AEROSPACE
MATERIAL SPECIFICATIONS

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc. 485 Lexington Ave., New York 17, N.Y.

AMS 6386

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Revised

STEEL SHEET AND PLATE
Low Alloy, Heat Treated
100,000 psi Yield Strength

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.

2. FORM: Sheet and plate.

3. APPLICATION: Primarily for large structural applications requiring a good combination of strength, formability, and weldability without subsequent heat treatment.

4. COMPOSITION:

Carbon	0.10 - 0.20
Phosphorous	0.035 max
Sulphur	0.040 max

4.1 Other alloying elements shall be added in amounts and controlled ranges as reported by supplier.

4.2 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2259, paragraph titled "Low Alloy Steel"; variation for boron shall be 0.0004 under min and 0.001 over maximum.

5. CONDITION: Hardened, tempered, descaled, and oiled, unless otherwise specified.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties:

Nominal Thickness Inches	Tensile Strength psi		Yield Strength at 0.2% Offset or at Extension Indicated (E = 30,000,000)		Elongation % in 2 in.
	min	max	psi, min	Extension Under Load in. in 2 in.	min
Under 0.230	115,000	135,000	100,000	0.0107	12
0.230 to 2.5, incl	115,000	135,000	100,000	0.0107	18

6.1.1 Tensile properties apply to specimens taken with axes both perpendicular and parallel to the direction of rolling.

6.2 Hardness: Shall be Brinell 235 - 277 or equivalent.

6.3 Bending: Material shall withstand, without cracking, bending at room temperature through the angle indicated below around a diameter equal to the bend factor times the material, with axes of bends both perpendicular and parallel to the direction of rolling.

Nominal Thickness Inch	Type of Bend	Angle deg, min	Bend Factor
1.0 and under	Free	180	2
Over 1.0 to 2.5, incl	Free	180	3

6.4 Impact: The average results of 3 Charpy "V" impact tests conducted at -65 F shall meet either the absorbed energy or the lateral expansion requirements indicated below:

Nominal Material Thickness Inch	Absorbed Energy min	Lateral Expansion min
Under 0.125	No requirement	No requirement
0.125 to 0.40, incl	3.5 ft-lb per 0.10 in. of specimen thickness	2.5%
Over 0.40	14 ft-lb	2%

6.4.1 Impact specimens shall be prepared in accordance with Type A of ASTM E23-56T except that the thickness of specimens from sheet and plate 0.394 in. and under in thickness shall be approximately the thickness of the material (all surfaces may be lightly machined); all specimens shall have notches located perpendicular to the original rolled surfaces. Specimens shall be cut with their long dimensions parallel to the direction of final rolling of the sheet or plate. Specimen preparation shall include reheating to the final tempering temperature used in producing the material and cooling at the rate of approximately 1 deg per min. to 600 F or lower.

6.4.2 Lateral expansion shall be determined by measuring the increase in width of the surface contacted by the striking edge of the pendulum.

7. QUALITY: The product shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to fabrication or to performance of parts.

8. TOLERANCES: Unless otherwise specified, tolerances, except for flatness, shall conform to all applicable requirements of the latest issue of AMS 2252.

8.1 Flatness: Plate shall not deviate from flat by more than 3/8 in. in any 5 ft of width or length. Unless otherwise agreed upon by purchaser and vendor, sheets shall not deviate from flat by more than 3/4 in. in any 3 feet.

9. REPORTS:

9.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report of the results of tests for chemical composition of each heat in the shipment and the results of tests on each size from each heat to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, heat number, tempering temperature, material specification number, thickness, size, and quantity from each heat.