Outokumpu 4845 High Temperature Austenitic Stainless Steel

Category : Metal , Ferrous Metal , Austenitic , Stainless Steel

Material Notes:

Standardized high-temperature steel for use at temperatures up to 1100°C in dry air. Prone to embrittlement after exposure between 600-900°C. 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, cold rolled narrow strip, bar, and rod forms.

Order this product through the following link:
http://www.lookpolymers.com/polymer_Outokumpu-4845-High-Temperature-Austenitic-Stainless-Steel.php

Physical Properties	Metric	English	Comments
Density	7.80 g/cc	0.282 lb/in³	RT

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	600 MPa	87000 psi	Outokumpu Typical, Hot Rolled Plate (Quarto); EN 10002-1
	320 MPa @Temperature 600 °C	46400 psi @Temperature 1110 °F	EN min.; EN 10002-5
	370 MPa @Temperature 500 °C	53700 psi @Temperature 932 °F	EN min.; EN 10002-5
	400 MPa @Temperature 400 °C	58000 psi @Temperature 752 °F	EN min.; EN 10002-5
	410 MPa @Temperature 300 °C	59500 psi @Temperature 572 °F	EN min.; EN 10002-5
	430 MPa @Temperature 200 °C	62400 psi @Temperature 392 °F	EN min.; EN 10002-5
	470 MPa @Temperature 100 °C	68200 psi @Temperature 212 °F	EN min.; EN 10002-5
Tensile Strength, Yield	270 MPa @Strain 0.200 %	39200 psi @Strain 0.200 %	Outokumpu Typical,Hot Rolled Plate (Quarto); EN 10002-1
	310 MPa @Strain 1.00 %	45000 psi @Strain 1.00 %	Outokumpu Typical,Hot Rolled Plate (Quarto); EN 10002-1
	82.0 MPa @Strain 0.200 %,	11900 psi @Strain 0.200 %,	EN min.; EN 10002-5

Mechanical Properties	Metric	English	Comments
	Temperature 600 °C	Temperature 1110 °F	
	85.0 MPa @Strain 0.200 %, Temperature 500 °C	12300 psi @Strain 0.200 %, Temperature 932 °F	EN min.; EN 10002-5
	91.0 MPa @Strain 0.200 %, Temperature 400 °C	13200 psi @Strain 0.200 %, Temperature 752 °F	EN min.; EN 10002-5
	100 MPa @Strain 0.200 %, Temperature 300 °C	14500 psi @Strain 0.200 %, Temperature 572 °F	EN min.; EN 10002-5
	114 MPa @Strain 1.00 %, Temperature 600 °C	16500 psi @Strain 1.00 %, Temperature 1110 °F	EN min.; EN 10002-5
	116 MPa @Strain 0.200 %, Temperature 200 °C	16800 psi @Strain 0.200 %, Temperature 392 °F	EN min.; EN 10002-5
	121 MPa @Strain 1.00 %, Temperature 500 °C	17500 psi @Strain 1.00 %, Temperature 932 °F	EN min.; EN 10002-5
	126 MPa @Strain 1.00 %, Temperature 400 °C	18300 psi @Strain 1.00 %, Temperature 752 °F	EN min.; EN 10002-5
	139 MPa @Strain 1.00 %, Temperature 300 °C	20200 psi @Strain 1.00 %, Temperature 572 °F	EN min.; EN 10002-5
	140 MPa @Strain 0.200 %, Temperature 100 °C	20300 psi @Strain 0.200 %, Temperature 212 °F	EN min.; EN 10002-5
	154 MPa @Strain 1.00 %, Temperature 200 °C	22300 psi @Strain 1.00 %, Temperature 392 °F	EN min.; EN 10002-5
	185 MPa @Strain 1.00 %, Temperature 100 °C	26800 psi @Strain 1.00 %, Temperature 212 °F	EN min.; EN 10002-5
Elongation at Break	50 %	50 %	Outokumpu Typical, Hot Rolled Plate (Quarto); EN 10002-1
Rupture Strength	8.50 MPa @Temperature 900 °C,	1230 psi @Temperature 1650 °F,	

Mechanical Properties	Metric	English	Comments
	Time 3.60e+7 sec	Time 10000 hour	
	13.0 MPa @Temperature 850 °C, Time 3.60e+7 sec	1890 psi @Temperature 1560 °F, Time 10000 hour	
	18.0 MPa @Temperature 800 °C, Time 3.60e+7 sec	2610 psi @Temperature 1470 °F, Time 10000 hour	
	26.0 MPa @Temperature 750 °C, Time 3.60e+7 sec	3770 psi @Temperature 1380 °F, Time 10000 hour	
	40.0 MPa @Temperature 700 °C, Time 3.60e+7 sec	5800 psi @Temperature 1290 °F, Time 10000 hour	
	65.0 MPa @Temperature 650 °C, Time 3.60e+7 sec	9430 psi @Temperature 1200 °F, Time 10000 hour	
	130 MPa @Temperature 600 °C, Time 3.60e+7 sec	18900 psi @Temperature 1110 °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	11.9 W/m-K	82.6 BTU-in/hr-ft²-°F	RT

Thermal Properties	Metric	English	Comments
	19.8 W/m-K @Temperature 500 °C	137 BTU-in/hr-ft²-°F @Temperature 932 °F	
	27.1 W/m-K @Temperature 1000 °C	188 BTU-in/hr-ft²-°F @Temperature 1830 °F	
Maximum Service Temperature, Air	1100 °C	2010 °F	Dry Air

Component Elements Properties	Metric	English	Comments
Carbon, C	0.050 %	0.050 %	
Chromium, Cr	25 %	25 %	
Iron, Fe	54.95 %	54.95 %	
Nickel, Ni	20 %	20 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000960 ohm-cm	0.0000960 ohm-cm	RT

Processing Properties	Metric	English	Comments
Annealing Temperature	1040 - 1070 °C	1900 - 1960 °F	Stress Relief Annealing (min. 0.5 h)
	1050 - 1150 °C	1920 - 2100 °F	Solution Annealing

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