SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS5082 | REV. G

Issued 1944-11
Revised 2007-08
Reaffirmed 2012-04

Superseding AMS5082F

Steel Tubing, Seamless
0.31 - 0.38C (SAE 1035)
Stress Relieved

(Composition similar to UNS G10350)

RATIONALE

AMS5082G has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE

1.1 Purpose

This specification covers a carbon steel in the form of seamless tubing.

1.2 Application

This tubing has been used typically for parts requiring moderate strength, but usage is not limited to such applications.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms a part of this specification to the extent specified herein. The supplier may work to a subsequent revision of a document unless a specific document issue is specified. When the referenced document has been cancelled and no superseding document has been specified, the last published issue of that document shall apply.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

AMS 2253	Tolerances, Carbon and Alloy Steel Tubing
AMS 2259	Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2370	Quality Assurance Sampling and Testing, Carbon and Low-Alloy Steel Wrought Products and Forging Stock
AMS 2807	Identification, Carbon and Low-Alloy Steels, Corrosion and Heat-Resistant Steels and Alloys, Sheet, Strip, Plate, and Aircraft Tubing

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/AMS5082G

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM E 8	Tension Testing of Metallic Materials
ASTM E 350	Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM E 350 by spectrochemical methods, or by other analytical methods acceptable to purchaser.

TABLE 1 - COMPOSITION

Element	min	max
Carbon	0.31	0.38
Manganese	0.60	0.90
Silicon	0.10	0.30
Phosphorus	--	0.040
Sulfur	--	0.050

3.1.1 Check Analysis

Composition variations shall meet the applicable requirements of AMS 2259.

3.2 Condition

Cold drawn and stress relieved.

3.3 Properties

Tubing shall conform to the following requirements; tensile testing shall be performed in accordance with ASTM E 8.

3.3.1 Tensile Properties

Except as specified in 3.3.1.1, tubing 1.500 inches (38.10 mm) and under in nominal OD with wall thickness of 0.125 inch (3.18 mm) and under shall have properties as shown in Table 2.

TABLE 2A - MINIMUM TENSILE PROPERTIES, INCH/POUND UNITS

Property		Value
Tensile Strength		90 ksi
Yield strength at 0.2% Offset		70 ksi
Elongation in 2 inches or 4D		
Nominal OD Inches	Wall Thickness Inch	
Up to 0.500, incl	Up to 0.035, incl	8%
Over 0.500 to 1.500, incl	Over 0.035 to 0.125, incl	10%

TABLE 2B - MINIMUM TENSILE PROPERTIES, SI UNITS

Property		Value
Tensile Strength		621 MPa
Yield strength at 0.2% Offset		483 MPa
Elongation in 50.8 mm or 4D		
Nominal OD Millimeters	Wall Thickness Millimeters	
Up to 12.70, incl	Up to 0.89, incl	8%
Over 12.70 to 38.10, incl	Over 0.89 to 3.18 incl	10%

3.3.1.1 When specified, tubing shall be supplied conforming to the tensile properties shown in Table 3.

TABLE 3 - MINIMUM TENSILE PROPERTIES, IF SPECIFIED

Property	Value
Tensile Strength	105 ksi (724 MPa)
Yield strength at 0.2% Offset	85 ksi (586 MPa)
Elongation in 50.8 mm or 4D	8%

3.4 Quality

Tubing, as received by purchaser, shall be uniform in quality and condition and shall have a finish conforming to the best practice for high quality aircraft tubing. It shall be smooth and free from heavy scale or oxide, burrs, seams, tears, grooves, laminations, slivers, pits, and other imperfections detrimental to usage of the tubing. Surface imperfections such as handling marks, straightening marks, light mandrel and die marks, shallow pits, and scale pattern will not be considered injurious if the imperfections are removable within the tolerances specified for wall thickness, but removal of such imperfections is not required.

3.5 Tolerances

Shall conform to AMS 2253.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of the tubing shall supply all samples for vendor's tests and shall be responsible for the performance of all required tests. Purchaser reserves the right to sample and perform any confirmatory testing deemed necessary to ensure that the tubing conforms to specified requirements.

4.2 Classification of Tests

All technical requirements of this specification are acceptance tests and shall be performed on each heat or lot as applicable.

4.3 Sampling and Testing

Shall be in accordance with AMS 2370.

4.4 Reports

The vendor of tubing shall furnish with each shipment a report showing the results of tests for composition of each heat and for tensile properties of each lot, and stating that the product conforms to the other technical requirements. This report shall include the purchase order number, heat and lot numbers, AMS 5082G, size, and quantity.