

AEROSPACE MATERIAL SPECIFICATION



AMS-S-18729A

Issued DEC 1998
Cancelled JAN 2002

Superseding AMS-S-18729

Steel Plate, Sheet, and Strip, Alloy 4130 Aircraft Quality

CANCELLATION NOTICE

This specification has been declared "CANCELLED" by the Aerospace Materials Division, SAE, as of January 2002 and has been superseded by the following:

For condition "A" use AMS 6351. The requirements of the latest issue of AMS 6351 shall apply when AMS-S-18729 condition "A" is specified.

For condition "MA" use AMS 6350. The requirements of the latest issue of AMS 6350 shall apply when AMS-S-18729 condition "MA" is specified.

For condition "N" use AMS 6345. The requirements of the latest issue of AMS 6345 shall apply when AMS-S-18729 condition is specified.

By this action, this document will remain listed in the Numerical Section of the Index of Aerospace Material Specifications, noting that it has been superseded.

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This document has been taken directly from U.S. Military Specification MIL-S-18729C, Amendment 1 and contains only minor editorial and format changes required to bring it into conformance with the publishing requirements of SAE technical standards. The initial release of this document is intended to replace MIL-S-18729C, Amendment 1. Any part numbers established by the original specification remain unchanged.

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Under Department of Defense policies and procedures, any qualification requirements and associated qualified products lists are mandatory for DOD contracts. Any requirement relating to qualified products lists (QPL's) has not been adopted by SAE and is not part of this SAE technical document.

1. SCOPE:

1.1 Scope:

This specification covers chrome-molybdenum alloy 4130, steel sheet, strip, and plate of thickness to and including 1.50 inches.

1.2 Classification:

Materials shall be furnished in the following conditions, as specified (see 6.2):

Physical condition:

- (A) Annealed
- (MA) Modified annealed
- (N) Normalized or otherwise heat treated by the producer

2. APPLICABLE DOCUMENTS:

The following publications, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AMS 2252	Tolerances, Alloy Steel Sheet, Strip, and Plate
AMS 2259	Chemical Check Analysis Limits, Wrought Low Alloy and Carbon Steel
AMS 2301	Aircraft Quality Steel Cleanliness, Magnetic Particle Inspection Procedure
AMS 2640	Magnetic Particle Inspection

2.2 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

FED-STD-48	Tolerances for Steel and Iron Wrought Products
FED-STD-151	Metals; Test Methods
FED-STD-183	Continuous Identification Marking of Iron and Steel Products
MIL-STD-163	Steel Mill Products, Preparation for Shipment and Storage

3. REQUIREMENTS:

3.1 Quality:

The steel shall be of aircraft quality, suitable for the fabrication, by appropriate commercial procedures, of reliable parts which may be inspected by magnetic particle inspection methods conforming to AMS 2640, with frequency/severity ratings in accordance with AMS 2301 not greater than 0.80/0.67.

3.2 Data:

Data shall be supplied as required (see 6.2).

3.3 Chemical composition:

The chemical composition shall be as specified in table I.

3.4 Transverse mechanical properties:

Transverse mechanical properties shall be as specified in table II.

3.5 Transverse bending requirements, materials under 0.749 inch and less in thickness:

Materials shall withstand bending without cracking, at room temperature with the axis of bending transverse to the direction of rolling, through an angle as indicated in table III. Condition A material shall be bent around a diameter equal to the thickness of the sample; and condition N and MA materials, around a diameter equal to three times the thickness of the material.

TABLE I. Chemical composition

Element	Analysis (percent)	Tolerances ^{1/} (percent)
Carbon	0.28 - 0.33	±0.02
Manganese	.40 - 0.60	± .03
Phosphorus	.025 max	+ .005
Sulfur	.025 max	+ .005
Silicon	.20 - 0.35	± .02
Chromium	.80 - 1.10	± .05
Molybdenum	.15 - 0.25	± .02
Nickel	.25 max	+ .03

3.6 Grain size:

The austenitic grain size of the steel shall be predominantly No. 5 or finer, with grains as large as No. 3 permissible.