

Carpenter Custom Age 625 PLUS® Nickel-Base Alloy, Cold Drawn 37.5% Plus Aging 649°C (1200°F)/4hr/FC to 579°C/4hr/AC

Category : Metal , Nonferrous Metal , Nickel Alloy , Superalloy

Material Notes:

Data provided by Carpenter Technology Corporation. Custom Age 625 PLUS® alloy is a precipitation hardenable, nickel-base alloy which, in many environments, displays corrosion resistance similar to that of Alloy 625 and superior to that of Alloy 718. A yield strength (0.2% offset) above 120 ksi (827 MPa) can be obtained by aging without prior warm or cold working. The precipitation hardening capability is particularly important in applications where large-section size or intricate shape precludes warm working. In the age hardened (high strength) condition, Custom Age 625 PLUS alloy offers exceptional resistance to stress corrosion cracking as well as general, pitting and crevice corrosion. Custom Age 625 PLUS alloy could be considered for applications where severely corrosive environments are a concern, such as those encountered in deep sour gas wells as well as in a variety of refinery and chemical process industry applications. In addition, Custom Age 625 PLUS alloy could be considered a candidate for use in marine environments, where Alloy 625 has been used successfully. The higher strength capability of Custom Age 625 PLUS alloy may be particularly useful for fasteners and shafts. Data provided by Carpenter Technology Corporation. Custom Age 625 PLUS® alloy is a precipitation hardenable, nickel-base alloy which, in many environments, displays corrosion resistance similar to that of Alloy 625 and superior to that of Alloy 718. A yield strength (0.2% offset) above 120 ksi (827 MPa) can be obtained by aging without prior warm or cold working. The precipitation hardening capability is particularly important in applications where large-section size or intricate shape precludes warm working. In the age hardened (high strength) condition, Custom Age 625 PLUS alloy offers exceptional resistance to stress corrosion cracking as well as general, pitting and crevice corrosion. Custom Age 625 PLUS alloy could be considered for applications where severely corrosive environments are a concern, such as those encountered in deep sour gas wells as well as in a variety of refinery and chemical process industry applications. In addition, Custom Age 625 PLUS alloy could be considered a candidate for use in marine environments, where Alloy 625 has been used successfully. The higher strength capability of Custom Age 625 PLUS alloy may be particularly useful for fasteners and shafts. Custom Age 625 PLUS® is a registered trademark of Carpenter Technology Corporation.

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http://www.lookpolymers.com/polymer_Carpenter-Custom-Age-625-PLUS-Nickel-Base-Alloy-Cold-Drawn-375-Plus-Aging-649C-1200F4hrFC-to-579C4hrAC.php

Physical Properties	Metric	English	Comments
Density	8.40 g/cc	0.303 lb/in ³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	1855 MPa	269000 psi	
Tensile Strength, Yield	1806 MPa @Strain 0.200 %	261900 psi @Strain 0.200 %	
Elongation at Break	12 %	12 %	In 4D
Reduction of Area	36 %	36 %	
	207 GPa	30000 ksi	

Modulus of Elasticity Mechanical Properties	Metric @ Temperature 23.0 °C	English @ Temperature 73.4 °F	Comments
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Thermal Properties	Metric	English	Comments
CTE, linear	12.6 µm/m-°C	7.00 µin/in-°F	
	@Temperature 25.0 - 100 °C	@Temperature 77.0 - 212 °F	
	13.4 µm/m-°C	7.44 µin/in-°F	
	@Temperature 25.0 - 300 °C	@Temperature 77.0 - 572 °F	
	14.0 µm/m-°C	7.78 µin/in-°F	
	@Temperature 25.0 - 500 °C	@Temperature 77.0 - 932 °F	
Specific Heat Capacity	0.418 J/g-°C	0.0999 BTU/lb-°F	
Melting Point	1257 - 1356 °C	2295 - 2473 °F	
Solidus	1257 °C	2295 °F	
Liquidus	1356 °C	2473 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	<= 0.35 %	<= 0.35 %	
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	19 - 22 %	19 - 22 %	
Iron, Fe	5.0 %	5.0 %	as remainder
Manganese, Mn	<= 0.20 %	<= 0.20 %	
Molybdenum, Mo	7.0 - 9.5 %	7.0 - 9.5 %	
Nickel, Ni	59 - 63 %	59 - 63 %	
Niobium, Nb (Columbium, Cb)	2.75 - 4.0 %	2.75 - 4.0 %	
Phosphorous, P	<= 0.015 %	<= 0.015 %	
Silicon, Si	<= 0.20 %	<= 0.20 %	
Sulfur, S	<= 0.010 %	<= 0.010 %	
Titanium, Ti	1.0 - 1.6 %	1.0 - 1.6 %	

Electrical Properties	Metric	English	Comments
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Electrical Properties	Metric ¹ 299 ohm-cm	English ¹ 299 ohm-cm	Comments
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Contact Songhan Plastic Technology Co.,Ltd.

Website : www.lookpolymers.com
Email : sales@lookpolymers.com
Tel : +86 021-51131842
Mobile : +86 13061808058
Skype : lookpolymers
Address : United North Road 215,Fengxian District, Shanghai City,China