AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
29 West 39th Street
New York City

AMS4041B

Issued 11-1-41
Revised 4-1-46

ALUMINUM ALLOY SHEET, ALUMINUM COVERED
Copper Magnesium Manganese (ALC 24S-T)

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

2. COMPOSITION: (a) The composition of the core and cladding materials shall conform to the following requirements:

Aluminum Alloy Core		Aluminum Cladding	
Copper	3.8 - 4.9	Iron + Silicon	0.70 max
Magnesium	1.2 - 1.8	Copper	0.10 max
Manganese	0.3 - 0.9	Zinc	0.10 max
Iron	0.50 max	Manganese	0.05 max
Silicon	0.50 max	Aluminum (by difference)	99.30 min
Chromium	0.25 max		
Zinc	0.10 max		
Other Impurities, each	0.05 max		
Other Impurities, total	0.15 max		
Aluminum	remainder		

(b) When the analysis is made on a sample milled from the material representative of the entire cross section of the sheet, the percentage of the various elements as determined by analysis, except aluminum, shall be increased by 1% for thicknesses up to 0.064 and 5% for thicknesses 0.064 and up, and these figures shall be taken as the composition of the base metal.

3. CLADDING THICKNESS: (a) Prior to Rolling.- Aluminum plates which are bonded to the alloy ingot or slab preparatory to rolling to the specified thickness of the sheet shall have a thickness of not less than 5% of the total composite thickness for sheet having a finished thickness less than 0.064 inch and not less than 2.5% for sheet having a finished thickness of 0.064 inch and greater.

(b) Finished Product.- After rolling the average cladding thickness shall be not less than 80% of the values specified above.

4. CONDITION: (a) Solution heat treated, conforming to the following physical properties. Test specimens shall conform to ASTM E-8, except from sheet less then 3/4 inch wide, and shall be cut across the direction of rolling except from sheet less than 9 inches wide. Elongation requirements apply only to sheet 3/4 inch and over in width.

Thickness Inch	Tensile Strength psi min		Yield Strength (0.2% Offset) or at Extension Indicated psi min		Extension Under Load inch in 2 in min.		Elongation % in 2 in. min		Bend Factor	
	Flat Sheet	Coiled Sheet	Flat Sheet	Coiled Sheet	Flat Sheet	Coiled Sheet	Flat Sheet	Coiled Sheet	Flat Sheet	Coiled Sheet
0.012-0.020	59,000	56,000	39,000	37,000	0.0114	0.0110	10	11	4	4
0.021-0.040	59,000	56,000	39,000	37,000	0.0114	0.0110	12	14	4	4
0.041-0.063	59,000	56,000	39,000	37,000	0.0114	0.0110	13	15	5	5
0.064	62,000	60,000	40,000	38,000	0.0116	0.0112	13	13	5	5
0.065-0.128	62,000	------	40,000	------	0.0116	------	13	--	5	-
0.129-0.249	62,000	------	40,000	------	0.0116	------	11	--	8	-

(b) Sheet shall withstand, without cracking, bending at room temperature through an angle of 180° around a diameter equal to the bend factor shown above times the nominal thickness of the sheet, with axis of bend parallel to direction of rolling.

5. QUALITY: (a) Sheet shall be uniform in quality and condition, clean, sound, and free from foreign material and from internal and external defects detrimental to fabrication or to the appearance and performance of parts. Sheet revealing defects during fabrication shall be subject to rejection.

(b) Sheet and parts made therefrom shall be subjected to inspection by any method which will reveal defects.

6. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest revision of AMS 2202, as applicable. Thickness tolerances shall conform to Table II.

7. REPORTS: (a) Unless otherwise specified, the vendor of sheet shall furnish three copies of a notarized report stating that the sheet meets all the requirements of this specification. This report shall include the purchase order number, material specification number, size and quantity.

(b) Unless otherwise specified, the vendor of finished or semi-finished parts shall furnish with each shipment three copies of a notarized report showing the purchase order number, material specification number, contractor or other direct supplier of sheet, part number, and quantity. When sheet for making parts is produced or purchased by the parts vendor, the vendor shall inspect each lot of sheet to determine conformance to the requirements of this specification, and shall include in the above report a certification that the sheet conforms, or shall include copies of the laboratory report showing the results of tests to determine conformance.

8. IDENTIFICATION: (a) Unless otherwise specified, each flat sheet shall be marked with the manufacturer's identification, and, in addition, the alloy name or number or AMS 4041, the thickness in inches, and the temper. The characters shall be not less than 3/8 inch in height and shall be applied in rows of constantly recurring symbols from edge of the sheet to the opposite edge with the rows spaced such that no piece larger than 8 inches square could be cut from the sheet without bearing the alloy identification, or AMS 4041, and the temper. The manufacturer's identification and the thickness of the piece shall appear in rows not more than 20 inches apart. The characters shall be clearly legible and applied to the material by suitable means and suitable marking fluid and shall not be obliterated by normal handling.