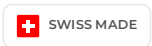


FRAISE-HÉMISPHERIQUE Z4 · BALL-NOSE-ENDMILL Z4 ·
HALBRUND-FRÄSER Z4



21402A-12 Version 11.09.2026



E2

SUBMICRON GRAIN GRADE
HIGH-SPEED MACHINING
OF ABRASIVE MATERIALS

$\lambda = 35^\circ$
 $\gamma = 10^\circ$

VARIABLE HELIX ANGLES
35° AND CUTTING ANGLE
10°

HEMISPHERICAL SHAPE

SIDE AND CENTER CUT

l_1
2.2xD

CUTTING EDGE LENGTH
2.2xD

FITTING LENGTH STANDARD

MATERIAL COMPATIBILITY

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

Product material compatibility				
CATEGORY	MATERIAL	SPECIFICATION	GRP	21402A-12
Alloyed and non-alloyed steels	Non-alloyed steels	Rm < 450 N/mm ²	1a	●●● 3/3
		Rm 450–700 N/mm ²	1b	●●● 3/3
		Rm 700–900 N/mm ²	1c	●●● 3/3
		Rm > 1200 N/mm ²	1d	●●● 3/3
Stainless steels	Stainless steels	Rm < 650 N/mm ²	2a	●●● 3/3
		Rm 650–950 N/mm ²	2b	●●● 3/3
		Rm > 950 N/mm ²	2c	●●● 3/3
Hardened steels	Hardened steels	44–56 HRC	3a	●●○ 2/3
		57–67 HRC	3b	●●○ 2/3
Exotic materials	Special alloys	< 32 HRC	4a	●●● 3/3
		> 32 HRC	4b	●●● 3/3
Graphite	Industrial graphite		5	●○○ 1/3
Cast iron	Grey / nodular cast iron	< 32 HRC	6a	●●● 3/3
		> 32 HRC	6b	●●● 3/3
Titanium	Titanium alloys	Rm < 600 N/mm ²	7a	●●● 3/3
		600 < Rm N/mm ²	7b	●●● 3/3
Nickel alloys	Inconel, Hastelloy	Rm < 1000 N/mm ²	8a	●●● 3/3
		Rm > 1000 N/mm ²	8b	●●● 3/3
Copper, brass, bronze	Copper-based	Rm < 850 N/mm ²	9a	●○○ 1/3
		Rm > 850 N/mm ²	9b	●○○ 1/3
Aluminum	Aluminum alloys	Si < 0.5%	10a	●○○ 1/3
		0.5% < Si < 5%	10b	●○○ 1/3
		Si > 5%	10c	●○○ 1/3
Synthetic materials	Engineering plastics	Thermoplastic	11a	○○○ 0/3
		Thermoset	11b	○○○ 0/3
Composite materials	Reinforced composites	Glass fiber / GFK	12a	●○○ 1/3
		Carbon fiber / KFK	12b	●○○ 1/3
Precious metals	Gold, platinum, silver	Gold	13a	●○○ 1/3
		Platinum	13b	●●○ 2/3

TECHNICAL DRAWING



DIMENSIONS

NOMINAL DIMENSIONS	
D (0 / -0.01)	12 mm
d (h5)	12 mm
L	83 mm
l1	26 mm
l3	–
d3	–
R	6 mm
e	–
Z	4
Chamfer K	–
w° collision angle	–

