

ATI Allegheny Ludlum Stainless Steel JS700® Alloy (UNS N08700)

Category : Metal , Ferrous Metal , Stainless Steel

Material Notes:

Allegheny Ludlum's Corrosion resistant engineering alloy, JS700®, is a high-alloy, fully austenitic, superaustenitic stainless steel. This alloy is a proven problem-solver in many applications where corrosive conditions are too severe for standard grades of stainless steel. It has also provided a cost-effective alternative to more expensive nickel-base and titanium-base alloys. JS700 stainless steel is more highly alloyed than standard stainless steels. The high molybdenum content is particularly important to the corrosion resistant properties. It enhances development of the passive film responsible for the corrosion resistance of stainless, and makes the alloy more noble so that corrosion resistance is improved even under conditions which tend to destroy passivity. The chromium content of the JS700 is essential to corrosion resistance. Since chromium contributes to sigma formation, the 20% level was chosen as a satisfactory compromise. The high nickel content not only minimizes sigma, but also contributes markedly to corrosion resistance. The effects of higher nickel are believed to relate more to corrosion propagation than to initiation. The combination of the three major alloying elements gives JS700 stainless steel a high degree of resistance to stress corrosion cracking. No field service failures from stress corrosion cracking in JS700 Alloy have been reported to date. Information provided by Allegheny Ludlum Corporation.

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http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Stainless-Steel-JS700-Alloy-UNS-N08700.php

Physical Properties	Metric	English	Comments
Density	7.95 g/cc	0.287 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	<= 212	<= 212	
Tensile Strength, Ultimate	>= 552 MPa	>= 80100 psi	
Tensile Strength, Yield	>= 241 MPa @Strain 0.200 %	>= 35000 psi @Strain 0.200 %	
Elongation at Break	>= 30 %	>= 30 %	in 2" (50 mm)
Reduction of Area	>= 40 %	>= 40 %	

Thermal Properties	Metric	English	Comments
CTE, linear	16.4 µm/m-°C @Temperature 0.000 - 100 °C	9.11 µin/in-°F @Temperature 32.0 - 212 °F	
Thermal Conductivity	14.7 W/m-K	102 BTU-in/hr-ft ² -°F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.040 %	<= 0.040 %	

Component Elements Properties	Metric	English	Comments
Chromium, Cr	10 - 23 %	10 - 23 %	
Copper, Cu	<= 0.50 %	<= 0.50 %	
Iron, Fe	49 %	49 %	as balance
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Molybdenum, Mo	4.3 - 5.0 %	4.3 - 5.0 %	
Nickel, Ni	24 - 26 %	24 - 26 %	
Niobium, Nb (Columbium, Cb)	<= 0.40 %	<= 0.40 %	
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	

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