Zapp® 1.4112 YL, AISI 440B, Datasheet US

Medical Alloys

Zapp is certified to ISO 9001

Material Zapp® 1.4112 YL, AISI 440B

Zapp® 1.4112 YL is a stainless martensitic chromium steel with addition of molybdenum and vanadium. It is characterized by high hardness.
In terms of cutting ability, edge retention and sharpness this steel is superior to a 13 % Cr steel.

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Typical Applications

- Surgical cutting tools, e.g. scalpels
- Dental surgery (drills, reamers, stepped reamers, cutting tools and special tools with inside cooling)

Corresponding Standards

DIN EN 10088-3 (X90CrMoV18)
AISI 440B

Polishability

Zapp® 1.4112 YL is high gloss polishable.

Weldability

Zapp® 1.4112 YL is usually not welded.

Magnetism

Zapp® 1.4112 YL is magnetizable.

Corrosion Resistance

Zapp® 1.4112 YL has sufficient resistance in moderate, non-chlorine-containing media. Corrosion resistance to water and water vapor is excellent.

Hot Working

Forging at 2012 – 1472 °F.

Wear Resistance

Zapp® 1.4112 YL shows high wear resistance.

Product Conditions*

Bars, drawn, straightened, ground, polished	Tensile [ksi]	102 - 131

* Other conditions on request

Physical Properties	
Modulus of Elasticity E at 68 °F [ksi]	31,183
Specific Gravity ρ [lb/in³]	0.278
Thermal Conductivity λ bei 68°F [Btu in/hr ft² °F]	110
Coefficient of Thermal Expansion α [µin/in °F]	
68 – 212 °F	5.72
68 – 392 °F	6.00
68 – 572 °F	6.22
68 – 752 °F	6.44
Specific Heat c at 68 °F [Btu/lb °F]	103
Electric Resistivity ρ at 68 °F [Ω circular-mil/ft]	481

Also available at Zapp: Alloy 9.9440

Martensitic chromium steel with high wear resistance according to AISI 440A

9.9440

Chemical Composition

C	Si	Mn	P	S	Cr	Mo	V
0.85-0.95	max. 1.00	max. 1.00	max. 0.04	0.015-0.030	17.00-19.00	0.90-1.30	0.07-1.20

Heat Treatment

Soft Annealing
Temperature: 1,436 – 1,544 °F
Slow cooling in furnace.

Stress Relief Annealing
Temperature: 1,202 °F
After heating, hold in neutral atmosphere for 1 - 2 hours.
Slow cooling in furnace.

Hardening
Temperature: 1,877 – 1,967 °F
Holding time: 0.5 h
Cooling: Oil

Tempering
Temperature: 212 – 302 °F
Tempering should follow right after hardening.

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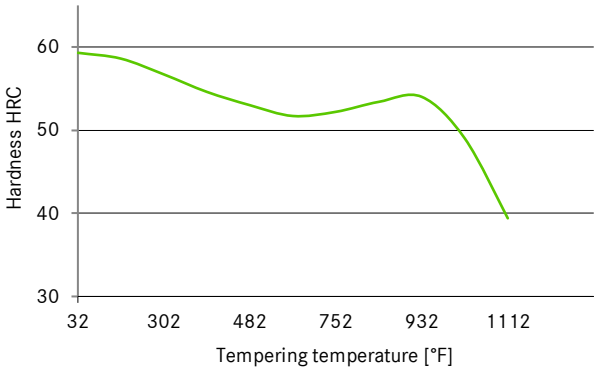
Tempering Chart



MEDICAL ALLOYS

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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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