

# Ergste® 1.4112YL Datasheet US

## 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 2012 – 1472 °F.

### Wear Resistance

Ergste® 1.4112YL shows high wear resistance.

### Product Conditions\*

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

## 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.

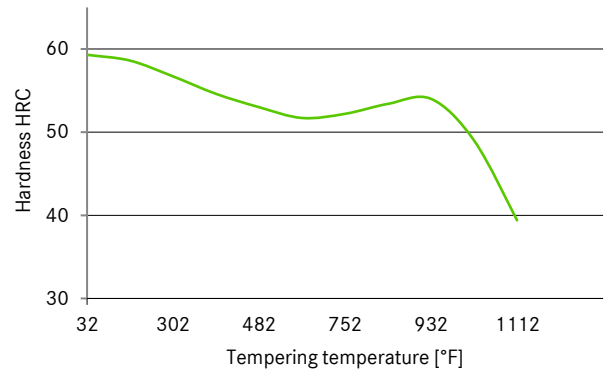
### Hardening

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

### Tempering

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

## Tempering Chart



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