

## ATI Allegheny Ludlum Stainless Steel AL 410S™ (UNS S41008)

Category : Metal , Ferrous Metal , Stainless Steel , T 400 Series Stainless Steel

### Material Notes:

Allegheny Ludlum AL 410S™ stainless steel is a low-carbon modification of Type 410 stainless steel. Low carbon and optionally a small addition of titanium and /or columbium minimize austenite formation at high temperatures, thereby restricting the alloy's ability to harden. The material remains soft and ductile even when the material is rapidly cooled from above the critical temperature. This low hardening characteristic helps to prevent cracking when the steel is welded or exposed to high temperature. The alloy is completely ferritic in the annealed condition. Typical applications include tower packing, distillation trays, automotive exhaust components, and other high-temperature applications. Information provided by Allegheny Ludlum Corporation.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_ATI-Allegheny-Ludlum-Stainless-Steel-AL-410S-UNS-S41008.php](http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-Stainless-Steel-AL-410S-UNS-S41008.php)

Physical Properties	Metric	English	Comments
Density	7.73 g/cc	0.279 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	75	75	Typical
	<= 89	<= 89	75 is typical. Maximum per ASTM A240 is 89.
Tensile Strength, Ultimate	>= 415 MPa	>= 60200 psi	Minimum
	444 MPa	64400 psi	Typical
Tensile Strength, Yield	290 MPa	42100 psi	290 MPa is typical, Minimum per ASTM A240 is 205 MPa.
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	>= 22 %	>= 22 %	Minimum
	33 %	33 %	Typical
Modulus of Elasticity	200 GPa	29000 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	10.8 µm/m-°C	6.00 µin/in-°F	
	@Temperature 0.000 - 100 °C	@Temperature 32.0 - 212 °F	
	11.5 µm/m-°C	6.39 µin/in-°F	
	@Temperature 0.000 - 315 °C	@Temperature 32.0 - 599 °F	
	12.2 µm/m-°C	6.78 µin/in-°F	

Thermal Properties	Metric	English	Comments
	@ Temperature 0.000 - 538 °C	@ Temperature 32.0 - 1000 °F	
	13.5 µm/m-°C	7.50 µin/in-°F	
	@Temperature 0.000 - 649 °C	@Temperature 32.0 - 1200 °F	
Specific Heat Capacity	0.460 J/g-°C	0.110 BTU/lb-°F	
Thermal Conductivity	26.9 W/m-K	187 BTU-in/hr-ft <sup>2</sup> -°F	
Melting Point	1480 - 1530 °C	2700 - 2790 °F	
Solidus	1480 °C	2700 °F	
Liquidus	1530 °C	2790 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.080 %	<= 0.080 %	
Chromium, Cr	11.5 - 13.5 %	11.5 - 13.5 %	
Iron, Fe	87 %	87 %	as balance
Manganese, Mn	<= 1.0 %	<= 1.0 %	
Nickel, Ni	<= 0.60 %	<= 0.60 %	
Phosphorous, P	<= 0.040 %	<= 0.040 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000600 ohm-cm	0.0000600 ohm-cm	

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