Outokumpu 4948 High Temperature Austenitic Stainless Steel

Category : Metal , Ferrous Metal , Austenitic , Stainless Steel

Material Notes:

Creep-resistant variant of 1.4301, with a standardized minimum carbon content for service at temperatures of up to 800°C in dry air.Applications: Heat and creep resistance. For use over 550°C for equipment and components within: Iron, steel, and non-ferrous industriesEngineering industryEnergy conservation plantsCement industryAvailable in hot rolled plate (Quarto), hot rolled strip/sheet (CPP), cold rolled strip/sheet, bar, and rod forms.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Outokumpu-4948-High-Temperature-Austenitic-Stainless-Steel.php

Physical Properties	Metric	English	Comments
Density	7.93 g/cc	0.286 lb/in³	RT

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	600 MPa	87000 psi	Outokumpu Typical, Hot Rolled Plate (Quarto); EN 10002-1
	300 MPa @Temperature 600 °C	43500 psi @Temperature 1110 °F	EN min.; EN 10002-5
	360 MPa @Temperature 500 °C	52200 psi @Temperature 932 °F	EN min.; EN 10002-5
	375 MPa @Temperature 300 °C	54400 psi @Temperature 572 °F	EN min.; EN 10002-5
	375 MPa @Temperature 400 °C	54400 psi @Temperature 752 °F	EN min.; EN 10002-5
	390 MPa @Temperature 200 °C	56600 psi @Temperature 392 °F	EN min.; EN 10002-5
	440 MPa @Temperature 100 °C	63800 psi @Temperature 212 °F	EN min.; EN 10002-5
Tensile Strength, Yield	290 MPa @Strain 0.200 %	42100 psi @Strain 0.200 %	Outokumpu Typical,Hot Rolled Plate (Quarto); EN 10002-1
	330 MPa @Strain 1.00 %	47900 psi @Strain 1.00 %	Outokumpu Typical,Hot Rolled Plate (Quarto); EN 10002-1
	78.0 MPa @Strain 0.200 %,	11300 psi @Strain 0.200 %,	EN min.; EN 10002-5

Mechanical Properties	Metric	English	Comments
	Temperature 600 °C	Temperature 1110 °F	
	88.0 MPa @Strain 0.200 %, Temperature 500 °C	12800 psi @Strain 0.200 %, Temperature 932 °F	EN min.; EN 10002-5
	98.0 MPa @Strain 0.200 %, Temperature 400 °C	14200 psi @Strain 0.200 %, Temperature 752 °F	EN min.; EN 10002-5
	108 MPa @Strain 0.200 %, Temperature 300 °C	15700 psi @Strain 0.200 %, Temperature 572 °F	EN min.; EN 10002-5
	108 MPa @Strain 1.00 %, Temperature 600 °C	15700 psi @Strain 1.00 %, Temperature 1110 °F	EN min.; EN 10002-5
	118 MPa @Strain 1.00 %, Temperature 500 °C	17100 psi @Strain 1.00 %, Temperature 932 °F	EN min.; EN 10002-5
	127 MPa @Strain 0.200 %, Temperature 200 °C	18400 psi @Strain 0.200 %, Temperature 392 °F	EN min.; EN 10002-5
	127 MPa @Strain 1.00 %, Temperature 400 °C	18400 psi @Strain 1.00 %, Temperature 752 °F	EN min.; EN 10002-5
	137 MPa @Strain 1.00 %, Temperature 300 °C	19900 psi @Strain 1.00 %, Temperature 572 °F	EN min.; EN 10002-5
	157 MPa @Strain 1.00 %, Temperature 200 °C	22800 psi @Strain 1.00 %, Temperature 392 °F	EN min.; EN 10002-5
	157 MPa @Strain 0.200 %, Temperature 100 °C	22800 psi @Strain 0.200 %, Temperature 212 °F	EN min.; EN 10002-5
	191 MPa @Strain 1.00 %, Temperature 100 °C	27700 psi @Strain 1.00 %, Temperature 212 °F	EN min.; EN 10002-5
Elongation at Break	55 %	55 %	Outokumpu Typical, Hot Rolled Plate (Quarto); EN 10002-1
Rupture Strength	34.0 MPa @Temperature 750 °C,	4930 psi @Temperature 1380 °F,	

Mechanical Properties	Metric	English	Comments
	Time 3.60e+7 sec	Time 10000 hour	
	55.0 MPa @Temperature 700 °C, Time 3.60e+7 sec	7980 psi @Temperature 1290 °F, Time 10000 hour	
	87.0 MPa @Temperature 650 °C, Time 3.60e+7 sec	12600 psi @Temperature 1200 °F, Time 10000 hour	
	132 MPa @Temperature 600 °C, Time 3.60e+7 sec	19100 psi @Temperature 1110 °F, Time 10000 hour	
	191 MPa @Temperature 550 °C, Time 3.60e+7 sec	27700 psi @Temperature 1020 °F, Time 10000 hour	
	250 MPa @Temperature 500 °C, Time 3.60e+7 sec	36300 psi @Temperature 932 °F, Time 10000 hour	
Modulus of Elasticity	196 GPa	28400 ksi	RT
	120 GPa @Temperature 1000 °C	17400 ksi @Temperature 1830 °F	
	158 GPa @Temperature 500 °C	22900 ksi @Temperature 932 °F	

Thermal Properties	Metric	English	Comments
CTE, linear	18.4 µm/m-°C @Temperature 500 °C	10.2 µin/in-°F @Temperature 932 °F	
	20.0 µm/m-°C @Temperature 1000 °C	11.1 µin/in-°F @Temperature 1830 °F	
Specific Heat Capacity	0.470 J/g-°C	0.112 BTU/lb-°F	RT
	0.530 J/g-°C @Temperature 500 °C	0.127 BTU/lb-°F @Temperature 932 °F	
Thermal Conductivity	14.3 W/m-K	99.2 BTU-in/hr-ft²-°F	RT
	21.9 W/m-K @Temperature 500 °C	152 BTU-in/hr-ft²-°F @Temperature 932 °F	
	28.8 W/m-K	200 BTU-in/hr-ft²-°F	

Thermal Properties	Metric	English	Comments
	@Temperature 1000 °C	@Temperature 1830 °F	
Maximum Service Temperature, Air	800 °C	1470 °F	Dry Air

Component Elements Properties	Metric	English	Comments
Carbon, C	0.050 %	0.050 %	
Chromium, Cr	18.1 %	18.1 %	
Iron, Fe	73.55 %	73.55 %	
Nickel, Ni	8.3 %	8.3 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000710 ohm-cm	0.0000710 ohm-cm	RT

Processing Properties	Metric	English	Comments
Annealing Temperature	840 - 900 °C	1540 - 1650 °F	Stress Relief Annealing (min. 0.5 h)
	1050 - 1110 °C	1920 - 2030 °F	Solution Annealing

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