passion
for precision

fraisa

Toro-SB and Sphero-SB
3D Milling Technology for Stainless Steels

NEW

Toro-SB and Sphero-SB
Specialists in the 3D Machining of Stainless Steels

In the process of machining stainless steels in particular, it is the tool costs which are the most significant. This is why the commercial machining of stainless steels requires the use of tools which have been specifically developed for this purpose. With **Toro-SB** and **Sphero-SB** such tools are now also available for the first time for the 3D machining of stainless steels.

The tool material, grinding quality, cutting-edge preparation and coating of the SB line have been adapted specifically for the machining of the austenitic structure of stainless steels. The design of the cutting wedges has been selected such that both **Sphero-SB** and **Toro-SB** can be used for semi-finish and finish machining.

For the user this means an improvement in machining time, surface quality and/or tool life compared to conventional tools for 3D machining. Furthermore, all machining can be carried out with just two tools. Tools which have been used for finishing can continue to be used for roughing operations before they are reconditioned in the FRAISA ReTool® system true to the original.

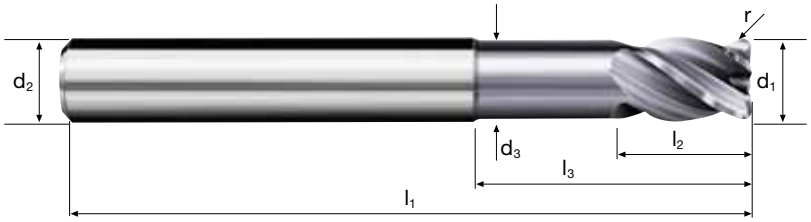
The advantages:

- **Reduction in tool costs**
- **Shortening of the machining time**
- **Improvement in surface quality**
- **More reliability and process optimisation**

Corner radius end mills Toro-SB

Tolerance r 0/+0.03, 3xd

HM MG10	λ 40° γ 5°
Vario	



Rm < 850	Rm 850–1100						Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

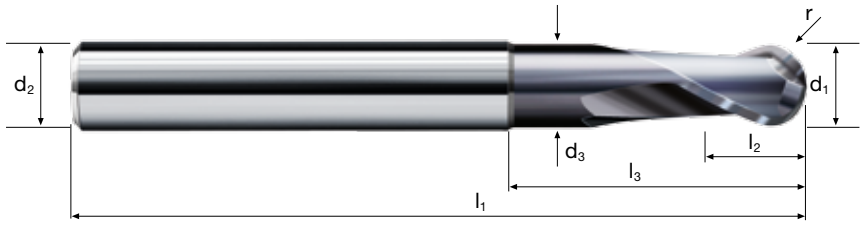
Example: **Order-N°.** Coating **P** Article-N°. **7340** Ø-Code **.138**

Ø-Code	d_1 e8	d_2 h6	d_3	l_1	l_2	l_3	r 0/+0.03	α	z		POLYCHROM P7340
.138	2	6	1.9	57	3	6	0.2	8.5°	4		•
.178	3	6	2.8	57	4	9	0.2	5.8°	4		•
.218	4	6	3.7	57	5	12	0.2	3.6°	4		•
.258	5	6	4.6	57	6	15	0.2	1.7°	4		•
.297	6	6	5.5	57	7	20	0.2	0.0°	4		•
.385	8	8	7.4	63	9	26	0.2	0.0°	4		•
.445	10	10	9.2	72	11	31	0.2	0.0°	4		•
.496	12	12	11.0	83	13	37	0.2	0.0°	4		•
.140	2	6	1.9	57	3	6	0.5	8.7°	4		•
.180	3	6	2.8	57	4	9	0.5	6.0°	4		•
.220	4	6	3.7	57	5	12	0.5	3.7°	4		•
.260	5	6	4.6	57	6	15	0.5	1.7°	4		•
.300	6	6	5.5	57	7	20	0.5	0.0°	4		•
.388	8	8	7.4	63	9	26	0.5	0.0°	4		•
.448	10	10	9.2	72	11	31	0.5	0.0°	4		•
.498	12	12	11.0	83	13	37	0.5	0.0°	4		•

Ball nose end mills Sphero-SB

Tolerance r f8 (-/-), 3xd

HM MG10	λ 30° γ 5°



Rm < 850	Rm 850–1100						Inox Stainless	Ti Titanium	Tool Steel

Example:
Order-N°. Coating **P** Article-N°. **7540** Ø-Code **.100**

Ø-Code	d1 -/-	d2 h6	d3	l1	l2	l3	r f8	α	z	POLYCHROM P7540
.100	1	6	0.95	57	1.5	3	0.5	11.8°	2	•
.140	2	6	1.90	57	3.0	6	1.0	9.0°	2	•
.180	3	6	2.80	57	4.0	9	1.5	6.4°	2	•
.220	4	6	3.70	57	5.0	12	2.0	4.0°	2	•
.260	5	6	4.60	57	6.0	15	2.5	2.0°	2	•
.300	6	6	5.50	57	7.0	20	3.0	0.0°	2	•
.391	8	8	7.40	63	9.0	26	4.0	0.0°	2	•
.450	10	10	9.20	72	11.0	31	5.0	0.0°	2	•
.501	12	12	11.00	83	13.0	37	6.0	0.0°	2	•

CNC Radius R

d1	r	Radius f8 Minimum	Radius f8 Maximum	R
1	0.5	**0.480**	**0.494**	**0.487**
2	1.0	**0.980**	**0.994**	**0.987**
3	1.5	**1.480**	**1.494**	**1.487**
4	2.0	**1.980**	**1.994**	**1.987**
5	2.5	**2.480**	**2.494**	**2.487**
6	3.0	**2.980**	**2.994**	**2.987**

CNC Radius R

d1	r	Radius f8 Minimum	Radius f8 Maximum	R
8	4.0	**3.972**	**3.990**	**3.981**
10	5.0	**4.972**	**4.990**	**4.981**
12	6.0	**5.972**	**5.990**	**5.981**

Field of application

Suitable for all 2D, 2.5D and 3D machining of austenitic stainless steels, which are commonly found in medical technology, food technology, apparatus engineering and in many other industries.

Productivity

The special combination of the tool material, geometry, grinding quality and cutting edge preparation makes it possible to increase the machining speed compared to conventional tools by 60%.

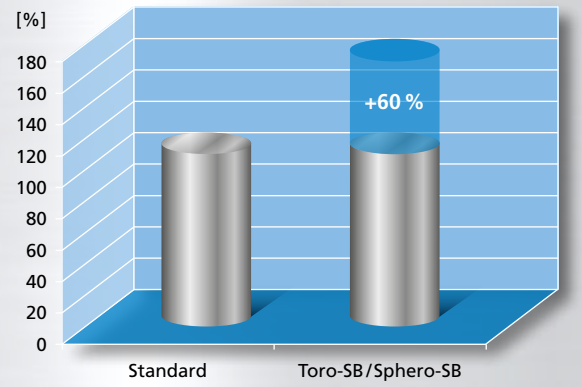
Carbide HM MG10

A fundamental developmental step for the machining of stainless steels has been achieved with the new MG10 grade, which is ductile but nevertheless hard. This grade, with its 10% content of cobalt, is excellent at increasing the resistance to edge chipping, which frequently occurs when machining austenitic steels using conventional tools.

Tool costs

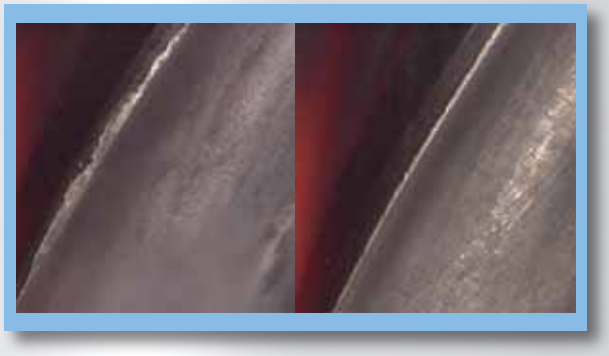
The tool costs, which in the process of machining of stainless steels are greater than those for low-alloy steels, are reduced considerably by **Sphero-SB** and **Toro-SB** compared to universal tools. The cost-conscious design with IT 8 tolerance and the enormous resistance to wear contribute towards this.

Feed rate comparison*



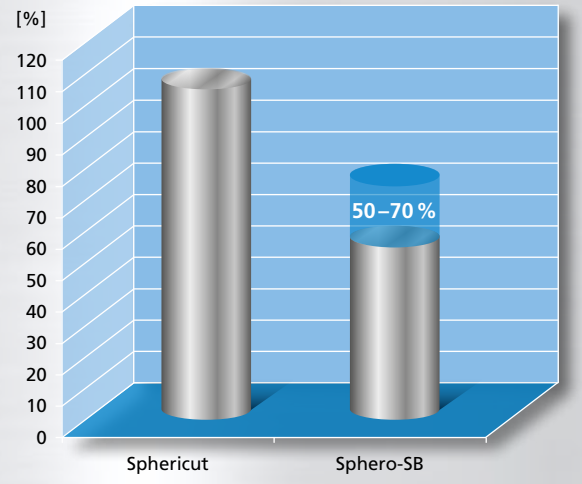
* In the processing of high-alloy austenitic steel.

Carbide comparison



Conventional carbide (left) and ultra-ductile (right)
(Material: 1.4301, Vc = 100 m/min, n = 5700 rpm, vf = 1000 mm/min, ap = 6 mm, ae = 2.4 mm, tool Ø = 6 mm, tf = 65 min)

Comparison of tool costs



Where is it possible to ask questions concerning the product?

If you have any question, please send an email to **mail.ch@fraisa.com**. You may also directly contact our local customer consultant.

The FRAISA application engineers will be happy to advise you.

For further information, please refer to **fraisa.com**

Here, you will be provided with further information on the FRAISA Group.

The fastest way to our E-Shop can be found here.

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