



## High Performance HSS Cutting Tools

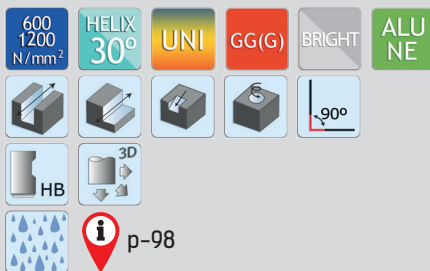
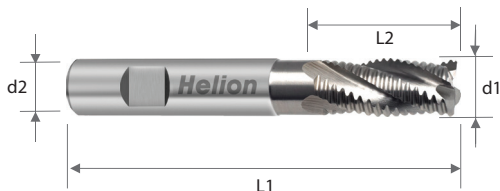
Universal cutter for efficient machining with HSS  
Special geometry for longer tool life  
High removal rate with soft cutting



**89.0602**  
**89.0604**

## ROUGHING END MILL HSS M42 DIN 844K NR

-  Fresa frontal desbaste HSS M42 DIN 844K NR
-  Fraise ébauche HSS M42 DIN 844K NR
-  Fresa di sgrossatura HSS M42 DIN 844K NR
-  Черновые концевые фрезы HSS M42 DIN 844K NR
-  Kaba parça freze HSS M42 DIN 844K NR
-  M42高速钢粗铣刀DIN844K NR



| Cod.       | d1 | d2 | L1 | L2 | Z |
|------------|----|----|----|----|---|
| 8906020600 | 6  | 6  | 57 | 13 | 4 |
| 8906020700 | 7  | 10 | 66 | 16 | 4 |
| 8906020800 | 8  | 10 | 69 | 19 | 4 |
| 8906020900 | 9  | 10 | 69 | 19 | 4 |
| 8906021000 | 10 | 10 | 72 | 22 | 4 |
| 8906021100 | 11 | 12 | 79 | 22 | 4 |
| 8906021200 | 12 | 12 | 83 | 26 | 4 |
| 8906021400 | 14 | 12 | 83 | 26 | 4 |
| 8906021500 | 15 | 12 | 83 | 26 | 4 |
| 8906021600 | 16 | 16 | 92 | 32 | 4 |

| Cod.       | d1 | d2 | L1  | L2 | Z |
|------------|----|----|-----|----|---|
| 8906021800 | 18 | 16 | 92  | 32 | 4 |
| 8906022000 | 20 | 20 | 104 | 38 | 4 |
| 8906022200 | 22 | 20 | 104 | 38 | 4 |
| 8906022400 | 24 | 25 | 121 | 45 | 4 |
| 8906041000 | 10 | 10 | 95  | 45 | 4 |
| 8906041200 | 12 | 12 | 110 | 53 | 4 |
| 8906041400 | 14 | 12 | 110 | 53 | 4 |
| 8906041600 | 16 | 16 | 123 | 63 | 4 |
| 8906041800 | 18 | 18 | 123 | 63 | 4 |
| 8906042000 | 20 | 20 | 141 | 75 | 4 |

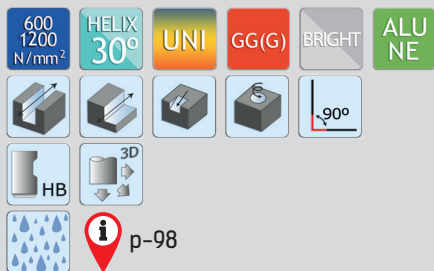
## END MILL HSS M42 DIN 844K N Z4-Z6

# 89.0402

-  Fresa frontal HSS M42 DIN 844K N Z4-Z6
-  Fraise finition HSS M42 DIN 844K N Z4-Z6
-  Fresa HSS M42 DIN 844K N Z4-Z6
-  4-6-х первые концевые фрезы HSS M42 DIN 844K N
-  Parça freze HSS M42 DIN 844K N Z4
-  M42高速钢铣刀DIN844K N Z4-Z6



MILL LINE



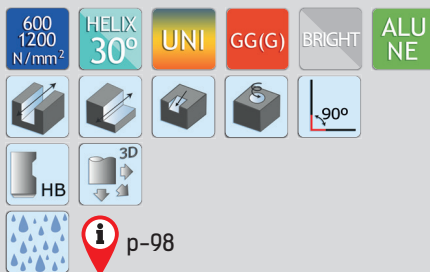
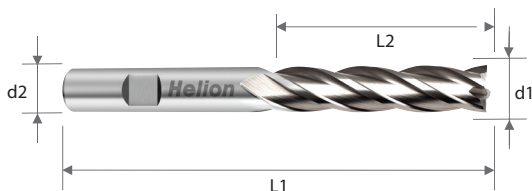
| Cod.       | d1   | d2 | L1 | L2 | Z |
|------------|------|----|----|----|---|
| 8904020200 | 2,00 | 6  | 51 | 7  | 4 |
| 8904020250 | 2,50 | 6  | 52 | 8  | 4 |
| 8904020300 | 3,00 | 6  | 52 | 8  | 4 |
| 8904020350 | 3,50 | 6  | 54 | 10 | 4 |
| 8904020400 | 4,00 | 6  | 55 | 11 | 4 |
| 8904020450 | 4,50 | 6  | 55 | 11 | 4 |
| 8904020500 | 5,00 | 6  | 57 | 13 | 4 |
| 8904020550 | 5,50 | 6  | 57 | 13 | 4 |
| 8904020600 | 6,00 | 6  | 57 | 13 | 4 |
| 8904020650 | 6,50 | 10 | 66 | 16 | 4 |
| 8904020700 | 7,00 | 10 | 66 | 16 | 4 |
| 8904020750 | 7,50 | 10 | 66 | 16 | 4 |
| 8904020800 | 8,00 | 10 | 69 | 19 | 4 |
| 8904020850 | 8,50 | 10 | 69 | 19 | 4 |
| 8904020900 | 9,00 | 10 | 69 | 19 | 4 |
| 8904020950 | 9,50 | 10 | 69 | 19 | 4 |

| Cod.       | d1    | d2 | L1  | L2 | Z |
|------------|-------|----|-----|----|---|
| 8904021000 | 10,00 | 10 | 72  | 22 | 4 |
| 8904021100 | 11,00 | 12 | 79  | 22 | 4 |
| 8904021200 | 12,00 | 12 | 83  | 26 | 4 |
| 8904021300 | 13,00 | 12 | 83  | 26 | 4 |
| 8904021400 | 14,00 | 12 | 83  | 26 | 4 |
| 8904021500 | 15,00 | 12 | 83  | 26 | 4 |
| 8904021600 | 16,00 | 16 | 92  | 32 | 4 |
| 8904021800 | 18,00 | 16 | 92  | 32 | 4 |
| 8904022000 | 20,00 | 20 | 104 | 38 | 4 |
| 8904022200 | 22,00 | 20 | 104 | 38 | 4 |
| 8904022400 | 24,00 | 25 | 121 | 45 | 6 |
| 8904022500 | 25,00 | 25 | 121 | 45 | 6 |
| 8904022600 | 26,00 | 25 | 121 | 45 | 6 |
| 8904022800 | 28,00 | 25 | 121 | 45 | 6 |
| 8904023000 | 30,00 | 25 | 121 | 45 | 6 |
| 8904023200 | 32,00 | 32 | 133 | 53 | 6 |

## 89.0404

### END MILL HSS M42 DIN 844L N Z4-Z6 LONG

-  Fresa frontal HSS M42 DIN 844L N Z4-Z6 larga
-  Fraise finition HSS M42 DIN 844L N Z4-Z6 longue
-  Fresa HSS M42 DIN 844L N Z4-Z6 lunga
-  4-6-х перые концевые фрезы HSS M42 DIN 844L N, длинная серия
-  Parça freze HSS M42 DIN 844L N Z4 UZUN
-  M42高速钢铣刀DIN844L N Z4-Z6 加长



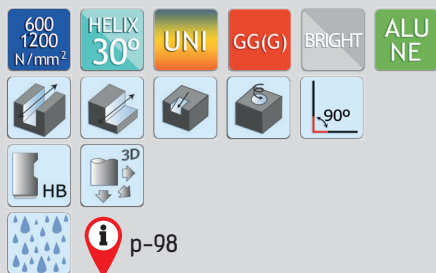
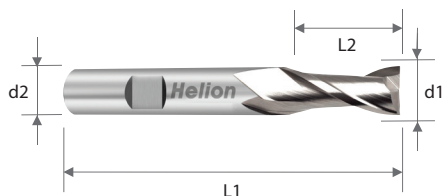
| Cod.       | d1 | d2 | L1  | L2 | Z |
|------------|----|----|-----|----|---|
| 8904040300 | 3  | 6  | 56  | 12 | 4 |
| 8904040400 | 4  | 6  | 63  | 19 | 4 |
| 8904040500 | 5  | 6  | 68  | 24 | 4 |
| 8904040600 | 6  | 6  | 68  | 24 | 4 |
| 8904040700 | 7  | 10 | 80  | 30 | 4 |
| 8904040800 | 8  | 10 | 88  | 38 | 4 |
| 8904040900 | 9  | 10 | 88  | 38 | 4 |
| 8904041000 | 10 | 10 | 95  | 45 | 4 |
| 8904041100 | 11 | 12 | 102 | 45 | 4 |
| 8904041200 | 12 | 12 | 110 | 53 | 4 |
| 8904041400 | 14 | 12 | 110 | 53 | 4 |

| Cod.       | d1 | d2 | L1  | L2  | Z |
|------------|----|----|-----|-----|---|
| 8904041500 | 15 | 12 | 110 | 53  | 4 |
| 8904041600 | 16 | 16 | 123 | 63  | 4 |
| 8904041800 | 18 | 16 | 123 | 63  | 4 |
| 8904042000 | 20 | 20 | 141 | 75  | 4 |
| 8904042500 | 25 | 25 | 166 | 90  | 6 |
| 8904042800 | 28 | 25 | 166 | 90  | 6 |
| 8904043000 | 30 | 25 | 166 | 90  | 6 |
| 8904043200 | 32 | 32 | 186 | 106 | 6 |
| 8904043600 | 36 | 32 | 186 | 106 | 6 |
| 8904044000 | 40 | 40 | 217 | 125 | 6 |

## END MILL HSS M42 DIN 844K N Z2

# 89.0202

-  Fresa frontal HSS M42 DIN 844K N Z2
-  Fraise à rainurer HSS M42 DIN 844K N Z2
-  Fresa HSS M42 DIN 844K N Z2
-  2-х перые концевые фрезы HSS M42 DIN 844K N
-  Parça freze HSS M42 DIN 844K N Z2
-  M42高速钢铣刀 DIN844K N Z2



| Cod.       | d1   | d2 | L1 | L2 | Z |
|------------|------|----|----|----|---|
| 8902020300 | 3,00 | 6  | 52 | 8  | 2 |
| 8902020350 | 3,50 | 6  | 54 | 10 | 2 |
| 8902020400 | 4,00 | 6  | 55 | 11 | 2 |
| 8902020450 | 4,50 | 6  | 55 | 11 | 2 |
| 8902020500 | 5,00 | 6  | 57 | 13 | 2 |
| 8902020550 | 5,50 | 6  | 57 | 13 | 2 |
| 8902020600 | 6,00 | 6  | 57 | 13 | 2 |
| 8902020700 | 7,00 | 10 | 66 | 16 | 2 |
| 8902020800 | 8,00 | 10 | 69 | 19 | 2 |

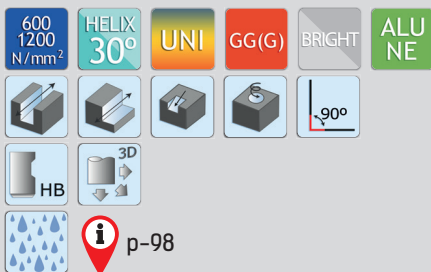
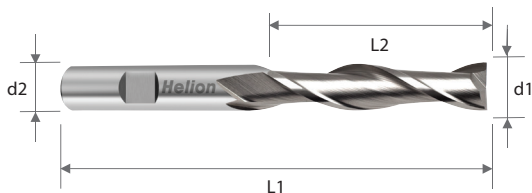
| Cod.       | d1    | d2 | L1  | L2 | Z |
|------------|-------|----|-----|----|---|
| 8902021000 | 10,00 | 10 | 72  | 22 | 2 |
| 8902021100 | 11,00 | 12 | 79  | 22 | 2 |
| 8902021200 | 12,00 | 12 | 83  | 26 | 2 |
| 8902021300 | 13,00 | 12 | 83  | 26 | 2 |
| 8902021400 | 14,00 | 12 | 83  | 26 | 2 |
| 8902021500 | 15,00 | 12 | 83  | 26 | 2 |
| 8902021600 | 16,00 | 16 | 92  | 32 | 2 |
| 8902021800 | 18,00 | 16 | 92  | 32 | 2 |
| 8902022000 | 20,00 | 20 | 104 | 38 | 2 |

## 89.0204

### END MILL HSS M42 DIN 844L N Z2 LONG



-  Fresa frontal HSS M42 DIN 844L N Z2 larga
-  Fraise à rainurer HSS M42 DIN 844L N Z2 longue
-  Fresa HSS M42 DIN 844L N Z2 lunga
-  2-х перые концевые фрезы HSS M42 DIN 844L N, длинная серия
-  Parça freze HSS M42 DIN 844L N Z2 UZUN
-  M42高速钢铣刀DIN844L N Z2 加长

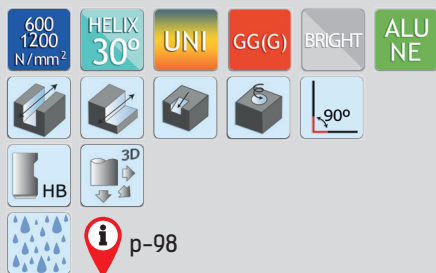
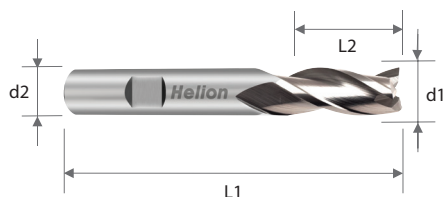


| Cod.       | d1 | d2 | L1  | L2 | Z |
|------------|----|----|-----|----|---|
| 8902040300 | 3  | 6  | 56  | 12 | 2 |
| 8902040400 | 4  | 6  | 63  | 19 | 2 |
| 8902040500 | 5  | 6  | 68  | 24 | 2 |
| 8902040600 | 6  | 6  | 68  | 24 | 2 |
| 8902040800 | 8  | 10 | 88  | 38 | 2 |
| 8902041000 | 10 | 10 | 95  | 45 | 2 |
| 8902041200 | 12 | 12 | 110 | 53 | 2 |
| 8902041400 | 14 | 12 | 110 | 53 | 2 |
| 8902041600 | 16 | 16 | 123 | 63 | 2 |
| 8902041800 | 18 | 16 | 123 | 63 | 2 |
| 8902042000 | 20 | 20 | 141 | 75 | 2 |

## END MILL HSS M42 DIN 844K N Z3

# 89.0302

-  Fresa frontal HSS M42 DIN 844K N Z3
-  Fraise à rainurer HSS M42 DIN 844K N Z3
-  Fresa HSS M42 DIN 844K N Z3
-  3-х перые концевые фрезы HSS M42 DIN 844K N
-  Freze HSS M42 DIN 844K N Z3
-  M42高速钢铣刀DIN844K N Z3



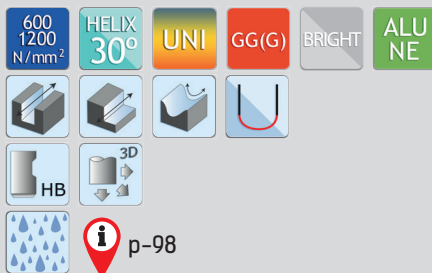
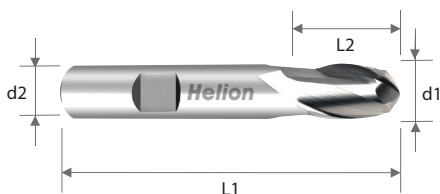
| Cod.       | d1   | d2 | L1 | L2 | Z |
|------------|------|----|----|----|---|
| 8903020280 | 2,80 | 6  | 52 | 8  | 3 |
| 8903020300 | 3,00 | 6  | 52 | 8  | 3 |
| 8903020380 | 3,80 | 6  | 55 | 11 | 3 |
| 8903020400 | 4,00 | 6  | 55 | 11 | 3 |
| 8903020480 | 4,80 | 6  | 57 | 13 | 3 |
| 8903020500 | 5,00 | 6  | 57 | 13 | 3 |
| 8903020575 | 5,75 | 6  | 57 | 13 | 3 |
| 8903020600 | 6,00 | 6  | 57 | 13 | 3 |
| 8903020675 | 6,75 | 10 | 66 | 16 | 3 |
| 8903020700 | 7,00 | 10 | 66 | 16 | 3 |
| 8903020775 | 7,75 | 10 | 69 | 19 | 3 |
| 8903020800 | 8,00 | 10 | 69 | 19 | 3 |
| 8903020900 | 9,00 | 10 | 69 | 19 | 3 |

| Cod.       | d1    | d2 | L1  | L2 | Z |
|------------|-------|----|-----|----|---|
| 8903020970 | 9,70  | 10 | 72  | 22 | 3 |
| 8903021000 | 10,00 | 10 | 72  | 22 | 3 |
| 8903021100 | 11,00 | 12 | 79  | 22 | 3 |
| 8903021170 | 11,70 | 12 | 79  | 22 | 3 |
| 8903021200 | 12,00 | 12 | 83  | 26 | 3 |
| 8903021370 | 13,70 | 12 | 83  | 26 | 3 |
| 8903021400 | 14,00 | 12 | 83  | 26 | 3 |
| 8903021500 | 15,00 | 12 | 83  | 26 | 3 |
| 8903021570 | 15,70 | 16 | 92  | 32 | 3 |
| 8903021600 | 16,00 | 16 | 92  | 32 | 3 |
| 8903021800 | 18,00 | 16 | 92  | 32 | 3 |
| 8903022000 | 20,00 | 20 | 104 | 38 | 3 |

## 89.0221

### BALL NOSE END MILL HSS M42 DIN 327 N Z2

-  Fresa frontal p. bola HSS M42 DIN 327 N Z2
-  Fraise à bout hémisphérique HSS M42 DIN 327 N Z2
-  Fresa a testa sferica HSS M42 DIN 327 N Z2
-  2-х перые концевые фрезы со сферическим торцом HSS M42 DIN 327N
-  Kúresel uç freze HSS M42 DIN 327 N Z2
-  球头M42高速钢铣刀DIN327 N Z2



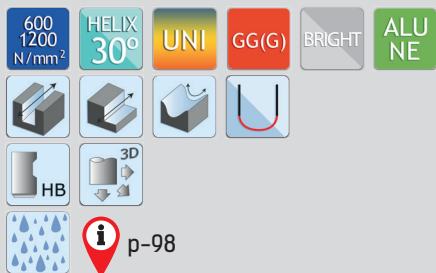
| Cod.       | d1 | d2 | L1 | L2 | Z |
|------------|----|----|----|----|---|
| 8902210200 | 2  | 6  | 48 | 4  | 2 |
| 8902210300 | 3  | 6  | 49 | 5  | 2 |
| 8902210400 | 4  | 6  | 51 | 7  | 2 |
| 8902210500 | 5  | 6  | 52 | 8  | 2 |
| 8902210600 | 6  | 6  | 52 | 8  | 2 |
| 8902210700 | 7  | 10 | 60 | 10 | 2 |
| 8902210800 | 8  | 10 | 61 | 11 | 2 |
| 8902210900 | 9  | 10 | 61 | 11 | 2 |
| 8902211000 | 10 | 10 | 63 | 13 | 2 |

| Cod.       | d1 | d2 | L1 | L2 | Z |
|------------|----|----|----|----|---|
| 8902211200 | 12 | 12 | 73 | 16 | 2 |
| 8902211300 | 13 | 12 | 73 | 16 | 2 |
| 8902211400 | 14 | 12 | 73 | 16 | 2 |
| 8902211500 | 15 | 12 | 73 | 16 | 2 |
| 8902211600 | 16 | 16 | 79 | 19 | 2 |
| 8902211700 | 17 | 16 | 79 | 19 | 2 |
| 8902211800 | 18 | 16 | 79 | 19 | 2 |
| 8902211900 | 19 | 16 | 79 | 19 | 2 |
| 8902212000 | 20 | 20 | 88 | 22 | 2 |

## BALL NOSE END MILL HSS M42 DIN 844K N Z2 LONG

# 89.0223

-  Fresa frontal p. bola HSS M42 DIN 844K N Z2 larga
-  Fraise à bout hémisphérique HSS M42 DIN 844K N Z2 longue
-  Fresa a testa sferica HSS M42 DIN 844K N Z2 lunga
-  2-х перые концевые фрезы со сферическим торцом HSS M42 DIN 844K N, длинная серия
-  Küresel uç freze HSS M42 DIN 844K N Z2 UZUN
-  球头M42高速钢铣刀DIN844K N Z2 加长



| Cod.       | d1 | d2 | L1  | L2 | Z |
|------------|----|----|-----|----|---|
| 8902230300 | 3  | 6  | 56  | 8  | 2 |
| 8902230400 | 4  | 6  | 63  | 11 | 2 |
| 8902230500 | 5  | 6  | 68  | 13 | 2 |
| 8902230600 | 6  | 6  | 68  | 13 | 2 |
| 8902230700 | 7  | 10 | 80  | 16 | 2 |
| 8902230800 | 8  | 10 | 88  | 19 | 2 |
| 8902231000 | 10 | 10 | 95  | 22 | 2 |
| 8902231200 | 12 | 12 | 110 | 26 | 2 |
| 8902231400 | 14 | 12 | 110 | 26 | 2 |
| 8902231500 | 15 | 12 | 110 | 26 | 2 |
| 8902231600 | 16 | 16 | 123 | 32 | 2 |
| 8902231800 | 18 | 16 | 123 | 32 | 2 |
| 8902232000 | 20 | 20 | 141 | 38 | 2 |

## CUTTING CONDITIONS HSS



89.0602    89.0604    89.0402    89.0404    89.0202    89.0204    89.0302    89.0221    89.0223

THESE CONDITIONS ARE CALCULATED FOR SLOT MILLING.

\* In case of side milling could increase the feed rate +20% to 50%

\* For long series must reduce Vc - 20%

\* For roughing cutters could increase feed rate + 50%

|                  |                                                      |           | d1       | d1    | d1    | d1    | d1    | d1    | d1    | d1    | d1    | d1    | d1    | d1    |
|------------------|------------------------------------------------------|-----------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                  |                                                      |           | 2,00     | 3,00  | 4,00  | 5,00  | 6,00  | 8,00  | 10,00 | 12,00 | 16,00 | 20,00 | 25,00 | 32,00 |
|                  |                                                      |           | Vc m/min | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm |
| Steel            | General steels <500 N/mm <sup>2</sup>                | (<150 HB) | 45       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | General steels <700 N/mm <sup>2</sup>                | (<205 HB) | 40       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | General steels <850 N/mm <sup>2</sup>                | (<25 HRC) | 35       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | General steels <1000 N/mm <sup>2</sup>               | (<32 HRC) | 25       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | Tempering steel <850 N/mm <sup>2</sup>               | (<25 HRC) | 40       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | Tempering steel <1000 N/mm <sup>2</sup>              | (<32 HRC) | 35       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | Tempering steel <1200 N/mm <sup>2</sup>              | (<44 HRC) | 25       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
| Cast iron        | Cast iron <180HB                                     |           | 35       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | Malleable cast iron GTW - GTS                        |           | 25       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | Nodular cast iron GG - GGG                           |           | 25       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
| INOX             | INOX Stainless steel <700 N/mm <sup>2</sup>          | (<205 HB) | 15       | 0,009 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |
|                  | INOX Stainless steel >700 N/mm <sup>2</sup>          | (>205 HB) | -        | -     | -     | -     | -     | -     | -     | -     | -     | -     | 0,100 | 0,150 |
| Exotic materials | Titanium, Ti-, Ni-, Co- alloy (Inconel, Stellite...) |           | 12       | 0,007 | 0,009 | 0,010 | 0,018 | 0,022 | 0,030 | 0,036 | 0,045 | 0,060 | 0,070 | 0,100 |