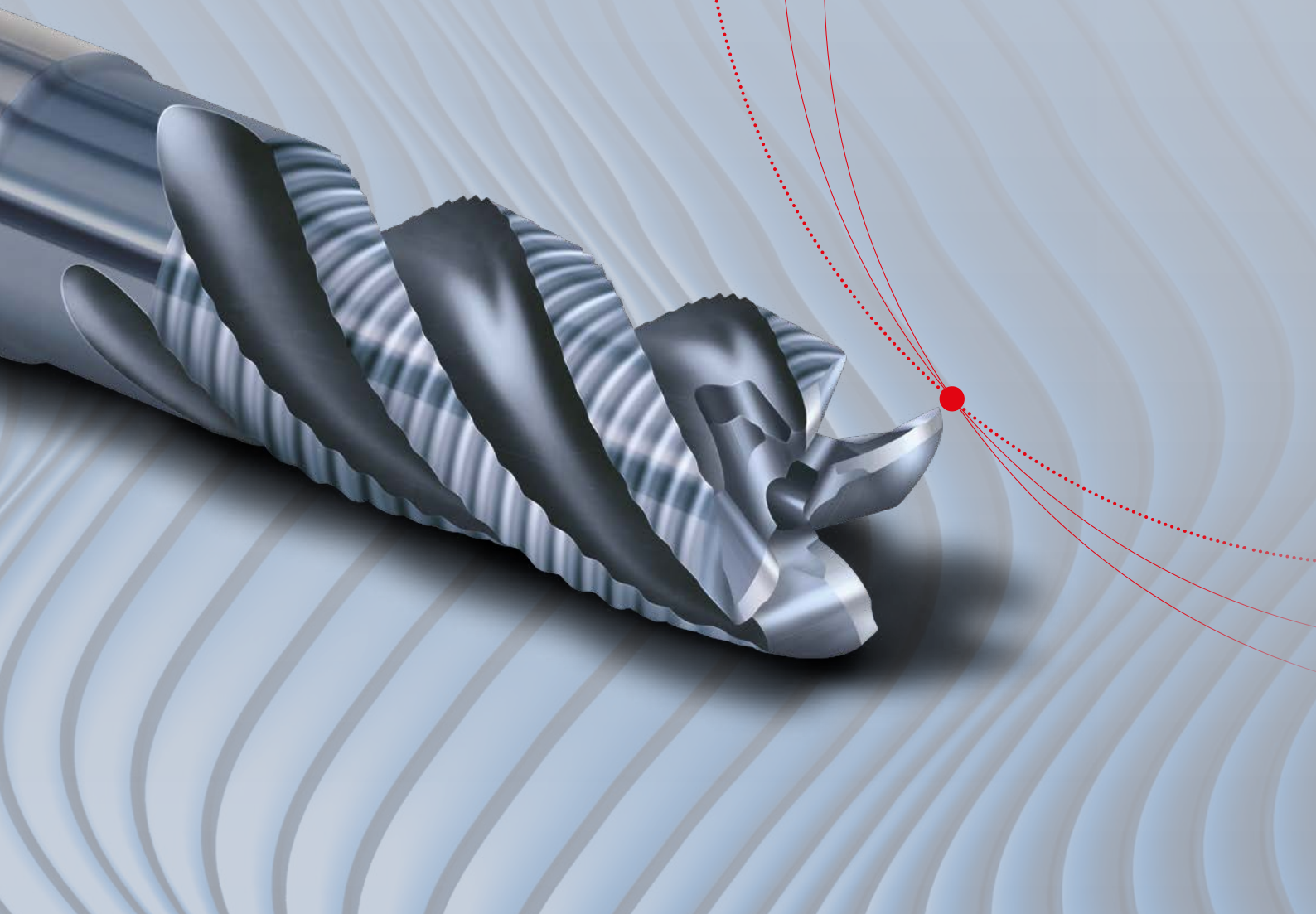
passion
for precision

fraisa

SupraCarb® High-Performance Mill

HPC milling in a new performance dimension!



Productivity boost in HPC roughing thanks to the SupraCarb® mill

The **SupraCarb®** mill expands our range of tools equipped with a high-performance penetration edge. A central air and cooling channel, in conjunction with the redesigned penetration edge, opens up new horizons for performance in HPC roughing.

Penetration jobs can be conducted up to 15 times faster than before – while maintaining the same high level of process reliability and reproducibility that the previous model with contoured cutting edge had featured.

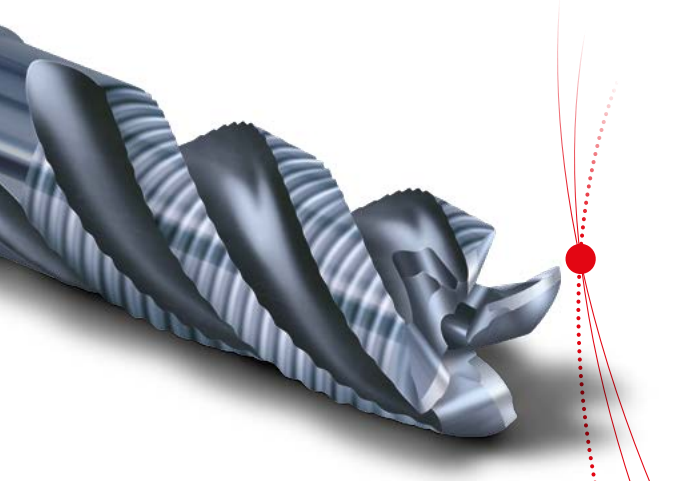
The easy-cut geometry specifically tailored to handle the machining load, in combination with the extremely wear-resistant FRAISA POLYCHROM hard coating, facilitates high-performance milling in soft and hardened steel, tool steel, stainless steel, cast iron, and titanium.

The success of NB-RP (P15336/P15236) stands out in comparison with rival products. The material removal rate and therefore productivity are 50% higher – while the service life of the tool is almost 300% longer. Thanks to our continued development of the S-shaped penetration edge and central air and cooling channel, the chips are cut with little friction and removed quickly from the machining area. The greatly reduced mechanical and thermal loads can be transformed into higher productivity and a longer tool life.

These new performance horizons of the contoured **SupraCarb®**-milling tool open up great opportunities to **boost your productivity.**

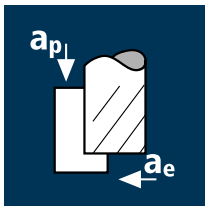
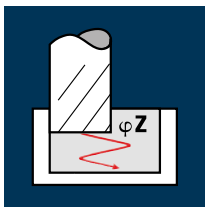
The advantages:

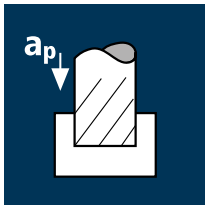
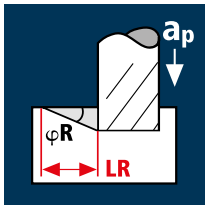
- **Maximum productivity and competitiveness** thanks to a high-performance tool with contoured cutting edge and penetration edge
- Improved **tool life, process reliability and reproducibility** thanks to the central air and cooling channel and contoured cutting edge
- **Wide variety of machinable materials ranging from steel through tool steel, stainless steel, titanium to cast iron** thanks to the easy-cut geometry and heavy-duty POLYCHROM coating
- **Smaller 'tool kit', reduced capital lockup and shorter setup times** thanks to an extended range of applications
- **Optimum utilization of machines** with limited dynamics or spindle speed
- **Reduced costs** thanks to enhanced tool utilization and time savings in the production process
- **Optimal life cycle** with ToolCare® tool management, FRAISA ReTool® tool preparation and recycling via ReToolBlue



Available online

FRAISA ToolExpert® 2.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φZ [°]
	Steel < 850 N/mm²	4.00	3	180	0.020	6.000	2.400	14325	860	12.4	20°
		5.00	4	180	0.025	7.500	3.000	11460	1145	25.8	20°
		6.00	4	180	0.030	9.000	3.600	9550	1145	37.1	20°
		8.00	4	180	0.040	12.000	4.800	7160	1145	66.0	20°
		10.00	4	180	0.050	15.000	6.000	5730	1145	103.1	20°
		12.00	4	180	0.055	18.000	7.200	4775	1050	136.1	20°
		16.00	4	180	0.055	24.000	9.600	3580	790	181.5	20°
		20.00	4	180	0.060	30.000	12.000	2865	690	247.5	20°
	Steel 850 - 1100 N/mm²	4.00	3	130	0.020	6.000	2.400	10345	620	8.9	18°
		5.00	4	130	0.025	7.500	3.000	8275	830	18.6	18°
		6.00	4	130	0.030	9.000	3.600	6895	830	26.8	18°
		8.00	4	130	0.040	12.000	4.800	5175	830	47.7	18°
		10.00	4	130	0.050	15.000	6.000	4140	830	74.5	18°
		12.00	4	130	0.055	18.000	7.200	3450	760	98.3	18°
		16.00	4	130	0.055	24.000	9.600	2585	570	131.1	18°
		20.00	4	130	0.060	30.000	12.000	2070	495	178.8	18°
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	3	45	0.015	6.000	2.400	3580	160	2.3	12°
		5.00	4	45	0.020	7.500	3.000	2865	230	5.2	12°
		6.00	4	45	0.025	9.000	3.600	2385	240	7.7	12°
		8.00	4	45	0.030	12.000	4.800	1790	215	12.4	12°
		10.00	4	45	0.040	15.000	6.000	1430	230	20.6	12°
		12.00	4	45	0.045	18.000	7.200	1195	215	27.8	12°
		16.00	4	45	0.045	24.000	9.600	895	160	37.1	12°
		20.00	4	45	0.050	30.000	12.000	715	145	51.6	12°
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	3	60	0.015	6.000	2.400	4775	215	3.1	12°
		5.00	4	60	0.020	7.500	3.000	3820	305	6.9	12°
		6.00	4	60	0.025	9.000	3.600	3185	320	10.3	12°
		8.00	4	60	0.030	12.000	4.800	2385	285	16.5	12°
		10.00	4	60	0.040	15.000	6.000	1910	305	27.5	12°
		12.00	4	60	0.045	18.000	7.200	1590	285	37.1	12°
		16.00	4	60	0.045	24.000	8.400	1195	215	43.3	12°
		20.00	4	60	0.050	30.000	12.000	955	190	68.8	12°

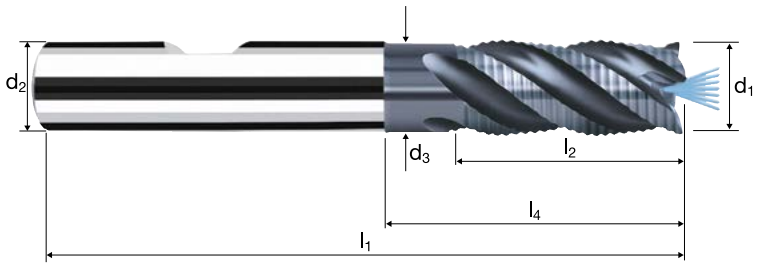
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min^{-1}]	v_f [mm/min]	Q [cm^3/min]	φR [°]	LR [mm]
	Steel < 850 N/mm²	4.00	3	150	0.020	5.000	4.000	11935	715	14.3	20°	13.7
		5.00	4	150	0.025	6.300	5.000	9550	955	30.1	20°	17.3
		6.00	4	150	0.030	7.500	6.000	7960	955	43.0	20°	20.6
		8.00	4	150	0.040	10.000	8.000	5970	955	76.4	20°	27.5
		10.00	4	150	0.050	12.500	10.000	4775	955	119.4	20°	34.3
		12.00	4	150	0.055	15.000	12.000	3980	875	157.6	20°	41.2
		16.00	4	150	0.055	20.000	16.000	2985	655	210.1	20°	54.9
		20.00	4	150	0.060	25.000	20.000	2385	575	286.5	20°	68.7
	Steel 850 - 1100 N/mm²	4.00	3	80	0.020	5.000	4.000	6365	380	7.6	20°	13.7
		5.00	4	80	0.025	6.300	5.000	5095	510	16.0	20°	17.3
		6.00	4	80	0.030	7.500	6.000	4245	510	22.9	20°	20.6
		8.00	4	80	0.040	10.000	8.000	3185	510	40.7	20°	27.5
		10.00	4	80	0.050	12.500	10.000	2545	510	63.7	20°	34.3
		12.00	4	80	0.055	15.000	12.000	2120	465	84.0	20°	41.2
		16.00	4	80	0.055	20.000	16.000	1590	350	112.0	20°	54.9
		20.00	4	80	0.060	25.000	20.000	1275	305	152.8	20°	68.7
	Titanium alloys > 300 HB [Ti6Al4V]	4.00	3	35	0.015	5.000	4.000	2785	125	2.5	14°	20.1
		5.00	4	35	0.020	6.300	5.000	2230	180	5.6	14°	25.3
		6.00	4	35	0.025	7.500	6.000	1855	185	8.4	14°	30.1
		8.00	4	35	0.030	10.000	8.000	1395	165	13.4	14°	40.1
		10.00	4	35	0.040	12.500	10.000	1115	180	22.3	14°	50.1
		12.00	4	35	0.045	15.000	12.000	930	165	30.1	14°	60.2
		16.00	4	35	0.045	20.000	16.000	695	125	40.1	14°	80.2
		20.00	4	35	0.050	25.000	20.000	555	110	55.7	14°	100.3
	Inox normal [Cr-Ni/1.4301] [Cr-Ni-Mo/1.4571]	4.00	3	50	0.015	5.000	4.000	3980	180	3.6	14°	20.1
		5.00	4	50	0.020	6.300	5.000	3185	255	8.0	14°	25.3
		6.00	4	50	0.025	7.500	6.000	2655	265	11.9	14°	30.1
		8.00	4	50	0.030	10.000	8.000	1990	240	19.1	14°	40.1
		10.00	4	50	0.040	12.500	10.000	1590	255	31.8	14°	50.1
		12.00	4	50	0.045	15.000	12.000	1325	240	43.0	14°	60.2
		16.00	4	50	0.045	20.000	16.000	995	180	57.3	14°	80.2
		20.00	4	50	0.050	25.000	20.000	795	160	79.6	14°	100.3

Cylindrical end mills SupraCarb®

Profiled, normal version with short neck
High-performance penetration edge with central air/cooling channel

Base-X **B**

HM MG10	λ 38° γ 0°
r	



Roughing

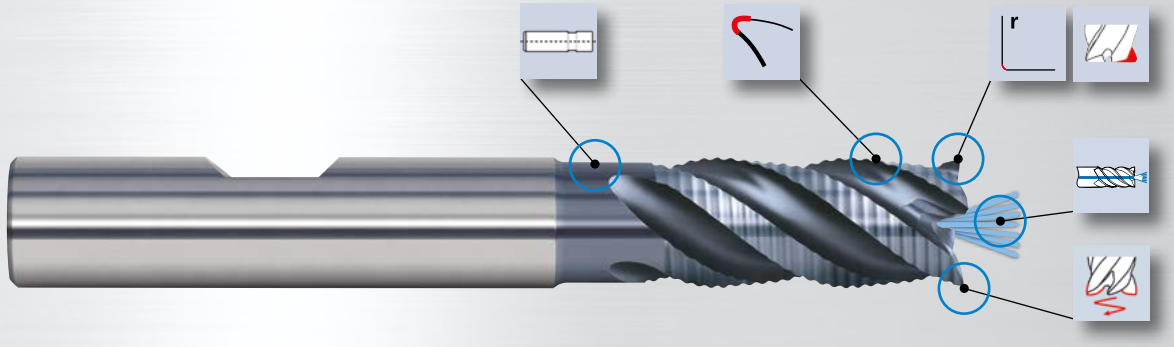
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8402** ø-Code **220**

Ø Code	d_1 e8	d_2 h5	d_3	l_1	l_2	l_3	l_4	r	α	z	POLYCHROM P8402	POLYCHROM P8302
220	4.00	6.00	3.70	57	11.00	16.00	20.95	0.100	3.0°	3		●
260	5.00	6.00	4.60	57	13.00	18.00	21.27	0.100	1.5°	4		●
300	6.00	6.00	5.50	57	13.00	19.34	20.00	0.100	0.0°	4		●
391	8.00	8.00	7.40	63	19.00	25.29	26.00	0.150	0.0°	4		●
450	10.00	10.00	9.20	72	22.00	30.20	31.00	0.200	0.0°	4		●
501	12.00	12.00	11.00	83	26.00	36.13	37.00	0.200	0.0°	4		●
610	16.00	16.00	15.00	92	32.00	42.13	43.00	0.200	0.0°	4		●
682	20.00	20.00	19.00	104	38.00	52.13	53.00	0.200	0.0°	4		●

The technologies



FRAISA protects various versions of its **high-performance penetration edge** by registering **its designs and patents.**

Tools with central air and cooling channel

- The tool is designed with a central, continuous bore that acts as an air and cooling channel
- Perfect chip removal, particularly for inner contours
- Better cooling of the cutting edge, thus allowing a higher thermal and mechanical workload as well as a broader range of materials

High-performance penetration edge

- Easy-cutting, high-performance penetration edge for high penetration angles
- Higher performance, longer tool life and improved process reliability for penetration
- High functionality with FRAISA ToolExpert® cutting data

Small corner radius

- The cylindrical tool has a small corner radius to reinforce the cutting edge
- Greater thermal and mechanical workload and therefore increased efficiency

Milling tool with edge reconditioning

- Reconditioning of the main cutting edge for greater cutting-edge stability
- Increased mechanical and thermal loading of the cutting edge
- Overall lengthening of tool life

Milling tool with polished teeth

- Reinforcement of the exposed cutting edge
- Absorption of higher cutting forces

Tools with a short shank

- Tools with release feature from the end of the cutting edge to the shaft neck
- Enables repositioning for deeper infeeds beyond the length of the cutting edge
- Expansion of the tool›s range of applications

SupraCarb® tools have an easy-cut geometry and are ideally suitable for use in soft and hardened steels, in stainless steels, annealed tool steel, cast iron and titanium.

Rm < 850	**Rm** 850-1100	**Rm** 1100-1300					**Inox** Stainless	**Ti** Titanium	**GG(G)** **Tool Steel**

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** |

You can also find us at:
facebook.com/fraisagroup
youtube.com/fraisagroup
linkedin.com/company/fraisa

passion for precision

fraisa

HIB01658 06/2021 EN