Material Ergste® 9.9035

Ergste® 9.9035 is a vacuum melted nickel-cobalt-alloy with a high content of chromium and molybdenum. Therefore, an excellent ratio between high strength, ductility and outstanding corrosion resistance is achieved. The capability of precipitation depends to a great extent on the contributed distortion.

Typical Fields of Application
- Dental applications
- Vascular intervention

Weldability

Ergste® 9.9035 is well weldable (e.g. laser welding).

Magnetism

Ergste® 9.9035 is not magnetizable.

Corrosion Resistance

Ergste® 9.9035 is highly resistant to pitting and crevice corrosion, regardless of strength level. The corrosion resistance against sulfidation, high temperature oxidation and hydrogen embrittlement is excellent.

Polishability

Ergste® 9.9035 is polishable.

Corresponding Standards

ASTM F562, DIN ISO 5832-6

Mechanical Properties

<table>
<thead>
<tr>
<th>Condition</th>
<th>Rm [ksi]</th>
<th>Rp0.2 [ksi]</th>
<th>As [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solution annealed</td>
<td>Min. 116</td>
<td>Min. 43.5</td>
<td>Min. 40</td>
</tr>
<tr>
<td>Cold-worked medium hard</td>
<td>Min. 145</td>
<td>Min. 94</td>
<td>Min. 20</td>
</tr>
<tr>
<td>Cold-worked hard</td>
<td>Min. 174</td>
<td>Min. 145</td>
<td>Min. 10</td>
</tr>
<tr>
<td>Cold worked hard and aged</td>
<td>Min. 260</td>
<td>Min. 230</td>
<td>Min. 8</td>
</tr>
</tbody>
</table>

Physical Properties

- Young’s Modulus E at 68 °F [ksi]: 33,939
- Density ρ [lb/in³]: 0.303
- Thermal Conductivity λ at 68°F [Btu in/hr ft² °F]: 78
- Coefficient of Thermal Expansion α [µin/in °F]: 7.22
- Specific Heat c at 68°F [Btu/lb °F]: 119
- Specific Electrical Resistance ρ at 68°F [Ω circular-mil/ft]: 620

Heat Treatment

Solution annealing
Temperature: 1,922 ± 25 °F
Holding time: 1 to 2 h
Cooling: air, water

Machinability

Machining after heat treatment is difficult.

Hot Working

Forging at 2,138 – 1,598 °F

Typical Chemical Analysis (Mass-%)

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>Si</th>
<th>Mn</th>
<th>P</th>
<th>S</th>
<th>Cr</th>
<th>Ni</th>
<th>Mo</th>
<th>Fe</th>
<th>Ti</th>
<th>Co</th>
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<tbody>
<tr>
<td>Min.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>19.0</td>
<td>33.0</td>
<td>9.0</td>
<td>-</td>
<td>-</td>
<td>Bal.</td>
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<tr>
<td>Max.</td>
<td>0.025</td>
<td>0.15</td>
<td>0.15</td>
<td>0.015</td>
<td>0.010</td>
<td>21.0</td>
<td>37.00</td>
<td>10.50</td>
<td>1.00</td>
<td>1.00</td>
<td></td>
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</tbody>
</table>
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