YG TAP GENERAL

TC411 SERIES

# MF ISO metric fine threads DIN 13

Metrisches ISO-Feingewinde DIN 13
ISO MÉTRIQUE PAS FINS DIN13
ISO Metrico passo fine DIN 13

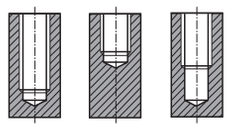
▶ Suitable for tapping blind holes due to special flute geometry and excellent chip evacuation.

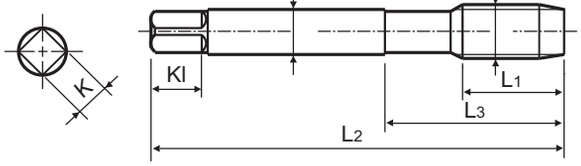
▶ Geeignet zum Gewinden von Sacklöchern dank besonderer Nutengeometrie und ausgezeichneter Spanabfuhr.

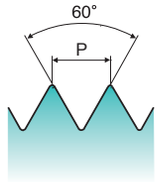
DIN 374

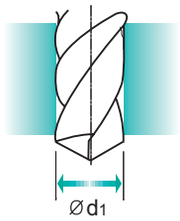


Hole type
2.5×D






Material groups GS | HSS-E | DIN 374 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer

Recommended Cutting Page : P.161

Unit : mm

| SIZE | Pitch | EDP No. | Thread Length | Overall Length | Neck Length | Shank Diameter | Square Size | Square Length | No. of Flute | Tapping Drill Diameter |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | P | Bright | L1 | L2 | L3 | ØD2 | K | Kl | Z | Ød1 |
| M4 | × 0.5 | TC411256 | 5 | 63 | 21 | 2.8 | 2.1 | 5 | 3 | 3.5 |
| M5 | × 0.5 | TC411296 | 5 | 70 | 25 | 3.5 | 2.7 | 6 | 3 | 4.5 |
| M6 | × 0.75 | TC411326 | 8 | 80 | 30 | 4.5 | 3.4 | 6 | 3 | 5.2 |
| M6 | × 0.5 | TC411336 | 5 | 80 | 30 | 4.5 | 3.4 | 6 | 3 | 5.5 |
| M7 | × 0.75 | TC411356 | 10 | 80 | 30 | 5.5 | 4.3 | 7 | 3 | 6.2 |
| M8 | × 1 | TC411376 | 10 | 90 | 36 | 6 | 4.9 | 8 | 3 | 7 |
| M8 | × 0.75 | TC411386 | 8 | 80 | 30 | 6 | 4.9 | 8 | 3 | 7.2 |
| M8 | × 0.5 | TC411936 | 5 | 80 | 30 | 6 | 4.9 | 8 | 3 | 7.5 |
| M10 | × 1.25 | TC411436 | 16 | 100 | 40 | 7 | 5.5 | 8 | 3 | 8.8 |
| M10 | × 1 | TC411446 | 10 | 90 | 36 | 7 | 5.5 | 8 | 3 | 9 |
| M10 | × 0.75 | TC411456 | 10 | 90 | 36 | 7 | 5.5 | 8 | 3 | 9.2 |
| M12 | × 1.5 | TC411516 | 15 | 100 | 40 | 9 | 7 | 10 | 3 | 10.5 |
| M12 | × 1.25 | TC411526 | 15 | 100 | 40 | 9 | 7 | 10 | 3 | 10.8 |
| M12 | × 1 | TC411536 | 11 | 100 | 40 | 9 | 7 | 10 | 3 | 11 |
| M14 | × 1.5 | TC411556 | 15 | 100 | 40 | 11 | 9 | 12 | 3 | 12.5 |
| M14 | × 1.25 | TC411566 | 15 | 100 | 40 | 11 | 9 | 12 | 3 | 12.8 |
| M14 | × 1 | TC411576 | 11 | 100 | 40 | 11 | 9 | 12 | 3 | 13 |
| M16 | × 1.5 | TC411616 | 15 | 100 | 40 | 12 | 9 | 12 | 3 | 14.5 |
| M16 | × 1 | TC411626 | 12 | 100 | 40 | 12 | 9 | 12 | 3 | 15 |
| M18 | × 1.5 | TC411676 | 17 | 110 | 44 | 14 | 11 | 14 | 4 | 16.5 |
| M18 | × 1 | TC411686 | 13 | 110 | 44 | 14 | 11 | 14 | 4 | 17 |

▶ NEXT PAGE

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | | M | | | K | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Description | Non-alloy steel | | | | | Low alloy steel | | | | High alloyed steel, and tool steel | | Stainless steel | | | Grey cast iron | | Nodular cast iron | | Malleable cast iron | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | | 13 | 25 | 28 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommended | ○ | ◎ | ◎ | ◎ | ○ | ◎ | ◎ | ○ | | | | ○ | ○ | | | | ◎ | ◎ | | |

| ISO | N | | | | | | | | | | S | | | | | | | H | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Description | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | | | Titanium Alloys | | Hardened steel | | Chilled Cast Iron | Hardened Cast Iron |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ○ | | ○ | ○ | ◎ | ○ | | ◎ | | | | | | | | | | | | | |

# MF ISO metric fine threads DIN 13

Metrisches ISO-Feingewinde DIN 13
ISO MÉTRIQUE PAS FINS DIN13
ISO Metrico passo grosso DIN 13

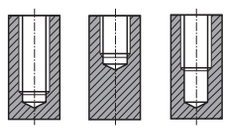
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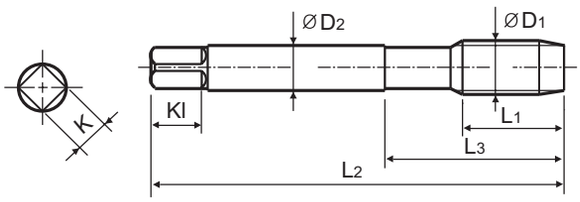
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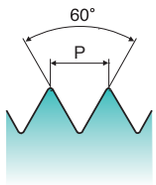
DIN 374

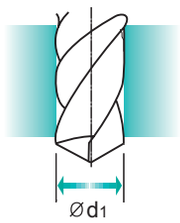


Hole type
2.5×D






Material groups **GS** | HSS-E | DIN 374 | 6H | 60° | C | Bright | R40

Machine taps
Maschinengewindebohrer

Recommended Cutting Page : P.161

Unit : mm

| SIZE | Pitch | EDP No. | Thread Length | Overall Length | Neck Length | Shank Diameter | Square Size | Square Length | No. of Flute | Tapping Drill Diameter |
|---|---|---|---|---|---|---|---|---|---|---|
| ØD1 | P | Bright | L1 | L2 | L3 | ØD2 | K | Kl | Z | Ød1 |
| M20 | × 1.5 | TC411726 | 17 | 125 | 50 | 16 | 12 | 15 | 4 | 18.5 |
| M20 | × 1 | TC411736 | 14 | 125 | 50 | 16 | 12 | 15 | 4 | 19 |
| M22 | × 1.5 | TC411766 | 17 | 125 | 50 | 18 | 14.5 | 17 | 4 | 20.5 |
| M22 | × 1 | TC411776 | 14 | 125 | 50 | 18 | 14.5 | 17 | 4 | 21 |
| M24 | × 2 | TC411796 | 20 | 140 | 54 | 18 | 14.5 | 17 | 4 | 22 |
| M24 | × 1.5 | TC411806 | 20 | 140 | 54 | 18 | 14.5 | 17 | 4 | 22.5 |
| M26 | × 1.5 | TC411856 | 20 | 140 | 54 | 18 | 14.5 | 17 | 4 | 24.5 |
| M27 | × 2 | TC411876 | 20 | 140 | 54 | 20 | 16 | 19 | 4 | 25 |
| M27 | × 1.5 | TC411886 | 20 | 140 | 54 | 20 | 16 | 19 | 4 | 25.5 |
| M28 | × 1.5 | TC411916 | 20 | 140 | 54 | 20 | 16 | 19 | 4 | 26.5 |
| M30 | × 2 | TC411966 | 22 | 150 | 57 | 22 | 18 | 21 | 4 | 28 |
| M30 | × 1.5 | TC411976 | 22 | 150 | 57 | 22 | 18 | 21 | 4 | 28.5 |

◎ : Excellent ○ : Good

| ISO | P | | | | | | | | | | | M | | | K | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Description | Non-alloy steel | | | | | Low alloy steel | | | | High alloyed steel, and tool steel | | Stainless steel | | | Grey cast iron | | Nodular cast iron | | Malleable cast iron | |
| VDI 3323 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| HRc | | 13 | 25 | 28 | 32 | 10 | 29 | 32 | 38 | 15 | 35 | 15 | 23 | 10 | 10 | 26 | 3 | 25 | | 21 |
| HB | 125 | 190 | 250 | 270 | 300 | 180 | 275 | 300 | 350 | 200 | 325 | 200 | 240 | 180 | 180 | 260 | 160 | 250 | 130 | 230 |
| Recommended | ○ | ◎ | ◎ | ◎ | ○ | ◎ | ◎ | ○ | | | | ○ | ○ | | | | ◎ | ◎ | | |

| ISO | N | | | | | | | | | | S | | | | | | | H | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Material Description | Aluminum-wrought alloy | | Aluminum-cast, alloyed | | | Copper and Copper Alloys (Bronze / Brass) | | | Non Metallic Materials | | Heat Resistant Super Alloys | | | | | Titanium Alloys | | Hardened steel | | Chilled Cast Iron | Hardened Cast Iron |
| VDI 3323 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| HRc | | | | | | | | | | | 15 | 30 | 25 | 38 | 34 | | | 55 | 60 | 42 | 55 |
| HB | 60 | 100 | 75 | 90 | 130 | 110 | 90 | 100 | | | 200 | 280 | 250 | 350 | 320 | 400Rm | 1050Rm | 550 | 630 | 400 | 550 |
| Recommended | ○ | | ○ | ○ | ◎ | ○ | | ◎ | | | | | | | | | | | | | |

# RECOMMENDED CUTTING CONDITIONS
## EMPFOHLENE SCHNEIDKONDITIONEN



| ISO | VDI 3323 | Material Description | HB | HRc | TC711 TC411 TC144 TC124 TC134 | TD711 TD411 | TC517 TC612 | TC127 TC122 TC222 TC214 TC234 TC224 | TD127 TD222 | TC227 | TD227 | TC211 | TC463 TC473 TC424 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Vc (m/min) | | | | | | | | |
| P | 1 | Non-alloy steel | 125 | | 15-20 | 20-25 | 15-20 | 15-20 | 20-25 | 15-20 | 20-25 | 15-20 | 15-20 |
| | 2 | | 190 | 13 | 15-20 | 20-25 | 15-20 | 15-20 | 20-25 | 15-20 | 20-25 | 15-20 | 15-20 |
| | 3 | | 250 | 25 | 12-18 | 18-24 | 12-18 | 12-18 | 18-24 | 12-18 | 18-24 | 12-18 | 12-18 |
| | 4 | | 270 | 28 | 10-15 | 15-20 | 10-15 | 10-15 | 15-20 | 10-15 | 15-20 | 10-15 | 10-15 |
| | 5 | | 300 | 32 | 6-10 | 10-14 | 6-10 | 6-10 | 10-14 | 6-10 | 10-14 | 6-10 | 6-10 |
| | 6 | Low alloy steel | 180 | 10 | 10-15 | 15-20 | 10-15 | 10-15 | 15-20 | 10-15 | 15-20 | 10-15 | 10-15 |
| | 7 | | 275 | 29 | 10-15 | 15-20 | 10-15 | 10-15 | 15-20 | 10-15 | 15-20 | 10-15 | 10-15 |
| | 8 | | 300 | 32 | 6-10 | 10-14 | 6-10 | 6-10 | 10-14 | 6-10 | 10-14 | 6-10 | 6-10 |
| | 9 | | 350 | 38 | | | | | | | | | |
| | 10 | High alloyed steel, and tool steel | 200 | 15 | | | | | | | | | |
| | 11 | | 325 | 35 | | | | | | | | | |
| M | 12 | Stainless steel | 200 | 15 | 7-10 | 10-13 | 7-10 | 7-10 | 10-13 | 7-10 | 10-13 | 7-10 | 7-10 |
| | 13 | | 240 | 23 | 5-8 | 8-11 | 5-8 | 5-8 | 8-11 | 5-8 | 8-11 | 5-8 | 5-8 |
| | 14 | | 180 | 10 | | | | | | | | | |
| K | 15 | Grey cast iron | 180 | 10 | | | | | | | | | 10-15 |
| | 16 | | 260 | 26 | | | | | | | | | 5-8 |
| | 17 | Nodular cast iron | 160 | 3 | 10-15 | 15-20 | 10-15 | 10-15 | 15-20 | 10-15 | 15-20 | 10-15 | 10-15 |
| | 18 | | 250 | 25 | 5-8 | 8-11 | 5-8 | 5-8 | 8-11 | 5-8 | 8-11 | 5-8 | 5-8 |
| | 19 | Malleable cast iron | 130 | | | | | | | | | | |
| | 20 | | 230 | 21 | | | | | | | | | |
| N | 21 | Aluminum-wrought alloy | 60 | | 10-15 | 15-20 | 10-15 | 10-15 | 15-20 | 10-15 | 15-20 | 10-15 | |
| | 22 | | 100 | | | | | | | | | | |
| | 23 | Aluminum-cast, alloyed | 75 | | 15-20 | 20-25 | 15-20 | 15-20 | 20-25 | 15-20 | 20-25 | 15-20 | |
| | 24 | | 90 | | 15-20 | 20-25 | 15-20 | 15-20 | 20-25 | 15-20 | 20-25 | 15-20 | |
| | 25 | | 130 | | 10-15 | 15-20 | 10-15 | 10-15 | 15-20 | 10-15 | 15-20 | 10-15 | 10-15 |
| | 26 | Copper and Copper Alloys (Bronze / Brass) | 110 | | 25-35 | 35-40 | 25-35 | 25-35 | 35-40 | 25-35 | 35-40 | 25-35 | 25-35 |
| | 27 | | 90 | | | | | | | | | | 8-12 |
| | 28 | | 100 | | 15-20 | 20-25 | 15-20 | 15-20 | 20-25 | 15-20 | 20-25 | 15-20 | |
| | 29 | Non Metallic Materials | | | | | | | | | | | |
| | 30 | | | | | | | | | | | | |
| S | 31 | Heat Resistant Super Alloys | 200 | 15 | | | | | | | | | |
| | 32 | | 280 | 30 | | | | | | | | | |
| | 33 | | 250 | 25 | | | | | | | | | |
| | 34 | | 350 | 38 | | | | | | | | | |
| | 35 | | 320 | 34 | | | | | | | | | |
| | 36 | Titanium Alloys | 400 Rm | | | | | | | | | | |
| | 37 | | 1050 Rm | | | | | | | | | | |
| H | 38 | Hardened steel | 550 | 55 | | | | | | | | | |
| | 39 | | 630 | 60 | | | | | | | | | |
| | 40 | Chilled Cast Iron | 400 | 42 | | | | | | | | | |
| | 41 | Hardened Cast Iron | 550 | 55 | | | | | | | | | |

# SURFACE TREATMENT AND COATING

The applied High Speed Steels holds a grant of good wear resistance and toughness. Therefore YG-1 normally delivers taps with bright and unfinished surface. For certain materials, various surface treatments provide higher advantage in machining.

## STEAM TEMPERED - Vap

Steam Tempered is a Fe3O4-oxyd-coating which reduces friction between the tool and workpiece, also preventing cold welding.

## NITRIDING - NI

Recommend surface treatment for machining materials that affect wear abrasion, such as grey cast iron, alu-alloys with high Si-percentages (more than 10%).

Below are the various surface treatments for excellent finish surfaces suitable for many applications. The surface treatments are produced and developed within the company.

## TiN-COATING

TiN-coating yields a hardness of approx. 2,300 HV and also a heat resistant up to approx. 600°C. The current coating is an excellent all-round coating for normal applications.
Colour : Golden Coefficient of friction against steel : 0.4

## TiCN-COATING

TiCN takes place of TiN when the conditions require the coating to have a different hardness and toughness.
The TiCN brings advantages for machining very difficult steels or cutting interrupted bores.
The TiCN-coating has a hardness of approx. 3,000 HV, but is heat resistance only holds up to approx. 400°C, meaning that the TiCN needs an excellent cooling system for a long service life.
Colour : Blue-Grey Coefficient of friction against steel : 0.4

## TiAlN-COATING

A special coating for machining abrasive materials such as grey cast iron, alu-alloys with silicon, fiber reinforced plastics, etc., or machining at high temperatures with insufficient cooling, or at high speeds ≥ 600m/min. TiAlN has a hardness of approx. 3,000 HV and is heat resistant up to approx. 800°C.
Colour : Violet-Grey Coefficient of friction against steel : 0.4

## Hardslick-COATING

Hardslick combines the advantages of an extremely hard, thermally stable TiAlN-coating with the sliding and lubricating properties of an outer WC/C(Tungsten carbide/carbon)-coating in a novel way. The Hardslick coating has a hardness of approx. 3,000 HV and is temperature-resistant up to approx. 800°C.
Colour : Violet-Grey Coefficient of friction against steel : 0.2

# SELECTION GUIDE

YG THREADING TOOLS

## HSS & HSS-E
# YG TAP GENERAL

Suitable for Tapping Blind / Through Holes
due to Flute Geometry and Excellent Chip Evacuation

| | | | | | |
|---|---|---|---|---|---|
| HOLE TYPE | | | Max. 2.5xD Blind Hole | | |
| TOOL MATERIAL | | | HSS-E | | |
| CHAMFER LEAD ACC. TO DIN2197 | | | C | C | C |
| FLUTE TYPE | | | Spiral Flute | Spiral Flute | Spiral Flute |
| SPIRAL FLUTE ANGLE | | | R40 | R40 | R20 |
| SERIES | M | DIN371/376 | TC711 (P.124) | TD711 (P.125) | TC517 (P.133) |
| | | DIN352 | | | TC612 (P.134) |
| | | DIN357/LONG | | | |
| | MF | DIN374 | TC411 (P.126) | TD411 (P.128) | |
| | | DIN2181 | | | |
| | UNC | DIN371/376 | TC144 (P.130) | | |
| | | DIN351 | | | |
| | UNF | DIN371/374 | TC124 (P.131) | | |
| | | DIN2181 | | | |
| | BSW | DIN2182/2183 | TC134 (P.132) | | |
| | | DIN351 | | | |
| | G(BSP) | DIN5156/5157 | | | |
| | EG-M | DIN371/376 | | | |
| | EG-UNC | DIN371/376 | | | |
| | EG-UNF | DIN371/374 | | | |
| SURFACE TREATMENT | | | Bright | TiN | Bright |
| MODEL | | |  |  |  |

Please visit globalyg1.com/mat for material search

◎ : Excellent ○ : Good

Recommended cutting conditions : P.161

| ISO | VDI 3323 | Material Description | Composition / Structure / Heat Treatment | | HB | HRc | | | |
|---|---|---|---|---|---|---|---|---|---|
| P | 1 | Non-alloy steel | About 0.15% C | Annealed | 125 | | ○ | ○ | ○ |
| | 2 | | About 0.45% C | Annealed | 190 | 13 | ◎ | ◎ | ◎ |
| | 3 | | About 0.45% C | Quenched & Tempered | 250 | 25 | ◎ | ◎ | ◎ |
| | 4 | | About 0.75% C | Annealed | 270 | 28 | ◎ | ◎ | ◎ |
| | 5 | | About 0.75% C | Quenched & Tempered | 300 | 32 | ○ | ○ | ○ |
| | 6 | Low alloy steel | | Annealed | 180 | 10 | ◎ | ◎ | ◎ |
| | 7 | | | Quenched & Tempered | 275 | 29 | ◎ | ◎ | ◎ |
| | 8 | | | Quenched & Tempered | 300 | 32 | ○ | ○ | ○ |
| | 9 | | | Quenched & Tempered | 350 | 38 | | | |
| | 10 | High alloyed steel, and tool steel | | Annealed | 200 | 15 | | | |
| | 11 | | | Quenched & Tempered | 325 | 35 | | | |
| M | 12 | Stainless steel | Ferritic / Martensitic | Annealed | 200 | 15 | ○ | ○ | ○ |
| | 13 | | Martensitic | Quenched & Tempered | 240 | 23 | ○ | ○ | ○ |
| | 14 | | Austenitic | | 180 | 10 | | | |
| K | 15 | Grey cast iron | Pearlitic / ferritic | | 180 | 10 | | | |
| | 16 | | Pearlitic (Martensitic) | | 260 | 26 | | | |
| | 17 | Nodular cast iron | Ferritic | | 160 | 3 | ◎ | ◎ | ◎ |
| | 18 | | Pearlitic | | 250 | 25 | ◎ | ◎ | ◎ |
| | 19 | Malleable cast iron | Ferritic | | 130 | | | | |
| | 20 | | Pearlitic | | 230 | 21 | | | |
| N | 21 | Aluminum-wrought alloy | Not Curable | | 60 | | ○ | ○ | ○ |
| | 22 | | Curable | Hardened | 100 | | | | |
| | 23 | Aluminum-cast, alloyed | ≤ 12% Si, Not Curable | | 75 | | ○ | ○ | ○ |
| | 24 | | ≤ 12% Si, Curable | Hardened | 90 | | ○ | ○ | ○ |
| | 25 | | > 12% Si, Not Curable | | 130 | | ◎ | ◎ | ◎ |
| | 26 | Copper and Copper Alloys (Bronze / Brass) | Cutting Alloys, PB>1% | | 110 | | ○ | ○ | ○ |
| | 27 | | CuZn, CuSnZn (Brass) | | 90 | | | | |
| | 28 | | CuSn, lead-free copper and electrolytic copper | | 100 | | ◎ | ◎ | ◎ |
| | 29 | Non Metallic Materials | Duroplastic, Fiber Reinforced Plastic | | | | | | |
| | 30 | | Rubber, Wood, etc. | | | | | | |
| S | 31 | Heat Resistant Super Alloys | Fe Based | Annealed | 200 | 15 | | | |
| | 32 | | | Cured | 280 | 30 | | | |
| | 33 | | Ni or Co Based | Annealed | 250 | 25 | | | |
| | 34 | | | Cured | 350 | 38 | | | |
| | 35 | | | Cast | 320 | 34 | | | |
| | 36 | Titanium Alloys | Pure Titanium | | 400 Rm | | | | |
| | 37 | | Alpha + Beta Alloys | Hardened | 1050 Rm | | | | |
| H | 38 | Hardened steel | | Hardened | 550 | 55 | | | |
| | 39 | | | Hardened | 630 | 60 | | | |
| | 40 | Chilled Cast Iron | | Cast | 400 | 42 | | | |
| | 41 | Hardened Cast Iron | | Hardened | 550 | 55 | | | |