

# Zylindrische Fräser E-Cut Alu

Glattschneidig, normale Ausführung, Kurzhals



$l_2 = 2.2 \times d_1$   
 $l_3 = 3.0 \times d_1$

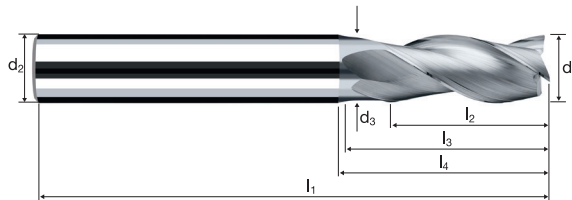
HM  
MG10

$\lambda$  34°  
 $\gamma$  24°

90°

G 2.5

Vario



**new!**

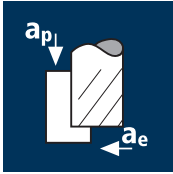
Schruppen Schichten



Al Aluminium > 99%   Al Aluminium Alloy   Al Aluminium Cast   Cu Copper   Plastic Thermoplast

| Ø<br>Code | d <sub>1</sub><br>e8 | d <sub>2</sub><br>h5 | d <sub>3</sub> | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | l <sub>4</sub> | α    | z | Beschreibung             |                                 |
|-----------|----------------------|----------------------|----------------|----------------|----------------|----------------|----------------|------|---|--------------------------|---------------------------------|
|           |                      |                      |                |                |                |                |                |      |   | Beispiel:<br>Bestell-Nr. | Beschichtung Artikel-Nr. ø-Code |
| 180       | 3.00                 | 6.00                 | 2.80           | 54             | 6.60           | 9.00           | 12.33          | 7.2° | 3 | ●                        |                                 |
| 220       | 4.00                 | 6.00                 | 3.70           | 54             | 9.00           | 12.00          | 14.54          | 4.2° | 3 | ●                        |                                 |
| 260       | 5.00                 | 6.00                 | 4.60           | 57             | 11.00          | 15.00          | 16.72          | 2.0° | 3 | ●                        |                                 |
| 300       | 6.00                 | 6.00                 | 5.50           | 57             | 13.50          | 18.00          | 19.85          | 0.0° | 3 | ●                        |                                 |
| 391       | 8.00                 | 8.00                 | 7.40           | 63             | 18.00          | 24.00          | 26.37          | 0.0° | 3 | ●                        |                                 |
| 450       | 10.00                | 10.00                | 9.20           | 74             | 22.00          | 30.00          | 33.01          | 0.0° | 3 | ●                        |                                 |
| 501       | 12.00                | 12.00                | 11.00          | 85             | 27.00          | 36.00          | 39.71          | 0.0° | 3 | ●                        |                                 |
| 610       | 16.00                | 16.00                | 15.00          | 102            | 36.00          | 48.00          | 52.27          | 0.0° | 3 | ●                        |                                 |
| 682       | 20.00                | 20.00                | 19.00          | 115            | 44.00          | 60.00          | 64.77          | 0.0° | 3 | ●                        |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |
|           |                      |                      |                |                |                |                |                |      |   |                          |                                 |

## Anwendung



## Werkstoff

Al-Knetlegierung  
Al-Integralbau



| $d_1$<br>[mm] | $z$ | $v_c$<br>[m/min] | $f_z$<br>[mm] | $a_p$<br>[mm] | $a_e$<br>[mm] | $n$<br>[min <sup>-1</sup> ] | $v_f$<br>[mm/min] | $Q$<br>[cm <sup>2</sup> /min] |
|---------------|-----|------------------|---------------|---------------|---------------|-----------------------------|-------------------|-------------------------------|
| 3.00          | 3   | 396              | 0.056         | 4.500         | 1.350         | 42015                       | 6996              | 42.5                          |
| 4.00          | 3   | 500              | 0.074         | 6.000         | 1.800         | 39790                       | 8833              | 95.4                          |
| 5.00          | 3   | 500              | 0.093         | 7.500         | 2.250         | 31830                       | 8833              | 149.1                         |
| 6.00          | 3   | 500              | 0.111         | 9.000         | 2.700         | 26525                       | 8833              | 214.6                         |
| 8.00          | 3   | 500              | 0.148         | 12.000        | 3.600         | 19895                       | 8833              | 381.6                         |
| 10.00         | 3   | 500              | 0.185         | 15.000        | 4.500         | 15915                       | 8833              | 596.2                         |
| 12.00         | 3   | 500              | 0.222         | 18.000        | 5.400         | 13265                       | 8835              | 858.7                         |
| 16.00         | 3   | 500              | 0.237         | 24.000        | 7.200         | 9945                        | 7065              | 1220.8                        |
| 20.00         | 3   | 500              | 0.278         | 30.000        | 9.000         | 7960                        | 6627              | 1789.2                        |

Reinkupfer



|       |   |     |       |        |       |       |      |        |
|-------|---|-----|-------|--------|-------|-------|------|--------|
| 3.00  | 3 | 375 | 0.041 | 4.500  | 1.350 | 39790 | 4942 | 30.0   |
| 4.00  | 3 | 375 | 0.055 | 6.000  | 1.800 | 29840 | 4942 | 53.4   |
| 5.00  | 3 | 375 | 0.069 | 7.500  | 2.250 | 23875 | 4942 | 83.4   |
| 6.00  | 3 | 375 | 0.083 | 9.000  | 2.700 | 19895 | 4942 | 120.1  |
| 8.00  | 3 | 375 | 0.110 | 12.000 | 3.600 | 14920 | 4942 | 213.5  |
| 10.00 | 3 | 375 | 0.138 | 15.000 | 4.500 | 11935 | 4941 | 333.5  |
| 12.00 | 3 | 375 | 0.166 | 18.000 | 5.400 | 9945  | 4941 | 480.2  |
| 16.00 | 3 | 375 | 0.177 | 24.000 | 7.200 | 7460  | 3953 | 683.1  |
| 20.00 | 3 | 375 | 0.207 | 30.000 | 9.000 | 5970  | 3707 | 1001.0 |

Thermoplaste



|       |   |     |       |        |       |       |       |        |
|-------|---|-----|-------|--------|-------|-------|-------|--------|
| 3.00  | 3 | 396 | 0.067 | 4.500  | 1.350 | 42015 | 8395  | 51.0   |
| 4.00  | 3 | 500 | 0.089 | 6.000  | 1.800 | 39790 | 10600 | 114.5  |
| 5.00  | 3 | 500 | 0.111 | 7.500  | 2.250 | 31830 | 10599 | 178.9  |
| 6.00  | 3 | 500 | 0.133 | 9.000  | 2.700 | 26525 | 10599 | 257.6  |
| 8.00  | 3 | 500 | 0.178 | 12.000 | 3.600 | 19895 | 10600 | 457.9  |
| 10.00 | 3 | 500 | 0.222 | 15.000 | 4.500 | 15915 | 10599 | 715.5  |
| 12.00 | 3 | 500 | 0.266 | 18.000 | 5.400 | 13265 | 10601 | 1030.5 |
| 16.00 | 3 | 500 | 0.284 | 24.000 | 7.200 | 9945  | 8478  | 1465.0 |
| 20.00 | 3 | 500 | 0.333 | 30.000 | 9.000 | 7960  | 7952  | 2147.0 |

Al-Gusslegierung



|       |   |     |       |        |       |       |      |        |
|-------|---|-----|-------|--------|-------|-------|------|--------|
| 3.00  | 3 | 396 | 0.044 | 4.500  | 1.350 | 42015 | 5596 | 34.0   |
| 4.00  | 3 | 400 | 0.059 | 6.000  | 1.800 | 31830 | 5653 | 61.1   |
| 5.00  | 3 | 400 | 0.074 | 7.500  | 2.250 | 25465 | 5653 | 95.4   |
| 6.00  | 3 | 400 | 0.089 | 9.000  | 2.700 | 21220 | 5653 | 137.4  |
| 8.00  | 3 | 400 | 0.118 | 12.000 | 3.600 | 15915 | 5653 | 244.2  |
| 10.00 | 3 | 400 | 0.148 | 15.000 | 4.500 | 12730 | 5652 | 381.5  |
| 12.00 | 3 | 400 | 0.178 | 18.000 | 5.400 | 10610 | 5653 | 549.5  |
| 16.00 | 3 | 400 | 0.189 | 24.000 | 7.200 | 7960  | 4524 | 781.7  |
| 20.00 | 3 | 400 | 0.222 | 30.000 | 9.000 | 6365  | 4239 | 1144.6 |



Al-Knetlegierung  
Al-Integralbau



|       |   |     |       |        |        |       |      |        |
|-------|---|-----|-------|--------|--------|-------|------|--------|
| 3.00  | 3 | 395 | 0.032 | 4.500  | 3.000  | 41910 | 4012 | 54.2   |
| 4.00  | 3 | 400 | 0.043 | 6.000  | 4.000  | 31830 | 4063 | 97.5   |
| 5.00  | 3 | 400 | 0.053 | 7.500  | 5.000  | 25465 | 4063 | 152.4  |
| 6.00  | 3 | 400 | 0.064 | 9.000  | 6.000  | 21220 | 4063 | 219.4  |
| 8.00  | 3 | 400 | 0.085 | 12.000 | 8.000  | 15915 | 4063 | 390.1  |
| 10.00 | 3 | 400 | 0.106 | 15.000 | 10.000 | 12730 | 4063 | 609.4  |
| 12.00 | 3 | 400 | 0.128 | 18.000 | 12.000 | 10610 | 4063 | 877.6  |
| 16.00 | 3 | 400 | 0.136 | 24.000 | 16.000 | 7960  | 3252 | 1248.6 |
| 20.00 | 3 | 400 | 0.160 | 30.000 | 20.000 | 6365  | 3047 | 1828.1 |

Reinkupfer



|       |   |     |       |        |        |       |      |        |
|-------|---|-----|-------|--------|--------|-------|------|--------|
| 3.00  | 3 | 300 | 0.024 | 4.500  | 3.000  | 31830 | 2273 | 30.7   |
| 4.00  | 3 | 300 | 0.032 | 6.000  | 4.000  | 23875 | 2273 | 54.6   |
| 5.00  | 3 | 300 | 0.040 | 7.500  | 5.000  | 19100 | 2273 | 85.3   |
| 6.00  | 3 | 300 | 0.048 | 9.000  | 6.000  | 15915 | 2273 | 122.7  |
| 8.00  | 3 | 300 | 0.063 | 12.000 | 8.000  | 11935 | 2273 | 218.2  |
| 10.00 | 3 | 300 | 0.079 | 15.000 | 10.000 | 9550  | 2273 | 341.0  |
| 12.00 | 3 | 300 | 0.095 | 18.000 | 12.000 | 7960  | 2274 | 491.2  |
| 16.00 | 3 | 300 | 0.102 | 24.000 | 16.000 | 5970  | 1819 | 698.5  |
| 20.00 | 3 | 300 | 0.119 | 30.000 | 20.000 | 4775  | 1705 | 1023.0 |

Thermoplaste



|       |   |     |       |        |        |       |      |        |
|-------|---|-----|-------|--------|--------|-------|------|--------|
| 3.00  | 3 | 400 | 0.038 | 4.500  | 3.000  | 42440 | 4876 | 65.8   |
| 4.00  | 3 | 400 | 0.051 | 6.000  | 4.000  | 31830 | 4876 | 117.0  |
| 5.00  | 3 | 400 | 0.064 | 7.500  | 5.000  | 25465 | 4876 | 182.8  |
| 6.00  | 3 | 400 | 0.077 | 9.000  | 6.000  | 21220 | 4876 | 263.3  |
| 8.00  | 3 | 400 | 0.102 | 12.000 | 8.000  | 15915 | 4876 | 468.1  |
| 10.00 | 3 | 400 | 0.128 | 15.000 | 10.000 | 12730 | 4875 | 731.3  |
| 12.00 | 3 | 400 | 0.153 | 18.000 | 12.000 | 10610 | 4876 | 1053.2 |
| 16.00 | 3 | 400 | 0.163 | 24.000 | 16.000 | 7960  | 3902 | 1498.3 |
| 20.00 | 3 | 400 | 0.191 | 30.000 | 20.000 | 6365  | 3656 | 2193.7 |

Al-Gusslegierung



|       |   |     |       |        |        |       |      |        |
|-------|---|-----|-------|--------|--------|-------|------|--------|
| 3.00  | 3 | 320 | 0.026 | 4.500  | 3.000  | 33955 | 2601 | 35.1   |
| 4.00  | 3 | 320 | 0.034 | 6.000  | 4.000  | 25465 | 2601 | 62.4   |
| 5.00  | 3 | 320 | 0.043 | 7.500  | 5.000  | 20370 | 2600 | 97.5   |
| 6.00  | 3 | 320 | 0.051 | 9.000  | 6.000  | 16975 | 2600 | 140.4  |
| 8.00  | 3 | 320 | 0.068 | 12.000 | 8.000  | 12730 | 2600 | 249.6  |
| 10.00 | 3 | 320 | 0.085 | 15.000 | 10.000 | 10185 | 2600 | 390.0  |
| 12.00 | 3 | 320 | 0.102 | 18.000 | 12.000 | 8490  | 2601 | 561.8  |
| 16.00 | 3 | 320 | 0.109 | 24.000 | 16.000 | 6365  | 2080 | 798.7  |
| 20.00 | 3 | 320 | 0.128 | 30.000 | 20.000 | 5095  | 1951 | 1170.7 |