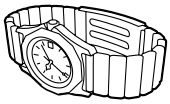
Ergste® 1.4456CA Datasheet
Precision Wire

Zapp is Certified to ISO 9001

Nickel-Free Cr-Mn-Mo-N-Steel
Ergste® 1.4456CA

Ergste® 1.4456CA is a nickel-free, pressure-nitrided austenite that reaches a remarkable viscosity when achieving up to more than 2,000 MPa tensile strength.

The nitrogen that is added by means of the PESR-technology (pressurized electro slag remelting) stabilizes the austenitic structure and increases the corrosion resistance and the strength without reducing the viscosity.

Typical Fields of Applications

- Spectacles frames
- Cases for watches
- Jewelry

Corrosion Resistance

Ergste® 1.4456CA is characterized by a high corrosion resistance due to the nitrogen. However, it tends to denitrification which leads to a reduced corrosion resistance.

Polishability

Ergste® 1.4456CA reaches excellent polishing results.

Heat treatment

Ergste®1.4456CA is very sensitive to the influence of any kind of temperature. Therefore, heat treatment should rather be avoided.

If a heat treatment is provided, an ultrafast heating and a rapid cooling have to be ensured. Otherwise the Ergste®1.4456CA forms precipitates.

Solution Annealing

Temperature: 1,100 – 1,150 °C
Cooling: Water

Corresponding Standards

- X8CrMnMoN18-18-2

Typical Chemical Composition

C	Si	Mn	P	S
< 0.10	< 1.00	16.00-20.00	< 0.05	< 0.05
N	**Cr**	**Ni**	**Mo**	
0.70-1.00	16.00-20.00	< 0.20	1.80-2.50	

Mechanical Properties (Solution Annealed)

Tensile Strength R_m	[MPa]	≥ 950
Yield Strength $R_{p0,2}$	[MPa]	≥ 600
Elongation	[%]	55

Mechanical Properties (Cold Worked)

Tensile Strength R_m	[MPa]	≥ 1,600
Yield Strength $R_{p0,2}$	[MPa]	≥ 900
Elongation	[%]	≥ 12

Physical Properties

	Symbol	Measure-ments at °C	Unit
Modulus of Elasticity	E	200 at 20 °C	GPa
Specific Density	ρ	7.7	kg/m³
Thermal Conductivity	λ	14.9 at 87 °C	W/m*K
Coefficient of Thermal Expansion	α		10^{-6}*K^{-1}
20-100 °C		16.0	
20-200 °C		17.1	
20-300 °C		17.9	
20-400 °C		18.7	
Electric Resistancy	ρ	0.73	Ω · mm²/m
Permeability	μ	≤ 1,004	

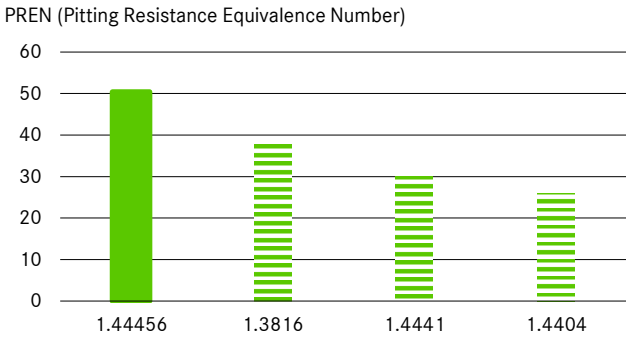
Hot Working

Temperature: 1,240 – 1,030 °C
Cooling: Water
Higher forming forces are necessary compared to conventional austenites.

Cold Working

During processing the Ergste® 1.4456CA tends to embrittlement and thereby causing short cracks. It has to be ensured that the material doesn't experience heating while being deformed.

Comparison of the Corrosion Resistance



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Last revision: July 2020