



MIL-DTL-46100E

MIL-DTL-46100E is a military-specified, high hardness armor steel. It is approved for use within the U. S. Department of the Army and is available for use by all departments and agencies of the U.S. Department of Defense. Typically, this grade of armor steel is utilized in protection against land mines or explosive structures, especially as it relates to vehicle armor. The surface hardness of this material is a minimum of 477 BHN.

Dimensions*		
T	W	L
0.1575" – 2.000" 4.0mm – 50.8mm	48" – 480" 1,219mm – 2,591mm	96" – 480" 2.4M – 12M

Dimensional Tolerances: ½ ASTM A6 Thickness & Flatness tolerances. Additional tolerances per ASTM A6 – unless otherwise specified.

Chemical Composition** – % Weight								
Thickness	C	Mn	P	S	Si	Ni	Cr	Mo
0.1575" – 1.350"	.32	1.00	.02	.005	.6	.60	.70	.30
1.351" – 2.000"	.32	1.00	.02	.005	.6	1.55	1.60	.30

Physical Properties – Typical Values at 68°F					
BHN Hardness	Tensile Strength	Yield Strength	Elongation in 2"	LCVN – 40°	TCVN – 40°
477 – 534	190 ksi	240 ksi	10%	24 ft. lbs. 33 Joules	20 ft. lbs. 27 Joules

*Additional dimensions are available upon request

**Typical maximum values. Chemical composition may vary by thickness. Mill certifications are available upon request.



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		Ballistic Properties			
		Ammunition	Velocity (ft/s)	Min Thick (in)	Min Thick (mm)
NIJ	3	7.62 x 51 M80	2750 +/- 49	0.250"	6.35
	4	30.06 M2,AP	2850 +/- 49	0.500"	12.7
STANAG	1	5.56 x 45 M193	3073 +/- 66	0.357"	9.00
		7.62 M80	2733 +/- 66	0.357"	9.00
		5.56 x 45 SS109/M855	2953 +/- 66	0.357"	9.00
	2	7.62 x 39 API BZ	2280 +/- 66	0.472"	12.0
EN	FB4	7.62 x 39 M43	2362 +/- 32	0.157"	4.00
	FB5	5.56 x 45 SS109/M855	3116 +/- 32	0.236"	6.00
		5.56 x 45 SS109/M855	3116 +/- 32	0.250"	6.00
	FB6	7.62 M80	2722 +/- 32	0.250"	6.35
	FB7	7.62 x 51 P80 AP	2690 +/- 32	0.551"	14.0

* Additional ballistic properties not listed above are available upon request.

FORMING

Due to its high hardness, we recommend cold bending according to the following:

th = thickness	Transverse to Rolling	Longitudinal to Rolling
Radius	6 x th	8 x th
Die Opening	12 x th	16 x th

CUTTING

All classic thermal cutting processes are compatible with MIL-DTL-46100E (oxy-fuel, plasma, laser, water jet). Plasma cutting under water may be used to 1.00" (25.4mm thickness). Preheating is recommended. The HAZ hardness will be softened by elevated heat input. The HAZ softening can be eliminated by using abrasive water jet cutting.

WELDING

Any conventional welding method may be used. As the plate thickness increases, the potential for cracking also becomes greater. Therefore, preheating according to the material thickness listed below is recommended:

Recommended Preheat Temperatures				
Combined Thickness	0.00" – 0.50"	0.50" – 1.00"	1.00" – 1.50"	1.50" – 2.00"
MIL-DTL-46100E	70°F	200°F	250°F	300°F

When ambient temperature is below 50°F, the recommended preheat should be increased by 70°F.

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