

EVRAZ North America produces a wide range of steel armor plate specifications for the defense and security industries. End uses include heavy, medium, and light military vehicles, add-on armor kits, VIP armored cars, personnel protection, and security structures.

SPECIFICATION

Armalloy 500HH complies with MIL-DTL-46100E and a variety of other military and commercial specifications.

DIMENSIONS AND TOLERANCES (other dimensions available upon request)

T	0.1575" to 2.000"	4.0mm to 50.8mm
W	48" to 102"	1220mm to 2590mm
L	96" to 480"	2.4m to 12m

1/2 ASTM A6/A6M thickness & flatness tolerances. All other tolerances per ASTM A6/A6M unless otherwise agreed.

CHEMICAL COMPOSITION (heat analysis - % maximum)

Thickness (in.)	Thickness (mm)	C	Mn	P	S	Si	Ni	Cr	Mo	B	CE*
0.1575 - 1.350	4.0 - 34.3	0.32	1.00	0.02	0.005	1.0	1.5	1.5	0.50	0.003	0.68
1.351 - 2.000	34.3 - 50.8	0.32	1.00	0.02	0.005	1.0	2.0	1.6	0.50	0.003	0.80

*Carbon Equivalence (CE) = C + Mn/6 + (Cr + Mo + V)/5 + (Cu + Ni)/15

Delivery condition: Water quenched and tempered

MECHANICAL PROPERTIES (typical values)

Hardness	Yield	Tensile	Elongation	Toughness (CVN)	
				Transverse -40°	Longitudinal -40°
477 to 534 BHN	190 Ksi 1,310 MPa	240 Ksi 1,655 MPa	10% min. in 2" (50mm)	20 ft-lbs 27 Joules	24 ft-lbs 33 Joules

BALLISTIC TESTING: As agreed per customer order

MATERIAL TEST REPORT: Chemical composition, BHN hardness, toughness (CVN) testing per heat lot

EDGE CONDITION: Mill edge or cut edge as agreed

SURFACE CONDITION: Per ASTM A6/A6M Shot-blast and primer coating available upon request

HEAT TREATMENT: May not be heated above 400°F (225°C) during fabrication or the certified hardness cannot be maintained

FABRICATION

COLD-FORMING: Due to the high hardness, EVRAZ recommends cold bending to be limited to:

Direction	Radius	Die Opening
Transverse to Rolling (Easy)	6 T	12 T
Longitudinal to Rolling (Hard)	8 T	16 T

FLAME CUTTING: Standard thermal cutting (oxy-fuel, plasma, laser, water jet) can be used. Plasma cutting under water can be used to 1.00" (25.4mm thickness). Preheating is recommended – refer to welding section below. The HAZ hardness will be softened by elevated heat input. The HAZ softening can be eliminated by using abrasive water jet cutting.

WELDING: Armalloy 500HH is commonly welded using standard industry welding techniques. The potential for cracking increases with plate thickness; therefore it is recommended to preheat based on material thickness per the table below:

Recommended Preheat Temperatures					
Thickness	0.1575"	0.50"	1.00"	1.50"	2.00"
	4mm	13mm	25mm	35mm	50mm
	70°F/22°C	200°F/100°C	250°F/125°C	300°F/150°C	

When ambient temperature is below 50°F (10°C), the recommended preheat should be increased by 70°F (22°C). Please contact our sales service department for additional information on welding.



ARMALLOY 500HH Armor Plate

MIL-DTL-46100E

BALLISTIC PROPERTIES ARMALLOY 500HH

Specifications	Ammunition	Velocity (ft/s)	Velocity (m/s)	Min Thick (in.)	Min Thick (mm)
NIJ					
3	7.62 x 51 M80	2750 +/- 49	838 +/- 15	0.250	6.35
4	30.06 M2, AP	2850 +/- 49	869 +/- 15	0.500	12.7
STANAG					
	5.56 x 45 M193	3073 +/- 66	937 +/- 20		
1	7.62 M80	2733 +/- 66	833 +/- 20	0.357	9.00
	5.56 x 45 SS109/M855	2953 +/- 66	900 +/- 20		
2	7.62 x 39 API BZ	2280 +/- 66	695 +/- 20	0.472	12.0
EN					
FB4	7.62 x 39 M43	2362 +/- 32	720 +/- 10	0.157	4.00
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.236	6.00
FB5	5.56 x 45 SS109/M855	3116 +/- 32	965 +/- 10	0.250	6.35
FB6	7.62 M80	2722 +/- 32	830 +/- 10	0.250	6.35
FB7	7.62 x 51 P80 AP	2690 +/- 32	820 +/- 10	0.551	14.0

*Additional ballistic properties not listed above are available upon request

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