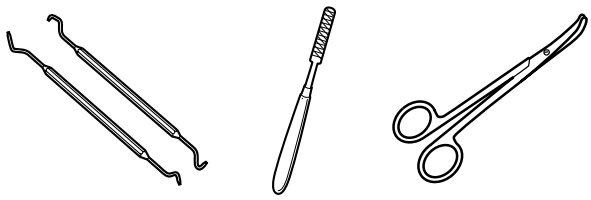
Zapp® 1.4021 YB Data Sheet
Medical Alloys

Zapp is certified to ISO 9001



Material Zapp® 1.4021 YB
Zapp® 1.4021 YB is a martensitic stainless chromium steel that is corrosion resistant to water and steam. This requires the hardened and low tempered state and a shiny, polished surface preference. In the high-tempered or annealed condition, the corrosion resistance is reduced.

Typical Applications
Dental applications
Surgical instruments e.g.
_ retractor/ surgical hooks
_ Tweezers
_ Scissors
_ Ring pliers
_ Bone Cutting Forceps
_ Probes
_ Chisels

Polishability
The polishing ability of Zapp® 1.4021 YB is very good.

Weldability
Welding is only possible when certain precautions are taken. Generally, welding is not recommended.

Machinability
Machining conditions of Zapp® 1.4021 YB equalize with unalloyed mild steel.

Magnetism
Zapp® 1.4021 YB is magnetizable.

Hot Working
Forging at 1,100 – 800 °C, slow cooling.

Corrosion Resistance
Due to its chromium content, Zapp® 1.4021 YB shows good corrosion resistance in moderately aggressive, non-chlorine-containing media, such as soaps, solvents and organic acids. This steel is also scaling resistant to oxidizing atmosphere at temperatures up to 600 ° C.

Corresponding Standards
DIN EN 10088-3 (X20Cr13)
ASTM F899, AISI 420A (UNS S42000)

Chemical Composition *

C	Si	Mn	P	S	Cr
0.22	0.45	0.80	0.02	0.02	12.30

* Average in mass -%

Product Conditions*

Bars, drawn, straightened, ground, polished	Tensile [MPa]	650 - 850

* Other conditions on request

Physical Properties	
Modulus of Elasticity at 20 °C [GPa]	215
Specific Gravity ρ [kg/dm³]	7.7
Thermal Conductivity λ at 20°C [W/m*K]	30
Coefficient of Thermal Expansion α [10^{-6}*K^{-1}]	
20 – 100 °C	10.5
20 – 200 °C	11.0
20 – 300 °C	11.5
20 – 400 °C	12.0
20 – 500 °C	12.0
Specific Heat at 20 °C [kJ/kg*°C]	460
Electric Resistivity ρ at 20 °C [Ω*mm²/m]	0.60

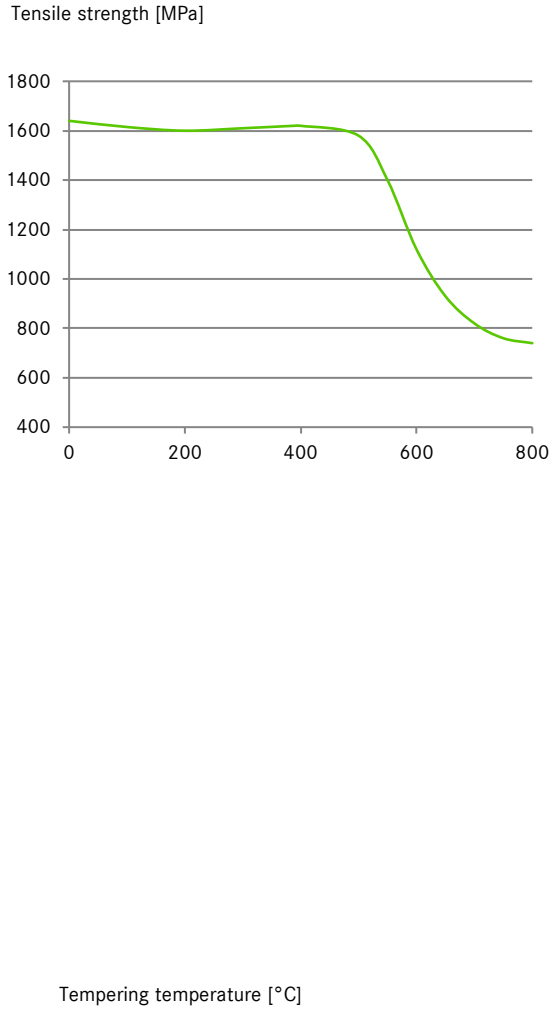
Heat Treatment

Soft Annealing
Temperature: 745 – 825 °C
Cooling: Air

Hardening
Temperature: 950 – 1,050 °C
Cooling: Oil, air

Tempering
Temperature I: 650 – 750 °C
Temperature II: 600 – 700 °C

Tempering Chart



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Further information regarding our products and locations are available in our image brochure and under www.zapp.com

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