

ATI Allegheny Ludlum AL 304DA Stainless/Carbon Steel Three-Ply Composite

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

Material Notes:

Composition above represents only the Type 304 cladding. Its iron content calculated as balance. Allegheny Ludlum AL 304DA is tri-ply composite consisting of a dual stabilized, low carbon steel center "sandwiched" between Type 304 stainless steel. The top and bottom stainless steel surfaces (cladding), each representing approximately 20% of the product thickness, are bonded to the carbon steel core during hot rolling, thereby providing a metallurgical bond which remains sound during subsequent cold forming operations. This composite product provides the excellent corrosion resistance of AL 304 stainless steel along with the good heat transfer characteristics of carbon steel. Carbon from the core does not migrate into the stainless steel cladding during hot processing and thereby enhances formability by eliminating the possibility of "hook cracks" caused by carbide precipitation at the stainless/carbon steel interface. The major use of AL 304DA material is in conventional cookware because of its corrosion resistance safety in food contact, attractive appearance, ease of cleaning, oxidation resistance, ease of fabrication, good heat distribution characteristics, and durability. AL 304DA may also be used as induction heating cookware. Information provided by Allegheny Ludlum Corporation.

Order this product through the following link:

http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-AL-304DA-StainlessCarbon-Steel-Three-Ply-Composite.php

Physical Properties	Metric	English	Comments
Density	7.86 g/cc	0.284 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell B	76	76	
Tensile Strength, Ultimate	500 MPa	72500 psi	
Tensile Strength, Yield	260 MPa	37700 psi	
Elongation at Break	46 %	46 %	
Modulus of Elasticity	200 GPa	29000 ksi	

Thermal Properties	Metric	English	Comments
CTE, linear	15.72 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	8.733 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	
	@Temperature 20.0 - 500 $^\circ\text{C}$	@Temperature 68.0 - 932 $^\circ\text{F}$	
Specific Heat Capacity	0.490 J/g- $^\circ\text{C}$	0.117 BTU/lb- $^\circ\text{F}$	
	@Temperature 100 $^\circ\text{C}$	@Temperature 212 $^\circ\text{F}$	
Thermal Conductivity	33.0 W/m-K	229 BTU-in/hr-ft ² - $^\circ\text{F}$	
	@Temperature 500 $^\circ\text{C}$	@Temperature 932 $^\circ\text{F}$	
	36.0 W/m-K	250 BTU-in/hr-ft ² - $^\circ\text{F}$	

Thermal Properties	Metric @ Temperature 100 °C	English @ Temperature 212 °F	Comments
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Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.080 %	<= 0.080 %	
Chromium, Cr	18 - 20 %	18 - 20 %	
Iron, Fe	71 %	71 %	
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Nickel, Ni	8.0 - 10.5 %	8.0 - 10.5 %	
Nitrogen, N	<= 0.10 %	<= 0.10 %	
Phosphorous, P	<= 0.045 %	<= 0.045 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000256 ohm-cm	0.0000256 ohm-cm	

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