

ATI Allegheny Ludlum K12® Dual Hardness Steel

Category : Metal , Ferrous Metal , Carbon Steel

Material Notes:

This is a roll bonded, dual hardness armor plate consisting of a high hardness front side to break up or flatten incoming projectiles while the back side functions to capture the projectile. The composition of both faces is a Ni-Mo-Cr steel, but the front side has a higher carbon content, which leads to a higher hardness after heat treatment. The front and back sides are roll bonded by a multi-step, proprietary process which involves heating the assembly to a specific temperature and hot rolling it until the two sides develop a strong, metallurgical bond. The roll-bonded plates are annealed, sheared, and flattened. A careful and precise heat treatment is required to achieve optimum ballistics performance. Information provided by Allegheny Ludlum.

Order this product through the following link:

http://www.lookpolymers.com/polymer_ATI-Allegheny-Ludlum-K12-Dual-Hardness-Steel.php

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

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	233 - 286	233 - 286	Annealed; Soft Side
	293	293	Annealed; Hard Side
Hardness, Rockwell C	48 - 54	48 - 54	Heat Treated; Soft Side
	58 - 64	58 - 64	Heat Treated; Hard Side
Tensile Strength, Ultimate	1020 MPa	148000 psi	Average Annealed
Tensile Strength, Yield	896 MPa	130000 psi	
	@Strain 0.200 %	@Strain 0.200 %	
Elongation at Break	14.5 %	14.5 %	Average Annealed
Compressive Yield Strength	1610 MPa	234000 psi	0.2%; Average Transverse Hardened
	1640 MPa	238000 psi	0.2%; Average Longitudinal Hardened
Charpy Impact	16.3 - 17.6 J	12.0 - 13.0 ft-lb	0.009" V-Notch in soft side; struck on hard side; Heat Treated
Charpy Impact, Unnotched	209 J	154 ft-lb	Heat Treated

Thermal Properties	Metric	English	Comments
CTE, linear	11.5 µm/m-°C	6.39 µin/in-°F	
	@Temperature 21.0 - 93.0 °C	@Temperature 69.8 - 199 °F	

Thermal Properties	0.481 J/g-°C Metric	0.115 BTU/lb-°F English	Comments
Specific Heat Capacity	@Temperature 21.0 - 93.0 °C	@Temperature 69.8 - 199 °F	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000260 ohm-cm	0.0000260 ohm-cm	
	@Temperature 0.000 °C	@Temperature 32.0 °F	
	0.0000310 ohm-cm	0.0000310 ohm-cm	
	@Temperature 100 °C	@Temperature 212 °F	

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