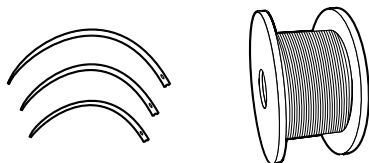


Ergste® 1.4031YC Data Sheet

Medical Alloys



Zapp is certified to ISO 9001



Material Ergste® 1.4031YC

Ergste® 1.4031YC 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. Due to a higher carbon content, Ergste® 1.4031YC can achieve a higher hardness than Ergste® 1.4021YB.

Typical applications

- Surgical needle wire (hardenable)

Polishability

Ergste® 1.4031YC enables best mirror finish after polishing.

Weldability

Generally, welding is not recommended.

Machinability

Machining conditions of Ergste® 1.4031YC can be equated with unalloyed mild steel.

Magnetism

Ergste® 1.4031YC is magnetizable.

Hot working

Forging at 1100 – 800 °C, slow cooling.

Corrosion resistance

Due to its chromium content, Ergste® 1.4031YC has good corrosion resistance in moderately aggressive, non-chlorine-containing media, such as soaps, solvents and organic acids.

Corresponding standards

DIN EN 10088-3 (X20Cr13)

ASTM F899 AISI 420X (UNS S42000)

Chemical composition *

C	Si	Mn	P	S	Cr
0.40	0.40	0.50	0.020	0.020	13.20

* Average in mass-%

Product conditions*

Wire, drawn (Coils, Spools)	Tensile [MPa]	700 - 900
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* Other conditions on request

Physical properties

Modulus of Elasticity at 20 °C [GPa]	215
Specific Gravity ρ [kg/dm ³]	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 *mm ² /m]	0.55

Heat treatment

Soft annealing

Temperature: 745 – 825 °C

Cooling: Air

Hardening

Temperature: 950 – 1050 °C

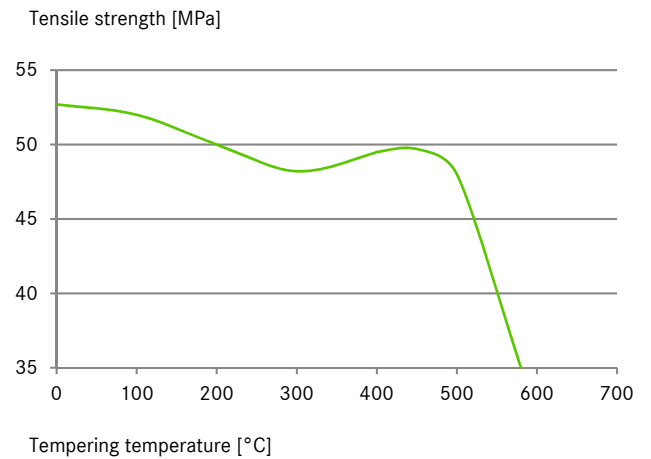
Cooling: Oil, air

Tempering

Temperature I: 650 – 750 °C

Temperature II: 600 – 700 °C

Tempering chart



Zapp Precision Metals GmbH

MEDICAL ALLOYS

Letmather Straße 69

58239 Schwerte

P.O. Box 17 20

58212 Schwerte

Phone +49 2304 79-540

Fax +49 2304 79-482

medicalalloys@zapp.com

www.zapp.com

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

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