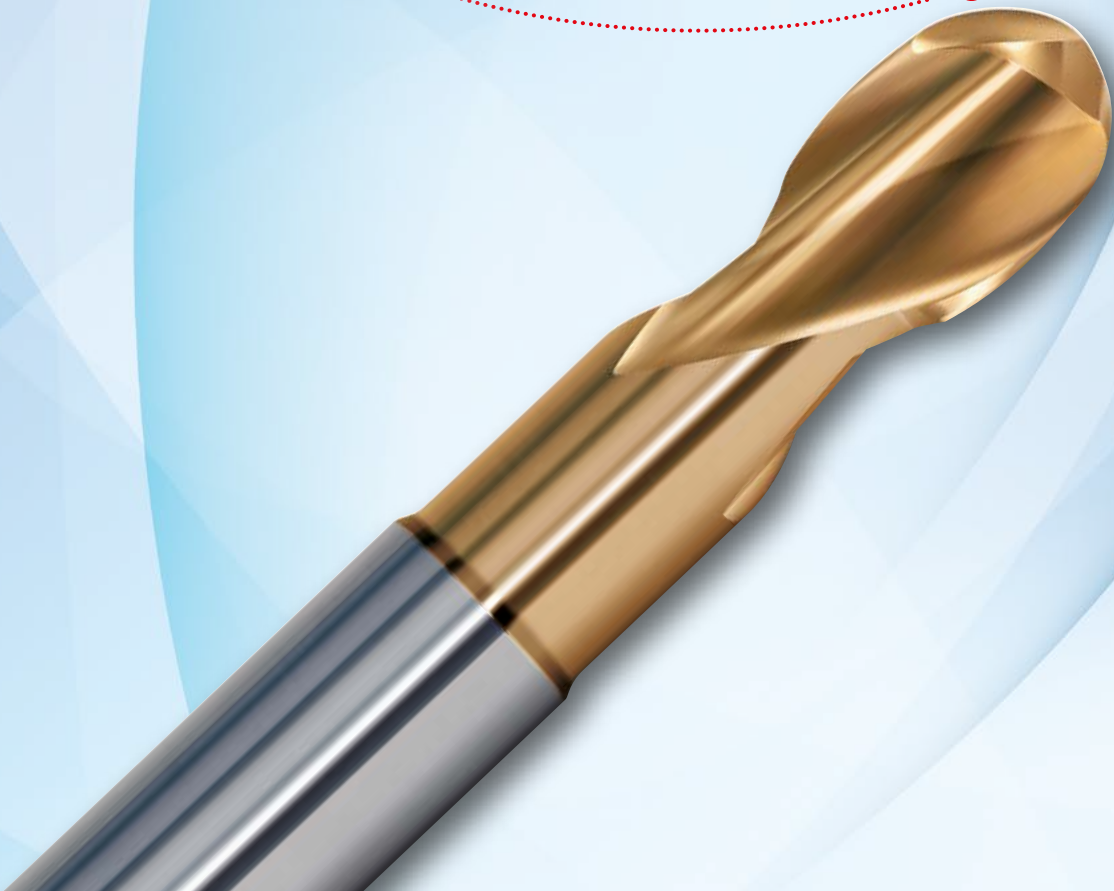


passion  
for precision



**SpheroX** – Finishing and roughing  
from 40 to 70 HRC



# SpheroX – Finishing and roughing from 40 to 70 HRC

**SpheroX** 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 **SpheroX** for machining simple and complex geometries in all areas of tool and mold making.

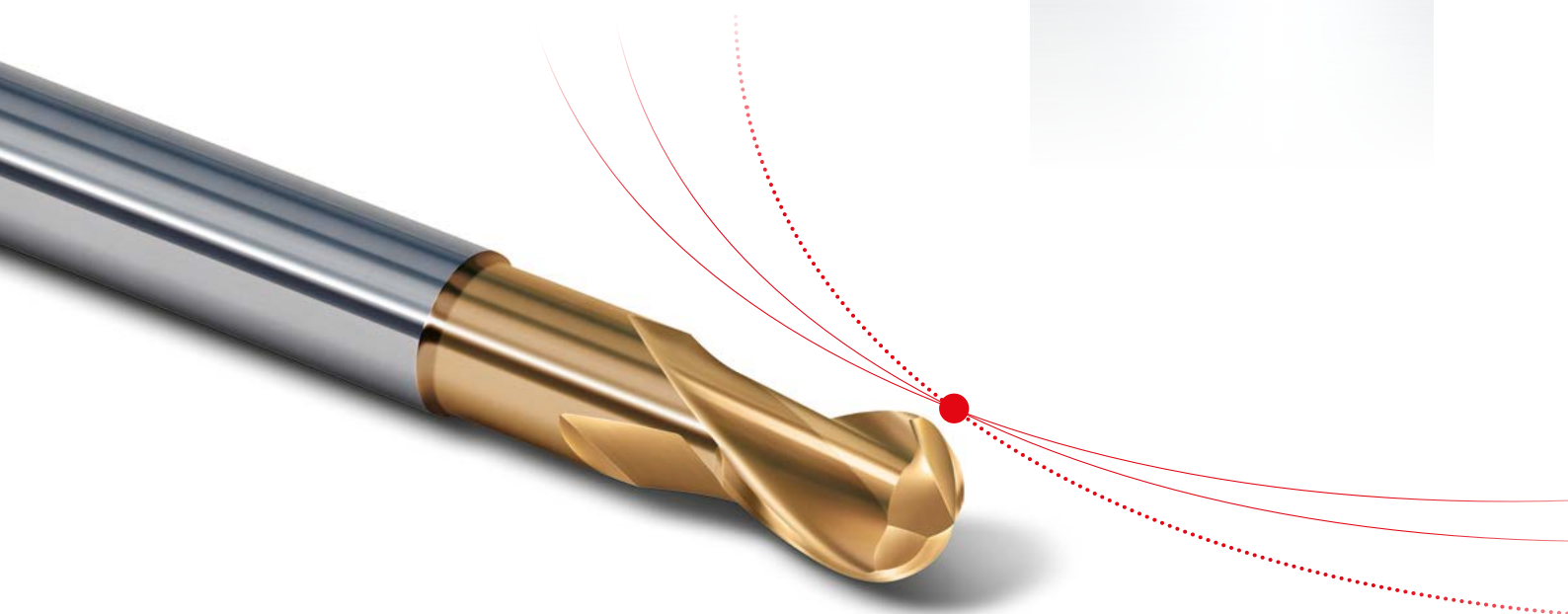
The newly developed Safe-Center edge (SC edge) improves process reliability while guaranteeing a high tool life. The superiority of the Safe-Center edge can be seen especially during penetration operations.

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.

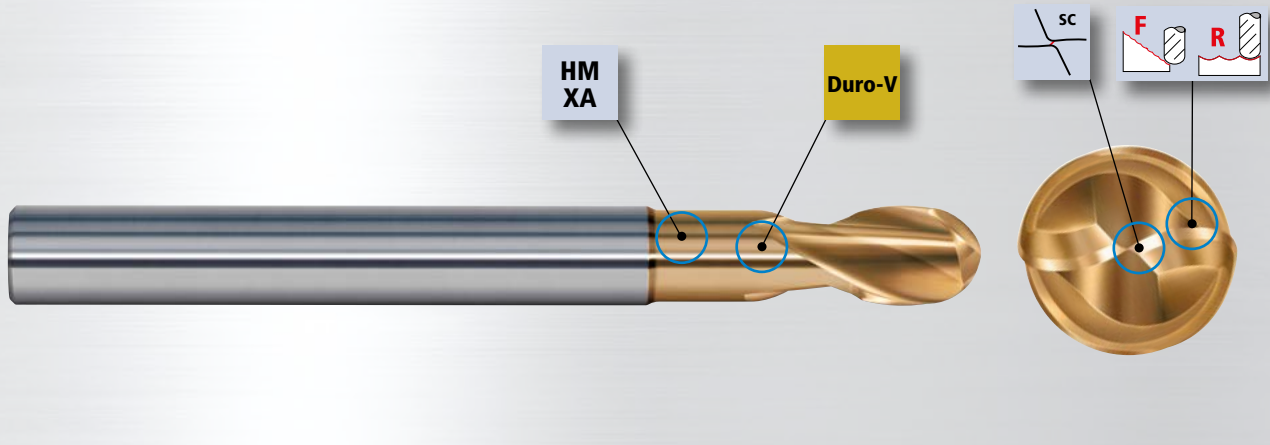
It's precisely this combination of cutting material, cutting edge conditioning, coating, and the SC edge that produces excellent results when handling components during forging, working with cutting and bending tools and working with molds when injection molding and die casting.

## 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 FRAISA ReTool®



The new, universal SpheroX 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

**Universality**

SpheroX 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)

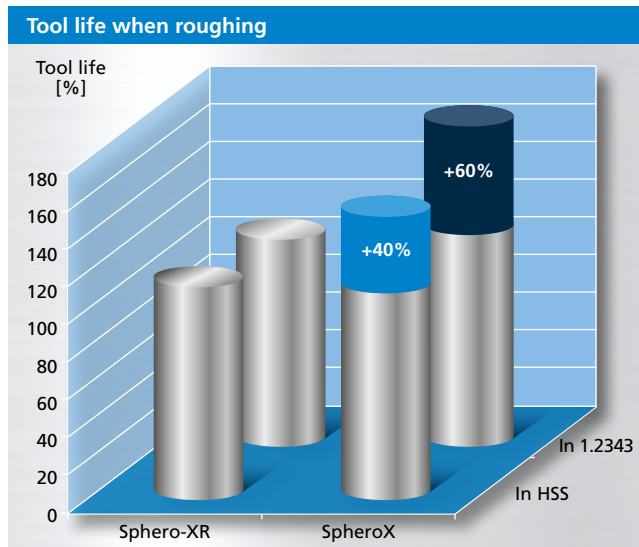


**Tool life and process reliability**

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

**FRAISA ReTool® tool reconditioning**

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



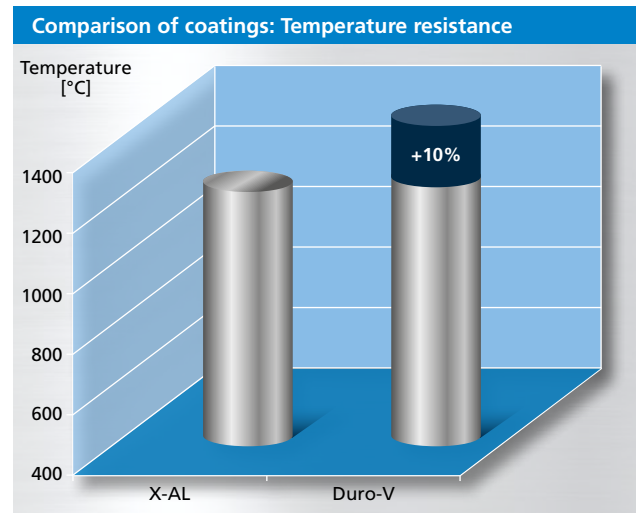
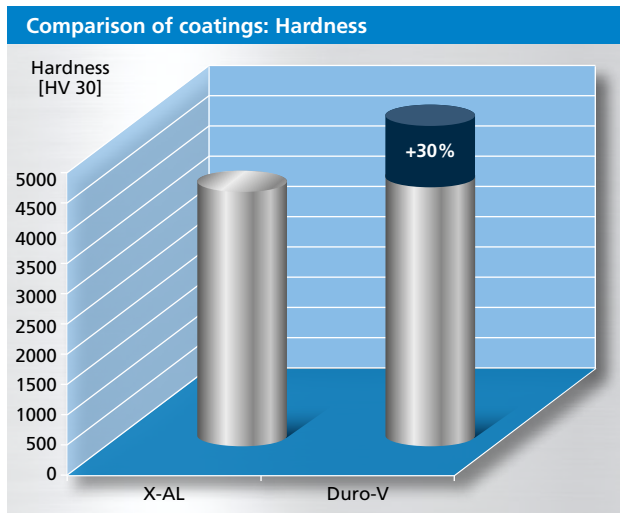
## Improved performance because of Duro-V

The new Duro-V coating from FRAISA lengthens tool life considerably across the entire hardness range from 40 to 70 HRC. Consequently, **SpheroX** 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, **SpheroX** 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.

**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

SpheroX

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

SpheroX

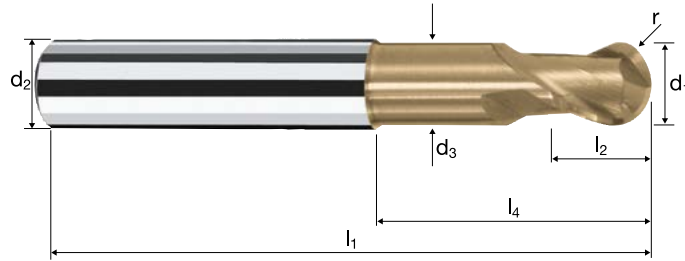
Roughing of HSS (65 HRC)  
 Wear after 40 min

# Ball nose end mills SpheroX

Tolerance r  $\pm 0.005$ , 3xd



**HM XA**     $\lambda$  30°  
                    $\gamma$  -10°

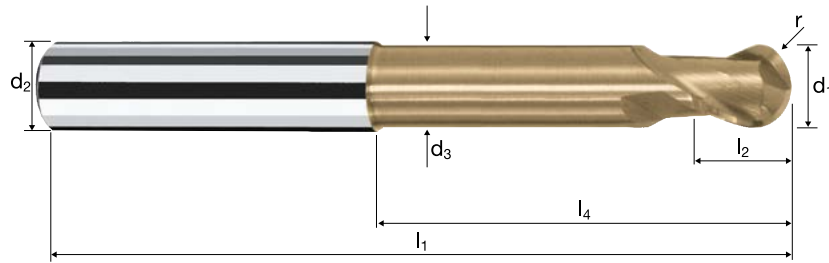
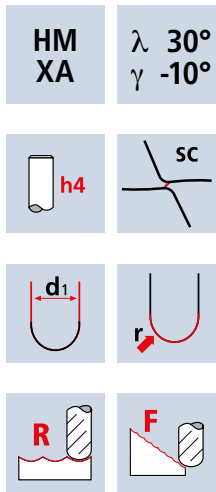


		Rm	Rm	HRC	HRC	HRC		Ti	HSS
		1100-1300	1300-1500	48-56	56-60	> 60		Titanium	ToolSteel

Example: Order-N°.											DURO-V	
											V7470	
Ø Code	d <sub>1</sub>	d <sub>2</sub> h4	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r ±0.005	α	z		
100	1.00	6.00	0.95	57	1.50	3.00	13.08	0.500	11.8°	2	●	
140	2.00	6.00	1.90	57	3.00	6.00	14.31	1.000	9.0°	2	●	
180	3.00	6.00	2.80	57	4.00	9.00	15.63	1.500	6.4°	2	●	
220	4.00	6.00	3.70	57	5.00	12.00	16.95	2.000	4.0°	2	●	
260	5.00	6.00	4.60	57	6.00	15.00	18.27	2.500	2.0°	2	●	
300	6.00	6.00	5.50	57	7.00	19.34	20.00	3.000	0.0°	2	●	
391	8.00	8.00	7.40	63	9.00	25.29	26.00	4.000	0.0°	2	●	
450	10.00	10.00	9.20	72	11.00	30.20	31.00	5.000	0.0°	2	●	
501	12.00	12.00	11.00	83	13.00	36.13	37.00	6.000	0.0°	2	●	
610	16.00	16.00	15.00	92	17.00	42.13	43.00	8.000	0.0°	2	●	

# Ball nose end mills SpheroX

Tolerance r ±0.005, 4.5xd



		Rm	Rm	HRC	HRC	HRC		Ti	HSS
		1100-1300	1300-1500	48-56	56-60	> 60		Titanium	ToolSteel

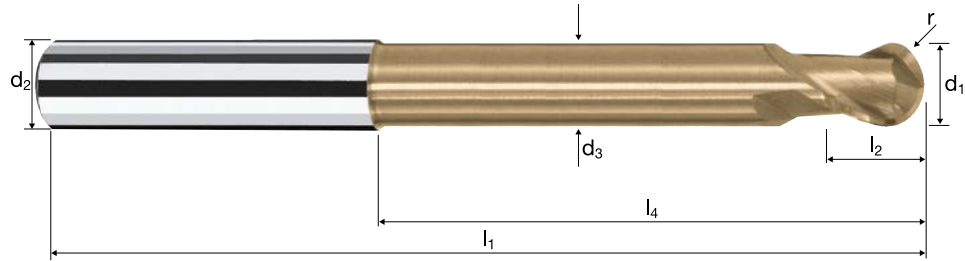
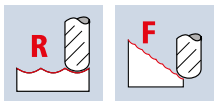
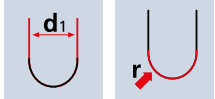
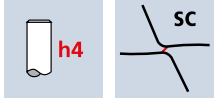
Example: Order-N°.											DURO-V	
											V7472	
Ø	d <sub>1</sub>	d <sub>2</sub> h4	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r ±0.005	α	z		
100	1.00	6.00	0.95	61	1.50	4.50	14.58	0.500	10.0°	2	●	●
140	2.00	6.00	1.90	61	3.00	9.00	17.31	1.000	6.8°	2	●	●
180	3.00	6.00	2.80	61	4.00	13.50	20.13	1.500	4.5°	2	●	●
220	4.00	6.00	3.70	66	5.00	18.00	22.95	2.000	2.7°	2	●	●
260	5.00	6.00	4.60	66	6.00	22.50	25.77	2.500	1.4°	2	●	●
300	6.00	6.00	5.50	69	7.00	30.34	31.00	3.000	0.0°	2	●	●
391	8.00	8.00	7.40	80	9.00	39.29	40.00	4.000	0.0°	2	●	●
450	10.00	10.00	9.20	90	11.00	47.20	48.00	5.000	0.0°	2	●	●
501	12.00	12.00	11.00	105	13.00	54.13	55.00	6.000	0.0°	2	●	●
610	16.00	16.00	15.00	125	17.00	74.13	75.00	8.000	0.0°	2	●	●

# Ball nose end mills SpheroX

Tolerance r ±0.005, 6xd



HM  
XA    λ 30°  
          γ -10°



	Rm	Rm	HRC	HRC	HRC	Ti	HSS
	1100-1300	1300-1500	48-56	56-60	> 60	Titanium	ToolSteel

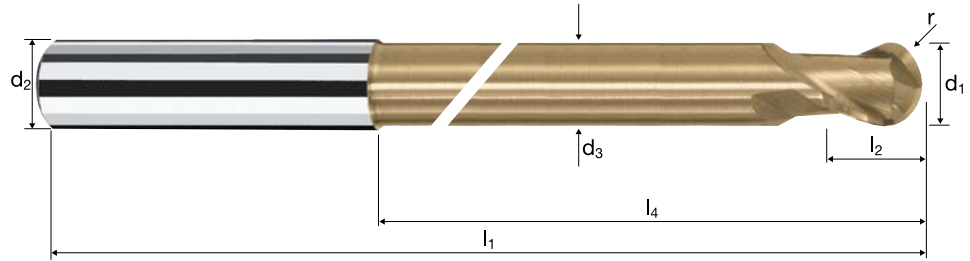
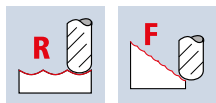
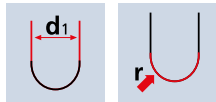
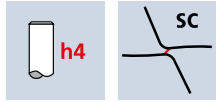
Example: Order-N°.											DURO-V
											V7474
											V7474
Ø	d <sub>1</sub>	d <sub>2</sub> h4	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r ±0.005	α	z	
100	1.00	6.00	0.95	66	1.50	6.00	16.08	0.500	9.5°	2	●
140	2.00	6.00	1.90	66	3.00	12.00	20.31	1.000	6.1°	2	●
180	3.00	6.00	2.80	66	4.00	18.00	24.63	1.500	3.9°	2	●
220	4.00	6.00	3.70	69	5.00	24.00	28.95	2.000	2.2°	2	●
260	5.00	6.00	4.60	75	6.00	30.00	33.27	2.500	1.0°	2	●
300	6.00	6.00	5.50	80	7.00	42.34	43.00	3.000	0.0°	2	●
391	8.00	8.00	7.40	90	9.00	52.29	53.00	4.000	0.0°	2	●
450	10.00	10.00	9.20	105	11.00	63.20	64.00	5.000	0.0°	2	●
501	12.00	12.00	11.00	120	13.00	73.13	74.00	6.000	0.0°	2	●
610	16.00	16.00	15.00	135	17.00	85.13	86.00	8.000	0.0°	2	●

# Ball nose end mills SpheroX

Tolerance r  $\pm 0.005$ , 9xd



HM  
XA  $\lambda$  30°  
 $\gamma$  -10°



	Rm	Rm	HRC	HRC	HRC	Ti	HSS
	1100-1300	1300-1500	48-56	56-60	> 60	Titanium	ToolSteel

Example: Order-N°.											DURO-V	
											V7478	
$\emptyset$ Code	d <sub>1</sub>	d <sub>2</sub> h4	d <sub>3</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	l <sub>4</sub>	r $\pm 0.005$	$\alpha$	z		
100	1.00	6.00	0.95	69	1.50	9.00	19.08	0.500	8.0°	2		●
140	2.00	6.00	1.90	69	3.00	18.00	26.31	1.000	4.7°	2		●
180	3.00	6.00	2.80	75	4.00	27.00	33.63	1.500	2.8°	2		●
220	4.00	6.00	3.70	80	5.00	36.00	40.95	2.000	1.5°	2		●
260	5.00	6.00	4.60	87	6.00	45.00	48.27	2.500	0.7°	2		●
300	6.00	6.00	5.50	100	7.00	62.34	63.00	3.000	0.0°	2		●
391	8.00	8.00	7.40	120	9.00	82.29	83.00	4.000	0.0°	2		●
450	10.00	10.00	9.20	135	11.00	93.20	94.00	5.000	0.0°	2		●
501	12.00	12.00	11.00	160	13.00	113.13	114.00	6.000	0.0°	2		●
610	16.00	16.00	15.00	180	17.00	130.13	131.00	8.000	0.0°	2		●





Scan this QR code to find more information on the FRAISA Group.



The fastest way to our E-Shop.

**FRAISA SA**

Gurzelenstr. 7 | 4512 Bellach | Switzerland |  
Tel.: +41 (0) 32 617 42 42 |  
mail.ch@fraisa.com | [fraisa.com](http://fraisa.com) |

You can also find us at:

[facebook.com/fraisagroup](https://facebook.com/fraisagroup)  
[youtube.com/fraisagroup](https://youtube.com/fraisagroup)  
[linkedin.com/company/fraisa](https://linkedin.com/company/fraisa)

passion  
for precision

