

## ATI Allegheny Ludlum AL 2003™ Duplex Stainless Steel

Category : Metal , Ferrous Metal , Duplex , Stainless Steel , T S30000 Series Stainless Steel

### Material Notes:

Characteristics: superior stress corrosion cracking resistance to Types 316 and 317, yield strength double that of conventional austenitic stainless steel, good corrosion resistance, good chloride stress corrosion cracking resistance. Applications: Desalination Bridge Decking Oil and Gas Home Appliances Heat Exchangers Pressure Vessels Pulp and Paper Tanks Architectural Structures Water Heaters Power Generation Reinforcing Bar Chemical Processing Information provided by Allegheny Ludlum

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[http://www.lookpolymers.com/polymer\\_ATI-Allegheny-Ludlum-AL-2003-Duplex-Stainless-Steel.php](http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-AL-2003-Duplex-Stainless-Steel.php)

Physical Properties	Metric	English	Comments
Density	7.723 g/cc	0.2790 lb/in <sup>3</sup>	

Mechanical Properties	Metric	English	Comments
Hardness, Rockwell C	20	20	
Tensile Strength, Ultimate	725 MPa	105000 psi	
	745 MPa	108000 psi	0% cold reduction
	917 MPa	133000 psi	9.4% cold reduction
	1165 MPa	169000 psi	27.6% cold reduction
	1620 MPa	235000 psi	67.3% cold reduction
Tensile Strength, Yield	586 MPa	85000 psi	
	@Temperature 260 °C	@Temperature 500 °F	
	600 MPa	87000 psi	
	@Temperature 204 °C	@Temperature 399 °F	
	607 MPa	88000 psi	
@Temperature 149 °C	@Temperature 300 °F		
Tensile Strength, Yield	655 MPa	95000 psi	
	@Temperature 93.0 °C	@Temperature 199 °F	
	545 MPa	79000 psi	0% cold reduction
	827 MPa	120000 psi	9.4% cold reduction
	1020 MPa	148000 psi	27.6% cold reduction
	1476 MPa	214100 psi	67.3% cold reduction

Mechanical Properties	Metric <sup>MPa</sup>	English <sup>psi</sup>	Comments
	@Temperature 260 °C	@Temperature 500 °F	
	<b>386 MPa</b>	<b>56000 psi</b>	
	@Temperature 204 °C	@Temperature 399 °F	
	<b>427 MPa</b>	<b>61900 psi</b>	
	@Temperature 149 °C	@Temperature 300 °F	
	<b>455 MPa</b>	<b>66000 psi</b>	
	@Temperature 93.0 °C	@Temperature 199 °F	
	<b>515 MPa</b>	<b>74700 psi</b>	
	@Strain 0.200 %	@Strain 0.200 %	
<b>Elongation at Break</b>	<b>1.0 %</b>	<b>1.0 %</b>	<b>67.3% cold reduction</b>
	<b>10 %</b>	<b>10 %</b>	<b>27.6% cold reduction</b>
	<b>15 %</b>	<b>15 %</b>	<b>9.4% cold reduction</b>
	<b>34 %</b>	<b>34 %</b>	<b>0% cold reduction</b>
	<b>40 %</b>	<b>40 %</b>	<b>in 2"</b>
	<b>22 %</b>	<b>22 %</b>	
	@Temperature 260 °C	@Temperature 500 °F	
	<b>26 %</b>	<b>26 %</b>	
	@Temperature 204 °C	@Temperature 399 °F	
	<b>27 %</b>	<b>27 %</b>	
	@Temperature 149 °C	@Temperature 300 °F	
	<b>32 %</b>	<b>32 %</b>	
	@Temperature 93.0 °C	@Temperature 199 °F	
<b>Modulus of Elasticity</b>	<b>190 GPa</b>	<b>27600 ksi</b>	

Thermal Properties	Metric	English	Comments
<b>CTE, linear</b>	<b>13.0 μm/m-°C</b>	<b>7.22 μin/in-°F</b>	
	@Temperature 23.0 - 100 °C	@Temperature 73.4 - 212 °F	
<b>Specific Heat Capacity</b>	<b>0.510 J/g-°C</b>	<b>0.122 BTU/lb-°F</b>	
	@Temperature 23.0 - 100 °C	@Temperature 73.4 - 212 °F	

Thermal Properties	Metric /m-K	English Btu-in/hr-ft <sup>2</sup> -°F	Comments
Thermal Conductivity	@Temperature 23.0 - 100 °C	@Temperature 73.4 - 212 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.030 %	<= 0.030 %	
Chromium, Cr	19.5 - 22.5 %	19.5 - 22.5 %	
Iron, Fe	>= 68.22 %	>= 68.22 %	As Remainder
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Molybdenum, Mo	1.5 - 2.0 %	1.5 - 2.0 %	
Nickel, Ni	3.0 - 4.0 %	3.0 - 4.0 %	
Nitrogen, N	0.14 - 0.20 %	0.14 - 0.20 %	
Phosphorous, P	<= 0.030 %	<= 0.030 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.020 %	<= 0.020 %	

## Contact Songhan Plastic Technology Co.,Ltd.

Website : [www.lookpolymers.com](http://www.lookpolymers.com)

Email : [sales@lookpolymers.com](mailto:sales@lookpolymers.com)

Tel : +86 021-51131842

Mobile : +86 13061808058

Skype : lookpolymers

Address : United North Road 215,Fengxian District, Shanghai City,China