent finish quality and extended wear life are the major benefits of these new designs, in very hard work materials with complex applications.



Manufacturers & Suppliers
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Somta's New Solid Carbide High Performance Roughing & Hard Material Finishing End Mills

To complement Somta's standard range of XTREME coated solid carbide drills and finishing end mills (previously TiAlN coated as standard), we **now introduce two new groupings of ultra high performance carbide end mills.**

Roughers

A range of high performance roughing end mills for rapid stock removal, with new geometry designed for very low cutting forces. These new roughers are for general engineering applications such as side cutting, slotting and ramping - and can be used on machines with medium to low rigidity.

Hard Material Finishers

A range of high performance finishing end mills for operation on hard materials in the range 48 to 52 HRc (455-512HB). The finishers are designed for peripheral milling of contours and complex shapes, and are ideal for hardened mould and die steels up to 52HRC (512HB).

Solid Carbide High Performance

Roughing & Hard Material Finishing End Mills

03G Solid Carbide Multi-Flute Finishing End Mill
REGULAR LENGTH, XTREME COATED
Finisher for hard materials

Features:
Somta standard
Cylindrical shank with h6 tolerance
Dubbing for extra strength and longer tool life
Non Centre Cutting

Applications:
• Designed for peripheral milling of contours and complex shapes
• Ideal for hardened mould and die steels up to 52Hrc

d	d1	l1	l2	CODE
3	6	10	57	03G0400K
3	8	16	63	03G0600K
3	10	18	72	03G0800K
3	12	22	83	03G1200K
3	16	30	92	03G1600K
3	20	38	104	03G2000K

03I Solid Carbide Ball Nose Finishing End Mill
REGULAR LENGTH, XTREME COATED
Finisher for hard materials

Features:
Somta standard
Cylindrical shank with h6 tolerance
Dubbing for extra strength and longer tool life
Non Centre Cutting
Possible modifications-neck according to customer request

Applications:
• Designed for peripheral milling of contours and complex shapes
• Ideal for hardened mould and die steels up to 52Hrc

d	d1	l1	l2	CODE
3	6	10	57	03I0400K
3	8	16	63	03I0600K
3	10	18	72	03I0800K
3	12	22	83	03I1200K
3	16	30	92	03I1600K
3	20	38	104	03I2000K

03J Solid Carbide Ball Nose Finishing End Mill
LONG SERIES, XTREME COATED
Finisher for hard materials

Features:
Somta standard
Cylindrical shank with h6 tolerance
Dubbing for extra strength and longer tool life
Non Centre Cutting
Possible modifications-neck according to customer request

Applications:
• Designed for peripheral milling of contours and complex shapes
• Ideal for hardened mould and die steels up to 52Hrc

d	d1	l1	l2	CODE
3	6	10	57	03J0400K
3	8	16	63	03J0600K
3	10	18	72	03J0800K
3	12	22	83	03J1200K
3	16	30	92	03J1600K
3	20	38	104	03J2000K

03C Solid Carbide 3 Flute Roughing End Mill
REGULAR LENGTH, KNUCKLE FORM, COARSE PITCH, UNCOATED (FOR ALUMINIUM)

Features:
Somta standard
Cylindrical shank with h6 tolerance
Cutting portion with tolerance -0,020 / -0,070
Chamfer and dubbing to reinforce corner for a long tool life
Centre Cutting
Possible modifications - neck according to customer request

Applications:
• Side cutting, slotting and ramping - special design for low cutting forces
• For general engineering applications - can be used on machines with medium to low rigidity.

d	d1	l1	l2	CODE
3	6	10	57	03C0400K
3	8	16	63	03C0600K
3	10	18	72	03C0800K
3	12	22	83	03C1200K
3	16	30	92	03C1600K
3	20	38	104	03C2000K

03D Solid Carbide 3 Flute Roughing End Mill
REGULAR LENGTH, KNUCKLE FORM, FINE PITCH, XTREME COATED
Fine-pitch producing a semi-finish surface which is acceptable for many applications

Features:
Somta standard
Cylindrical shank with h6 tolerance
Cutting portion with tolerance -0,020 / -0,070
Chamfer and dubbing to reinforce corner for a long tool life
Centre Cutting
Possible modifications - neck according to customer request

Applications:
• Side cutting, slotting and ramping - special design for low cutting forces combined with a semi-finish surface.
• For general engineering applications and die mould applications - can be used on machines with medium to low rigidity.

d	d1	l1	l2	CODE
3	6	10	57	03D0400K
3	8	16	63	03D0600K
3	10	18	72	03D0800K
3	12	22	83	03D1200K
3	16	30	92	03D1600K
3	20	38	104	03D2000K

03E Solid Carbide Multi-Flute Roughing End Mill
REGULAR LENGTH, KNUCKLE FORM, FINE PITCH, XTREME COATED
Flat profile producing a semi-finish surface which is acceptable for many applications

Features:
Somta standard
Cylindrical shank with h6 tolerance
Cutting portion with tolerance -0,020 / -0,070
Chamfer and dubbing to reinforce corner for a long tool life
Centre Cutting
Possible modifications - neck according to customer request

Applications:
• Side cutting, slotting and ramping - special design for low cutting forces combined with a semi-finish surface.
• For general engineering applications and die mould applications - can be used on machines with medium to low rigidity.

d	d1	l1	l2	CODE
3	6	10	57	03E0400K
3	8	16	63	03E0600K
3	10	18	72	03E0800K
3	12	22	83	03E1200K
3	16	30	92	03E1600K
3	20	38	104	03E2000K

Material Type	Hardness HB	Tensile Strength N/mm ²	Recommended Surface Speed in m/min		Recommended feed in mm per tooth for Coated Carbide End Mills based on 1.0 x D cutting depth with 0.5 x D cutting width. Reduce depth to 0.75 x D for slotting						
			min	max	End Mill Diameter in mm						
					4	6	8	10	12	16	20
03C Solid Carbide 3 Flute Roughing End Mill REGULAR LENGTH, KNUCKLE FORM, COARSE PITCH, UNCOATED (FOR ALUMINIUM)											
Aluminium wrought alloys	< 100	< 350	500	2000	-	0.066	0.088	0.11	0.132	0.176	0.22
Aluminium cast alloys > 5% Si < 10% Si	< 120	< 400	500	1500	-	0.059	0.079	0.099	0.119	0.158	0.198
03D Solid Carbide 3 Flute Roughing End Mill REGULAR LENGTH, FLAT CREST, COARSE PITCH, XTREME COATED											
Free Cutting Carbon Steel	< 150	< 540	150	200	-	0.044	0.06	0.072	0.083	0.101	0.114
0.3 to 0.4% Carbon Steel	< 170	< 620	140	190	-	0.044	0.06	0.072	0.083	0.101	0.114
Alloy Steel	< 248	< 910	120	160	-	0.036	0.05	0.061	0.07	0.087	0.101
Hardened Alloy Steel	< 330	< 1150	90	150	-	0.033	0.045	0.054	0.062	0.077	0.088
Stainless Steel - Martensitic (400 Series)	< 248	< 810	60	100	-	0.029	0.04	0.048	0.056	0.07	0.081
Stainless Steel - Austenitic (300 Series)	< 300	< 1000	80	100	-	0.036	0.05	0.061	0.07	0.087	0.101
Grey Cast Irons	110-300	-	120	160	-	0.044	0.06	0.072	0.083	0.101	0.114
Nodular Cast Irons	110	140	140	140	-	0.036	0.05	0.061	0.07	0.087	0.101
Malleable Cast Irons	100	130	100	130	-	0.029	0.04	0.048	0.056	0.07	0.081
Heat Resisting Alloys	< 350	< 1200	20	40	-	0.019	0.026	0.032	0.037	0.046	0.054
Commercially Pure Titanium	< 275	< 1000	50	80	-	0.029	0.04	0.048	0.056	0.07	0.081
Commercially Alloyed Titanium	< 350	< 1200	45	65	-	0.026	0.037	0.045	0.052	0.064	0.074

03F Solid Carbide Multi-flute Roughing End Mill
REGULAR LENGTH, FLAT CREST, FINE PITCH, XTREME COATED
Flat profile producing a semi-finish surface which is acceptable for many applications

Features:
Somta standard
Cylindrical shank with h6 tolerance
Cutting portion with tolerance -0,020 / -0,070
Chamfer and dubbing to reinforce corner for a long tool life
Centre Cutting
Possible modifications - neck according to customer request

Applications:
• Side cutting, slotting and ramping - special design for low cutting forces
• For general engineering applications - can be used on machines with medium to low rigidity.

d	d1	l1	l2	CODE
4	6	10	57	03F0400K
4	8	16	63	03F0600K
4	10	18	72	03F0800K
4	12	22	83	03F1200K
4	16	30	92	03F1600K
4	20	38	104	03F2000K

Material Type	Hardness HB	Tensile Strength N/mm ²	Recommended Surface Speed in m/min		Recommended feed in mm per tooth for Coated Carbide End Mills based on 1.0 x D cutting depth with 0.5 x D cutting width. Reduce depth to 0.75 x D for slotting						
			min	max	End Mill Diameter in mm						
					4	6	8	10	12	16	20
03E Solid Carbide Multi-Flute Roughing End Mill REGULAR LENGTH, KNUCKLE FORM, FINE PITCH, XTREME COATED											
Free Cutting Carbon Steel	< 150	< 540	150	200	-	0.044	0.06	0.072	0.083	0.101	0.114
0.3 to 0.4% Carbon Steel	< 170	< 620	140	190	-	0.044	0.06	0.072	0.083	0.101	0.114
Alloy Steel	< 248	< 910	120	160	-	0.036	0.05	0.061	0.07	0.087	0.101
Hardened Alloy Steel	< 330	< 1150	90	150	-	0.033	0.045	0.054	0.062	0.077	0.088
Stainless Steel - Martensitic (400 Series)	< 248	< 810	60	100	-	0.029	0.04	0.048	0.056	0.07	0.081
Stainless Steel - Austenitic (300 Series)	< 300	< 1000	80	100	-	0.036	0.05	0.061	0.07	0.087	0.101
Grey Cast Irons	110-300	-	120	160	-	0.044	0.06	0.072	0.083	0.101	0.114
Nodular Cast Irons	110	140	140	140	-	0.036	0.05	0.061	0.07	0.087	0.101
Malleable Cast Irons	100	130	100	130	-	0.029	0.04	0.048	0.056	0.07	0.081
Heat Resisting Alloys	< 350	< 1200	20	40	-	0.019	0.026	0.032	0.037	0.046	0.054
Commercially Pure Titanium	< 275	< 1000	50	80	-	0.029	0.04	0.048	0.056	0.07	0.081
Commercially Alloyed Titanium	< 350	< 1200	45	65	-	0.026	0.037	0.045	0.052	0.064	0.074
03F Solid Carbide Multi-flute Roughing End Mill REGULAR LENGTH, FLAT CREST, FINE PITCH, XTREME COATED											
Free Cutting Carbon Steel	< 150	< 540	150	200	-	0.036	0.049	0.059	0.072	0.087	0.098
0.3 to 0.4% Carbon Steel	< 170	< 620	140	190	-	0.036	0.049	0.059	0.072	0.087	0.098
Alloy Steel	< 248	< 910	120	160	-	0.03	0.041	0.049	0.061	0.075	0.087
Hardened Alloy Steel	< 330	< 1150	90	150	-	0.027	0.037	0.044	0.054	0.066	0.076
Stainless Steel - Martensitic (400 Series)	< 248	< 810	60	100	-	0.024	0.033	0.039	0.049	0.06	0.07
Stainless Steel - Austenitic (300 Series)	< 300	< 1000	80	100	-	0.03	0.041	0.049	0.061	0.075	0.087
Grey Cast Irons	110-300	-	120	160	-	0.036	0.049	0.059	0.072	0.087	0.098
Nodular Cast Irons	110	140	140	140	-	0.03	0.041	0.049	0.061	0.075	0.087
Malleable Cast Irons	100	130	100	130	-	0.024	0.033	0.039	0.049	0.06	0.07
Commercially Pure Titanium	< 275	< 1000	50	80	-	0.024	0.033	0.039	0.049	0.06	0.07
03G Solid Carbide Multi-Flute Finishing End Mill REGULAR LENGTH, XTREME COATED											
Hardened Steels, Irons	<460	-	120	140	-	0.036	0.049	0.059	0.069	0.084	0.107
Hardened Steels, Irons	460-515	-	80	130	-	0.027	0.037	0.044	0.051	0.063	0.078
03I Solid Carbide Ball Nose Finishing End Mill REGULAR LENGTH, XTREME COATED											
Hardened Steels, Irons	<460	-	290	406	0.106	0.162	0.221	0.266	0.308	0.379	0.434
Hardened Steels, Irons	460-515	-	203	348	0.08	0.122	0.166	0.199	0.23	0.281	0.32
03J Solid Carbide Ball Nose Finishing End Mill LONG SERIES, XTREME COATED											
Hardened Steels, Irons	<460	-	290	406	0.106	0.162	0.221	0.266	0.308	0.379	0.434
Hardened Steels, Irons	460-515	-	203	348	0.08	0.122	0.166	0.199	0.23	0.281	0.32

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