SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

SAE AMS-S-7952A

Issued DEC 1998
Cancelled SEP 2002

Superseding AMS-S-7952

Steel, Sheet and Strip, Uncoated, Carbon (1020 and 1025) (Aircraft Quality)

CANCELLATION NOTICE

This specification has been declared “CANCELLED” by the Aerospace Materials Division, SAE, as of September 2002, and has been superseded by the AMS 5046. The requirements of AMS 5046, Carbon Steel Sheet, Strip, and Plate, (SAE 1020 and 1025), Annealed, shall apply when AMS-S-7952 is specified.

By this action, this document will remain listed in the Index of Aerospace Material Specifications noting that it has been cancelled. Cancelled specifications are available from SAE.

TO PLACE A DOCUMENT ORDER:
Tel: 877-606-7323 (inside USA and Canada)
Tel: 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: custsvc@sae.org
SAE WEB ADDRESS: http://www.sae.org

This document has been taken directly from U.S. Military Specification MIL-S-7952A, Amendment 1, Notice 2 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-7952A, Amendment 1, Notice 2. Any part numbers established by the original specification remain unchanged.

The original Military Specification was adopted as an SAE standard under the provisions of the SAE Technical Standards Board (TSB) Rules and Regulations (TSB 001) pertaining to accelerated adoption of government specifications and standards. TSB rules provide for (a) the publication of portions of unrevised government specifications and standards without consensus voting at the SAE Committee level, and (b) the use of the existing government specification or standard format.

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 This specification covers low-carbon steel, sheet or strip, of aircraft quality.

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 U.S. Government Publications:

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

MIL-L-7870	Lubricating Oil, General Purpose, Low Temperature
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
AND10355	Tolerances - Carbon Steel Sheet and Strip

3. REQUIREMENTS:

3.1 Manufacturing process:

The steel shall be manufactured by the open-hearth, basic-oxygen, or electric-furnace process. Sheet and strip shall be annealed, and finished by cold rolling. Sufficient discard shall be taken from each ingot to insure freedom from injurious piping and undue segregation.

3.2 Chemical composition:

The chemical composition shall conform to the acceptable limits specified in table I.

3.2.1 If the composition, 1020 or 1025, is not specified, either composition may be furnished at the option of the manufacturer.

TABLE I. Chemical composition

Elements	Analysis percent by weight		Check analysis tolerance (percent) 1/
	1020	1025	
Carbon	0.18 - 0.25	0.22 - 0.30	+0.03, -0.04
Manganese	0.30 - 0.60	0.30 - 0.60	±0.03
Phosphorus	0.040 max.	0.040 max.	+0.01
Sulfur	0.050 max.	0.050 max.	+0.01

1/ The average of the determinations shall be within the limits specified under the "analysis" column. Individual determinations may vary to the extent indicated in the "check analysis tolerance" column, except that several determinations of a single element in any one heat shall not vary both above and below the specified range.

3.3 Physical properties:

The physical properties shall be as specified in table II.

TABLE II. Physical properties

Tensile strength (min)	Yield strength at 0.2 percent offset		Elongation in 2 inches (min)
	(min)	Extension under load	
psi	psi	inch in 2 inches	percent
55,000	36,000	0.0065	22 1/

1/ For each 2,000 pounds per square inch in excess of 55,000 pounds per square inch tensile strength, a reduction in elongation of 1 percent to a minimum of 10 percent will be allowed.

3.4 Bending:

Test specimens shall withstand bending at room temperature through an angle of 180 degrees around a diameter equal to the thickness of the specimen, without cracking on the outside of the bent portion.

3.5 Tolerances:

The permissible variation in dimensions shall be as specified in Standard AND10355.

3.6 Product identification:

The marking of sheet and strip steel shall be in accordance with FED-STD-183 and shall include nominal thickness. A suitable marking fluid which is not soluble in water or lubricating oil conforming to Specification MIL-L-7870 shall be used. The markings produced shall not rub off or be smeared by contact incident to normal handling during shipment and storage.

3.7 Workmanship:

All sheet or strip shall be clean, smooth, free from seams, laminations, blisters, appreciable scale, or other defects, and shall have a good finish.

3.7.1 The grain size shall be fine and uniform in all parts of the sheet or strip. The sheet or strip shall not be decarburized to such an extent that the specified physical properties are affected.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for inspection:

Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of tests:

All the tests required herein are classified as quality conformance tests, for which necessary sampling techniques and methods of testing are specified.

4.3 Sampling plans:

4.3.1 Sampling for chemical analysis: Sampling for chemical analysis shall be in accordance with Method 111 or 112 of FED-STD-151.

4.3.1.1 Waiver: Samples for check chemical analysis may be waived at the discretion of the inspector, provided that all of the material under inspection can be identified as being made from a heat previously analyzed and found to conform to the chemical composition specified in 3.2.

4.3.2 Sampling for tensile test: Sampling for tensile strength shall be in accordance with Method 211 of FED-STD-151, using type F1 or F2 specimens. Test specimens shall be prepared with the longitudinal axis transverse to the direction of rolling, when the width of the material permits.