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INTERNATIONAL
400 Commonwealth Drive, Warrendale, PA 15096-0001

AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4246A

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Superseding AMS 4246

Submitted for recognition as an American National Standard

ALUMINUM ALLOY, WELDING WIRE
7.0Si - 0.52Mg (357)

UNS A03570

1. SCOPE:

1.1 Form:

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

1.2 Application:

This wire has been used typically as filler metal for gas-metal-arc and gas-tungsten-arc welding of aluminum alloy castings having similar composition and requiring, in the weld zone, response to heat treatment, properties, and corrosion resistance comparable to those of the castings, but usage is not limited to such applications.

1.3 Classification:

Wire supplied to this specification is classified as follows:

Type 1 As Extruded and Sized
Type 2 As Drawn

1.3.1 Unless a specific type is ordered, either type may be supplied.

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.

2.1 SAE Publications:

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

AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
MAM 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings, Metric (SI) Units
AMS 2813	Packaging and Marking of Packages of Welding Wire, Standard Method
AMS 2814	Packaging and Marking of Packages of Welding Wire, Premium Quality
AMS 2816	Identification, Welding Wire, Tab Marking Method
AMS 2819	Identification, Welding Wire, Direct Color Code System
ARP1876	Weldability Test for Weld Filler Metal Wire

3. TECHNICAL REQUIREMENTS:

3.1 Wire 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
Silicon	6.5	7.5
Magnesium	0.45	0.6
Titanium	-	0.20
Iron	-	0.15
Zinc	-	0.05
Copper	-	0.05
Manganese	-	0.03
Other Impurities, each	-	0.05
Other Impurities, total	-	0.15
Aluminum	remainder	

3.1.1 (R) Chemical analysis of initial ingot, bar, or rod stock before drawing is acceptable provided the processes used for drawing or rolling, annealing, and cleaning are controlled to ensure continued conformance to composition requirements, and the facility employs procedures to ensure traceability of wire to the originally analyzed source.

3.2 Condition:

As drawn or extruded and sized, as ordered. Wire shall be in a temper and with a surface finish which will provide proper feeding of the wire in machine welding equipment.

3.3 Fabrication:

3.3.1 (R) Butt welding is permissible provided both ends to be joined are alloy verified using a method capable of distinguishing the alloy from all other alloys processed in the facility or the repair is made at the wire processing station. The butt weld shall not interfere with uniform, uninterrupted feeding of the wire in machine welding equipment.

3.3.2 Drawing compounds, oxides, dirt, oil, and other foreign materials shall be removed by cleaning processes which will neither result in pitting nor cause gas absorption by the wire or deposition of substances harmful to welding operations.

3.4 (R) Weldability:

Melted wire shall flow smoothly and evenly during welding and shall produce acceptable welds. ARP1876 may be used to resolve disputes.

3.5 Quality:

Wire, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to welding operations, operation of welding equipment, or properties of the deposited weld metal.

3.6 Sizes and Tolerances:

Wire shall be supplied in the standard sizes and to the tolerances shown in 3.6.1 and 3.6.2.

3.6.1 Diameter:

3.6.1.1 Extruded Wire: Shall be as shown in Table 2.

TABLE 2A - Sizes and Diameter Tolerances, Inch/Pound Units

Form	Nominal Diameter Inch	Tolerance Inch Plus	Tolerance Inch Minus
Cut Lengths	0.047, 0.062, 0.094, 0.125	0.007	0.007
Spools	0.030, 0.035, 0.047, 0.062, 0.094	0.002	0.002

TABLE 2B - Sizes and Diameter Tolerances, SI Units

Form	Nominal Diameter Millimeters	Tolerance Millimeter Plus	Tolerance Millimeter Minus
Cut Lengths	1.19, 1.57, 2.39, 3.18	0.18	0.18
Spools	0.76, 0.89, 1.19, 1.57, 2.39	0.05	0.05

3.6.1.2 Drawn Wire: Shall be as shown in Table 3.

TABLE 3A - Sizes and Diameter Tolerances, Inch/Pound

Form	Nominal Diameter Inch	Tolerance Inch Plus	Tolerance Inch Minus
Cut Lengths	0.047, 0.062, 0.094, 0.125	0.0015	0.0015
Spools	0.030, 0.035, 0.047	0.001	0.002
Spools	0.062, 0.094	0.002	0.002

TABLE 3B - Sizes and Diameter Tolerances, SI Units

Form	Nominal Diameter Millimeters	Tolerance Millimeter Plus	Tolerance Millimeter Minus
Cut Lengths	1.19, 1.57, 2.39, 3.18	0.038	0.038
Spools	0.76, 0.89, 1.19	0.025	0.05
Spools	1.57, 2.39	0.05	0.05

3.6.2 Length: Cut lengths shall be furnished in 36 inch (914 mm) lengths and shall not vary more than +0, -1 inch (-25 mm) from the length ordered.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of 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:

4.2.1 Acceptance Tests: Composition (3.1) and sizes and tolerances (3.6) are acceptance tests and shall be performed on each inspection lot.

4.2.2 Periodic Tests: Weldability (3.4) is a periodic test and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2355 or MAM 2355.