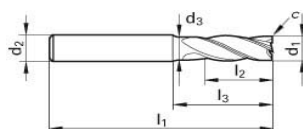




# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C011    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| • | • | • | • | • | • |

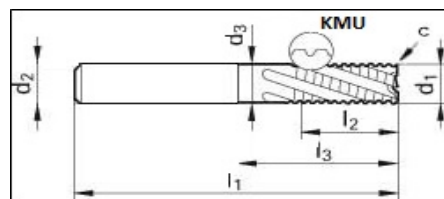
| Артикул-Ø | d1 h10 | d2 h6 | d3   | l1    | l2   | l3   | c x 45° |
|-----------|--------|-------|------|-------|------|------|---------|
| C011-4,0  | 4,0    | 6,0   | 3,8  | 57,0  | 11,0 | 18,0 | 0,04    |
| C011-5,0  | 5,0    | 6,0   | 4,8  | 57,0  | 13,0 | 18,0 | 0,05    |
| C011-5,7  | 5,7    | 6,0   | 5,5  | 57,0  | 13,0 | 19,6 | 0,06    |
| C011-6,0  | 6,0    | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 0,06    |
| C011-7,7  | 7,7    | 8,0   | 7,4  | 63,0  | 19,0 | 25,5 | 0,08    |
| C011-8,0  | 8,0    | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 0,08    |
| C011-9,7  | 9,7    | 10,0  | 9,4  | 72,0  | 22,0 | 30,5 | 0,10    |
| C011-10,0 | 10,0   | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 0,10    |
| C011-11,7 | 11,7   | 12,0  | 11,2 | 83,0  | 26,0 | 35,3 | 0,12    |
| C011-12,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 0,12    |
| C011-13,7 | 13,7   | 14,0  | 13,2 | 83,0  | 26,0 | 35,3 | 0,14    |
| C011-14,0 | 14,0   | 14,0  | 13,5 | 83,0  | 26,0 | 36,0 | 0,14    |
| C011-15,6 | 15,6   | 16,0  | 15,1 | 92,0  | 32,0 | 41,2 | 0,16    |
| C011-16,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 0,16    |
| C011-19,5 | 19,5   | 20,0  | 19,0 | 104,0 | 38,0 | 51,1 | 0,20    |
| C011-20,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 0,20    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C011-10,0-НА.

| Режимы резания                            |                   |              |             |                          |           |       |       |       |       |       |       |       |
|-------------------------------------------|-------------------|--------------|-------------|--------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|
| Обработка канавок                         |                   |              |             |                          |           |       |       |       |       |       |       |       |
| Материал                                  | Твердость         | Глубина (ap) | Ширина (ae) | Скорость<br>резания (Vc) | f, (mm/z) |       |       |       |       |       |       |       |
|                                           |                   |              |             |                          | 4         | 5     | 6     | 8     | 10    | 12    | 16    | 20    |
| P                                         | < 850 N/mm2       | 1xd          | 1xd         | 270                      | 0,017     | 0,021 | 0,025 | 0,034 | 0,050 | 0,060 | 0,080 | 0,100 |
|                                           | 850 - 1200 N/mm2  | 1xd          | 1xd         | 230                      | 0,017     | 0,021 | 0,025 | 0,034 | 0,050 | 0,060 | 0,080 | 0,100 |
|                                           | 850 - 1400 N/mm2  | 1xd          | 1xd         | 180                      | 0,014     | 0,018 | 0,021 | 0,028 | 0,045 | 0,054 | 0,072 | 0,090 |
| M                                         | < 750 N/mm2       | 1xd          | 1xd         | 120                      | 0,014     | 0,018 | 0,021 | 0,028 | 0,045 | 0,054 | 0,072 | 0,090 |
|                                           | > 750 - 950 N/mm2 | 1xd          | 1xd         | 80                       | 0,013     | 0,016 | 0,019 | 0,026 | 0,040 | 0,048 | 0,064 | 0,080 |
| K                                         | > 240 HB          | 1xd          | 1xd         | 150                      | 0,017     | 0,021 | 0,025 | 0,034 | 0,050 | 0,060 | 0,080 | 0,100 |
| N                                         | < 7% Si           | 1xd          | 1xd         | 500                      | 0,022     | 0,028 | 0,033 | 0,044 | 0,065 | 0,078 | 0,104 | 0,130 |
|                                           | ≥ 7% Si           | 1xd          | 1xd         | 340                      | 0,018     | 0,023 | 0,027 | 0,036 | 0,055 | 0,066 | 0,088 | 0,110 |
| S                                         | ≤ 1300 N/mm2      | 1xd          | 1xd         | 60                       | 0,013     | 0,016 | 0,019 | 0,026 | 0,040 | 0,048 | 0,064 | 0,080 |
| Высокопроизводительная обработка черновая |                   |              |             |                          |           |       |       |       |       |       |       |       |
| Материал                                  | Твердость         | Глубина (ap) | Ширина (ae) | Скорость<br>резания (Vc) | f, (mm/z) |       |       |       |       |       |       |       |
|                                           |                   |              |             |                          | 4         | 5     | 6     | 8     | 10    | 12    | 16    | 20    |
| P                                         | < 850 N/mm3       | 1.5xd        | 0.4xd       | 350                      | 0,021     | 0,026 | 0,032 | 0,042 | 0,063 | 0,075 | 0,100 | 0,125 |
|                                           | 851 - 1200 N/mm2  | 1.5xd        | 0.4xd       | 290                      | 0,021     | 0,026 | 0,032 | 0,042 | 0,063 | 0,075 | 0,100 | 0,125 |
|                                           | 851 - 1400 N/mm2  | 1.5xd        | 0.33xd      | 260                      | 0,018     | 0,023 | 0,027 | 0,036 | 0,059 | 0,070 | 0,094 | 0,117 |
| M                                         | < 750 N/mm3       | 1.5xd        | 0.33xd      | 160                      | 0,018     | 0,023 | 0,027 | 0,036 | 0,059 | 0,070 | 0,094 | 0,117 |
|                                           | > 750 - 950 N/mm3 | 1.5xd        | 0.25xd      | 120                      | 0,019     | 0,024 | 0,029 | 0,038 | 0,060 | 0,072 | 0,096 | 0,120 |
| K                                         | > 240 HB          | 1.5xd        | 0.4xd       | 190                      | 0,021     | 0,026 | 0,032 | 0,042 | 0,063 | 0,075 | 0,100 | 0,125 |
| N                                         | < 7% Si           | 1.5xd        | 0.4xd       | 600                      | 0,028     | 0,034 | 0,041 | 0,055 | 0,081 | 0,098 | 0,130 | 0,163 |
|                                           | ≥ 7% Si           | 1.5xd        | 0.4xd       | 440                      | 0,023     | 0,028 | 0,034 | 0,045 | 0,069 | 0,083 | 0,110 | 0,138 |
| S                                         | ≤ 1300 N/mm3      | 1.5xd        | 0.33xd      | 110                      | 0,017     | 0,021 | 0,025 | 0,033 | 0,052 | 0,062 | 0,083 | 0,104 |
| Высокопроизводительная обработка чистовая |                   |              |             |                          |           |       |       |       |       |       |       |       |
| Материал                                  | Твердость         | Глубина (ap) | Ширина (ae) | Скорость<br>резания (Vc) | f, (mm/z) |       |       |       |       |       |       |       |
|                                           |                   |              |             |                          | 4         | 5     | 6     | 8     | 10    | 12    | 16    | 20    |
| P                                         | < 850 N/mm3       | 2xd          | 0.02xd      | 540                      | 0,018     | 0,023 | 0,028 | 0,037 | 0,055 | 0,066 | 0,088 | 0,110 |
|                                           | 851 - 1200 N/mm2  | 2xd          | 0.02xd      | 460                      | 0,018     | 0,023 | 0,028 | 0,037 | 0,055 | 0,066 | 0,088 | 0,110 |
|                                           | 851 - 1400 N/mm2  | 2xd          | 0.02xd      | 350                      | 0,015     | 0,019 | 0,023 | 0,031 | 0,050 | 0,059 | 0,079 | 0,099 |
| M                                         | < 750 N/mm3       | 2xd          | 0.02xd      | 220                      | 0,015     | 0,019 | 0,023 | 0,031 | 0,050 | 0,059 | 0,079 | 0,099 |
|                                           | > 750 - 950 N/mm3 | 2xd          | 0.02xd      | 160                      | 0,014     | 0,018 | 0,021 | 0,028 | 0,044 | 0,053 | 0,070 | 0,088 |
| K                                         | > 240 HB          | 2xd          | 0.02xd      | 300                      | 0,018     | 0,023 | 0,028 | 0,037 | 0,055 | 0,066 | 0,088 | 0,110 |
| N                                         | < 7% Si           | 2xd          | 0.02xd      | 1000                     | 0,024     | 0,030 | 0,036 | 0,048 | 0,072 | 0,086 | 0,114 | 0,143 |
|                                           | ≥ 7% Si           | 2xd          | 0.02xd      | 680                      | 0,020     | 0,025 | 0,030 | 0,040 | 0,061 | 0,073 | 0,097 | 0,121 |
| S                                         | ≤ 1300 N/mm3      | 2xd          | 0.02xd      | 130                      | 0,014     | 0,018 | 0,021 | 0,028 | 0,044 | 0,053 | 0,070 | 0,088 |
| Врезание под углом, врезание по спирали   |                   |              |             |                          |           |       |       |       |       |       |       |       |
| Материал                                  | Твердость         | Глубина (ap) | Наклон max. | Скорость<br>резания (Vc) | f, (mm/z) |       |       |       |       |       |       |       |
|                                           |                   |              |             |                          | 4         | 5     | 6     | 8     | 10    | 12    | 16    | 20    |
| P                                         | < 850 N/mm4       | 1xd          | 45°         | 270                      | 0,015     | 0,019 | 0,023 | 0,030 | 0,045 | 0,054 | 0,072 | 0,090 |
|                                           | 852 - 1200 N/mm2  | 1xd          | 45°         | 230                      | 0,013     | 0,017 | 0,020 | 0,026 | 0,040 | 0,048 | 0,064 | 0,080 |
|                                           | 852 - 1400 N/mm2  | 1xd          | 30°         | 180                      | 0,011     | 0,014 | 0,017 | 0,022 | 0,030 | 0,036 | 0,048 | 0,060 |
| M                                         | < 750 N/mm4       | 1xd          | 10°         | 120                      | 0,009     | 0,012 | 0,014 | 0,018 | 0,030 | 0,036 | 0,048 | 0,060 |
|                                           | > 750 - 950 N/mm4 | 1xd          | 5°          | 80                       | 0,007     | 0,009 | 0,011 | 0,014 | 0,025 | 0,030 | 0,040 | 0,050 |
| K                                         | > 240 HB          | 1xd          | 45°         | 150                      | 0,015     | 0,019 | 0,023 | 0,030 | 0,045 | 0,054 | 0,072 | 0,090 |
| N                                         | < 7% Si           | 1xd          | 30°         | 500                      | 0,013     | 0,017 | 0,020 | 0,026 | 0,040 | 0,048 | 0,064 | 0,080 |
|                                           | ≥ 7% Si           | 1xd          | 45°         | 340                      | 0,015     | 0,019 | 0,023 | 0,030 | 0,045 | 0,054 | 0,072 | 0,090 |
| S                                         | ≤ 1300 N/mm4      | 1xd          | 10°         | 60                       | 0,007     | 0,009 | 0,011 | 0,014 | 0,025 | 0,030 | 0,040 | 0,050 |
| Сверление                                 |                   |              |             |                          |           |       |       |       |       |       |       |       |
| Материал                                  | Твердость         | Глубина (ap) |             | Скорость<br>резания (Vc) | f, (mm/z) |       |       |       |       |       |       |       |
|                                           |                   |              |             |                          | 4         | 5     | 6     | 8     | 10    | 12    | 16    | 20    |
| P                                         | < 850 N/mm5       | 1.5xd        |             | 270                      | 0,014     | 0,018 | 0,021 | 0,028 | 0,040 | 0,048 | 0,064 | 0,080 |
|                                           | 853 - 1200 N/mm2  | 1.5xd        |             | 230                      | 0,012     | 0,015 | 0,018 | 0,024 | 0,035 | 0,042 | 0,056 | 0,070 |
|                                           | 853 - 1400 N/mm2  | 1xd          |             | 180                      | 0,008     | 0,010 | 0,012 | 0,016 | 0,025 | 0,030 | 0,040 | 0,050 |
| K                                         | > 240 HB          | 1.5xd        |             | 150                      | 0,014     | 0,018 | 0,021 | 0,028 | 0,040 | 0,048 | 0,064 | 0,080 |
|                                           | < 7% Si           | 1xd          |             | 500                      | 0,012     | 0,015 | 0,018 | 0,024 | 0,035 | 0,042 | 0,056 | 0,070 |
| N                                         | ≥ 7% Si           | 1xd          |             | 340                      | 0,014     | 0,018 | 0,021 | 0,028 | 0,040 | 0,048 | 0,064 | 0,080 |

# Фрезы. Каталог 2022

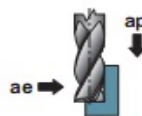
| Артикул | Вид обработки |
|---------|---------------|
| C012    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ● | ● | ○ |   | ○ |   |

| Артикул-Ø | d1 h10 | d2 h6 | d3   | l1    | l2   | l3   | c x 45° |
|-----------|--------|-------|------|-------|------|------|---------|
| C012-5,0  | 5,0    | 6,0   | 4,8  | 57,0  | 13,0 | 18,0 | 0,2     |
| C012-6,0  | 6,0    | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 0,3     |
| C012-7,0  | 7,0    | 8,0   | 6,7  | 63,0  | 16,0 | 24,9 | 0,3     |
| C012-8,0  | 8,0    | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 0,3     |
| C012-9,0  | 9,0    | 10,0  | 8,7  | 72,0  | 19,0 | 29,9 | 0,3     |
| C012-10,0 | 10,0   | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 0,3     |
| C012-12,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 0,5     |
| C012-14,0 | 14,0   | 14,0  | 13,5 | 83,0  | 26,0 | 36,0 | 0,5     |
| C012-16,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 0,5     |
| C012-18,0 | 18,0   | 18,0  | 17,5 | 92,0  | 32,0 | 42,0 | 0,5     |
| C012-20,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 0,5     |
| C012-25,0 | 25,0   | 25,0  | 24,0 | 121,0 | 45,0 | 63,0 | 0,6     |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C012-10,0-НА.**

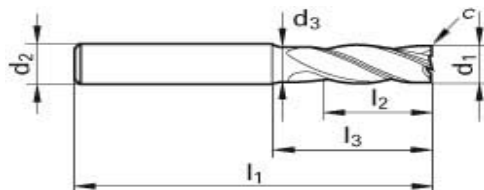
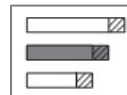
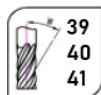
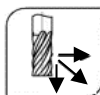
| Режимы резания          |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |      |         |        |       |       |       |       |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|--------------------------------------------------------------------------------------|----------|------|---------|--------|-------|-------|-------|-------|
| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |  |          |      |         |        |       |       |       |       |
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          |                                                                                      |          |      |         | H      |       |       |       |       |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC                                                                             | ≤ 63 HRC | Ød1  | Vc      | fz     | ap    | ae    |       |       |
| (мм)                    | (мм)                         | (мм)                    | (мм)                    | (мм)     | (мм)       | (мм)    | (мм)    | (мм)                     | (мм)                     | (мм)                                                                                 | (мм)     | (мм) | (м/мин) | (мм/з) | (мм)  | (мм)  |       |       |
| 6,0                     | 8,0                          | 10,0                    | 12,0                    | 16,0     | 20,0       | 6,0     | 8,0     | 10,0                     | 12,0                     | 16,0                                                                                 | 20,0     | 160  | 120     | 0,021  | 0,019 | 9,00  | 4,50  |       |
| 8,0                     | 10,0                         | 12,0                    | 16,0                    | 20,0     | 24,0       | 8,0     | 10,0    | 12,0                     | 16,0                     | 20,0                                                                                 | 24,0     | 160  | 120     | 0,028  | 0,026 | 12,00 | 6,00  |       |
| 10,0                    | 12,0                         | 16,0                    | 20,0                    | 24,0     | 28,0       | 10,0    | 12,0    | 16,0                     | 20,0                     | 24,0                                                                                 | 28,0     | 160  | 120     | 0,037  | 0,035 | 15,00 | 7,50  |       |
| 12,0                    | 16,0                         | 20,0                    | 24,0                    | 28,0     | 32,0       | 12,0    | 16,0    | 20,0                     | 24,0                     | 28,0                                                                                 | 32,0     | 160  | 120     | 0,044  | 0,041 | 18,00 | 9,00  |       |
| 16,0                    | 20,0                         | 24,0                    | 28,0                    | 32,0     | 36,0       | 16,0    | 20,0    | 24,0                     | 28,0                     | 32,0                                                                                 | 36,0     | 160  | 120     | 0,059  | 0,055 | 24,00 | 12,00 |       |
| 20,0                    | 24,0                         | 28,0                    | 32,0                    | 36,0     | 40,0       | 20,0    | 24,0    | 28,0                     | 32,0                     | 36,0                                                                                 | 40,0     | 160  | 120     | 0,074  | 0,069 | 30,00 | 15,00 |       |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 6,0  | 110     | 70     | 0,019 | 0,016 | 9,00  | 4,50  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 8,0  | 110     | 70     | 0,026 | 0,021 | 12,00 | 6,00  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 10,0 | 110     | 70     | 0,035 | 0,030 | 15,00 | 7,50  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 12,0 | 110     | 70     | 0,041 | 0,036 | 18,00 | 9,00  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 16,0 | 110     | 70     | 0,055 | 0,048 | 24,00 | 12,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 20,0 | 110     | 70     | 0,069 | 0,060 | 30,00 | 15,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 6,0  | 140     | 130    | 0,021 | 0,019 | 9,00  | 4,50  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 8,0  | 140     | 130    | 0,028 | 0,026 | 12,00 | 6,00  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 10,0 | 140     | 130    | 0,037 | 0,035 | 15,00 | 7,50  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 12,0 | 140     | 130    | 0,044 | 0,041 | 18,00 | 9,00  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 16,0 | 140     | 130    | 0,059 | 0,055 | 24,00 | 12,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 20,0 | 140     | 130    | 0,074 | 0,069 | 30,00 | 15,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 6,0  | 40      | 70     | 0,014 | 0,016 | 9,00  | 4,50  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 8,0  | 40      | 70     | 0,019 | 0,021 | 12,00 | 6,00  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 10,0 | 40      | 70     | 0,026 | 0,030 | 15,00 | 7,50  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 12,0 | 40      | 70     | 0,032 | 0,036 | 18,00 | 9,00  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 16,0 | 40      | 70     | 0,042 | 0,048 | 24,00 | 12,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | 20,0 | 40      | 70     | 0,053 | 0,060 | 30,00 | 15,00 |

- рекомендованное применение
- возможное применение



## Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C016    | чист/черн     |



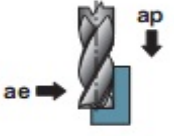
| P | M | K | N | S | H |
|---|---|---|---|---|---|
|   |   |   | ● |   |   |

| Артикул-Ø | Ød1 h10 | Ød2 h6 | Ød3  | l1    | l2   | l3   | с х 45° |
|-----------|---------|--------|------|-------|------|------|---------|
| C016-3,0  | 3,0     | 6,0    | 2,8  | 57,0  | 8,0  | 15,0 | 0,06    |
| C016-4,0  | 4,0     | 6,0    | 3,8  | 57,0  | 11,0 | 18,0 | 0,08    |
| C016-5,0  | 5,0     | 6,0    | 4,8  | 57,0  | 13,0 | 18,0 | 0,10    |
| C016-6,0  | 6,0     | 6,0    | 5,7  | 57,0  | 13,0 | 20,0 | 0,12    |
| C016-8,0  | 8,0     | 8,0    | 7,7  | 63,0  | 19,0 | 26,0 | 0,16    |
| C016-10,0 | 10,0    | 10,0   | 9,5  | 72,0  | 22,0 | 30,0 | 0,20    |
| C016-12,0 | 12,0    | 12,0   | 11,5 | 83,0  | 26,0 | 36,0 | 0,24    |
| C016-16,0 | 16,0    | 16,0   | 15,5 | 92,0  | 32,0 | 42,0 | 0,32    |
| C016-20,0 | 20,0    | 20,0   | 19,5 | 104,0 | 38,0 | 52,0 | 0,40    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C016-10,0-НА.**

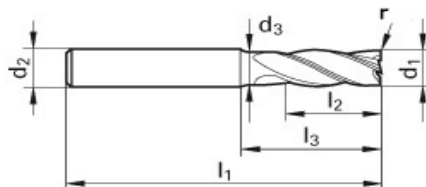
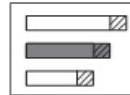
### Режимы резания

| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |         |        |       |       |       |       |      |      |  |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|---------------------------------------------------------------------------------------|---------|--------|-------|-------|-------|-------|------|------|--|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          | Ød1                                                                                   |         | Vc     |       | fz    |       | ap    |      | ae   |  |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) | (мм/з) | (мм)  | (мм)  | (мм)  | (мм)  | (мм) | (мм) |  |
|             |                  |             |             |          |            | ●       | ●       |              |              |          |          | 3,0                                                                                   | 750     | 345    | 0,025 | 0,021 | 8,00  | 8,00  | 0,99 | 0,99 |  |
|             |                  |             |             |          |            | ●       | ●       |              |              |          |          | 6,0                                                                                   | 750     | 345    | 0,051 | 0,043 | 13,00 | 13,00 | 1,98 | 1,98 |  |
|             |                  |             |             |          |            | ●       | ●       |              |              |          |          | 8,0                                                                                   | 750     | 345    | 0,068 | 0,057 | 19,00 | 19,00 | 2,64 | 2,64 |  |
|             |                  |             |             |          |            | ●       | ●       |              |              |          |          | 10,0                                                                                  | 750     | 345    | 0,104 | 0,078 | 22,00 | 22,00 | 3,30 | 3,30 |  |
|             |                  |             |             |          |            | ●       | ●       |              |              |          |          | 12,0                                                                                  | 750     | 345    | 0,120 | 0,090 | 26,00 | 26,00 | 3,96 | 3,96 |  |
|             |                  |             |             |          |            | ●       | ●       |              |              |          |          | 16,0                                                                                  | 750     | 345    | 0,170 | 0,120 | 32,00 | 32,00 | 5,28 | 5,28 |  |
|             |                  |             |             |          |            | ●       | ●       |              |              |          |          | 20,0                                                                                  | 750     | 345    | 0,210 | 0,160 | 38,00 | 38,00 | 6,60 | 6,60 |  |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C017    | чист/черн     |



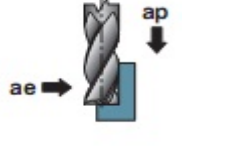
| P | M | K | N | S | H |
|---|---|---|---|---|---|
|   |   |   | • |   |   |

| Артикул-Ø-г   | d1 e8 | d2 h6 | d3   | l1    | l2   | l3   | r   |
|---------------|-------|-------|------|-------|------|------|-----|
| C017-3,0-0,5  | 3,0   | 6,0   | 2,8  | 57,0  | 8,0  | 15,0 | 0,5 |
| C017-3,0-1,0  | 3,0   | 6,0   | 2,8  | 57,0  | 8,0  | 15,0 | 1,0 |
| C017-4,0-0,5  | 4,0   | 6,0   | 3,8  | 57,0  | 11,0 | 18,0 | 0,5 |
| C017-4,0-1,0  | 4,0   | 6,0   | 3,8  | 57,0  | 11,0 | 18,0 | 1,0 |
| C017-5,0-0,5  | 5,0   | 6,0   | 4,8  | 57,0  | 13,0 | 18,0 | 0,5 |
| C017-5,0-1,0  | 5,0   | 6,0   | 4,8  | 57,0  | 13,0 | 18,0 | 1,0 |
| C017-6,0-0,5  | 6,0   | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 0,5 |
| C017-6,0-1,0  | 6,0   | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 1,0 |
| C017-8,0-0,5  | 8,0   | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 0,5 |
| C017-8,0-1,0  | 8,0   | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 1,0 |
| C017-8,0-1,5  | 8,0   | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 1,5 |
| C017-10,0-0,5 | 10,0  | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 0,5 |
| C017-10,0-1,0 | 10,0  | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 1,0 |
| C017-10,0-2,0 | 10,0  | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 2,0 |
| C017-12,0-0,5 | 12,0  | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 0,5 |
| C017-12,0-1,0 | 12,0  | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 1,0 |
| C017-12,0-2,0 | 12,0  | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 2,0 |
| C017-16,0-1,0 | 16,0  | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 1,0 |
| C017-16,0-1,0 | 16,0  | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 1,0 |
| C017-20,0-1,0 | 20,0  | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 1,0 |
| C017-20,0-2,0 | 20,0  | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 2,0 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C017-10,0-1,0-НА.

## Режимы резания

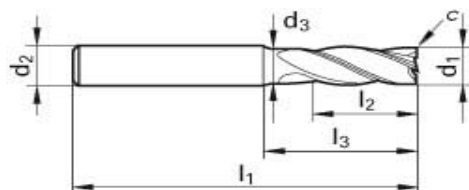
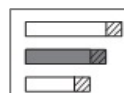
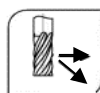
| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |  |  |  |  |  |  |  |  |  |  |          |          |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|---------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|----------|----------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          |                                                                                       |  |  |  |  |  |  |  |  |  | H        |          |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> |                                                                                       |  |  |  |  |  |  |  |  |  | ≤ 54 HRC | ≤ 63 HRC |
| ∅d1                     | Vc                           | fz                      |                         | ap       |            | ae      |         |                          |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| (мм)                    | (м/мин)                      | (мм/з)                  |                         | (мм)     |            | (мм)    |         |                          |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| 3,0                     | 750                          | 345                     | 0,025                   | 0,021    | 8,00       | 8,00    | 0,99    | 0,99                     |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| 6,0                     | 750                          | 345                     | 0,051                   | 0,043    | 13,00      | 13,00   | 1,98    | 1,98                     |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| 8,0                     | 750                          | 345                     | 0,068                   | 0,057    | 19,00      | 19,00   | 2,64    | 2,64                     |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| 10,0                    | 750                          | 345                     | 0,104                   | 0,078    | 22,00      | 22,00   | 3,30    | 3,30                     |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| 12,0                    | 750                          | 345                     | 0,120                   | 0,090    | 26,00      | 26,00   | 3,96    | 3,96                     |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| 16,0                    | 750                          | 345                     | 0,170                   | 0,120    | 32,00      | 32,00   | 5,28    | 5,28                     |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |
| 20,0                    | 750                          | 345                     | 0,210                   | 0,160    | 38,00      | 38,00   | 6,60    | 6,60                     |                          |                                                                                       |  |  |  |  |  |  |  |  |  |          |          |

- рекомендованное применение
- возможное применение



# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C020    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ○ |   | ● |   |   | ● |

| Артикул-Ø | d1 h10 | d2 h6 | d3   | l1    | l2   | l3   | c x 45° |
|-----------|--------|-------|------|-------|------|------|---------|
| C020-6,0  | 6,0    | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 0,15    |
| C020-8,0  | 8,0    | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 0,15    |
| C020-10,0 | 10,0   | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 0,20    |
| C020-12,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 0,20    |
| C020-16,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 0,35    |
| C020-20,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 0,45    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (HA/HB). Пример: C020-10,0-HA.

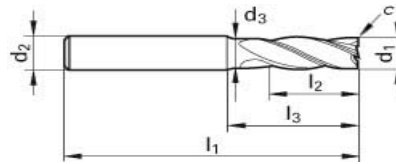
## Режимы резания

| Материалы                 |                                |                           |                           |                       |                         |                       |                       |                            |                            | Diagram illustrating the cutting parameters for a drill bit: $a_e$ (cutting edge length), $V_c$ (cutting speed), $f_z$ (feed per tooth), $a_p$ (cutting depth), and $a_e$ (cutting edge length). |                       |                   |         |        |       |       |       |       |      |      |
|---------------------------|--------------------------------|---------------------------|---------------------------|-----------------------|-------------------------|-----------------------|-----------------------|----------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------|---------|--------|-------|-------|-------|-------|------|------|
| P                         |                                | M                         |                           | K                     |                         | N                     |                       | S                          |                            | H                                                                                                                                                                                                |                       | $\varnothing d_1$ |         | $V_c$  | $f_z$ | $a_p$ |       | $a_e$ |      |      |
| $\leq 850 \text{ N/mm}^2$ | $850 \geq 1400 \text{ N/mm}^2$ | $\leq 750 \text{ N/mm}^2$ | $\geq 750 \text{ N/mm}^2$ | $\leq 240 \text{ HB}$ | $\geq 240 \text{ HB30}$ | $\leq 3\% \text{ Si}$ | $\leq 7\% \text{ Si}$ | $\leq 1300 \text{ N/mm}^2$ | $\geq 1300 \text{ N/mm}^2$ | $\leq 54 \text{ HRC}$                                                                                                                                                                            | $\leq 63 \text{ HRC}$ | (мм)              | (м/мин) | (мм/з) | (мм)  | (мм)  | (мм)  |       |      |      |
|                           |                                |                           |                           |                       | ●                       |                       |                       |                            |                            |                                                                                                                                                                                                  |                       | 6,0               |         | 280    |       | 0,075 |       | 13,00 |      | 0,48 |
|                           |                                |                           |                           |                       | ●                       |                       |                       |                            |                            |                                                                                                                                                                                                  |                       | 8,0               |         | 280    |       | 0,100 |       | 19,00 |      | 0,64 |
|                           |                                |                           |                           |                       | ●                       |                       |                       |                            |                            |                                                                                                                                                                                                  |                       | 10,0              |         | 280    |       | 0,138 |       | 22,00 |      | 0,80 |
|                           |                                |                           |                           |                       | ●                       |                       |                       |                            |                            |                                                                                                                                                                                                  |                       | 12,0              |         | 280    |       | 0,170 |       | 26,00 |      | 0,96 |
|                           |                                |                           |                           |                       | ●                       |                       |                       |                            |                            |                                                                                                                                                                                                  |                       | 16,0              |         | 280    |       | 0,220 |       | 32,00 |      | 1,28 |
|                           |                                |                           |                           |                       | ●                       |                       |                       |                            |                            |                                                                                                                                                                                                  |                       | 20,0              |         | 280    |       | 0,280 |       | 38,00 |      | 1,60 |
|                           |                                |                           |                           |                       |                         |                       |                       |                            |                            |                                                                                                                                                                                                  |                       |                   |         |        |       |       |       |       |      |      |
|                           |                                |                           |                           |                       |                         |                       |                       |                            |                            | ●                                                                                                                                                                                                | ●                     | 6,0               | 140     | 80     | 0,053 | 0,042 | 13,00 | 13,00 | 0,48 | 0,48 |
|                           |                                |                           |                           |                       |                         |                       |                       |                            |                            | ●                                                                                                                                                                                                | ●                     | 8,0               | 140     | 80     | 0,070 | 0,056 | 19,00 | 19,00 | 0,64 | 0,64 |
|                           |                                |                           |                           |                       |                         |                       |                       |                            |                            | ●                                                                                                                                                                                                | ●                     | 10,0              | 140     | 80     | 0,100 | 0,075 | 22,00 | 22,00 | 0,80 | 0,80 |
|                           |                                |                           |                           |                       |                         |                       |                       |                            |                            | ●                                                                                                                                                                                                | ●                     | 12,0              | 140     | 80     | 0,120 | 0,090 | 26,00 | 26,00 | 0,96 | 0,96 |
|                           |                                |                           |                           |                       |                         |                       |                       |                            |                            | ●                                                                                                                                                                                                | ●                     | 16,0              | 140     | 80     | 0,160 | 0,120 | 32,00 | 32,00 | 1,28 | 1,28 |
|                           |                                |                           |                           |                       |                         |                       |                       |                            |                            | ●                                                                                                                                                                                                | ●                     | 20,0              | 140     | 80     | 0,200 | 0,150 | 38,00 | 38,00 | 1,60 | 1,60 |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C022    | чистовая      |



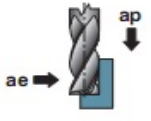
| P | M | K | N | S | H |
|---|---|---|---|---|---|
| • | • | • | ○ | • | ○ |

| Артикул-Ø | d1 h10 | d2 h6 | d3   | l1    | l2   | l3   | c x 45° |
|-----------|--------|-------|------|-------|------|------|---------|
| C022-4,0  | 4,0    | 6,0   | 3,8  | 57,0  | 11,0 | 18,0 | 0,05    |
| C022-5,0  | 5,0    | 6,0   | 4,8  | 57,0  | 13,0 | 18,0 | 0,05    |
| C022-6,0  | 6,0    | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 0,05    |
| C022-8,0  | 8,0    | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 0,10    |
| C022-10,0 | 10,0   | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 0,10    |
| C022-12,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 0,15    |
| C022-16,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 0,15    |
| C022-20,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 0,15    |
| C022-25,0 | 25,0   | 25,0  | 24,0 | 121,0 | 45,0 | 63,0 | 0,20    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C022-10,0-НА.

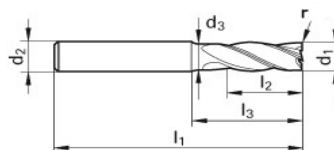
## Режимы резания

| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |         |        |        |       |       |       |      |      |      |    |  |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|-------------------------------------------------------------------------------------|---------|--------|--------|-------|-------|-------|------|------|------|----|--|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          | Ød1                                                                                 |         |        |        | Vc    |       | fz    |      | ap   |      | ae |  |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                | (м/мин) | (мм/з) | (мм/з) | (мм)  | (мм)  | (мм)  | (мм) | (мм) | (мм) |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                 | 340     | 250    | 0,036  | 0,031 | 11,00 | 11,00 | 0,30 | 0,30 |      |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 6,0                                                                                 | 340     | 250    | 0,072  | 0,062 | 13,00 | 13,00 | 0,60 | 0,60 |      |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 8,0                                                                                 | 340     | 250    | 0,096  | 0,083 | 19,00 | 19,00 | 0,80 | 0,80 |      |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 10,0                                                                                | 340     | 250    | 0,138  | 0,115 | 22,00 | 22,00 | 1,00 | 1,00 |      |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 12,0                                                                                | 340     | 250    | 0,170  | 0,140 | 26,00 | 26,00 | 1,20 | 1,20 |      |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 16,0                                                                                | 340     | 250    | 0,220  | 0,180 | 32,00 | 32,00 | 1,60 | 1,60 |      |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 20,0                                                                                | 340     | 250    | 0,280  | 0,230 | 38,00 | 38,00 | 2,00 | 2,00 |      |    |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 25,0                                                                                | 340     | 250    | 0,340  | 0,280 | 45,00 | 45,00 | 2,50 | 2,50 |      |    |  |
|             |                  |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                 | 220     | 110    | 0,031  | 0,024 | 11,00 | 11,00 | 0,30 | 0,30 |      |    |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 6,0                                                                                 | 220     | 110    | 0,062  | 0,048 | 13,00 | 13,00 | 0,60 | 0,60 |      |    |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 8,0                                                                                 | 220     | 110    | 0,083  | 0,064 | 19,00 | 19,00 | 0,80 | 0,80 |      |    |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 10,0                                                                                | 220     | 110    | 0,115  | 0,092 | 22,00 | 22,00 | 1,00 | 1,00 |      |    |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 12,0                                                                                | 220     | 110    | 0,140  | 0,110 | 26,00 | 26,00 | 1,20 | 1,20 |      |    |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 16,0                                                                                | 220     | 110    | 0,180  | 0,150 | 32,00 | 32,00 | 1,60 | 1,60 |      |    |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 20,0                                                                                | 220     | 110    | 0,230  | 0,180 | 38,00 | 38,00 | 2,00 | 2,00 |      |    |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 25,0                                                                                | 220     | 110    | 0,280  | 0,210 | 45,00 | 45,00 | 2,50 | 2,50 |      |    |  |
|             |                  |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                 | 300     | 260    | 0,038  | 0,035 | 11,00 | 11,00 | 0,30 | 0,30 |      |    |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 6,0                                                                                 | 300     | 260    | 0,076  | 0,069 | 13,00 | 13,00 | 0,60 | 0,60 |      |    |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 8,0                                                                                 | 300     | 260    | 0,101  | 0,092 | 19,00 | 19,00 | 0,80 | 0,80 |      |    |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 10,0                                                                                | 300     | 260    | 0,150  | 0,127 | 22,00 | 22,00 | 1,00 | 1,00 |      |    |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 12,0                                                                                | 300     | 260    | 0,180  | 0,150 | 26,00 | 26,00 | 1,20 | 1,20 |      |    |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 16,0                                                                                | 300     | 260    | 0,240  | 0,200 | 32,00 | 32,00 | 1,60 | 1,60 |      |    |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 20,0                                                                                | 300     | 260    | 0,300  | 0,250 | 38,00 | 38,00 | 2,00 | 2,00 |      |    |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 25,0                                                                                | 300     | 260    | 0,360  | 0,300 | 45,00 | 45,00 | 2,50 | 2,50 |      |    |  |
|             |                  |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                 | 60      | 110    | 0,019  | 0,028 | 11,00 | 11,00 | 0,30 | 0,30 |      |    |  |
|             |                  |             |             |          |            |         |         | •            | •            |          |          | 6,0                                                                                 | 60      | 110    | 0,039  | 0,055 | 13,00 | 13,00 | 0,60 | 0,60 |      |    |  |
|             |                  |             |             |          |            |         |         | •            | •            |          |          | 8,0                                                                                 | 60      | 110    | 0,052  | 0,074 | 19,00 | 19,00 | 0,80 | 0,80 |      |    |  |
|             |                  |             |             |          |            |         |         | •            | •            |          |          | 10,0                                                                                | 60      | 110    | 0,074  | 0,104 | 22,00 | 22,00 | 1,00 | 1,00 |      |    |  |
|             |                  |             |             |          |            |         |         | •            | •            |          |          | 12,0                                                                                | 60      | 110    | 0,090  | 0,120 | 26,00 | 26,00 | 1,20 | 1,20 |      |    |  |
|             |                  |             |             |          |            |         |         | •            | •            |          |          | 16,0                                                                                | 60      | 110    | 0,120  | 0,170 | 32,00 | 32,00 | 1,60 | 1,60 |      |    |  |
|             |                  |             |             |          |            |         |         | •            | •            |          |          | 20,0                                                                                | 60      | 110    | 0,150  | 0,210 | 38,00 | 38,00 | 2,00 | 2,00 |      |    |  |
|             |                  |             |             |          |            |         |         | •            | •            |          |          | 25,0                                                                                | 60      | 110    | 0,180  | 0,250 | 45,00 | 45,00 | 2,50 | 2,50 |      |    |  |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C023    | чист/черн     |



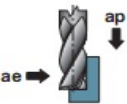
| P | M | K | N | S | H |
|---|---|---|---|---|---|
| • | • |   |   | • |   |

Возможно изменение радиуса по запросу клиента.

| Артикул-Ø-г   | d1 h10 | d2 h6 | d3   | l1    | l2   | l3   | r   |
|---------------|--------|-------|------|-------|------|------|-----|
| C023-6,0-1,0  | 6,0    | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 1,0 |
| C023-6,0-2,0  | 6,0    | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 2,0 |
| C023-8,0-1,0  | 8,0    | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 1,0 |
| C023-8,0-2,0  | 8,0    | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 2,0 |
| C023-10,0-1,0 | 10,0   | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 1,0 |
| C023-10,0-2,0 | 10,0   | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 2,0 |
| C023-12,0-1,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 1,0 |
| C023-12,0-2,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 2,0 |
| C023-12,0-3,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 3,0 |
| C023-12,0-4,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 4,0 |
| C023-16,0-1,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 1,0 |
| C023-16,0-2,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 2,0 |
| C023-16,0-3,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 3,0 |
| C023-16,0-4,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 4,0 |
| C023-20,0-1,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 1,0 |
| C023-20,0-2,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 2,0 |
| C023-20,0-3,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 3,0 |
| C023-20,0-4,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 4,0 |
| C023-25,0-1,0 | 25,0   | 25,0  | 24,0 | 121,0 | 45,0 | 63,0 | 1,0 |
| C023-25,0-2,0 | 25,0   | 25,0  | 24,0 | 121,0 | 45,0 | 63,0 | 2,0 |
| C023-25,0-3,0 | 25,0   | 25,0  | 24,0 | 121,0 | 45,0 | 63,0 | 3,0 |
| C023-25,0-4,0 | 25,0   | 25,0  | 24,0 | 121,0 | 45,0 | 63,0 | 4,0 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

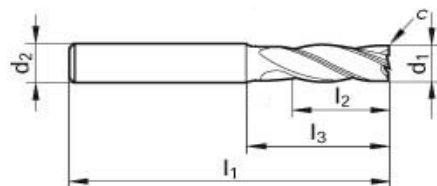
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C023-10,0-1,0-НА.

| Режимы резания |                  |             |             |          |            |         |         |              |              |                                                                                      |          |      |         |        |       |       |       |       |       |       |
|----------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|--------------------------------------------------------------------------------------|----------|------|---------|--------|-------|-------|-------|-------|-------|-------|
| Материалы      |                  |             |             |          |            |         |         |              |              |  |          |      |         |        |       |       |       |       |       |       |
| P              |                  | M           |             | K        |            | N       |         | S            |              |                                                                                      |          | H    |         |        |       |       |       |       |       |       |
| ≤ 850 N/mm²    | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC                                                                             | ≤ 63 HRC | ∅d1  | Vc      | fz     | ap    | ae    |       |       |       |       |
| (мм)           | (мм)             | (мм)        | (мм)        | (мм)     | (мм)       | (мм)    | (мм)    | (мм)         | (мм)         | (мм)                                                                                 | (мм)     | (мм) | (м/мин) | (мм/з) | (мм)  | (мм)  |       |       |       |       |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 3,0  | 260     | 170    | 0,025 | 0,020 | 3,00  | 3,00  | 1,20  | 1,20  |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 6,0  | 260     | 170    | 0,050 | 0,036 | 6,00  | 6,00  | 2,40  | 2,40  |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 8,0  | 260     | 170    | 0,067 | 0,050 | 8,00  | 8,00  | 3,20  | 3,20  |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 10,0 | 260     | 170    | 0,085 | 0,065 | 10,00 | 10,00 | 4,00  | 4,00  |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 12,0 | 260     | 170    | 0,110 | 0,085 | 12,00 | 12,00 | 4,80  | 4,80  |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 16,0 | 260     | 170    | 0,140 | 0,110 | 16,00 | 16,00 | 6,40  | 6,40  |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 20,0 | 260     | 170    | 0,170 | 0,140 | 20,00 | 20,00 | 8,00  | 8,00  |
| •              | •                |             |             |          |            |         |         |              |              |                                                                                      |          | 25,0 | 260     | 170    | 0,190 | 0,150 | 25,00 | 25,00 | 10,00 | 10,00 |
|                |                  |             |             |          |            |         |         |              |              |                                                                                      |          | 3,0  | 120     | 80     | 0,015 | 0,010 | 3,00  | 3,00  | 1,20  | 1,20  |
|                |                  | •           | •           |          |            |         |         |              |              |                                                                                      |          | 6,0  | 120     | 80     | 0,030 | 0,020 | 6,00  | 6,00  | 2,40  | 2,40  |
|                |                  | •           | •           |          |            |         |         |              |              |                                                                                      |          | 8,0  | 120     | 80     | 0,040 | 0,027 | 8,00  | 8,00  | 3,20  | 3,20  |
|                |                  | •           | •           |          |            |         |         |              |              |                                                                                      |          | 10,0 | 120     | 80     | 0,060 | 0,040 | 10,00 | 10,00 | 4,00  | 4,00  |
|                |                  | •           | •           |          |            |         |         |              |              |                                                                                      |          | 12,0 | 120     | 80     | 0,080 | 0,055 | 12,00 | 12,00 | 4,80  | 4,80  |
|                |                  | •           | •           |          |            |         |         |              |              |                                                                                      |          | 16,0 | 120     | 80     | 0,100 | 0,070 | 16,00 | 16,00 | 6,40  | 6,40  |
|                |                  | •           | •           |          |            |         |         |              |              |                                                                                      |          | 20,0 | 120     | 80     | 0,120 | 0,085 | 20,00 | 20,00 | 8,00  | 8,00  |
|                |                  | •           | •           |          |            |         |         |              |              |                                                                                      |          | 25,0 | 120     | 80     | 0,135 | 0,100 | 25,00 | 25,00 | 10,00 | 10,00 |
|                |                  |             |             |          |            |         |         |              |              |                                                                                      |          | 3,0  | 45      | 85     | 0,015 | 0,020 | 2,40  | 3,00  | 0,90  | 1,20  |
|                |                  |             |             |          |            |         |         | •            | •            |                                                                                      |          | 6,0  | 45      | 85     | 0,030 | 0,036 | 4,80  | 6,00  | 1,80  | 2,40  |
|                |                  |             |             |          |            |         |         | •            | •            |                                                                                      |          | 8,0  | 45      | 85     | 0,040 | 0,060 | 6,40  | 8,00  | 2,40  | 3,20  |
|                |                  |             |             |          |            |         |         | •            | •            |                                                                                      |          | 10,0 | 45      | 85     | 0,055 | 0,080 | 8,00  | 10,00 | 3,00  | 4,00  |
|                |                  |             |             |          |            |         |         | •            | •            |                                                                                      |          | 12,0 | 45      | 85     | 0,065 | 0,100 | 9,60  | 12,00 | 3,60  | 4,80  |
|                |                  |             |             |          |            |         |         | •            | •            |                                                                                      |          | 16,0 | 45      | 85     | 0,080 | 0,100 | 12,80 | 16,00 | 4,80  | 6,40  |
|                |                  |             |             |          |            |         |         | •            | •            |                                                                                      |          | 20,0 | 45      | 85     | 0,090 | 0,120 | 16,00 | 20,00 | 6,00  | 8,00  |
|                |                  |             |             |          |            |         |         | •            | •            |                                                                                      |          | 25,0 | 45      | 85     | 0,100 | 0,130 | 20,00 | 25,00 | 7,50  | 10,00 |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C025    | чист/черн     |



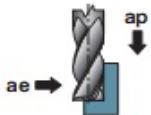
| P | M | K | N | S | H |
|---|---|---|---|---|---|
| • | • | • | ○ | ○ |   |

| Артикул-Ø | d1 h10 | d2 h6 | l1    | l2   | l3   | c x 45° |
|-----------|--------|-------|-------|------|------|---------|
| C025-3,0  | 3,0    | 6,0   | 57,0  | 7,0  | 10,9 | 0,05    |
| C025-3,5  | 3,5    | 6,0   | 57,0  | 7,0  | 10,9 | 0,05    |
| C025-4,0  | 4,0    | 6,0   | 57,0  | 8,0  | 11,9 | 0,05    |
| C025-4,5  | 4,5    | 6,0   | 57,0  | 8,0  | 13,4 | 0,05    |
| C025-5,0  | 5,0    | 6,0   | 57,0  | 10,0 | 15,4 | 0,05    |
| C025-6,0  | 6,0    | 6,0   | 57,0  | 10,0 | 21,0 | 0,05    |
| C025-7,0  | 7,0    | 8,0   | 63,0  | 13,0 | 21,4 | 0,05    |
| C025-8,0  | 8,0    | 8,0   | 63,0  | 16,0 | 27,0 | 0,10    |
| C025-9,0  | 9,0    | 10,0  | 72,0  | 16,0 | 32,0 | 0,10    |
| C025-10,0 | 10,0   | 10,0  | 72,0  | 19,0 | 32,0 | 0,10    |
| C025-12,0 | 12,0   | 12,0  | 83,0  | 22,0 | 38,0 | 0,15    |
| C025-14,0 | 14,0   | 14,0  | 83,0  | 22,0 | 44,0 | 0,15    |
| C025-16,0 | 16,0   | 16,0  | 92,0  | 26,0 | 44,0 | 0,15    |
| C025-18,0 | 18,0   | 18,0  | 92,0  | 26,0 | 44,0 | 0,15    |
| C025-20,0 | 20,0   | 20,0  | 104,0 | 32,0 | 54,0 | 0,15    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (HA/HB). Пример: C025-10,0-НА.

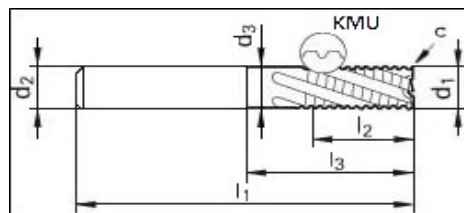
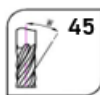
## Режимы резания

| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |          |          |  |         |        |       |       |       |       |       |       |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|----------|----------|---------------------------------------------------------------------------------------|---------|--------|-------|-------|-------|-------|-------|-------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H        |          | Ød1                                                                                   | Vc      | fz     |       | ap    |       | ae    |       |       |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) | (мм/з) |       | (мм)  |       | (мм)  |       |       |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 3,0                                                                                   | 140     | 110    | 0,014 | 0,130 | 3,00  | 3,00  | 2,25  | 2,25  |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 6,0                                                                                   | 140     | 110    | 0,028 | 0,026 | 6,00  | 6,00  | 4,50  | 4,50  |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 8,0                                                                                   | 140     | 110    | 0,037 | 0,035 | 8,00  | 8,00  | 6,00  | 6,00  |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 10,0                                                                                  | 140     | 110    | 0,052 | 0,048 | 10,00 | 10,00 | 7,50  | 7,50  |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 12,0                                                                                  | 140     | 110    | 0,060 | 0,060 | 12,00 | 12,00 | 9,00  | 9,00  |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 16,0                                                                                  | 140     | 110    | 0,080 | 0,080 | 16,00 | 16,00 | 12,00 | 12,00 |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 20,0                                                                                  | 140     | 110    | 0,100 | 0,100 | 20,00 | 20,00 | 15,00 | 15,00 |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |          |          | 25,0                                                                                  | 140     | 110    | 0,120 | 0,120 | 25,00 | 25,00 | 18,75 | 18,75 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          | 3,0                                                                                   | 100     | 50     | 0,013 | 0,012 | 3,00  | 3,00  | 2,25  | 2,25  |
|                         |                              | •                       | •                       |          |            |         |         |                          |                          |          |          | 6,0                                                                                   | 100     | 50     | 0,026 | 0,024 | 6,00  | 6,00  | 4,50  | 4,50  |
|                         |                              | •                       | •                       |          |            |         |         |                          |                          |          |          | 8,0                                                                                   | 100     | 50     | 0,035 | 0,032 | 8,00  | 8,00  | 6,00  | 6,00  |
|                         |                              | •                       | •                       |          |            |         |         |                          |                          |          |          | 10,0                                                                                  | 100     | 50     | 0,048 | 0,042 | 10,00 | 10,00 | 7,50  | 7,50  |
|                         |                              | •                       | •                       |          |            |         |         |                          |                          |          |          | 12,0                                                                                  | 100     | 50     | 0,060 | 0,050 | 12,00 | 12,00 | 9,00  | 9,00  |
|                         |                              | •                       | •                       |          |            |         |         |                          |                          |          |          | 16,0                                                                                  | 100     | 50     | 0,080 | 0,070 | 16,00 | 16,00 | 12,00 | 12,00 |
|                         |                              | •                       | •                       |          |            |         |         |                          |                          |          |          | 20,0                                                                                  | 100     | 50     | 0,100 | 0,080 | 20,00 | 20,00 | 15,00 | 15,00 |
|                         |                              | •                       | •                       |          |            |         |         |                          |                          |          |          | 25,0                                                                                  | 100     | 50     | 0,120 | 0,100 | 25,00 | 25,00 | 18,75 | 18,75 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          | 3,0                                                                                   | 130     | 110    | 0,014 | 0,130 | 3,00  | 3,00  | 2,25  | 2,25  |
|                         |                              |                         |                         | •        | •          |         |         |                          |                          |          |          | 6,0                                                                                   | 130     | 110    | 0,028 | 0,026 | 6,00  | 6,00  | 4,50  | 4,50  |
|                         |                              |                         |                         | •        | •          |         |         |                          |                          |          |          | 8,0                                                                                   | 130     | 110    | 0,037 | 0,035 | 8,00  | 8,00  | 6,00  | 6,00  |
|                         |                              |                         |                         | •        | •          |         |         |                          |                          |          |          | 10,0                                                                                  | 130     | 110    | 0,052 | 0,048 | 10,00 | 10,00 | 7,50  | 7,50  |
|                         |                              |                         |                         | •        | •          |         |         |                          |                          |          |          | 12,0                                                                                  | 130     | 110    | 0,060 | 0,060 | 12,00 | 12,00 | 9,00  | 9,00  |
|                         |                              |                         |                         | •        | •          |         |         |                          |                          |          |          | 16,0                                                                                  | 130     | 110    | 0,080 | 0,080 | 16,00 | 16,00 | 12,00 | 12,00 |
|                         |                              |                         |                         | •        | •          |         |         |                          |                          |          |          | 20,0                                                                                  | 130     | 110    | 0,100 | 0,100 | 20,00 | 20,00 | 15,00 | 15,00 |
|                         |                              |                         |                         | •        | •          |         |         |                          |                          |          |          | 25,0                                                                                  | 130     | 110    | 0,120 | 0,120 | 25,00 | 25,00 | 18,75 | 18,75 |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C026    | черновая      |



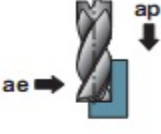
| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ● |   | ● |   |   | ○ |

| Артикул-Ø | d1 h10 | d2 h6 | d3   | l1    | l2   | l3   | c x 45° | z |
|-----------|--------|-------|------|-------|------|------|---------|---|
| C026-6,0  | 6,0    | 6,0   | 5,7  | 57,0  | 13,0 | 20,0 | 0,30    | 5 |
| C026-8,0  | 8,0    | 8,0   | 7,7  | 63,0  | 19,0 | 26,0 | 0,30    | 5 |
| C026-10,0 | 10,0   | 10,0  | 9,5  | 72,0  | 22,0 | 30,0 | 0,30    | 5 |
| C026-12,0 | 12,0   | 12,0  | 11,5 | 83,0  | 26,0 | 36,0 | 0,50    | 5 |
| C026-14,0 | 14,0   | 14,0  | 13,5 | 83,0  | 26,0 | 36,0 | 0,50    | 5 |
| C026-16,0 | 16,0   | 16,0  | 15,5 | 92,0  | 32,0 | 42,0 | 0,50    | 6 |
| C026-18,0 | 18,0   | 18,0  | 17,5 | 92,0  | 32,0 | 42,0 | 0,50    | 6 |
| C026-20,0 | 20,0   | 20,0  | 19,5 | 104,0 | 38,0 | 52,0 | 0,50    | 6 |
| C026-25,0 | 25,0   | 25,0  | 24,0 | 121,0 | 45,0 | 63,0 | 0,60    | 6 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C022-10,0-НА.

## Режимы резания

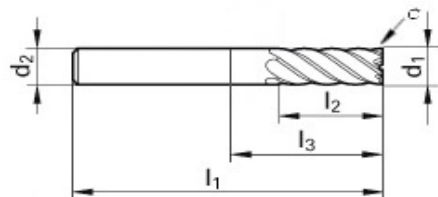
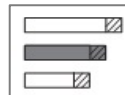
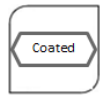
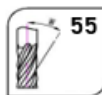
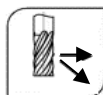
| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |         |        |        |       |       |       |       |       |  |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|---------------------------------------------------------------------------------------|---------|--------|--------|-------|-------|-------|-------|-------|--|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          | Ød1                                                                                   |         | Vc     |        | fz    |       | ap    |       | ae    |  |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) | (мм/з) | (мм/з) | (мм)  | (мм)  | (мм)  | (мм)  |       |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 6,0                                                                                   | 160     | 120    | 0,021  | 0,019 | 9,00  | 9,00  | 4,50  | 4,50  |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 8,0                                                                                   | 160     | 120    | 0,028  | 0,026 | 12,00 | 12,00 | 6,00  | 6,00  |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 10,0                                                                                  | 160     | 120    | 0,037  | 0,035 | 15,00 | 15,00 | 7,50  | 7,50  |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 12,0                                                                                  | 160     | 120    | 0,044  | 0,041 | 18,00 | 18,00 | 9,00  | 9,00  |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 16,0                                                                                  | 160     | 120    | 0,059  | 0,055 | 24,00 | 24,00 | 12,00 | 12,00 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 20,0                                                                                  | 160     | 120    | 0,074  | 0,069 | 30,00 | 30,00 | 15,00 | 15,00 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 25,0                                                                                  | 160     | 120    | 0,089  | 0,083 | 37,50 | 37,50 | 18,75 | 18,75 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 6,0                                                                                   | 140     | 130    | 0,021  | 0,019 | 9,00  | 9,00  | 4,50  | 4,50  |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 8,0                                                                                   | 140     | 130    | 0,028  | 0,026 | 12,00 | 12,00 | 6,00  | 6,00  |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 10,0                                                                                  | 140     | 130    | 0,037  | 0,035 | 15,00 | 15,00 | 7,50  | 7,50  |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 12,0                                                                                  | 140     | 130    | 0,044  | 0,041 | 18,00 | 18,00 | 9,00  | 9,00  |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 16,0                                                                                  | 140     | 130    | 0,059  | 0,055 | 24,00 | 24,00 | 12,00 | 12,00 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 20,0                                                                                  | 140     | 130    | 0,074  | 0,069 | 30,00 | 30,00 | 15,00 | 15,00 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 25,0                                                                                  | 140     | 130    | 0,089  | 0,083 | 37,50 | 37,50 | 18,75 | 18,75 |  |

- рекомендованное применение
- возможное применение



# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C029    | чистовая      |

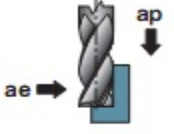


| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ○ |   | ● |   |   | ● |

| Артикул-Ø | d1 h10 | d2 h6 | l1    | l2   | l3   | c x 45° | z |
|-----------|--------|-------|-------|------|------|---------|---|
| C029-3,0  | 3,0    | 6,0   | 57,0  | 8,0  | 11,4 | 0,05    | 6 |
| C029-4,0  | 4,0    | 6,0   | 57,0  | 11,0 | 15,9 | 0,05    | 6 |
| C029-5,0  | 5,0    | 6,0   | 57,0  | 13,0 | 17,9 | 0,05    | 6 |
| C029-6,0  | 6,0    | 6,0   | 57,0  | 13,0 | 21,0 | 0,05    | 6 |
| C029-8,0  | 8,0    | 8,0   | 63,0  | 19,0 | 27,0 | 0,10    | 6 |
| C029-10,0 | 10,0   | 10,0  | 72,0  | 22,0 | 32,0 | 0,10    | 6 |
| C029-12,0 | 12,0   | 12,0  | 83,0  | 26,0 | 38,0 | 0,15    | 6 |
| C029-14,0 | 14,0   | 14,0  | 83,0  | 26,0 | 38,0 | 0,15    | 6 |
| C029-16,0 | 16,0   | 16,0  | 92,0  | 32,0 | 44,0 | 0,15    | 6 |
| C029-18,0 | 18,0   | 18,0  | 92,0  | 32,0 | 44,0 | 0,15    | 8 |
| C029-20,0 | 20,0   | 20,0  | 104,0 | 38,0 | 54,0 | 0,15    | 8 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (HA/НВ). **Пример: C029-10,0-НА.**

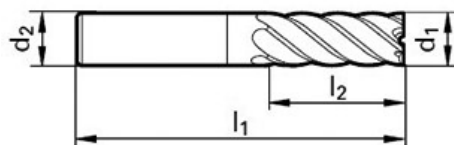
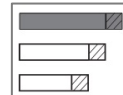
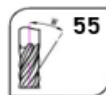
## Режимы резания

| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |          |          |  |         |     |        |       |       |       |      |      |  |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|----------|----------|---------------------------------------------------------------------------------------|---------|-----|--------|-------|-------|-------|------|------|--|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H        |          | Ød1                                                                                   |         | Vc  |        | fz    |       | ap    |      | ae   |  |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) |     | (мм/з) |       | (мм)  |       | (мм) |      |  |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 3,0                                                                                   |         | 180 |        | 0,029 | 8,00  | 8,00  | 0,15 | 0,15 |  |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 6,0                                                                                   |         | 180 |        | 0,057 | 13,00 | 13,00 | 0,30 | 0,30 |  |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 8,0                                                                                   |         | 180 |        | 0,076 | 19,00 | 19,00 | 0,40 | 0,40 |  |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 10,0                                                                                  |         | 180 |        | 0,105 | 22,00 | 22,00 | 0,50 | 0,50 |  |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 12,0                                                                                  |         | 180 |        | 0,130 | 26,00 | 26,00 | 0,60 | 0,60 |  |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 16,0                                                                                  |         | 180 |        | 0,170 | 32,00 | 32,00 | 0,80 | 0,80 |  |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 20,0                                                                                  |         | 180 |        | 0,210 | 38,00 | 38,00 | 1,00 | 1,00 |  |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 3,0                                                                                   | 100     | 70  | 0,024  | 0,019 | 8,00  | 8,00  | 0,15 | 0,15 |  |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 6,0                                                                                   | 100     | 70  | 0,048  | 0,038 | 13,00 | 13,00 | 0,30 | 0,30 |  |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 8,0                                                                                   | 100     | 70  | 0,064  | 0,050 | 19,00 | 19,00 | 0,40 | 0,40 |  |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 10,0                                                                                  | 100     | 70  | 0,088  | 0,070 | 22,00 | 22,00 | 0,50 | 0,50 |  |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 12,0                                                                                  | 100     | 70  | 0,110  | 0,080 | 26,00 | 26,00 | 0,60 | 0,60 |  |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 16,0                                                                                  | 100     | 70  | 0,140  | 0,110 | 32,00 | 32,00 | 0,80 | 0,80 |  |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 20,0                                                                                  | 100     | 70  | 0,180  | 0,140 | 38,00 | 38,00 | 1,00 | 1,00 |  |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C030    | чистовая      |

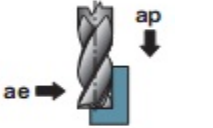


| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ○ |   | ● |   |   | ● |

| Артикул-Ø | d1 h10 | d2 h6 | l1    | l2   | l3    | c x 45° | z |
|-----------|--------|-------|-------|------|-------|---------|---|
| C030-6,0  | 6,0    | 6,0   | 75,0  | 30,0 | 39,0  | 0,05    | 6 |
| C030-8,0  | 8,0    | 8,0   | 100,0 | 40,0 | 64,0  | 0,10    | 6 |
| C030-10,0 | 10,0   | 10,0  | 100,0 | 40,0 | 60,0  | 0,10    | 6 |
| C030-12,0 | 12,0   | 12,0  | 150,0 | 45,0 | 105,0 | 0,15    | 6 |
| C030-16,0 | 16,0   | 16,0  | 150,0 | 65,0 | 102,0 | 0,15    | 6 |
| C030-20,0 | 20,0   | 20,0  | 150,0 | 65,0 | 100,0 | 0,15    | 8 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C029-10,0-НА.**

## Режимы резания

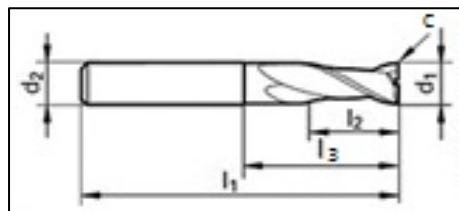
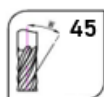
| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |               |              |            |       |            |       |      |      |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|--------------------------------------------------------------------------------------|---------------|--------------|------------|-------|------------|-------|------|------|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          |                                                                                      |               |              |            |       |            |       |      |      |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | Ød1<br>(мм)                                                                          | Vc<br>(м/мин) | fz<br>(мм/з) | ap<br>(мм) |       | ae<br>(мм) |       |      |      |
|             |                  |             |             |          | ●          |         |         |              |              |          |          | 6,0                                                                                  |               | 70           |            | 0,020 | 30,00      | 30,00 | 0,30 | 0,30 |
|             |                  |             |             |          | ●          |         |         |              |              |          |          | 8,0                                                                                  |               | 70           |            | 0,027 | 40,00      | 40,00 | 0,40 | 0,40 |
|             |                  |             |             |          | ●          |         |         |              |              |          |          | 10,0                                                                                 |               | 70           |            | 0,037 | 40,00      | 40,00 | 0,50 | 0,50 |
|             |                  |             |             |          | ●          |         |         |              |              |          |          | 12,0                                                                                 |               | 70           |            | 0,044 | 45,00      | 45,00 | 0,60 | 0,60 |
|             |                  |             |             |          | ●          |         |         |              |              |          |          | 16,0                                                                                 |               | 70           |            | 0,059 | 65,00      | 65,00 | 0,80 | 0,80 |
|             |                  |             |             |          | ●          |         |         |              |              |          |          | 20,0                                                                                 |               | 70           |            | 0,074 | 65,00      | 65,00 | 1,00 | 1,00 |
|             |                  |             |             |          |            |         |         |              |              |          |          |                                                                                      |               |              |            |       |            |       |      |      |
|             |                  |             |             |          |            |         |         |              |              | ●        | ●        | 6,0                                                                                  | 40            | 20           | 0,017      | 0,013 | 30,00      | 30,00 | 0,30 | 0,30 |
|             |                  |             |             |          |            |         |         |              |              | ●        | ●        | 8,0                                                                                  | 40            | 20           | 0,022      | 0,018 | 40,00      | 40,00 | 0,40 | 0,40 |
|             |                  |             |             |          |            |         |         |              |              | ●        | ●        | 10,0                                                                                 | 40            | 20           | 0,031      | 0,025 | 40,00      | 40,00 | 0,50 | 0,50 |
|             |                  |             |             |          |            |         |         |              |              | ●        | ●        | 12,0                                                                                 | 40            | 20           | 0,037      | 0,029 | 45,00      | 45,00 | 0,60 | 0,60 |
|             |                  |             |             |          |            |         |         |              |              | ●        | ●        | 16,0                                                                                 | 40            | 20           | 0,049      | 0,039 | 65,00      | 65,00 | 0,80 | 0,80 |
|             |                  |             |             |          |            |         |         |              |              | ●        | ●        | 20,0                                                                                 | 40            | 20           | 0,061      | 0,049 | 65,00      | 65,00 | 1,00 | 1,00 |

- рекомендованное применение
- возможное применение



## Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C035    | чист/черн     |



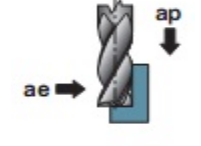
| P | M | K | N | S | H |
|---|---|---|---|---|---|
|   |   |   | ● |   |   |

| Артикул-Ø | d1 e8 | d2 h6 | l1    | l2   | l3   | c x 45° |
|-----------|-------|-------|-------|------|------|---------|
| C035-3,0  | 3,0   | 6,0   | 57,0  | 7,0  | 10,9 | 0,03    |
| C035-4,0  | 4,0   | 6,0   | 57,0  | 8,0  | 11,9 | 0,03    |
| C035-5,0  | 5,0   | 6,0   | 57,0  | 10,0 | 15,4 | 0,03    |
| C035-6,0  | 6,0   | 6,0   | 57,0  | 10,0 | 21,0 | 0,05    |
| C035-8,0  | 8,0   | 8,0   | 63,0  | 16,0 | 27,0 | 0,05    |
| C035-10,0 | 10,0  | 10,0  | 72,0  | 19,0 | 32,0 | 0,05    |
| C035-12,0 | 12,0  | 12,0  | 83,0  | 22,0 | 38,0 | 0,05    |
| C035-14,0 | 14,0  | 14,0  | 83,0  | 22,0 | 38,0 | 0,10    |
| C035-16,0 | 16,0  | 16,0  | 92,0  | 26,0 | 44,0 | 0,10    |
| C035-18,0 | 18,0  | 18,0  | 92,0  | 26,0 | 44,0 | 0,10    |
| C035-20,0 | 20,0  | 20,0  | 104,0 | 32,0 | 54,0 | 0,10    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C035-10,0-НА.

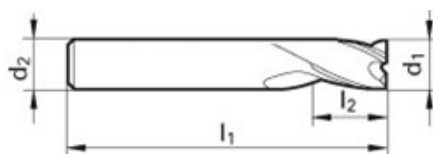
### Режимы резания

| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |         |        |       |       |       |       |       |       |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|---------------------------------------------------------------------------------------|---------|--------|-------|-------|-------|-------|-------|-------|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          | Ød1                                                                                   | Vc      | fz     | ap    |       | ae    |       |       |       |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) | (мм/з) | (мм)  |       | (мм)  |       |       |       |
|             |                  |             |             |          |            | •       | •       |              |              |          |          | 3,0                                                                                   | 350     | 190    | 0,021 | 0,018 | 3,00  | 3,00  | 2,25  | 2,25  |
|             |                  |             |             |          |            | •       | •       |              |              |          |          | 6,0                                                                                   | 350     | 190    | 0,043 | 0,036 | 6,00  | 6,00  | 4,50  | 4,50  |
|             |                  |             |             |          |            | •       | •       |              |              |          |          | 8,0                                                                                   | 350     | 190    | 0,057 | 0,048 | 8,00  | 8,00  | 6,00  | 6,00  |
|             |                  |             |             |          |            | •       | •       |              |              |          |          | 10,0                                                                                  | 350     | 190    | 0,075 | 0,064 | 10,00 | 10,00 | 7,50  | 7,50  |
|             |                  |             |             |          |            | •       | •       |              |              |          |          | 12,0                                                                                  | 350     | 190    | 0,090 | 0,080 | 12,00 | 12,00 | 9,00  | 9,00  |
|             |                  |             |             |          |            | •       | •       |              |              |          |          | 16,0                                                                                  | 350     | 190    | 0,120 | 0,100 | 16,00 | 16,00 | 12,00 | 12,00 |
|             |                  |             |             |          |            | •       | •       |              |              |          |          | 20,0                                                                                  | 350     | 190    | 0,150 | 0,130 | 20,00 | 20,00 | 15,00 | 15,00 |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C037    | чист/черн     |

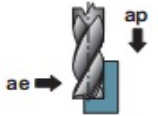


| P | M | K | N | S | H |
|---|---|---|---|---|---|
| • | • | • | ○ | ○ | ○ |

| Артикул-Ø | d1 h10 | d2 h6 | l1   | l2   | c x 45° |
|-----------|--------|-------|------|------|---------|
| C037-3,0  | 3,0    | 6,0   | 50,0 | 4,0  | 0,05    |
| C037-3,5  | 3,5    | 6,0   | 50,0 | 4,0  | 0,05    |
| C037-4,0  | 4,0    | 6,0   | 54,0 | 5,0  | 0,05    |
| C037-5,0  | 5,0    | 6,0   | 54,0 | 6,0  | 0,05    |
| C037-5,5  | 5,5    | 6,0   | 54,0 | 7,0  | 0,05    |
| C037-6,0  | 6,0    | 6,0   | 54,0 | 7,0  | 0,05    |
| C037-7,0  | 7,0    | 8,0   | 58,0 | 8,0  | 0,05    |
| C037-8,0  | 8,0    | 8,0   | 58,0 | 9,0  | 0,10    |
| C037-8,5  | 8,5    | 10,0  | 66,0 | 10,0 | 0,10    |
| C037-9,0  | 9,0    | 10,0  | 66,0 | 10,0 | 0,10    |
| C037-10,0 | 10,0   | 10,0  | 66,0 | 11,0 | 0,10    |
| C037-12,0 | 12,0   | 12,0  | 73,0 | 12,0 | 0,15    |
| C037-14,0 | 14,0   | 14,0  | 75,0 | 14,0 | 0,15    |
| C037-16,0 | 16,0   | 16,0  | 82,0 | 16,0 | 0,15    |
| C037-18,0 | 18,0   | 18,0  | 82,0 | 18,0 | 0,15    |
| C037-20,0 | 20,0   | 20,0  | 92,0 | 20,0 | 0,15    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C037-10,0-НА.

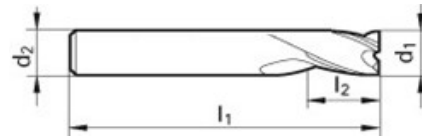
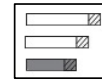
## Режимы резания

| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |         |     |        |       |       |       |       |       |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|---------------------------------------------------------------------------------------|---------|-----|--------|-------|-------|-------|-------|-------|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          | Ød1                                                                                   |         | Vc  | fz     |       | ap    |       | ae    |       |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) |     | (мм/з) | (мм)  |       | (мм)  |       |       |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                   | 140     | 110 | 0,014  | 0,012 | 3,00  | 3,00  | 2,25  | 2,25  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 6,0                                                                                   | 140     | 110 | 0,028  | 0,024 | 6,00  | 6,00  | 4,50  | 4,50  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 8,0                                                                                   | 140     | 110 | 0,037  | 0,032 | 8,00  | 8,00  | 6,00  | 6,00  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 10,0                                                                                  | 140     | 110 | 0,048  | 0,045 | 10,00 | 10,00 | 7,50  | 7,50  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 12,0                                                                                  | 140     | 110 | 0,060  | 0,050 | 12,00 | 12,00 | 9,00  | 9,00  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 16,0                                                                                  | 140     | 110 | 0,080  | 0,070 | 16,00 | 16,00 | 12,00 | 12,00 |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 20,0                                                                                  | 140     | 110 | 0,100  | 0,090 | 20,00 | 20,00 | 15,00 | 15,00 |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 3,0                                                                                   | 100     | 70  | 0,010  | 0,008 | 3,00  | 3,00  | 2,25  | 2,25  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 6,0                                                                                   | 100     | 70  | 0,019  | 0,015 | 6,00  | 6,00  | 4,50  | 4,50  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 8,0                                                                                   | 100     | 70  | 0,026  | 0,020 | 8,00  | 8,00  | 6,00  | 6,00  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 10,0                                                                                  | 100     | 70  | 0,035  | 0,029 | 10,00 | 10,00 | 7,50  | 7,50  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 12,0                                                                                  | 100     | 70  | 0,040  | 0,030 | 12,00 | 12,00 | 9,00  | 9,00  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 16,0                                                                                  | 100     | 70  | 0,060  | 0,050 | 16,00 | 16,00 | 12,00 | 12,00 |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 20,0                                                                                  | 100     | 70  | 0,070  | 0,060 | 20,00 | 20,00 | 15,00 | 15,00 |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 3,0                                                                                   | 130     |     | 0,013  |       | 3,00  |       | 2,25  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 6,0                                                                                   | 130     |     | 0,026  |       | 6,00  |       | 4,50  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 8,0                                                                                   | 130     |     | 0,034  |       | 8,00  |       | 6,00  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 10,0                                                                                  | 130     |     | 0,045  |       | 10,00 |       | 7,50  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 12,0                                                                                  | 130     |     | 0,050  |       | 12,00 |       | 9,00  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 16,0                                                                                  | 130     |     | 0,070  |       | 16,00 |       | 12,00 |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 20,0                                                                                  | 130     |     | 0,090  |       | 20,00 |       | 15,00 |       |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

|         |               |
|---------|---------------|
| Артикул | Вид обработки |
| C038    | чист/черн     |

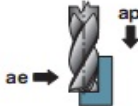


|   |   |   |   |   |   |
|---|---|---|---|---|---|
| P | M | K | N | S | H |
| • | • | • | ○ | ○ |   |

| Артикул-Ø | d1 e8 | d2 h6 | l1   | l2   | c x 45° |
|-----------|-------|-------|------|------|---------|
| C038-3,0  | 3,0   | 6,0   | 38,0 | 5,0  | 0,05    |
| C038-3,5  | 3,5   | 6,0   | 38,0 | 6,0  | 0,05    |
| C038-4,0  | 4,0   | 6,0   | 38,0 | 7,0  | 0,05    |
| C038-4,5  | 4,5   | 6,0   | 38,0 | 8,0  | 0,05    |
| C038-5,0  | 5,0   | 6,0   | 38,0 | 8,0  | 0,05    |
| C038-5,5  | 5,5   | 6,0   | 38,0 | 8,0  | 0,05    |
| C038-5,75 | 5,75  | 6,0   | 38,0 | 8,0  | 0,05    |
| C038-6,0  | 6,0   | 6,0   | 38,0 | 8,0  | 0,05    |
| C038-6,75 | 6,75  | 8,0   | 42,0 | 10,0 | 0,05    |
| C038-7,0  | 7,0   | 8,0   | 42,0 | 10,0 | 0,05    |
| C038-7,75 | 7,75  | 8,0   | 42,0 | 10,0 | 0,05    |
| C038-8,0  | 8,0   | 8,0   | 43,0 | 11,0 | 0,10    |
| C038-8,7  | 8,7   | 10,0  | 48,0 | 11,0 | 0,10    |
| C038-9,0  | 9,0   | 10,0  | 48,0 | 11,0 | 0,10    |
| C038-9,7  | 9,7   | 10,0  | 48,0 | 11,0 | 0,10    |
| C038-10,0 | 10,0  | 10,0  | 50,0 | 13,0 | 0,10    |
| C038-12,0 | 12,0  | 12,0  | 55,0 | 15,0 | 0,15    |
| C038-14,0 | 14,0  | 14,0  | 58,0 | 15,0 | 0,15    |
| C038-16,0 | 16,0  | 16,0  | 62,0 | 18,0 | 0,15    |
| C038-18,0 | 18,0  | 18,0  | 70,0 | 20,0 | 0,15    |
| C038-20,0 | 20,0  | 20,0  | 75,0 | 22,0 | 0,15    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C038-10,0-НА.**

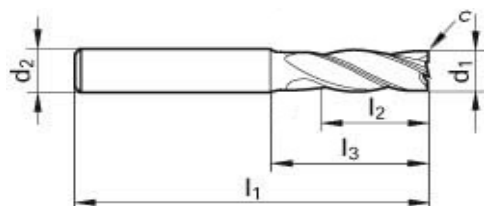
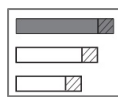
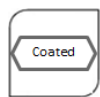
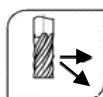
## Режимы резания

| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |                                                                                       |         |        |       |       |       |       |       |       |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|---------------------------------------------------------------------------------------|---------|--------|-------|-------|-------|-------|-------|-------|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          |  |         |        |       |       |       |       |       |       |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | Ød1                                                                                   | Vc      | fz     | ap    | ae    |       |       |       |       |
| (мм)        | (м/мин)          | (мм/з)      | (мм)        | (мм)     | (мм)       | (мм)    | (мм)    | (мм)         | (мм)         | (мм)     | (мм)     | (мм)                                                                                  | (м/мин) | (мм/з) | (мм)  | (мм)  |       |       |       |       |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                   | 140     | 110    | 0,014 | 0,012 | 3,00  | 3,00  | 2,25  | 2,25  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 6,0                                                                                   | 140     | 110    | 0,028 | 0,024 | 6,00  | 6,00  | 4,50  | 4,50  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 8,0                                                                                   | 140     | 110    | 0,037 | 0,032 | 8,00  | 8,00  | 6,00  | 6,00  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 10,0                                                                                  | 140     | 110    | 0,048 | 0,045 | 10,00 | 10,00 | 7,50  | 7,50  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 12,0                                                                                  | 140     | 110    | 0,060 | 0,050 | 12,00 | 12,00 | 9,00  | 9,00  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 16,0                                                                                  | 140     | 110    | 0,080 | 0,070 | 16,00 | 16,00 | 12,00 | 12,00 |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 20,0                                                                                  | 140     | 110    | 0,100 | 0,090 | 20,00 | 20,00 | 15,00 | 15,00 |
|             |                  |             |             |          |            |         |         |              |              |          |          |                                                                                       |         |        |       |       |       |       |       |       |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 3,0                                                                                   | 100     | 70     | 0,010 | 0,008 | 3,00  | 3,00  | 2,25  | 2,25  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 6,0                                                                                   | 100     | 70     | 0,019 | 0,015 | 6,00  | 6,00  | 4,50  | 4,50  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 8,0                                                                                   | 100     | 70     | 0,026 | 0,020 | 8,00  | 8,00  | 6,00  | 6,00  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 10,0                                                                                  | 100     | 70     | 0,035 | 0,029 | 10,00 | 10,00 | 7,50  | 7,50  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 12,0                                                                                  | 100     | 70     | 0,040 | 0,030 | 12,00 | 12,00 | 9,00  | 9,00  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 16,0                                                                                  | 100     | 70     | 0,060 | 0,050 | 16,00 | 16,00 | 12,00 | 12,00 |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 20,0                                                                                  | 100     | 70     | 0,070 | 0,060 | 20,00 | 20,00 | 15,00 | 15,00 |
|             |                  |             |             |          |            |         |         |              |              |          |          |                                                                                       |         |        |       |       |       |       |       |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 3,0                                                                                   | 130     |        | 0,013 |       | 3,00  |       | 2,25  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 6,0                                                                                   | 130     |        | 0,026 |       | 6,00  |       | 4,50  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 8,0                                                                                   | 130     |        | 0,034 |       | 8,00  |       | 6,00  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 10,0                                                                                  | 130     |        | 0,045 |       | 10,00 |       | 7,50  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 12,0                                                                                  | 130     |        | 0,050 |       | 12,00 |       | 9,00  |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 16,0                                                                                  | 130     |        | 0,070 |       | 16,00 |       | 12,00 |       |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 20,0                                                                                  | 130     |        | 0,090 |       | 20,00 |       | 15,00 |       |



# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C040    | чист/черн     |



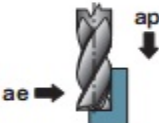
| P | M | K | N | S | H |
|---|---|---|---|---|---|
| • | • | • | ○ | ○ |   |

| Артикул-Ø | d1 h10 | d2 h6 | l1    | l2   | l3    | c x 45° |
|-----------|--------|-------|-------|------|-------|---------|
| C040-3,0  | 3,0    | 3,0   | 75,0  | 20,0 | 47,0  | 0,05    |
| C040-4,0  | 4,0    | 4,0   | 75,0  | 25,0 | 47,0  | 0,05    |
| C040-5,0  | 5,0    | 5,0   | 75,0  | 30,0 | 47,0  | 0,05    |
| C040-6,0  | 6,0    | 6,0   | 75,0  | 30,0 | 39,0  | 0,05    |
| C040-8,0  | 8,0    | 8,0   | 100,0 | 40,0 | 64,0  | 0,10    |
| C040-10,0 | 10,0   | 10,0  | 100,0 | 40,0 | 60,0  | 0,10    |
| C040-12,0 | 12,0   | 12,0  | 150,0 | 45,0 | 105,0 | 0,15    |
| C040-14,0 | 14,0   | 14,0  | 150,0 | 45,0 | 105,0 | 0,15    |
| C040-16,0 | 16,0   | 16,0  | 150,0 | 65,0 | 101,0 | 0,15    |
| C040-18,0 | 18,0   | 18,0  | 150,0 | 65,0 | 102,0 | 0,15    |
| C040-20,0 | 20,0   | 20,0  | 150,0 | 65,0 | 100,0 | 0,15    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C040-10,0-НА.

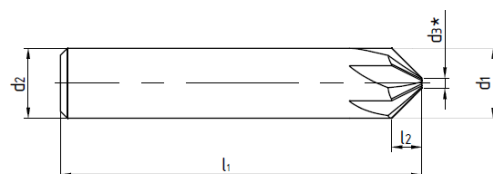
## Режимы резания

| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |         |        |       |       |       |       |      |      |  |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|---------------------------------------------------------------------------------------|---------|--------|-------|-------|-------|-------|------|------|--|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          | Ød1                                                                                   |         | Vc     |       | fz    |       | ap    |      | ae   |  |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) | (мм/з) | (мм)  | (мм)  | (мм)  | (мм)  | (мм) | (мм) |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                   | 50      | 40     | 0,004 | 0,004 | 6,00  | 6,00  | 0,90 | 0,90 |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 6,0                                                                                   | 50      | 40     | 0,008 | 0,007 | 12,00 | 12,00 | 1,80 | 1,80 |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 8,0                                                                                   | 50      | 40     | 0,011 | 0,010 | 16,00 | 16,00 | 2,40 | 2,40 |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 10,0                                                                                  | 50      | 40     | 0,014 | 0,013 | 20,00 | 20,00 | 3,00 | 3,00 |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 12,0                                                                                  | 50      | 40     | 0,017 | 0,016 | 24,00 | 24,00 | 3,60 | 3,60 |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 16,0                                                                                  | 50      | 40     | 0,023 | 0,022 | 32,00 | 32,00 | 4,80 | 4,80 |  |
| •           | •                |             |             |          |            |         |         |              |              |          |          | 20,0                                                                                  | 50      | 40     | 0,029 | 0,027 | 40,00 | 40,00 | 6,00 | 6,00 |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 3,0                                                                                   | 35      | 25     | 0,003 | 0,002 | 6,00  | 6,00  | 0,90 | 0,90 |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 6,0                                                                                   | 35      | 25     | 0,006 | 0,005 | 12,00 | 12,00 | 1,80 | 1,80 |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 8,0                                                                                   | 35      | 25     | 0,008 | 0,006 | 16,00 | 16,00 | 2,40 | 2,40 |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 10,0                                                                                  | 35      | 25     | 0,010 | 0,009 | 20,00 | 20,00 | 3,00 | 3,00 |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 12,0                                                                                  | 35      | 25     | 0,012 | 0,010 | 24,00 | 24,00 | 3,60 | 3,60 |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 16,0                                                                                  | 35      | 25     | 0,017 | 0,014 | 32,00 | 32,00 | 4,80 | 4,80 |  |
|             |                  | •           | •           |          |            |         |         |              |              |          |          | 20,0                                                                                  | 35      | 25     | 0,021 | 0,017 | 40,00 | 40,00 | 6,00 | 6,00 |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 3,0                                                                                   | 45      |        | 0,004 |       | 6,00  |       | 0,90 |      |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 6,0                                                                                   | 45      |        | 0,008 |       | 12,00 |       | 1,80 |      |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 8,0                                                                                   | 45      |        | 0,010 |       | 16,00 |       | 2,40 |      |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 10,0                                                                                  | 45      |        | 0,013 |       | 20,00 |       | 3,00 |      |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 12,0                                                                                  | 45      |        | 0,016 |       | 24,00 |       | 3,60 |      |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 16,0                                                                                  | 45      |        | 0,022 |       | 32,00 |       | 4,80 |      |  |
|             |                  |             |             | •        | •          |         |         |              |              |          |          | 20,0                                                                                  | 45      |        | 0,027 |       | 40,00 |       | 6,00 |      |  |

- рекомендованное применение
- возможное применение

## Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C041    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ● | ● | ● | ○ | ○ | ○ |

| Артикул-Ø | d1 js9 | d2 h6 | d3* | l1   | l2   |
|-----------|--------|-------|-----|------|------|
| C041-4,0  | 4,0    | 4,0   | 0,7 | 50,0 | 2,86 |
| C041-6,0  | 6,0    | 6,0   | 1,0 | 57,0 | 4,30 |
| C041-8,0  | 8,0    | 8,0   | 2,0 | 63,0 | 5,20 |
| C041-10,0 | 10,0   | 10,0  | 1,5 | 72,0 | 7,35 |
| C041-12,0 | 12,0   | 12,0  | 3,0 | 83,0 | 7,80 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C041-10,0-НА.**

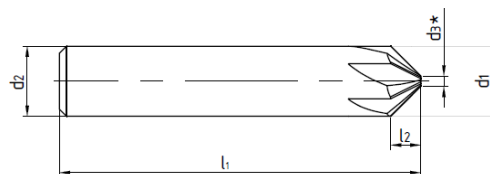
### Режимы резания

| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |          |          |      |         |        |       |       |      |      |      |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|----------|----------|------|---------|--------|-------|-------|------|------|------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H        |          |      |         |        |       |       |      |      |      |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC | ≤ 63 HRC |      |         |        |       |       |      |      |      |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          |      |         |        |       |       |      |      |      |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          | Ød1  | Vc      | fz     | ap    | ae    |      |      |      |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          | (мм) | (м/мин) | (мм/з) | (мм)  | (мм)  |      |      |      |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 3,0  | 192     | 140    | 0,018 | 0,016 | 0,75 | 0,75 | 0,75 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 6,0  | 192     | 140    | 0,036 | 0,032 | 1,50 | 1,50 | 1,50 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 8,0  | 192     | 140    | 0,048 | 0,042 | 2,00 | 2,00 | 2,00 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 10,0 | 192     | 140    | 0,060 | 0,060 | 2,50 | 2,50 | 2,50 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 12,0 | 192     | 140    | 0,080 | 0,070 | 3,00 | 3,00 | 3,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 3,0  | 120     | 80     | 0,013 | 0,090 | 0,75 | 0,75 | 0,75 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 6,0  | 120     | 80     | 0,025 | 0,019 | 1,50 | 1,50 | 1,50 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 8,0  | 120     | 80     | 0,034 | 0,025 | 2,00 | 2,00 | 2,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 10,0 | 120     | 80     | 0,050 | 0,040 | 2,50 | 2,50 | 2,50 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 12,0 | 120     | 80     | 0,050 | 0,040 | 3,00 | 3,00 | 3,00 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 3,0  | 170     |        | 0,017 |       | 0,75 |      | 0,75 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 6,0  | 170     |        | 0,033 |       | 1,50 |      | 1,50 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 8,0  | 170     |        | 0,044 |       | 2,00 |      | 2,00 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 10,0 | 170     |        | 0,060 |       | 2,50 |      | 2,50 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 12,0 | 170     |        | 0,070 |       | 3,00 |      | 3,00 |

- рекомендованное применение
- возможное применение

## Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C042    | чист/черн     |

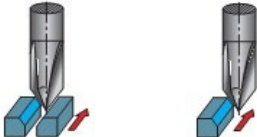


| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ● | ● | ● | ○ | ○ | ○ |

| Артикул-Ø | d1 js9 | d2 h6 | d3* | l1   | l2   |
|-----------|--------|-------|-----|------|------|
| C042-4,0  | 4,0    | 4,0   | 0,7 | 50,0 | 1,65 |
| C042-6,0  | 6,0    | 6,0   | 1,0 | 57,0 | 2,50 |
| C042-8,0  | 8,0    | 8,0   | 2,0 | 63,0 | 3,00 |
| C042-10,0 | 10,0   | 10,0  | 1,5 | 72,0 | 4,25 |
| C042-12,0 | 12,0   | 12,0  | 3,0 | 83,0 | 4,50 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C042-10,0-НА.**

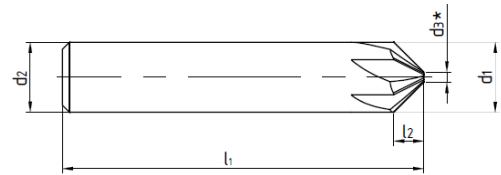
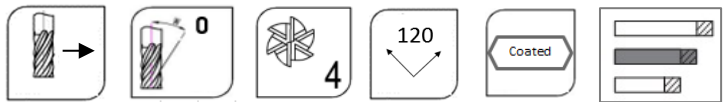
### Режимы резания

| Материалы                 |                                |                           |                           |                       |                         |                       |                       |                            |                            |                       |                       |                                                                                      |         |        |       |       |      |      |      |      |  |
|---------------------------|--------------------------------|---------------------------|---------------------------|-----------------------|-------------------------|-----------------------|-----------------------|----------------------------|----------------------------|-----------------------|-----------------------|--------------------------------------------------------------------------------------|---------|--------|-------|-------|------|------|------|------|--|
| P                         |                                | M                         |                           | K                     |                         | N                     |                       | S                          |                            | H                     |                       |  |         |        |       |       |      |      |      |      |  |
| $\leq 850 \text{ N/mm}^2$ | $850 \geq 1400 \text{ N/mm}^2$ | $\leq 750 \text{ N/mm}^2$ | $\geq 750 \text{ N/mm}^2$ | $\leq 240 \text{ HB}$ | $\geq 240 \text{ HB30}$ | $\leq 3\% \text{ Si}$ | $\leq 7\% \text{ Si}$ | $\leq 1300 \text{ N/mm}^2$ | $\geq 1300 \text{ N/mm}^2$ | $\leq 54 \text{ HRC}$ | $\leq 63 \text{ HRC}$ | $\varnothing d1$                                                                     | $Vc$    | $fz$   | $ap$  | $ae$  |      |      |      |      |  |
| (мм)                      | (М/МИН)                        | (ММ/З)                    | (ММ)                      | (ММ)                  | (ММ)                    | (ММ)                  | (ММ)                  | (ММ)                       | (ММ)                       | (ММ)                  | (ММ)                  | (ММ)                                                                                 | (М/МИН) | (ММ/З) | (ММ)  | (ММ)  |      |      |      |      |  |
| ●                         | ●                              |                           |                           |                       |                         |                       |                       |                            |                            |                       |                       | 3,0                                                                                  | 192     | 140    | 0,018 | 0,016 | 0,75 | 0,75 | 0,75 | 0,75 |  |
| ●                         | ●                              |                           |                           |                       |                         |                       |                       |                            |                            |                       |                       | 6,0                                                                                  | 192     | 140    | 0,036 | 0,032 | 1,50 | 1,50 | 1,50 | 1,50 |  |
| ●                         | ●                              |                           |                           |                       |                         |                       |                       |                            |                            |                       |                       | 8,0                                                                                  | 192     | 140    | 0,048 | 0,042 | 2,00 | 2,00 | 2,00 | 2,00 |  |
| ●                         | ●                              |                           |                           |                       |                         |                       |                       |                            |                            |                       |                       | 10,0                                                                                 | 192     | 140    | 0,060 | 0,060 | 2,50 | 2,50 | 2,50 | 2,50 |  |
| ●                         | ●                              |                           |                           |                       |                         |                       |                       |                            |                            |                       |                       | 12,0                                                                                 | 192     | 140    | 0,080 | 0,070 | 3,00 | 3,00 | 3,00 | 3,00 |  |
|                           |                                | ●                         | ●                         |                       |                         |                       |                       |                            |                            |                       |                       | 3,0                                                                                  | 120     | 80     | 0,013 | 0,090 | 0,75 | 0,75 | 0,75 | 0,75 |  |
|                           |                                | ●                         | ●                         |                       |                         |                       |                       |                            |                            |                       |                       | 6,0                                                                                  | 120     | 80     | 0,025 | 0,019 | 1,50 | 1,50 | 1,50 | 1,50 |  |
|                           |                                | ●                         | ●                         |                       |                         |                       |                       |                            |                            |                       |                       | 8,0                                                                                  | 120     | 80     | 0,034 | 0,025 | 2,00 | 2,00 | 2,00 | 2,00 |  |
|                           |                                | ●                         | ●                         |                       |                         |                       |                       |                            |                            |                       |                       | 10,0                                                                                 | 120     | 80     | 0,050 | 0,040 | 2,50 | 2,50 | 2,50 | 2,50 |  |
|                           |                                | ●                         | ●                         |                       |                         |                       |                       |                            |                            |                       |                       | 12,0                                                                                 | 120     | 80     | 0,050 | 0,040 | 3,00 | 3,00 | 3,00 | 3,00 |  |
|                           |                                |                           |                           | ●                     |                         |                       |                       |                            |                            |                       |                       | 3,0                                                                                  | 170     |        | 0,017 |       | 0,75 |      | 0,75 | 0,75 |  |
|                           |                                |                           |                           | ●                     |                         |                       |                       |                            |                            |                       |                       | 6,0                                                                                  | 170     |        | 0,033 |       | 1,50 |      | 1,50 | 1,50 |  |
|                           |                                |                           |                           | ●                     |                         |                       |                       |                            |                            |                       |                       | 8,0                                                                                  | 170     |        | 0,044 |       | 2,00 |      | 2,00 | 2,00 |  |
|                           |                                |                           |                           | ●                     |                         |                       |                       |                            |                            |                       |                       | 10,0                                                                                 | 170     |        | 0,060 |       | 2,50 |      | 2,50 | 2,50 |  |
|                           |                                |                           |                           | ●                     |                         |                       |                       |                            |                            |                       |                       | 12,0                                                                                 | 170     |        | 0,070 |       | 3,00 |      | 3,00 | 3,00 |  |

- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C043    | чист/черн     |

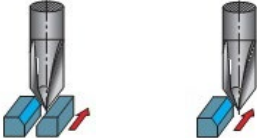


| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ● | ● | ● | ○ | ○ | ○ |

| Артикул-Ø | d1 js9 | d2 h6 | d3* | l1   | l2   |
|-----------|--------|-------|-----|------|------|
| C043-4,0  | 4,0    | 4,0   | 0,7 | 50,0 | 0,95 |
| C043-6,0  | 6,0    | 6,0   | 1,0 | 57,0 | 1,44 |
| C043-8,0  | 8,0    | 8,0   | 2,0 | 63,0 | 1,73 |
| C043-10,0 | 10,0   | 10,0  | 1,5 | 72,0 | 2,45 |
| C043-12,0 | 12,0   | 12,0  | 3,0 | 83,0 | 2,60 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C043-10,0-НА.**

## Режимы резания

| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |          |          |  |         |        |       |       |      |      |      |      |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|----------|----------|--------------------------------------------------------------------------------------|---------|--------|-------|-------|------|------|------|------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H        |          | Ød1                                                                                  | Vc      | fz     | ap    | ae    |      |      |      |      |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                 | (м/мин) | (мм/з) | (мм)  | (мм)  |      |      |      |      |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 3,0                                                                                  | 192     | 140    | 0,018 | 0,016 | 0,75 | 0,75 | 0,75 | 0,75 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 6,0                                                                                  | 192     | 140    | 0,036 | 0,032 | 1,50 | 1,50 | 1,50 | 1,50 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 8,0                                                                                  | 192     | 140    | 0,048 | 0,042 | 2,00 | 2,00 | 2,00 | 2,00 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 10,0                                                                                 | 192     | 140    | 0,060 | 0,060 | 2,50 | 2,50 | 2,50 | 2,50 |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 12,0                                                                                 | 192     | 140    | 0,080 | 0,070 | 3,00 | 3,00 | 3,00 | 3,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 3,0                                                                                  | 120     | 80     | 0,013 | 0,090 | 0,75 | 0,75 | 0,75 | 0,75 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 6,0                                                                                  | 120     | 80     | 0,025 | 0,019 | 1,50 | 1,50 | 1,50 | 1,50 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 8,0                                                                                  | 120     | 80     | 0,034 | 0,025 | 2,00 | 2,00 | 2,00 | 2,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 10,0                                                                                 | 120     | 80     | 0,050 | 0,040 | 2,50 | 2,50 | 2,50 | 2,50 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 12,0                                                                                 | 120     | 80     | 0,050 | 0,040 | 3,00 | 3,00 | 3,00 | 3,00 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 3,0                                                                                  | 170     |        | 0,017 |       | 0,75 |      | 0,75 | 0,75 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 6,0                                                                                  | 170     |        | 0,033 |       | 1,50 |      | 1,50 | 1,50 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 8,0                                                                                  | 170     |        | 0,044 |       | 2,00 |      | 2,00 | 2,00 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 10,0                                                                                 | 170     |        | 0,060 |       | 2,50 |      | 2,50 | 2,50 |
|                         |                              |                         |                         | ●        |            |         |         |                          |                          |          |          | 12,0                                                                                 | 170     |        | 0,070 |       | 3,00 |      | 3,00 | 3,00 |

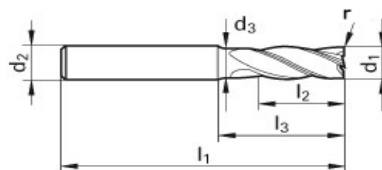
- рекомендованное применение
- возможное применение

# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C044    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| • | • | • | ○ | ○ | ○ |

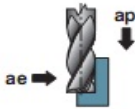


Возможно изменение радиуса по запросу клиента.

| Артикул-Ø-г   | d1 h10 | d2 h6 | d3   | l1    | l2   | l3   | r   |
|---------------|--------|-------|------|-------|------|------|-----|
| C044-6,0-0,5  | 6,0    | 6,0   | 5,7  | 57,0  | 10,0 | 20,0 | 0,5 |
| C044-6,0-1,0  | 6,0    | 6,0   | 5,7  | 57,0  | 10,0 | 20,0 | 1,0 |
| C044-8,0-0,5  | 8,0    | 8,0   | 7,7  | 63,0  | 16,0 | 26,0 | 0,5 |
| C044-8,0-1,0  | 8,0    | 8,0   | 7,7  | 63,0  | 16,0 | 26,0 | 1,0 |
| C044-8,0-1,5  | 8,0    | 8,0   | 7,7  | 63,0  | 16,0 | 26,0 | 1,5 |
| C044-8,0-2,0  | 8,0    | 8,0   | 7,7  | 63,0  | 16,0 | 26,0 | 2,0 |
| C044-10,0-0,5 | 10,0   | 10,0  | 9,5  | 72,0  | 19,0 | 30,0 | 0,5 |
| C044-10,0-1,0 | 10,0   | 10,0  | 9,5  | 72,0  | 19,0 | 30,0 | 1,0 |
| C044-10,0-1,5 | 10,0   | 10,0  | 9,5  | 72,0  | 19,0 | 30,0 | 1,5 |
| C044-10,0-2,0 | 10,0   | 10,0  | 9,5  | 72,0  | 19,0 | 30,0 | 2,0 |
| C044-12,0-0,5 | 12,0   | 12,0  | 11,5 | 83,0  | 22,0 | 36,0 | 0,5 |
| C044-12,0-1,0 | 12,0   | 12,0  | 11,5 | 83,0  | 22,0 | 36,0 | 1,0 |
| C044-12,0-1,5 | 12,0   | 12,0  | 11,5 | 83,0  | 22,0 | 36,0 | 1,5 |
| C044-12,0-2,0 | 12,0   | 12,0  | 11,5 | 83,0  | 22,0 | 36,0 | 2,0 |
| C044-16,0-1,0 | 16,0   | 16,0  | 15,5 | 92,0  | 26,0 | 42,0 | 1,0 |
| C044-16,0-1,5 | 16,0   | 16,0  | 15,5 | 92,0  | 26,0 | 42,0 | 1,5 |
| C044-16,0-2,0 | 16,0   | 16,0  | 15,5 | 92,0  | 26,0 | 42,0 | 2,0 |
| C044-20,0-1,0 | 20,0   | 20,0  | 19,5 | 104,0 | 32,0 | 52,0 | 1,0 |
| C044-20,0-1,5 | 20,0   | 20,0  | 19,5 | 104,0 | 32,0 | 52,0 | 1,5 |
| C044-20,0-2,0 | 20,0   | 20,0  | 19,5 | 104,0 | 32,0 | 52,0 | 2,0 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C044-10,0-1,0-НА.

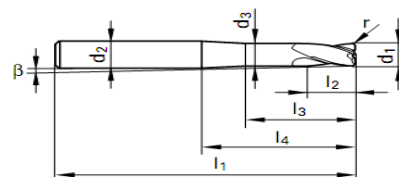
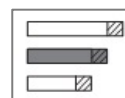
| Режимы резания          |                              |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|--------------------------------------------------------------------------------------|----------|---------|
| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |  |          |         |
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          |                                                                                      |          |         |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC                                                                             | ≥ 63 HRC |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | Ød1     |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | Vc      |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | fz      |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | ap      |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | ae      |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | (мм)    |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | (м/мин) |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | (мм/з)  |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | (мм)    |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          | (мм)    |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |
| •                       | •                            |                         |                         |          |            |         |         |                          |                          |                                                                                      |          |         |

- рекомендованное применение
- возможное применение



# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C049    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ○ |   | ● |   |   | ● |

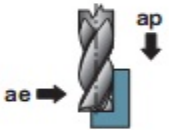
Возможно изменение радиуса по запросу клиента.

| Артикул-Ø-г   | d1 h8 | d2 h6 | d3   | l1   | l2   | l3   | l4   | r   | B   |
|---------------|-------|-------|------|------|------|------|------|-----|-----|
| C049-3,0-0,5  | 3,0   | 6,0   | 2,7  | 57,0 | 5,0  | 10,0 | 21,0 | 0,5 | 4,2 |
| C049-4,0-0,5  | 4,0   | 6,0   | 3,7  | 57,0 | 6,0  | 13,4 | 21,0 | 0,5 | 2,8 |
| C049-5,0-0,5  | 5,0   | 6,0   | 4,7  | 57,0 | 8,0  | 15,9 | 21,0 | 0,5 | 1,4 |
| C049-6,0-1,0  | 6,0   | 6,0   | 5,7  | 57,0 | 9,0  | 20,0 | 21,0 | 1,0 | -   |
| C049-8,0-1,0  | 8,0   | 8,0   | 7,7  | 63,0 | 12,0 | 26,0 | 27,0 | 1,0 | -   |
| C049-10,0-1,5 | 10,0  | 10,0  | 9,5  | 72,0 | 15,0 | 30,0 | 32,0 | 1,5 | -   |
| C049-12,0-1,5 | 12,0  | 12,0  | 11,5 | 83,0 | 18,0 | 36,0 | 38,0 | 1,5 | -   |
| C049-16,0-2,0 | 16,0  | 16,0  | 15,5 | 92,0 | 24,0 | 42,0 | 44,0 | 2,0 | -   |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C049-10,0-1,5-НА.

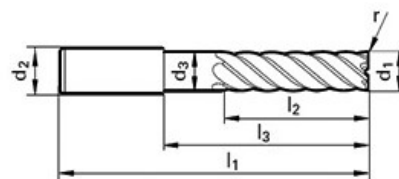
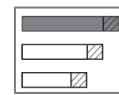
## Режимы резания

| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |          |          |  |         |     |        |       |      |      |      |      |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|----------|----------|---------------------------------------------------------------------------------------|---------|-----|--------|-------|------|------|------|------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H        |          | Ød1                                                                                   |         | Vc  | fz     |       | ap   |      | ae   |      |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) |     | (мм/з) |       | (мм) |      | (мм) |      |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 3,0                                                                                   |         | 220 |        | 0,030 |      | 0,30 |      | 0,30 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 6,0                                                                                   |         | 220 |        | 0,045 |      | 0,60 |      | 0,60 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 8,0                                                                                   |         | 220 |        | 0,060 |      | 0,80 |      | 0,80 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 10,0                                                                                  |         | 220 |        | 0,090 |      | 1,00 |      | 1,00 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 12,0                                                                                  |         | 220 |        | 0,120 |      | 1,20 |      | 1,20 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 16,0                                                                                  |         | 220 |        | 0,150 |      | 1,60 |      | 1,60 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 20,0                                                                                  |         | 220 |        | 0,180 |      | 2,00 |      | 2,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          |                                                                                       |         |     |        |       |      |      |      |      |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 3,0                                                                                   | 90      | 180 | 0,020  | 0,026 | 0,30 | 0,30 | 0,30 | 0,30 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 6,0                                                                                   | 90      | 180 | 0,030  | 0,039 | 0,60 | 0,60 | 0,60 | 0,60 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 8,0                                                                                   | 90      | 180 | 0,040  | 0,052 | 0,80 | 0,80 | 0,80 | 0,80 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 10,0                                                                                  | 90      | 180 | 0,060  | 0,078 | 1,00 | 1,00 | 1,00 | 1,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 12,0                                                                                  | 90      | 180 | 0,080  | 0,104 | 1,20 | 1,20 | 1,20 | 1,20 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 16,0                                                                                  | 90      | 180 | 0,100  | 0,130 | 1,60 | 1,60 | 1,60 | 1,60 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 20,0                                                                                  | 90      | 180 | 0,120  | 0,156 | 2,00 | 2,00 | 2,00 | 2,00 |

- рекомендованное применение
- возможное применение

## Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C051    | чистовая      |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ○ |   | ● |   |   | ● |

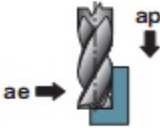
Возможно изменение радиуса по запросу клиента.

| Артикул-Ø-г   | d1 h10 | d2 h6 | d3   | l1    | l2   | l3    | r   |
|---------------|--------|-------|------|-------|------|-------|-----|
| C051-6,0-0,5  | 6,0    | 6,0   | 5,7  | 75,0  | 13,0 | 38,0  | 0,5 |
| C051-8,0-0,5  | 8,0    | 8,0   | 7,7  | 100,0 | 19,0 | 63,0  | 0,5 |
| C051-10,0-0,5 | 10,0   | 10,0  | 9,5  | 100,0 | 22,0 | 58,0  | 0,5 |
| C051-12,0-1,0 | 12,0   | 12,0  | 11,5 | 150,0 | 26,0 | 103,0 | 1,0 |
| C051-16,0-1,0 | 16,0   | 16,0  | 15,5 | 150,0 | 32,0 | 100,0 | 1,0 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C051-10,0-0,5-НА.**

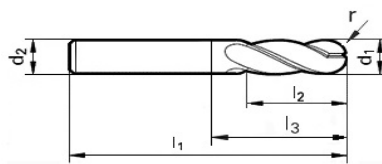
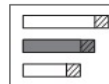
### Режимы резания

| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |  |          |      |         |        |       |       |       |       |      |      |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|---------------------------------------------------------------------------------------|----------|------|---------|--------|-------|-------|-------|-------|------|------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H                                                                                     |          | Ød1  | Vc      | fz     | ap    | ae    |       |       |      |      |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC                                                                              | ≤ 63 HRC | (мм) | (м/мин) | (мм/з) | (мм)  | (мм)  |       |       |      |      |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |                                                                                       |          | 6,0  |         | 70     |       | 0,020 |       | 13,00 |      | 0,30 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |                                                                                       |          | 8,0  |         | 70     |       | 0,027 |       | 19,00 |      | 0,40 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |                                                                                       |          | 10,0 |         | 70     |       | 0,037 |       | 22,00 |      | 0,50 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |                                                                                       |          | 12,0 |         | 70     |       | 0,044 |       | 26,00 |      | 0,60 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |                                                                                       |          | 16,0 |         | 70     |       | 0,059 |       | 32,00 |      | 0,80 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●                                                                                     | ●        | 6,0  | 40      | 20     | 0,017 | 0,013 | 13,00 | 13,00 | 0,30 | 0,30 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●                                                                                     | ●        | 8,0  | 40      | 20     | 0,022 | 0,018 | 19,00 | 19,00 | 0,40 | 0,40 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●                                                                                     | ●        | 10,0 | 40      | 20     | 0,031 | 0,025 | 22,00 | 22,00 | 0,50 | 0,50 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●                                                                                     | ●        | 12,0 | 40      | 20     | 0,037 | 0,029 | 26,00 | 26,00 | 0,60 | 0,60 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●                                                                                     | ●        | 16,0 | 40      | 20     | 0,049 | 0,039 | 32,00 | 32,00 | 0,80 | 0,80 |

- рекомендованное применение
- возможное применение

**Фрезы. Каталог 2022**

|         |               |
|---------|---------------|
| Артикул | Вид обработки |
| C052    | чист/черн     |

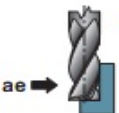


|   |   |   |   |   |   |
|---|---|---|---|---|---|
| P | M | K | N | S | H |
| ● | ● | ● | ○ | ○ | ○ |

| Артикул-Ø | d1 h10 | d2 h6 | l1    | l2   | l3   | r    |
|-----------|--------|-------|-------|------|------|------|
| C052-3,0  | 3,0    | 6,0   | 57,0  | 7,0  | 11,9 | 1,5  |
| C052-4,0  | 4,0    | 6,0   | 57,0  | 8,0  | 13,4 | 2,0  |
| C052-5,0  | 5,0    | 6,0   | 57,0  | 10,0 | 16,9 | 2,5  |
| C052-6,0  | 6,0    | 6,0   | 57,0  | 10,0 | 21,0 | 3,0  |
| C052-8,0  | 8,0    | 8,0   | 63,0  | 16,0 | 27,0 | 4,0  |
| C052-10,0 | 10,0   | 10,0  | 72,0  | 19,0 | 32,0 | 5,0  |
| C052-12,0 | 12,0   | 12,0  | 83,0  | 22,0 | 38,0 | 6,0  |
| C052-14,0 | 14,0   | 14,0  | 83,0  | 22,0 | 38,0 | 7,0  |
| C052-16,0 | 16,0   | 16,0  | 92,0  | 26,0 | 44,0 | 8,0  |
| C052-18,0 | 18,0   | 18,0  | 92,0  | 26,0 | 44,0 | 9,0  |
| C052-20,0 | 20,0   | 20,0  | 104,0 | 32,0 | 54,0 | 10,0 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.  
При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C052-10,0-НА.**

## Режимы резания

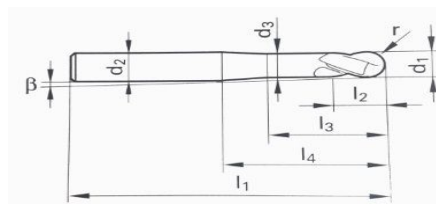
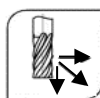
| Материалы   |                  |             |             |          |            |         |         |              |              |          |          |  |         |        |       |       |      |      |  |
|-------------|------------------|-------------|-------------|----------|------------|---------|---------|--------------|--------------|----------|----------|--------------------------------------------------------------------------------------|---------|--------|-------|-------|------|------|--|
| P           |                  | M           |             | K        |            | N       |         | S            |              | H        |          | Ød1                                                                                  | Vc      | fz     | ap    | ae    |      |      |  |
| ≤ 850 N/mm² | 850 ≥ 1400 N/mm² | ≤ 750 N/mm² | ≥ 750 N/mm² | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm² | ≥ 1300 N/mm² | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                 | (м/мин) | (мм/з) | (мм)  | (мм)  |      |      |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 3,0                                                                                  | 175     | 140    | 0,008 | 0,080 | 0,30 | 0,30 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 6,0                                                                                  | 175     | 140    | 0,012 | 0,011 | 0,60 | 0,60 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 8,0                                                                                  | 175     | 140    | 0,016 | 0,015 | 0,80 | 0,80 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 10,0                                                                                 | 175     | 140    | 0,025 | 0,024 | 1,00 | 1,00 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 12,0                                                                                 | 175     | 140    | 0,034 | 0,032 | 1,20 | 1,20 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 16,0                                                                                 | 175     | 140    | 0,042 | 0,040 | 1,60 | 1,60 |  |
| ●           | ●                |             |             |          |            |         |         |              |              |          |          | 20,0                                                                                 | 175     | 140    | 0,050 | 0,048 | 2,00 | 2,00 |  |
|             |                  |             |             |          |            |         |         |              |              |          |          |                                                                                      |         |        |       |       |      |      |  |
|             |                  | ●           | ●           |          |            |         |         |              |              |          |          | 3,0                                                                                  | 120     | 55     | 0,007 | 0,006 | 0,30 | 0,30 |  |
|             |                  | ●           | ●           |          |            |         |         |              |              |          |          | 6,0                                                                                  | 120     | 55     | 0,011 | 0,009 | 0,60 | 0,60 |  |
|             |                  | ●           | ●           |          |            |         |         |              |              |          |          | 8,0                                                                                  | 120     | 55     | 0,014 | 0,012 | 0,80 | 0,80 |  |
|             |                  | ●           | ●           |          |            |         |         |              |              |          |          | 10,0                                                                                 | 120     | 55     | 0,023 | 0,020 | 1,00 | 1,00 |  |
|             |                  | ●           | ●           |          |            |         |         |              |              |          |          | 12,0                                                                                 | 120     | 55     | 0,030 | 0,026 | 1,20 | 1,20 |  |
|             |                  | ●           | ●           |          |            |         |         |              |              |          |          | 16,0                                                                                 | 120     | 55     | 0,038 | 0,033 | 1,60 | 1,60 |  |
|             |                  | ●           | ●           |          |            |         |         |              |              |          |          | 20,0                                                                                 | 120     | 55     | 0,046 | 0,040 | 2,00 | 2,00 |  |
|             |                  |             |             |          |            |         |         |              |              |          |          |                                                                                      |         |        |       |       |      |      |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 3,0                                                                                  | 140     | 110    | 0,008 | 0,080 | 0,30 | 0,30 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 6,0                                                                                  | 140     | 110    | 0,012 | 0,011 | 0,60 | 0,60 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 8,0                                                                                  | 140     | 110    | 0,016 | 0,015 | 0,80 | 0,80 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 10,0                                                                                 | 140     | 110    | 0,025 | 0,024 | 1,00 | 1,00 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 12,0                                                                                 | 140     | 110    | 0,034 | 0,032 | 1,20 | 1,20 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 16,0                                                                                 | 140     | 110    | 0,042 | 0,040 | 1,60 | 1,60 |  |
|             |                  |             |             | ●        | ●          |         |         |              |              |          |          | 20,0                                                                                 | 140     | 110    | 0,050 | 0,048 | 2,00 | 2,00 |  |
|             |                  |             |             |          |            |         |         |              |              |          |          |                                                                                      |         |        |       |       |      |      |  |
|             |                  |             |             |          |            |         |         | ○            | ○            |          |          | 3,0                                                                                  | 30      | 55     | 0,005 | 0,007 | 0,30 | 0,30 |  |
|             |                  |             |             |          |            |         |         | ○            | ○            |          |          | 6,0                                                                                  | 30      | 55     | 0,008 | 0,011 | 0,60 | 0,60 |  |
|             |                  |             |             |          |            |         |         | ○            | ○            |          |          | 8,0                                                                                  | 30      | 55     | 0,010 | 0,014 | 0,80 | 0,80 |  |
|             |                  |             |             |          |            |         |         | ○            | ○            |          |          | 10,0                                                                                 | 30      | 55     | 0,017 | 0,023 | 1,00 | 1,00 |  |
|             |                  |             |             |          |            |         |         | ○            | ○            |          |          | 12,0                                                                                 | 30      | 55     | 0,022 | 0,030 | 1,20 | 1,20 |  |
|             |                  |             |             |          |            |         |         | ○            | ○            |          |          | 16,0                                                                                 | 30      | 55     | 0,028 | 0,038 | 1,60 | 1,60 |  |
|             |                  |             |             |          |            |         |         | ○            | ○            |          |          | 20,0                                                                                 | 30      | 55     | 0,034 | 0,046 | 2,00 | 2,00 |  |

- рекомендованное применение
- возможное применение



# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C058    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ○ |   | ● |   |   | ● |

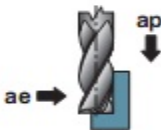
Возможно изменение радиуса по запросу клиента.

| Артикул-Ø-r   | d1 h8 | d2 h6 | d3    | l1   | l2   | l3   | l4   | r   | B    |
|---------------|-------|-------|-------|------|------|------|------|-----|------|
| C058-3,0-1,5  | 3,0   | 6,0   | 2,70  | 57,0 | 5,0  | 11,6 | 21,0 | 1,5 | 4,40 |
| C058-4,0-2,0  | 4,0   | 6,0   | 3,70  | 57,0 | 6,0  | 14,5 | 21,0 | 2,0 | 3,10 |
| C058-5,0-2,5  | 5,0   | 6,0   | 4,70  | 57,0 | 8,0  | 17,3 | 21,0 | 2,5 | 1,60 |
| C058-6,0-3,0  | 6,0   | 6,0   | 5,70  | 57,0 | 9,0  | 20,0 | 21,0 | 3,0 | -    |
| C058-8,0-4,0  | 8,0   | 8,0   | 7,70  | 63,0 | 12,0 | 26,0 | 27,0 | 4,0 | -    |
| C058-10,0-5,0 | 10,0  | 10,0  | 9,50  | 72,0 | 15,0 | 30,0 | 32,0 | 5,0 | -    |
| C058-12,0-6,0 | 12,0  | 12,0  | 11,50 | 83,0 | 18,0 | 36,0 | 38,0 | 6,0 | -    |
| C058-16,0-8,0 | 16,0  | 16,0  | 15,50 | 92,0 | 24,0 | 42,0 | 44,0 | 8,0 | -    |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). Пример: C058-10,0-5-НА.

## Режимы резания

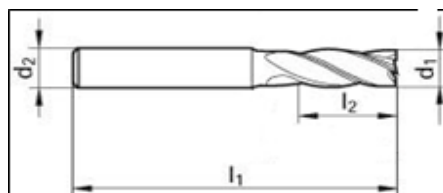
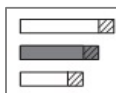
| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |          |          |  |         |        |       |       |      |      |      |      |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|----------|----------|---------------------------------------------------------------------------------------|---------|--------|-------|-------|------|------|------|------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H        |          | Ød1                                                                                   |         | Vc     | fz    | ap    |      | ae   |      |      |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC | ≤ 63 HRC | (мм)                                                                                  | (м/мин) | (мм/з) |       | (мм)  |      | (мм) |      |      |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 3,0                                                                                   |         | 220    |       | 0,030 |      | 0,30 |      | 0,30 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 6,0                                                                                   |         | 220    |       | 0,045 |      | 0,60 |      | 0,60 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 8,0                                                                                   |         | 220    |       | 0,060 |      | 0,80 |      | 0,80 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 10,0                                                                                  |         | 220    |       | 0,090 |      | 1,00 |      | 1,00 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 12,0                                                                                  |         | 220    |       | 0,120 |      | 1,20 |      | 1,20 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 16,0                                                                                  |         | 220    |       | 0,150 |      | 1,60 |      | 1,60 |
|                         |                              |                         |                         |          | ●          |         |         |                          |                          |          |          | 20,0                                                                                  |         | 220    |       | 0,180 |      | 2,00 |      | 2,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 3,0                                                                                   | 90      | 180    | 0,020 | 0,026 | 0,30 | 0,30 | 0,30 | 0,30 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 6,0                                                                                   | 90      | 180    | 0,030 | 0,039 | 0,60 | 0,60 | 0,60 | 0,60 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 8,0                                                                                   | 90      | 180    | 0,040 | 0,052 | 0,80 | 0,80 | 0,80 | 0,80 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 10,0                                                                                  | 90      | 180    | 0,060 | 0,078 | 1,00 | 1,00 | 1,00 | 1,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 12,0                                                                                  | 90      | 180    | 0,080 | 0,104 | 1,20 | 1,20 | 1,20 | 1,20 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 16,0                                                                                  | 90      | 180    | 0,100 | 0,130 | 1,60 | 1,60 | 1,60 | 1,60 |
|                         |                              |                         |                         |          |            |         |         |                          |                          | ●        | ●        | 20,0                                                                                  | 90      | 180    | 0,120 | 0,156 | 2,00 | 2,00 | 2,00 | 2,00 |

- рекомендованное применение
- возможное применение



# Фрезы. Каталог 2022

| Артикул | Вид обработки |
|---------|---------------|
| C066    | чист/черн     |



| P | M | K | N | S | H |
|---|---|---|---|---|---|
| ● | ● | ● |   |   | ○ |

| Артикул-Ø | d1 h10 | d2 h6 | l1    | l2   |
|-----------|--------|-------|-------|------|
| C066-3,0  | 3,0    | 6,0   | 50,0  | 8,0  |
| C066-4,0  | 4,0    | 6,0   | 50,0  | 11,0 |
| C066-5,0  | 5,0    | 6,0   | 50,0  | 13,0 |
| C066-6,0  | 6,0    | 6,0   | 60,0  | 16,0 |
| C066-8,0  | 8,0    | 8,0   | 60,0  | 20,0 |
| C066-10,0 | 10,0   | 10,0  | 75,0  | 30,0 |
| C066-11,0 | 11,0   | 12,0  | 75,0  | 30,0 |
| C066-12,0 | 12,0   | 12,0  | 75,0  | 32,0 |
| C066-14,0 | 14,0   | 14,0  | 100,0 | 40,0 |
| C066-16,0 | 16,0   | 16,0  | 100,0 | 40,0 |
| C066-18,0 | 18,0   | 18,0  | 100,0 | 45,0 |
| C066-20,0 | 20,0   | 20,0  | 100,0 | 45,0 |

Возможен заказ дробных диаметров с параметрами большего табличного значения.

При заказе указывать: артикул, диаметр, тип хвостовика (НА/НВ). **Пример: C066-10,0-НА.**

## Режимы резания

| Материалы               |                              |                         |                         |          |            |         |         |                          |                          |          |          |      |         |        |       |       |       |       |      |       |
|-------------------------|------------------------------|-------------------------|-------------------------|----------|------------|---------|---------|--------------------------|--------------------------|----------|----------|------|---------|--------|-------|-------|-------|-------|------|-------|
| P                       |                              | M                       |                         | K        |            | N       |         | S                        |                          | H        |          | Ød1  | Vc      | fz     | ap    | ae    |       |       |      |       |
| ≤ 850 N/mm <sup>2</sup> | 850 ≥ 1400 N/mm <sup>2</sup> | ≤ 750 N/mm <sup>2</sup> | ≥ 750 N/mm <sup>2</sup> | ≤ 240 HB | ≥ 240 HB30 | ≤ 3% Si | ≤ 7% Si | ≤ 1300 N/mm <sup>2</sup> | ≥ 1300 N/mm <sup>2</sup> | ≤ 54 HRC | ≤ 63 HRC | (мм) | (м/мин) | (мм/з) | (мм)  | (мм)  |       |       |      |       |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 3,0  | 160     | 120    | 0,014 | 0,012 | 8,00  | 8,00  | 0,60 | 0,60  |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 6,0  | 160     | 120    | 0,028 | 0,024 | 16,00 | 16,00 | 1,20 | 1,20  |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 8,0  | 160     | 120    | 0,037 | 0,032 | 20,00 | 20,00 | 1,60 | 1,60  |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 10,0 | 160     | 120    | 0,052 | 0,045 | 30,00 | 30,00 | 2,00 | 2,00  |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 12,0 | 160     | 120    | 0,060 | 0,054 | 32,00 | 32,00 | 2,40 | 2,40  |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 16,0 | 160     | 120    | 0,080 | 0,070 | 40,00 | 40,00 | 3,20 | 3,20  |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 20,0 | 160     | 120    | 0,100 | 0,090 | 45,00 | 45,00 | 4,00 | 4,00  |
| ●                       | ●                            |                         |                         |          |            |         |         |                          |                          |          |          | 25,0 | 160     | 120    | 0,120 | 0,110 | 45,00 | 45,00 | 5,00 | 5,00  |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          |      |         |        |       |       |       |       |      |       |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 3,0  | 100     | 60     | 0,010 | 0,008 | 8,00  | 8,00  | 0,60 | 20,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 6,0  | 100     | 60     | 0,019 | 0,015 | 16,00 | 16,00 | 1,20 | 20,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 8,0  | 100     | 60     | 0,026 | 0,020 | 20,00 | 20,00 | 1,60 | 20,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 10,0 | 100     | 60     | 0,035 | 0,029 | 30,00 | 30,00 | 2,00 | 20,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 12,0 | 100     | 60     | 0,041 | 0,035 | 32,00 | 32,00 | 2,40 | 20,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 16,0 | 100     | 60     | 0,060 | 0,050 | 40,00 | 40,00 | 3,20 | 20,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 20,0 | 100     | 60     | 0,070 | 0,060 | 45,00 | 45,00 | 4,00 | 20,00 |
|                         |                              | ●                       | ●                       |          |            |         |         |                          |                          |          |          | 25,0 | 100     | 60     | 0,090 | 0,070 | 45,00 | 45,00 | 5,00 | 20,00 |
|                         |                              |                         |                         |          |            |         |         |                          |                          |          |          |      |         |        |       |       |       |       |      |       |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 3,0  | 130     | 110    | 0,014 | 0,012 | 8,00  | 8,00  | 0,60 | 26,00 |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 6,0  | 130     | 110    | 0,028 | 0,021 | 16,00 | 16,00 | 1,20 | 26,00 |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 8,0  | 130     | 110    | 0,037 | 0,030 | 20,00 | 20,00 | 1,60 | 26,00 |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 10,0 | 130     | 110    | 0,052 | 0,040 | 30,00 | 30,00 | 2,00 | 26,00 |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 12,0 | 130     | 110    | 0,060 | 0,050 | 32,00 | 32,00 | 2,40 | 26,00 |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 16,0 | 130     | 110    | 0,080 | 0,060 | 40,00 | 40,00 | 3,20 | 26,00 |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 20,0 | 130     | 110    | 0,100 | 0,085 | 45,00 | 45,00 | 4,00 | 26,00 |
|                         |                              |                         |                         | ●        | ●          |         |         |                          |                          |          |          | 25,0 | 130     | 110    | 0,120 | 0,095 | 45,00 | 45,00 | 5,00 | 26,00 |

- рекомендованное применение
- возможное применение

