SAE Aerospace
An SAE International Group

AEROSPACE MATERIAL SPECIFICATION

AMS 4180F

Issued MAY 1948
Revised SEP 2006

Superseding AMS 4180E

Aluminum Wire
99.0Al Minimum (1100-H18)

(Composition similar to UNS A91100)

RATIONALE

AMS 4180F is a Five Year Review and update of this specification.

1. SCOPE

1.1 Form

This specification covers an aluminum alloy in the form of wire.

1.2 Application

This wire has been used typically for metal spraying, 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 2355	Quality Assurance Sampling and Testing, Aluminum and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
AS 1990	Aluminum Alloy Tempers

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 B 660	Packaging/Packing of Aluminum and Magnesium Products

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**

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS 2355.

TABLE 1 - COMPOSITION

Element	min	max
Aluminum	99.0	--
Copper	0.05	0.20
Iron plus Silicon	--	0.95
Zinc	--	0.10
Manganese	--	0.05
Beryllium	--	0.0008 (8 ppm)
Other Elements, each	--	0.05
Other Elements, total	--	0.15

3.2 Condition

Drawn, full hard (H18) temper (See AS 1990).

3.3 Properties

The wire shall conform to the following requirements; tensile strength shall be determined in accordance with AMS 2355.

3.3.1 Tensile Strength

Shall be not lower than 22.0 ksi (152 MPa).

3.3.2 Recoil

Wire shall not recoil of its own volition during use.

3.4 Quality

Wire, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the wire.

3.5 Sizes

Wire shall be 0.091 inch (2.31 mm) in diameter, unless otherwise specified. Other sizes commonly used for metal spraying are 0.125 inch (3.18 mm) and 0.1875 inch (4.762 mm) in diameter.

3.6 Tolerances

Diameter tolerances for all sizes of wire shall be plus 0.0005 inch (0.013 mm) and minus 0.0025 inch (0.064 mm).

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection

The vendor of the wire 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 to perform any confirmatory testing deemed necessary to ensure that the wire conforms to specified requirements.

4.2 Classification of Tests

Acceptance tests: Composition (3.1), tensile properties (3.3.1), tolerances (3.6) are acceptance tests, and except for composition, shall be performed on each lot.

4.3 Sampling and Testing

Shall be in accordance with AMS 2355.

4.4 Reports

The vendor of the wire shall furnish with each shipment a report stating that the wire conforms to the composition and showing the results of tests tensile strength of each lot. This report shall include the purchase order number, lot number, AMS 4180F, size, and quantity. The report shall also identify the producer, the product form, and the size of the mill product.

4.5 Resampling and Retesting

Shall be in accordance with AMS 2355.

5. PREPARATION FOR DELIVERY

5.1 Identification

Individual coils or reels shall have attached a durable tag or label legibly marked with not less than the purchase order number, AMS 4180F, lot number, manufacturer's identification, size, and quantity.

5.2 Packaging

5.2.1 Wire shall be supplied in coils having an inside diameter of 16 to 22 inches (406 to 559 mm) and weighing 20 to 30 pounds (9 to 14 kg), except that 10% of the coils may be lighter or heavier but shall be within the range 15 to 35 pounds (7 to 16 kg). The finish end of coils shall be marked and kept clear, when bound, so that the entire coil may be unreeled without tangling. Coils shall be closely wrapped in waterproof paper.

5.2.2 Wire shall be prepared for shipment in accordance with ASTM B 660 and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the wire to ensure carrier acceptance and safe delivery.

6. ACKNOWLEDGMENT

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

7. REJECTIONS

Wire not conforming to this specification, or to modifications authorized by purchaser, will be subject to rejection.

8. NOTES

8.1 A change bar (l) located in the left margin is for the convenience of the user in locating areas where technical revisions, not editorial changes, have been made to the previous issue of this specification. An (R) symbol to the left of the document title indicates a complete revision of the specification, including technical revisions. Change bars and (R) are not used in original publications, nor in specifications that contain editorial changes only.

8.2 Terms used in AMS are clarified in ARP1917.

8.3 Dimensions and properties in inch/pound units and the Fahrenheit temperatures are primary; dimensions and properties in SI units and the Celsius temperatures are shown as the approximate equivalents of the primary units and are presented only for information.