

FRAISE Z4 · ENDMILL Z4 · FRÄSER Z4

21111-12 Version 10.09.2026



SWISS MADE

E2

SUBMICRON GRAIN GRADE HIGH-SPEED MACHINING OF ABRASIVE MATERIALS

$\lambda=35^{\circ}-38^{\circ}$   
 $\gamma=10^{\circ}$

VARIABLE HELIX ANGLES 35° - 38° AND CUTTING ANGLE 10°

angle  
vif

SHARP EDGE

SIDE AND CENTER CUT

$h$   
1.5xD

CUTTING EDGE LENGTH 1.5XD

FITTING LENGTH SHORT

IRREGULAR TOOthing

$\lambda_2$   
 $\lambda_1$

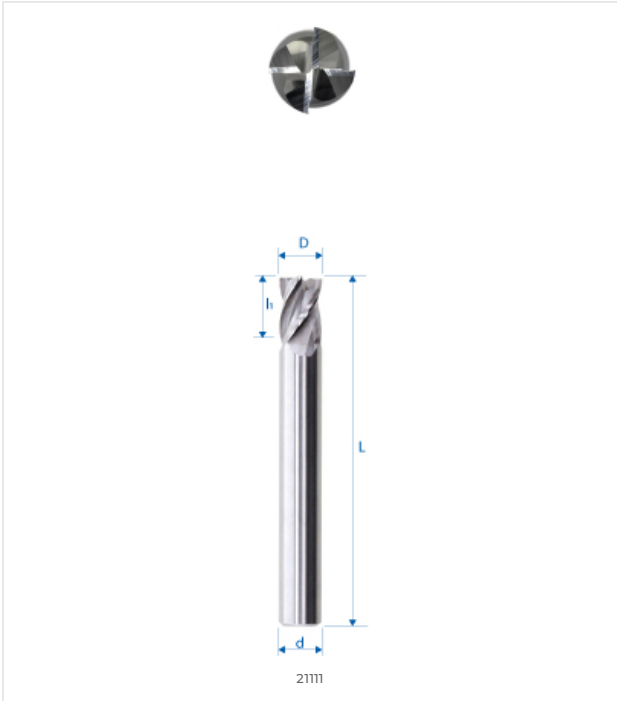
VARIABLE HELIX ANGLES

MATERIAL COMPATIBILITY

●●● Excellent (3/3) ●●○ Good (2/3) ●○○ Possible (1/3) ○○○ Not recommended

| Product material compatibility |                          |                    |     |          |
|--------------------------------|--------------------------|--------------------|-----|----------|
| CATEGORY                       | MATERIAL                 | SPECIFICATION      | GRP | 21111-12 |
| Alloyed and non-alloyed steels | Non-alloyed steels       | Rm < 450 N/mm²     | 1a  | ○○○ 0/3  |
|                                |                          | Rm 450–700 N/mm²   | 1b  | ○○○ 0/3  |
|                                |                          | Rm 700–900 N/mm²   | 1c  | ○○○ 0/3  |
|                                |                          | Rm > 1200 N/mm²    | 1d  | ○○○ 0/3  |
| Stainless steels               | Stainless steels         | Rm < 650 N/mm²     | 2a  | ○○○ 0/3  |
|                                |                          | Rm 650–950 N/mm²   | 2b  | ○○○ 0/3  |
|                                |                          | Rm > 950 N/mm²     | 2c  | ○○○ 0/3  |
| Hardened steels                | Hardened steels          | 44–56 HRC          | 3a  | ○○○ 0/3  |
|                                |                          | 57–67 HRC          | 3b  | ○○○ 0/3  |
| Exotic materials               | Special alloys           | < 32 HRC           | 4a  | ○○○ 0/3  |
|                                |                          | > 32 HRC           | 4b  | ○○○ 0/3  |
| Graphite                       | Industrial graphite      |                    | 5   | ●○○ 1/3  |
| Cast iron                      | Grey / nodular cast iron | < 32 HRC           | 6a  | ○○○ 0/3  |
|                                |                          | > 32 HRC           | 6b  | ○○○ 0/3  |
| Titanium                       | Titanium alloys          | Rm < 600 N/mm²     | 7a  | ●●○ 2/3  |
|                                |                          | 600 < Rm N/mm²     | 7b  | ●●○ 2/3  |
| Nickel alloys                  | Inconel, Hastelloy       | Rm < 1000 N/mm²    | 8a  | ○○○ 0/3  |
|                                |                          | Rm > 1000 N/mm²    | 8b  | ○○○ 0/3  |
| Copper, brass, bronze          | Copper-based             | Rm < 850 N/mm²     | 9a  | ●●● 3/3  |
|                                |                          | Rm > 850 N/mm²     | 9b  | ●●● 3/3  |
| Aluminum                       | Aluminum alloys          | Si < 0.5%          | 10a | ●●○ 2/3  |
|                                |                          | 0.5% < Si < 5%     | 10b | ●●○ 2/3  |
|                                |                          | Si > 5%            | 10c | ○○○ 0/3  |
| Synthetic materials            | Engineering plastics     | Thermoplastic      | 11a | ●●○ 2/3  |
|                                |                          | Thermoset          | 11b | ●●○ 2/3  |
| Composite materials            | Reinforced composites    | Glass fiber / GFK  | 12a | ●○○ 1/3  |
|                                |                          | Carbon fiber / KFK | 12b | ●○○ 1/3  |
| Precious metals                | Gold, platinum, silver   | Gold               | 13a | ●●○ 2/3  |
|                                |                          | Platinum           | 13b | ○○○ 0/3  |

TECHNICAL DRAWING



DIMENSIONS

| NOMINAL DIMENSIONS |       |
|--------------------|-------|
| D (0 / -0.01)      | 12 mm |
| d (h5)             | 12 mm |
| L                  | 83 mm |
| l1                 | 15 mm |
| l3                 | –     |
| d3                 | –     |
| R                  | –     |
| e                  | –     |
| Z                  | 4     |
| Chamfer K          | –     |
| w° collision angle | –     |



E-SHOP / EZI CUT  
eskenazi.ch/eshop/21111-12

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