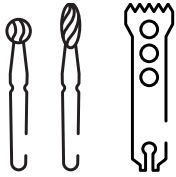


Zapp is certified to ISO 9001



Zapp® 1.4104 YN

Zapp® 1.4104 YN is a martensitic stainless steel with 17% of Chromium content. Due to the high content of Sulfur an increased machinability is achieved. On the other hand, this leads to both decreased corrosion resistance and ductility. Zapp® 1.4104 YN shows a good resistance to rust and acid. Further, it is possible to improve the mechanical resistance because of the carbon content. The improvement can be achieved by quenching and tempering.

Typical Applications

- Surgical instruments
- Decorative purposes
- Construction parts that show resistance in water and steam environments
- General machine and apparatus parts
- Piston rods for pneumatic cylinders

Weldability

Generally, Zapp® 1.4104 YN is not welded. The material is particularly unsuitable for joint welding. If welded, it is recommended to finish with a heat treatment to ensure the equality of the mechanical-technological properties in the welding zone and the base material

Polishability

Zapp® 1.4104 YN is not suitable for polishing.

Magnetism

Zapp® 1.4104 YN is magnetizable.

Corrosion Resistance

Zapp® 1.4104 YN has a worse corrosion resistance than Zapp® 1.4016 IH. The resistance to chlorinated media is impaired due to high content of sulfur. Plus, media that cause pitting and crevice corrosion should be avoided.

Corresponding Standards

- according to DIN EN 10088-3 (X14CrMoS17)
- according to AISI 430F

Chemical Composition

	C	Si	Mn	Cr	Mo	P	S
Min.	0.10	0	0	15.5	0.2	0	0.15
Max.	0.17	1.0	1.5	17.5	0.6	0.04	0.35

Mechanical Properties (Solution-Annealed)

Tensile Strength	TS/[Mpa]	max. 730
Hardness	HB	max. 220

Mechanical Properties (Quenched and Tempered)

Tensile Strength	R _m /[Mpa]	650 - 850
Yield Strength	YS _{0.2} /[MPa]	min. 500
Elongation at break, t ≤ 60 mm	A ₅ /[%]	min. 12
Elongation at break, 60 mm < t ≤ 160 mm	A ₅ /[%]	min. 10

Physical Properties

Modulus of Elasticity at 20 °C	E/[GPa]	215
Density	ρ/[kg/dm³]	7.7
Thermal Conductivity at 20 °C	λ [W/m *K]	25
Coefficient of Thermal Expansion	α [10 ⁻⁶ *K ⁻¹]	10.0
20 - 100 °C		10.5
20 - 200 °C		10.5
20 - 300 °C		10.5
20 - 400 °C		10.5
Specific Heat at 20 °C	c/[kJ/kg*K]	0.46
Specific Electric Resistivity at 20 °C	ρ/[Ω*mm²/m]	0.7

Hot Working

Hot working is to be performed at temperatures between 800 °C and 1,100 °C. Start with slow heating to approximately 850 °C.

Cooling in Air.

Cold Working

Zapp® 1.4104 YN is not suitable for cold working because of the sulfur precipitation.

Machining

The machining of Zapp® 1.4104 YN is better in comparison to other steels with 17 % content of chrome. The reason for that is the increased content of sulfur.

Heat Treatment

Soft Annealing

Temperature: 750 °C – 850 °C

Cooling: Oven, Air

Hardening

Temperature: 950 °C – 1,070 °C

Cooling: Quickly enough in oil, air

Tempering

Temperature: 550 °C – 550 °C

Cooling: Air

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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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