

AEROSPACE MATERIAL SPECIFICATION



AMS 4180E

Issued MAY 1948
Revised OCT 1993
Reaffirmed JUL 2000

Superseding AMS 4180D

Aluminum Wire 99.0Al Minimum (1100-H18)

UNS A91100

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 following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order.

2.1 SAE Publications:

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

AMS 2355 Quality Assurance Sampling and Testing, Aluminum and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings

MAM 2355 Quality Assurance Sampling and Testing, Aluminum and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings, Metric (SI) Units

2.2 ASTM Publications:

Available from ASTM, 1916 Race Street, Philadelphia, PA 19103-1187.

ASTM B 660 Packaging/Packing of Aluminum and Magnesium Products

SAE Technical Standards Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

SAE reviews each technical report at least every five years at which time it may be reaffirmed, revised, or cancelled. SAE invites your written comments and suggestions.

Copyright 2000 Society of Automotive Engineers, Inc.
All rights reserved.

Printed in U.S.A.

QUESTIONS REGARDING THIS DOCUMENT:
TO PLACE A DOCUMENT ORDER:
SAE WEB ADDRESS:

(724) 772-7161
(724) 776-4970
<http://www.sae.org>

FAX: (724) 776-0243
FAX: (724) 776-0790

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the percentages by weight shown in Table 1, determined in accordance with AMS 2355 or MAM 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 Impurities, each | -- | 0.05 |
| Other Impurities, total | -- | 0.15 |

3.2 Condition:

Drawn, full hard (-H18) temper.

3.3 Properties:

The wire shall conform to the following requirements; tensile strength shall be determined in accordance with AMS 2355 or MAM 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 +0.0005 inch (0.013 mm) and -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 performing all required tests. Purchaser reserves the right to sample and to perform any confirmatory testing deemed necessary to ensure that the wire conforms to the requirements to this specification.

4.2 Classification of Tests:

Tests for all technical requirements are acceptance tests and shall be performed on each lot.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2355 or MAM 2355.

4.4 Reports:

The vendor of the wire shall furnish with each shipment a report stating that the wire conforms to the chemical composition and showing the results of tests tensile strength of each lot. This report shall include the purchase order number, lot number, AMS 4180E, size, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2355 or MAM 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 4180E, 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 commercial practice 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.
- 5.2.3 For direct U.S. Military procurement, packaging shall be in accordance with ASTM B 660, Commercial Level, unless Level A is specified in the request for procurement.

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 (I) 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 Dimensions and properties in inch/pound units are primary; dimensions and properties in SI units are shown as the approximate equivalents of the primary units and are presented only for information.
- 8.3 For direct U.S. Military procurement, purchase documents should specify not less than the following:
- Title, number, and date of this specification
 - Size of wire desired
 - Quantity of wire desired
 - Level A packaging, if required (See 5.2.3).