

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



22402-20

Version du 21.06.2026

SWISS MADE

E2

OUTIL E2 MATÉRIAU  
HAUTE PRÉCISION

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

ANGLES DE COUPE ?35-  
38° ?10°



OUTIL À RAINURE EN U  
HÉMISPHERIQUE



FORET HÉLICOÏDAL À  
DOUBLE SENS

$l_1$   
2.2xD

PROFONDEUR 2.2XD  
POUR OUTILS



INDICATEUR D'USURE  
OUTIL STANDARD

## COMPATIBILITÉ MATIÈRE

●●● Excellent (3/3) ●●○ Bon (2/3) ●○○ Possible (1/3) ○○○ Non recommandé

| MATIÈRE  | SPÉCIFICATION                | GRP | 22402-20 |
|--|------------------------------|-----|----------|
| <b>Aciers alliés et non alliés</b><br><small>Aciers non alliés</small> | Rm < 450 N/mm <sup>2</sup>   | 1a  | ●○○      |
|  | Rm 450–700 N/mm <sup>2</sup> | 1b  | ○○○      |
|  | Rm 700–900 N/mm <sup>2</sup> | 1c  | ○○○      |
|  | Rm > 1200 N/mm <sup>2</sup>  | 1d  | ○○○      |
| <b>Aciers Inox</b><br><small>Aciers inoxydables</small>                | Rm < 650 N/mm <sup>2</sup>   | 2a  | ○○○      |
|  | Rm 650–950 N/mm <sup>2</sup> | 2b  | ○○○      |
|  | Rm > 950 N/mm <sup>2</sup>   | 2c  | ○○○      |
| <b>Aciers trempés</b><br><small>Aciers durcis</small>                  | 44–56 HRC                    | 3a  | ○○○      |
|  | 57–67 HRC                    | 3b  | ○○○      |
| <b>Matériaux exotiques</b><br><small>Alliages spéciaux</small>         | < 32 HRC                     | 4a  | ○○○      |
|  | > 32 HRC                     | 4b  | ○○○      |
| <b>Graphite</b><br><small>Graphite industriel</small>                  |                              | 5   | ●○○      |
| <b>Fontes</b><br><small>Fonte grise / nodulaire</small>                | < 32 HRC                     | 6a  | ○○○      |
|  | > 32 HRC                     | 6b  | ○○○      |
| <b>Titane</b><br><small>Alliages titane</small>                        | Rm < 600 N/mm <sup>2</sup>   | 7a  | ●○○      |
|  | 600 < Rm N/mm <sup>2</sup>   | 7b  | ●○○      |
| <b>Alliages Nickel</b><br><small>Inconel, Hastelloy</small>            | Rm < 1000 N/mm <sup>2</sup>  | 8a  | ○○○      |
|  | Rm > 1000 N/mm <sup>2</sup>  | 8b  | ○○○      |
| <b>Cuivre, laiton, bronze</b><br><small>Cuivreux</small>               | Rm < 850 N/mm <sup>2</sup>   | 9a  | ●●●      |
|  | Rm > 850 N/mm <sup>2</sup>   | 9b  | ●●●      |
| <b>Aluminium</b><br><small>Alliages aluminium</small>                  | Si < 0.5%                    | 10a | ●●●      |
|  | 0.5% < Si < 5%               | 10b | ●●●      |
|  | Si > 5%                      | 10c | ○○○      |
| <b>Matières synthétiques</b><br><small>Plastiques techniques</small>   | Thermoplastique              | 11a | ●●○      |
|  | Thermodurcissable            | 11b | ●●○      |
| <b>Matières composites</b><br><small>Composites renforcés</small>      | Fibre de verre / GFK         | 12a | ●○○      |
|  | Fibre de carbone / KFK       | 12b | ●○○      |
| <b>Métaux précieux</b><br><small>Or, platine, argent</small>           | Or                           | 13a | ●●○      |
|  | Platine                      | 13b | ○○○      |

## DESSIN TECHNIQUE



## DIMENSIONS

| DIMENSIONS NOMINALES |        |
|----------------------|--------|
| D (0 / -0.01)        | 20 mm  |
| d (h5)               | 20 mm  |
| L                    | 104 mm |
| l1                   | 38 mm  |
| l3                   | –      |
| d3                   | –      |
| R                    | 10 mm  |
| e                    | –      |
| Z                    | 4      |
| Chanfrein K          | –      |
| w° collision         | –      |



E-SHOP / EZI CUT  
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