

## Outokumpu 4311 Cr-Ni Austenitic Stainless Steel

Category : Metal , Ferrous Metal , Austenitic , Stainless Steel

### Material Notes:

Applications: Wet corrosion resistance and general service. Available 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-4311-Cr-Ni-Austenitic-Stainless-Steel.php](http://www.lookpolymers.com/polymer_Outokumpu-4311-Cr-Ni-Austenitic-Stainless-Steel.php)

Physical Properties	Metric	English	Comments
Density	7.90 g/cc	0.285 lb/in <sup>3</sup>	RT

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	>= 550 MPa	>= 79800 psi	EN 10002-1
	640 MPa	92800 psi	Outokumpu Typical, Hot Rolled Plate (Quarto); EN 10002-1
	410 MPa	59500 psi	EN min.; EN 10002-5
	@Temperature 300 °C	@Temperature 572 °F	
	430 MPa	62400 psi	EN min.; EN 10002-5
	@Temperature 200 °C	@Temperature 392 °F	
	490 MPa	71100 psi	EN min.; EN 10002-5
@Temperature 100 °C	@Temperature 212 °F		
Tensile Strength, Yield	850 MPa	123000 psi	EN min; EN 10002-5
	@Temperature -80.0 °C	@Temperature -112 °F	
	1250 MPa	181000 psi	EN min; EN 10002-5
	@Temperature -196 °C	@Temperature -321 °F	
	270 MPa	39200 psi	EN min.,RT; EN 10002-1
	@Strain 0.200 %	@Strain 0.200 %	
	310 MPa	45000 psi	EN min.,RT; EN 10002-1
@Strain 1.00 %	@Strain 1.00 %		
	320 MPa	46400 psi	Outokumpu Typical,Hot Rolled Plate (Quarto); EN 10002-1
	@Strain 0.200 %	@Strain 0.200 %	
	360 MPa	52200 psi	Outokumpu Typical,Hot Rolled Plate (Quarto); EN 10002-1
	@Strain 1.00 %	@Strain 1.00 %	

Mechanical Properties	119 MPa Metric	17300 psi English	Comments EN min.; EN 10002-5
	@Strain 0.200 %, Temperature 500 °C	@Strain 0.200 %, Temperature 932 °F	
	<b>125 MPa</b>	<b>18100 psi</b>	EN min.; EN 10002-5
	@Strain 0.200 %, Temperature 400 °C	@Strain 0.200 %, Temperature 752 °F	
	<b>136 MPa</b>	<b>19700 psi</b>	EN min.; EN 10002-5
	@Strain 0.200 %, Temperature 300 °C	@Strain 0.200 %, Temperature 572 °F	
	<b>149 MPa</b>	<b>21600 psi</b>	EN min.; EN 10002-5
	@Strain 1.00 %, Temperature 500 °C	@Strain 1.00 %, Temperature 932 °F	
	<b>156 MPa</b>	<b>22600 psi</b>	EN min.; EN 10002-5
	@Strain 1.00 %, Temperature 400 °C	@Strain 1.00 %, Temperature 752 °F	
	<b>157 MPa</b>	<b>22800 psi</b>	EN min.; EN 10002-5
	@Strain 0.200 %, Temperature 200 °C	@Strain 0.200 %, Temperature 392 °F	
	<b>167 MPa</b>	<b>24200 psi</b>	EN min.; EN 10002-5
	@Strain 1.00 %, Temperature 300 °C	@Strain 1.00 %, Temperature 572 °F	
	<b>187 MPa</b>	<b>27100 psi</b>	EN min.; EN 10002-5
	@Strain 1.00 %, Temperature 200 °C	@Strain 1.00 %, Temperature 392 °F	
	<b>205 MPa</b>	<b>29700 psi</b>	EN min.; EN 10002-5
	@Strain 0.200 %, Temperature 100 °C	@Strain 0.200 %, Temperature 212 °F	
	<b>240 MPa</b>	<b>34800 psi</b>	EN min.; EN 10002-5
	@Strain 1.00 %, Temperature 100 °C	@Strain 1.00 %, Temperature 212 °F	
	<b>350 MPa</b>	<b>50800 psi</b>	EN min.; EN 10002-5
	@Strain 0.200 %, Temperature -80.0 °C	@Strain 0.200 %, Temperature -112 °F	
	<b>420 MPa</b>	<b>60900 psi</b>	EN min.; EN 10002-5
	@Strain 1.00 %, Temperature -80.0 °C	@Strain 1.00 %, Temperature -112 °F	
	<b>550 MPa</b>	<b>79800 psi</b>	EN min.; EN 10002-5
	@Strain 0.200 %,	@Strain 0.200 %,	

Mechanical Properties	Temperature -196 °C Metric	Temperature -321 °F English	Comments
	650 MPa	94300 psi	
	@Strain 1.00 %, Temperature -196 °C	@Strain 1.00 %, Temperature -321 °F	EN min.; EN 10002-5
Elongation at Break	>= 40.0 %	>= 40.0 %	EN 10002-1
	55 %	55 %	Outokumpu Typical, Hot Rolled Plate (Quarto); EN 10002-1
	35 %	35 %	EN min
	@Temperature -196 °C	@Temperature -321 °F	
	40 %	40 %	EN min
	@Temperature -80.0 °C	@Temperature -112 °F	
Modulus of Elasticity	200 GPa	29000 ksi	RT
	165 GPa	23900 ksi	
	@Temperature 500 °C	@Temperature 932 °F	
	172 GPa	24900 ksi	
	@Temperature 400 °C	@Temperature 752 °F	
	179 GPa	26000 ksi	
	@Temperature 300 °C	@Temperature 572 °F	
	186 GPa	27000 ksi	
	@Temperature 200 °C	@Temperature 392 °F	
	194 GPa	28100 ksi	
	@Temperature 100 °C	@Temperature 212 °F	
Poissons Ratio	0.30	0.30	RT
Shear Modulus	77.0 GPa	11200 ksi	calculated
Impact Test	>= 60.0 J	>= 44.3 ft-lb	Hot rolled plate/Cold rolled strip/sheet, 10x10mm test pieces; EN 10045-1

Thermal Properties	Metric	English	Comments
CTE, linear	16.0 µm/m-°C	8.89 µin/in-°F	
	@Temperature 100 °C	@Temperature 212 °F	
	16.5 µm/m-°C	9.17 µin/in-°F	
	@Temperature 200 °C	@Temperature 392 °F	

Thermal Properties	Metric	English	Comments
	17.0 $\mu\text{m}/\text{m}\cdot\text{°C}$	9.44 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 300 °C	@Temperature 572 °F	
	17.5 $\mu\text{m}/\text{m}\cdot\text{°C}$	9.72 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 400 °C	@Temperature 752 °F	
	18.0 $\mu\text{m}/\text{m}\cdot\text{°C}$	10.0 $\mu\text{in}/\text{in}\cdot\text{°F}$	
	@Temperature 500 °C	@Temperature 932 °F	
Specific Heat Capacity	0.500 J/g-°C	0.120 BTU/lb-°F	RT
Thermal Conductivity	15.0 W/m-K	104 BTU-in/hr-ft <sup>2</sup> -°F	RT
	20.0 W/m-K	139 BTU-in/hr-ft <sup>2</sup> -°F	
	@Temperature 400 °C	@Temperature 752 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.020 %	0.020 %	
Chromium, Cr	18.5 %	18.5 %	
Iron, Fe	70.84 %	70.84 %	
Nickel, Ni	10.5 %	10.5 %	
Nitrogen, N	0.14 %	0.14 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000730 ohm-cm	0.0000730 ohm-cm	RT

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