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

AMS 5510H

Issued 12-4-39
Revised 6-30-62

STEEL SHEET, STRIP, AND PLATE, CORROSION AND HEAT RESISTANT 18Cr - 10Ni - Ti (SAE 30321)

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

2. APPLICATION: Primarily for parts and assemblies requiring both corrosion and heat resistance, especially where such parts and assemblies require welding during fabrication. Parts and assemblies requiring oxidation resistance up to approximately 1500 F (815 C) but useful at this temperature only when stresses are low.

3. COMPOSITION:

Carbon	0.08 max
Manganese	2.00 max
Silicon	0.40 - 1.00
Phosphorus	0.040 max
Sulfur	0.030 max
Chromium	17.00 - 19.00
Nickel	9.00 - 12.00
Titanium	6xC - 0.70
Molybdenum	0.50 max
Copper	0.50 max

3.1 Check Analysis: Composition variations shall meet the requirements of the latest issue of AMS 2248.

4. CONDITION:

4.1 Sheet: Cold rolled, solution heat treated, and descaled (No. 2D Finish).

4.2 Strip: Cold rolled, solution heat treated, and descaled (No. 1 Strip Finish).

4.3 Plate: Hot rolled, solution heat treated, and descaled.

5. TECHNICAL REQUIREMENTS:

5.1 Tensile Properties:

Nominal Thickness Inch	Tensile Strength psi, max	Elongation % in 2 in., min
Over 0.002 to 0.003, incl	110,000	20
Over 0.003 to 0.004, incl	105,000	30
Over 0.004	100,000	40

5.1.1 For widths 9 in. and over, tensile test specimens shall be taken with the axis perpendicular to the direction of rolling. For widths less than 9 in., tensile test specimens shall be taken with the axis parallel to the direction of rolling.

5.2 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 nominal thickness of the material, with axis of bend parallel to the direction of rolling.

Nominal Thickness Inch	Type of Bend	Angle deg, min	Bend Factor
0.249 and under	Free Bend	180	1
0.249 and under	V-Block	135	1
Over 0.249 to 0.749, incl	Free Bend	90	1
Over 0.249 to 0.749, incl	V-Block	135	2

5.3 Embrittlement: Material shall be capable of meeting the following test:

5.3.1 Test specimens, after being heated at 1200 F ± 10 (648.9 C ± 5.6) for 2 hr and air cooled, shall withstand immersion for 48 hr in a boiling aqueous solution containing 100 g of $CuSO_4.5H_2O$ and 100 ml of H_2SO_4 (sp gr 1.84) per liter of solution under a reflux condenser, without evidence of intercrystalline surface attack. After such immersion, specimens from material 0.749 in. and under in thickness shall withstand bending as in 5.2.

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 2242; for thickness of plate Table III shall apply and for flatness of sheet Table VI shall apply.

8. REPORTS:

8.1 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 thickness from each heat to determine conformance to the tensile and bending requirements of this specification. This report shall include the purchase order number, heat number, material specification number, thickness, size, and quantity from each heat.

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