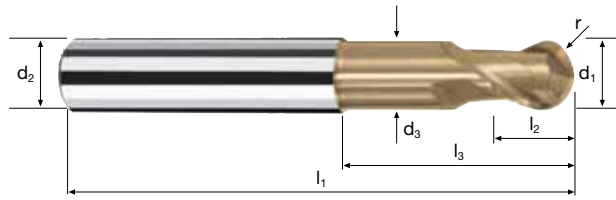
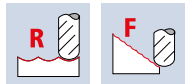
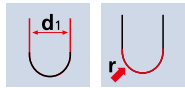
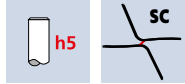


Ball nose end mills Sphero-X

Tolerance $r \pm 0.005, 3xd$



HM XA $\lambda \ 30^\circ$
 $\gamma \ -10^\circ$



new!

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			
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Example: Order-N°.		Coating V	Article-N°. 7470	ø-Code .100							DURO-V
Ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z		V7470
.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		●
.610	16	16	15.00	92	17.0	43	8.0	0.0°	2		●

More details can be found in our catalog entitled "High-performance milling tools 2016/17"



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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passion
for precision

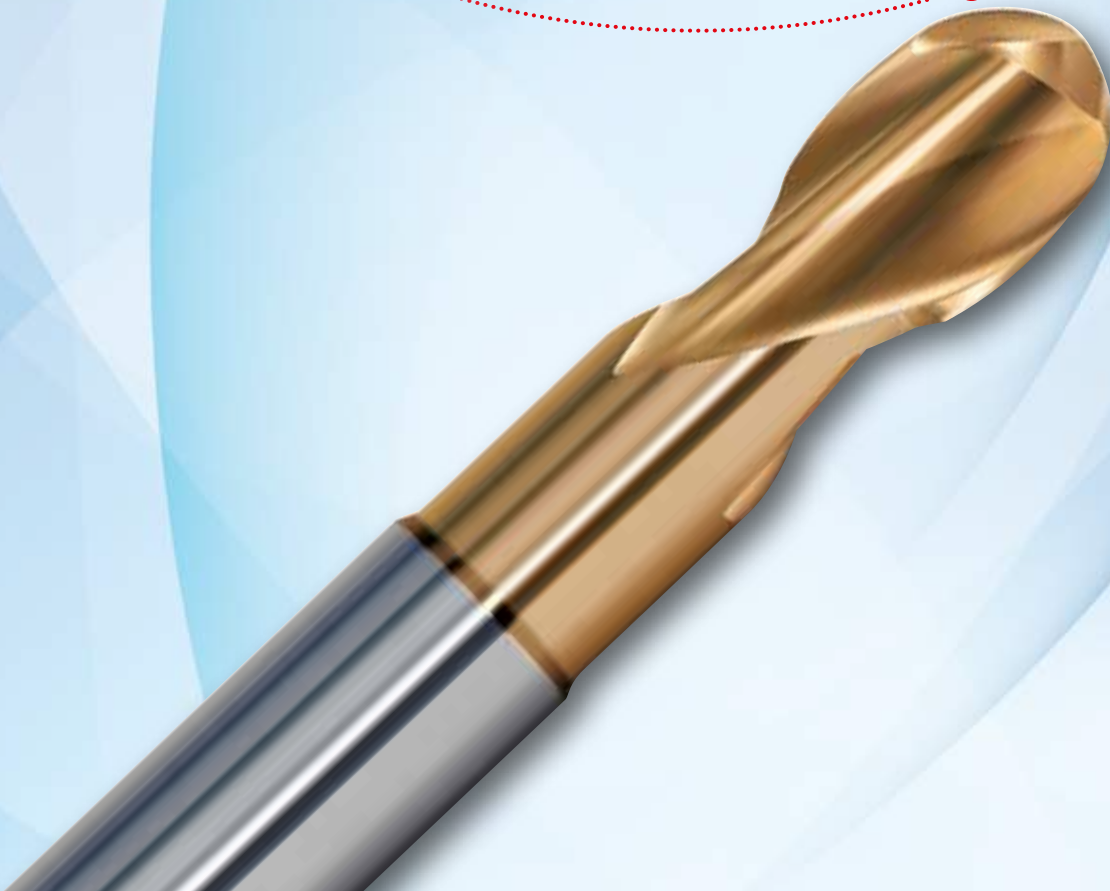


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fraisa

Sphero-X – Finishing and roughing
from 40 to 70 HRC

NEW



Sphero-X – Finishing and roughing from 40 to 70 HRC

Sphero-X denotes the new high-performance class of tool for efficient machining of hard materials in tool and mold making.

Through its flexible use in high-performance machining, great savings potentials can be realized when **roughing, finishing and superfinishing**.

A milestone in the field of hard machining is the new **Duro-V** coating, which enables maximum efficiency in the hardness range **from 40 to 70 HRC**. The hardness and ductility of this new coating systems predestines **Sphero-X** for machining simple and complex geometries in all areas of tool and mold making.

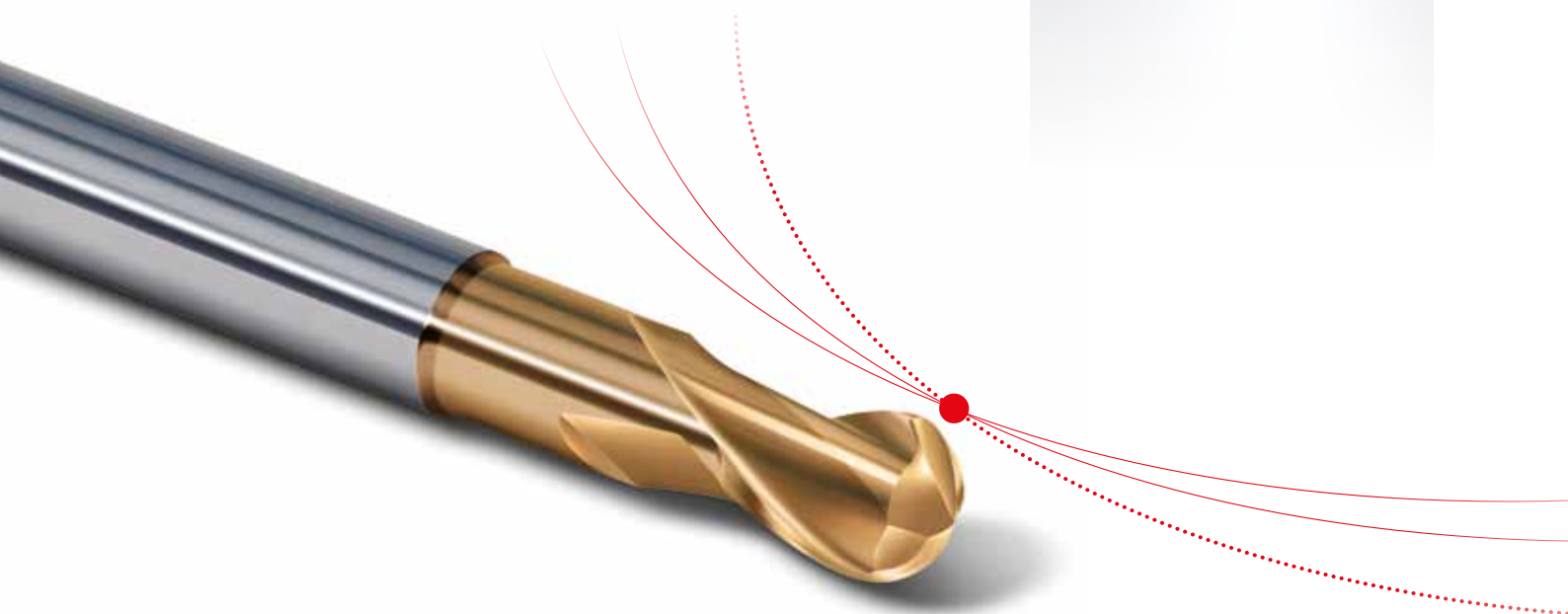
The newly developed Safe-Center edge (SC edge) improves process reliability while guaranteeing a high tool life. The superiority of the Safe-Center edge can be seen especially during penetration operations.

Thanks to the use of the proven cutting material HM XA, the increase in wear is significantly reduced. Preparation of the cutting edge stabilizes the cutting edge and counteracts chipping of the cutting edge.

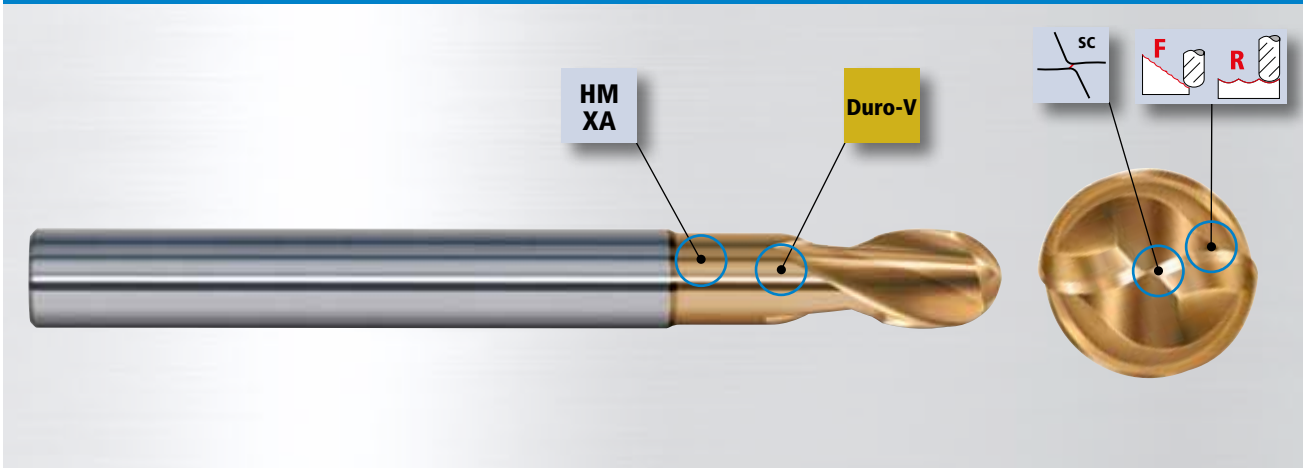
It's precisely this combination of cutting material, cutting edge conditioning, coating, and the SC edge that produces excellent results when handling components during forging, working with cutting and bending tools and working with molds when injection molding and die casting.

The advantages:

- **Maximum flexibility** because it can be used for roughing and finishing
- **Increased process reliability** thanks to the newly developed SC edge
- **Lower tool costs** thanks to universality
- **Universal utilizability** in various materials with up to 70 HRC and simple stock management
- **Multiple use** thanks to ReTool®



The new, universal Sphero-X available for machining hardened steels



F **Precise cutting-edge preparation**

- Stabilizing the cutting edge provides for high resistance to chipping of the cutting edge
- Better performance, longer tool life and greater process reliability when roughing and finishing

R

SC **New Safe-Center cutting edge geometry**

- Counteracts chipping during the penetration process
- Good cutting-edge stability means good wear resistance and performance capability

Duro-V **New Duro-V coating**

- Excellent abrasive wear lengthens tool life significantly in all hardness ranges

HM XA **HM XA**

- Excellent ductility with a very high hardness reduces the risk of chipping and increases process reliability

[3]

Universality

Sphero-X tools are ideally suitable not only for machining hot and cold work steels but also for the hardest materials, such as conventional and powder-metallurgically produced high-speed steels (HSS)

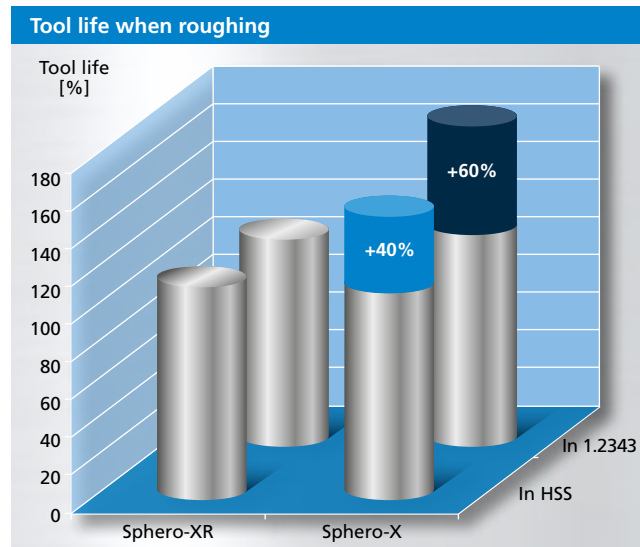


Tool life and process reliability

Thanks to product characteristics such as the new coating, the geometry and the resulting stability of the cutting edge, Sphero-X offers better performance, a longer tool life and greater process reliability.

ReTool® tool reconditioning

Sphero-X can be reconditioned in the ReTool® process to that it is as good as new. This preserves resources and saves money.



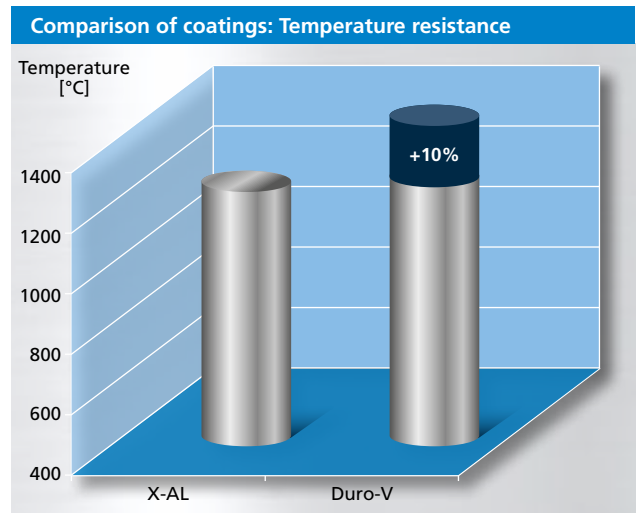
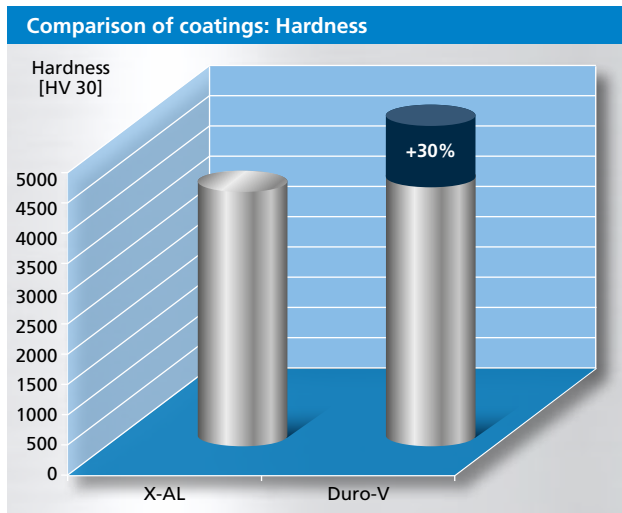
Improved performance because of Duro-V

The new Duro-V coating from FRAISA lengthens tool life considerably across the entire hardness range from 40 to 70 HRC. Consequently, **Sphero-X** is suitable for machining simple and complex geometries in all areas of tool and mold making.

Duro-V has an innovative coating structure with an optimized distribution of the elements that make up the coating.

Thanks to the patented coating method, Duro-V achieves an incredibly high level of hardness of 4400 HV. Its chemical composition, comprising titanium, aluminum, silicon and carbon, gives it excellent ductility despite this extreme hardness.

The high concentration of silicon in the coating gives the coating great strength and enables it to be used in applications with a high thermal load (up to 1200°C) and mechanical cutting edge load.



Low tool costs

Thanks to the hardness of this new coating, the innovative SC edge and the large cutting edge radius, **Sphero-X** is extremely resistant to abrasive wear.

Resistance to chipping of the cutting edge increases and opens up a wide application range when roughing, finishing and superfinishing.

[4]

Example 1

Finishing parameters:
 $n = 11880 \text{ U/min}$
 $v_f = 1780 \text{ mm/min}$
 $a_p = 0.15 \text{ mm}$
 $a_c = 0.15 \text{ mm}$

Roughing parameters:
 $n = 8510 \text{ U/min}$
 $v_f = 2470 \text{ mm/min}$
 $a_p = 0.72 \text{ mm}$
 $a_c = 0.72 \text{ mm}$

Material:
 1.2343, 54 HRC,
 Tool-Ø 6 mm

Sphero-X

Finishing/roughing of 1.2343 (54 HRC)
 Wear after 5 h finishing and 1 h roughing

Example 2

Parameters:
 $n = 4300 \text{ U/min}$
 $v_f = 1100 \text{ mm/min}$
 $a_p = 0.2 \text{ mm}$
 $a_c = 1 \text{ mm}$

Material:
 HSS, 65 HRC,
 Tool-Ø 6 mm

Sphero-X

Roughing of HSS (65 HRC)
 Wear after 40 min