

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 5521B

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STEEL SHEET AND STRIP, CORROSION AND HEAT RESISTANT 25Cr - 20Ni (SAE 30310) (Deep Drawing and Spinning)

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.
2. FORM: Sheet, strip, and plate.
3. APPLICATION: Primarily for parts and assemblies requiring both corrosion and heat resistance, especially where such parts may require welding during fabrication. Parts and assemblies requiring oxidation resistance up to approximately 2000 F, but useful at the higher temperatures only when stresses are very low. Strength at elevated temperatures is similar to that of the 18-8 types.

4. COMPOSITION:

Check Analysis Under Min or Over Max

Carbon	0.08 max	--	0.01
Manganese	2.00 max	--	0.04
Silicon	0.75 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	24.00 - 26.00	0.25	0.25
Nickel	19.00 - 22.00	0.20	0.20
Molybdenum	0.50 max	--	0.03
Copper	0.50 max	--	0.03

5. CONDITION:

- 5.1 Sheet: Cold rolled, solution heat treated free from continuous carbide network, and descaled (No. 2D Finish).
- 5.2 Strip: Cold rolled, solution heat treated free from continuous carbide network, and descaled (No. 1 Strip Finish).
- 5.3 Plate: Hot rolled, solution heat treated free from continuous carbide network, and descaled.

6. TECHNICAL REQUIREMENTS:

6.1 Tensile Properties:

Tensile Strength, psi	100,000 max
Elongation, % in 2 in.	40 min

- 6.1.1 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.

Section 7C of the SAE Technical Board rules provides that: "All technical reports including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

- 6.2 Hardness: Shall be not higher than Rockwell B 90 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 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

7. QUALITY: Material shall be uniform in quality and condition, clean, sound, and free from foreign materials and from internal and external defects detrimental to fabrication or to performance of parts.
8. TOLERANCES: Unless otherwise specified, tolerances shall conform to the latest issue of AMS 2242 as applicable.
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 thickness from each heat to determine conformance to the technical requirements of this specification. This report shall include the purchase order number, heat number, material specification number, thickness, size, and quantity from each heat.
- 9.2 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.
10. IDENTIFICATION: Unless otherwise specified, each plate, sheet, and strip shall be marked, in the respective location indicated below, with AMS 5521B, manufacturer's identification, heat number, and nominal thickness in inches. The characters shall be not less than 3/8 in. in height, shall be applied using a suitable marking fluid, and shall be capable of being removed in hot alkaline cleaning solution without rubbing. The markings shall have no deleterious effect on the material or its performance. The characters shall be sufficiently stable to withstand ordinary handling.
- 10.1 Plate, Flat Sheet, and Flat Strip Over 6 in. in Width: Shall be marked in lengthwise rows of characters recurring at intervals not greater than 2 ft, the rows being spaced not more than 3 in. apart and alternately staggered.