

# Ergste® 1.4112YL Datasheet

## Medical Alloys



Zapp is Certified to ISO 9001



### Material Ergste® 1.4112YL

Ergste® 1.4112YL 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.

### 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)

### Polishability

Ergste® 1.4112YL is high gloss polishable.

### Weldability

Ergste® 1.4112YL is usually not welded.

### Magnetism

Ergste® 1.4112YL is magnetizable.

### Corrosion Resistance

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

### 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

### Hot Working

Forging at 1,100 - 800 °C.

### Wear Resistance

Ergste® 1.4112YL shows high wear resistance.

### Product Conditions\*

Bars, drawn, straightened, ground, polished	Tensile [MPa]	700 - 900
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\* Other conditions on request

### Physical Properties

Modulus of Elasticity E at 20 °C [GPa]	215
Specific Gravity ρ [kg/dm³]	7.7
Thermal Conductivity λ bei 20 °C [W/m*K]	15.9
Coefficient of Thermal Expansion α [10 <sup>-6</sup> *K <sup>-1</sup> ]	
20 - 100 °C	10.3
20 - 200 °C	10.8
20 - 300 °C	11.2
20 - 400 °C	11.6
Specific Heat c at 20 °C [kJ/kg*°C]	430
Electric Resistivity ρ at 20 °C [Ω*mm²/m]	0.80

## Heat Treatment

### Soft Annealing

Temperature: 780 – 840 °C  
Slow cooling in furnace.

### Stress Relief Annealing

Temperature: 650 °C  
After heating, hold in neutral atmosphere for  
1 - 2 hours.  
Slow cooling in furnace.

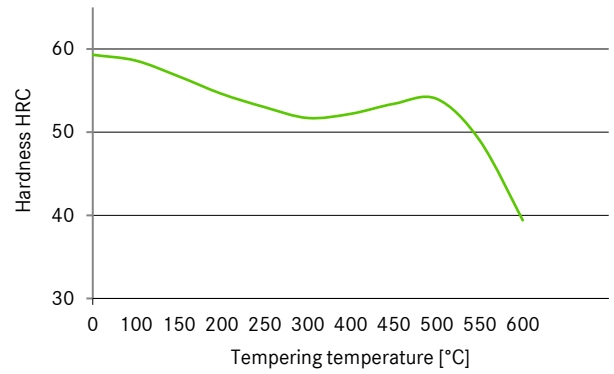
### Hardening

Temperature: 1,025 – 1,075 °C  
Holding time: 0.5 h  
Cooling: Oil

### Tempering

Temperature: 100 – 150 °C  
Tempering should follow right after hardening.

## 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](mailto:medicalalloys@zapp.com)  
[www.zapp.com](http://www.zapp.com)

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