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

AMS 4053

Issued 6-30-64
Revised

ALUMINUM ALLOY PLATE
1.0Mg - 0.60Si - 0.25Cu - 0.25Cr (6061-T651)
Stress-Relief Stretched

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

2. APPLICATION: Primarily for machined parts subject to excessive warpage during machining due to residual stresses, and for parts where strength and limited formability are required.

3. COMPOSITION:

	min	max
Magnesium	0.8	1.2
Silicon	0.40	0.8
Copper	0.15	0.40
Chromium	0.15	0.35
Iron	--	0.7
Zinc	--	0.25
Manganese	--	0.15
Titanium	--	0.15
Other Impurities, each	--	0.05
Other Impurities, total	--	0.15
Aluminum	remainder	

4. CONDITION: Solution heat treated, stress-relieved by stretching, and precipitation heat treated.

4.1 Material shall be stretched in the solution heat treated condition to produce a nominal permanent set of 2%, but not less than 1-1/2% nor more than 3%.

4.2 Material shall receive no further straightening operations after stretching.

5. TECHNICAL REQUIREMENTS: When ASTM methods are specified for determining conformance to the following requirements, tests shall be conducted in accordance with the issue of the ASTM method listed in the latest issue of AMS 2350.

5.1 Tensile Properties: Test specimens shall conform to ASTM E8 and shall be taken across the direction of rolling from widths 9 in. and over and parallel to the direction of rolling from widths less than 9 inches. Sheet type specimens shall be used for material less than 0.500 in. thick and 0.750 in. and over in width. Round specimens shall be used for material 0.500 in. and over in thickness and 0.750 in. and over in width. Material under 0.750 in. wide and under 0.500 in. thick may be tested in either full section or by use of round specimens; for such sizes, elongation requirements apply only when round specimens are used.

Nominal Thickness Inches	Tensile Strength psi, min	Yield Strength at 0.2% Offset or at Extension Indicated (E = 9,900,000) psi, min	Extension Under Load in. in 2 in.	Elongation % in 2 in. or 4D, min
0.250 to 0.499, incl	42,000	35,000	0.0111	10
Over 0.499 to 1.000, incl	42,000	35,000	0.0111	9
Over 1.000 to 2.000, incl	42,000	35,000	0.0111	8
Over 2.000 to 4.000, incl	42,000	35,000	0.0111	6
Over 4.000 to 5.000, incl	40,000	35,000	0.0111	6

5.1.1 When a dispute occurs between purchaser and vendor over the yield strength value, yield strength determined by the offset method shall apply.

5.1.2 Tensile properties of plate thicker than 5.000 in. shall be as agreed upon by purchaser and vendor.

5.2 Bending: Material 0.500 in. and under in thickness shall be capable of withstanding, without cracking, bending at room temperature through an angle of 180 deg around a diameter equal to 7 times the nominal thickness of the material, with axis of bend parallel to direction of rolling.

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

7. TOLERANCES: Unless otherwise specified, tolerances shall conform to all applicable requirements of the latest issue of AMS 2202.

8. REPORTS:

8.1 Unless otherwise specified, the vendor of the product shall furnish with each shipment three copies of a report stating that the product conforms to the chemical composition and technical requirements of this specification. This report shall include the purchase order number, material specification number, thickness, size, and quantity.