

BlueTap® Max has been specifically designed for high-performance taps. This grade combining the ASP® performance with an optimized Total Cost of Ownership. BlueTap® Max offers unrivalled properties: excellent grindability, high reliability as well as high hardness and good toughness.

STANDARDS

> Not standardized

DELIVERY HARDNESS

> Typical soft annealed hardness is 270 HB
> Cold-drawn material is typically 10-40 HB harder

CHEMICAL COMPOSITION

Safety datasheet available

C	Cr	Mo	W	Co	V
1.08	3.8	9.3	1.6	7.8	1.1

APPLICATIONS

> High-performance taps

FORM SUPPLIED

> Drawn bars
> Peeled bars
> Drawn and ground bars

Available surface conditions: drawn, peeled.

HEAT TREATMENT

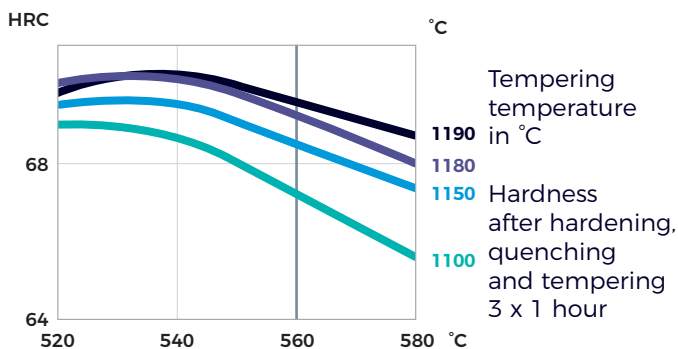
- > Soft annealing in a protective atmosphere at 850-900°C for 3 hours, followed by slow cooling at 10°C/h down to 700°C, then air cooling.
- > Stress-relieving at 600-700°C for approximately 2 hours, slow cooling down to 500°C.
- > Hardening in a protective atmosphere with preheating in 2 steps at 450-500°C and 850-900°C and austenitizing at a temperature suitable for chosen working hardness. Cooling down to 40-50°C.
- > Tempering at 560°C three times for at least 1 hour each time. Cooling to room temperature < 25°C between temperings.

PROCESSING

BlueTap® Max can be worked as follows:

- > machining (grinding, turning, milling)
- > polishing
- > hot forming
- > electrical discharge machining
- > welding (special procedure including preheating and filler materials of base material composition)

GUIDELINES FOR HARDENING



GRINDING

During grinding local heating of the surface, which can alter the temper, must be avoided. In general, grinding must be carried out more aggressively than with traditional tap materials or other more highly alloyed Powder Metallurgy High-Speed Steel grades. This is done in order to avoid blunting of the grinding wheel, and to allow for self-sharpening to take place. Grinding wheel manufacturers can help choosing the most appropriate grinding wheels.

SURFACE TREATMENT

The steel grade is a perfect substrate material for PVD coating. The usage of a PVD coating is highly encouraged as the grade is designed with the usage of a PVD coating in mind for optimal performance.

If nitriding is requested, a small diffusion zone is recommended but avoid compound and oxidized layers.

PROPERTIES

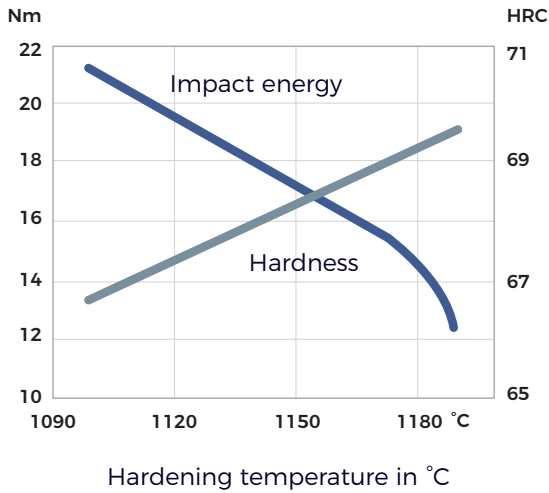
PHYSICAL PROPERTIES

Temperature	20°C	400°C	600°C
Density g/cm ³ ⁽¹⁾	8.0	7.9	7.9
Modulus of elasticity kN/mm ² ⁽²⁾	225	200	180
Thermal expansion ratio per °C ⁽²⁾	-	11.5x10 ⁻⁶	11.8x10 ⁻⁶
Thermal conductivity W/m°C ⁽²⁾	24	28	27
Specific heat J/kg°C ⁽²⁾	420	510	600

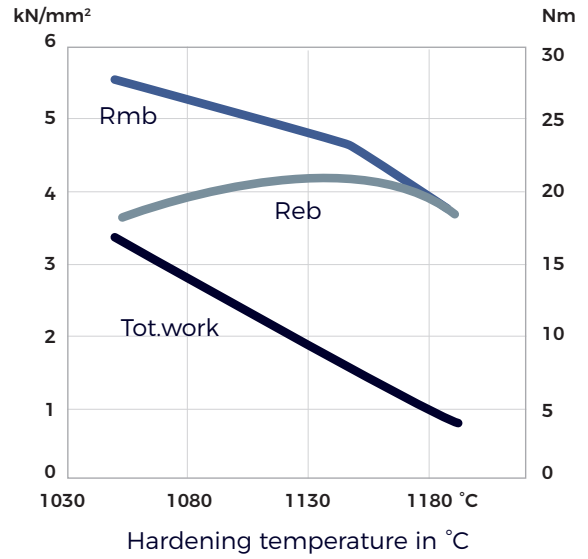
(1) Soft annealed

(2) Hardened 1180°C and tempered 560°C, 3 x 1 hour

IMPACT TOUGHNESS



4-POINT BEND STRENGTH



Original dimension Ø 6 mm
 Tempering 3 x 1 hour at 560°C
 Dimension of test piece Ø 4.7 mm

Rmb = Ultimate bend strength in kN/mm²
 Reb = Bend yield strength in kN/mm²
 Tot. work = Total work in Nm

COMPARATIVE PROPERTIES

