



Max %

**PHYSICAL PROPERTIES**

Property		Value			
Density: kg/dm <sup>3</sup>		7,90			
Hardness: HB30		<=223			
magnetizable		non			
Temperature T °C/F (°C/F)	Specific heat J / kgK (Btu / lb °F)	Thermal conductivity W/mK (Btu·in / ft <sup>2</sup> ·h·°F)	Electric resistance μΩ · cm (Ω circ mill / ft)	Modulus of elasticity kN/mm <sup>2</sup> (10 <sup>3</sup> ksi)	Expansion rate from 70°F bis T 10 <sup>-6</sup> / K (10 <sup>-6</sup> / °F)
20 / 68	0,5 (--)	11,9 (--)			16,1 (--)
200 / 392		15,1 (--)			17,2 (--)
400 / 752		18,3 (--)			18,1 (--)
500 / 932		19,8 (--)			18,4 (--)
600 / 1112		21,3 (--)			18,8 (--)
800 / 1472		24,3 (--)			19,4 (--)
900 / 1652		25,7 (--)			19,7 (--)
1000 / 1832		27,1 (--)			20 (--)
Temp.	Creep strain limit	Creep strain limit	Creep rupture strength	Creep rupture strength	Creep rupture strength
°C / °F	1% / 1000h	1% 10 000h	1000 h	10 000 h	100 000 h
°C / °F	N/mm <sup>2</sup> / ksi	N/mm <sup>2</sup> / ksi	N/mm <sup>2</sup> / ksi	N/mm <sup>2</sup> / ksi	N/mm <sup>2</sup> / ksi
600 / 1112	105 / 15,2	95 / 13,7	170 / 24,6	130 / 18,8	80 / 11,6
700 / 1292	50 / 7,2	75 / 10,8	90 / 13,0	40 / 5,8	18 / 2,6
800 / 1472	23 / 3,3	10 / 1,4	40 / 5,8	20 / 2,9	7 / 1,0
900 / 1652	10 / 1,4		20 / 2,9	10 71,4	3 / 0,4
1000 / 1832					

ksi value calculated

**MECHANICAL PROPERTIES (20°C / 68°F)**

Elongation Rp0,2 (MPA)	>=230	solution annealing
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<b>tensile strength Rm (MPa)</b>	550-750	solution annealing
<b>Elongation A5 (%)</b>	>=30	solution annealing
<b>Yield strength (Ro,2) (MPa)</b>	>=230	

#### TEMPERATURE INFORMATION

<b>Application area</b>		
<b>Operation temperature</b>	1652 °F to 2048 °F	air: up to 1922°F
<b>Explanation report</b>	scaling resistance (air) up to 1922°F	
<b>Solution heat treatment</b>		
<b>Working temperature</b>	1922 °F to 2102 °F	
<b>Explanation report</b>	fast cooldown in air or water	
<b>quenching</b>		
<b>Working temperature</b>	1922 °F to 2012 °F	
<b>Explanation report</b>	Cooldown: water/air	
<b>Solution heat treatment</b>		
<b>Working temperature</b>	1472 °F to 2102 °F	

#### STANDARDS / INFORMATION

<b>Standards</b>	<b>Description</b>
<a href="#">ASTM A 276</a>	Rods and cross-sections made of stainless and heat-resistant steel
<a href="#">DIN EN 10088-1 (09/2005)</a>	Stainless steels Part 1: List of stainless steels
<a href="#">DIN EN 10095 (05/1999)</a>	heat resistant steel and nickel alloy
SEW 310 (08/1992)	physical properties of steel
SEW 470 (02/1976)	heat-resisting rolled and forged steels

#### PROCESS INFORMATION

<b>Cold forming</b>	good
<b>Welding</b>	
<b>- Type</b>	Laser welding manual arc welding (E) MAG solid wire WIG
<b>- Add. material</b>	1.4842
<b>- Hints</b>	no heat treatment necessary before or after welding process

#### MAIN FIELDS OF APPLICATION

<b>Details of application</b>	-scaling resistance (air) up to 1922°F
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	<p>durable under oxidizing conditions (in sulfuric gases only up to 1202°F)  average corrosion resistance in carbonizing (up to 1652°F) and nitrogenous gases</p>
<b>Certifications</b>	
<b>Environmental technology</b>	waste-to-energy plants
<b>industrial furnace engineering</b>	
<b>petrochemical industry</b>	
<b>Chemical Industry</b>	

#### RANGE OF PRODUCTS

<b>Product type</b>	<b>Product</b>
Processing / Construction	from pipes, fittings, flanges (welded)
Plates / Sheets	plates/sheets plate/sheet cuts
Fittings	welded reductions Welded T-pieces seamless elbows seamless reductions seamless T-pieces Other Fittings a.o. Weldolets, Nipples
Flanges / Collars / Flared tube ends	various flanges (weld neck flange, blind flange etc.)
Bumped boiler ends / caps / round blanks	from sheets
Pipes / Tubes	welded pipes/tubes seamless pipes/tubes
Bar steel	flat steel section steel round bar steel

[Pipe/Tube/Fitting/Flange/Valve/Plate](#)

Stainless Steel/Nickel Alloy/Duplex

