AEROSPACE MATERIAL SPECIFICATION

AMS4309	REV. A

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Superseding AMS4309

Aluminum Alloy Extrusions
8.6Fe - 1.8Se - 1.3V (8009-H112)
Powder Metallurgy Product, Strain-Hardened

UNS A98009

RATIONALE

AMS4309A has been reaffirmed to comply with the SAE five-year review policy.

NONCURENT NOTICE

This specification has been declared “NONCURRENT” by the Aerospace Materials Division, SAE, as of October, 2003. It is recommended, therefore, that this specification not be specified for new designs.

“NONCURRENT” refers to those materials which have previously been widely used and which may be required on some existing designs in the future. The Aerospace Materials Division, however, does not recommend these as standard materials for future use in new designs.

“NONCURRENT” specifications are available from SAE upon request.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
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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/AMS4309A

1. SCOPE:

1.1 Form:

This specification covers an aluminum alloy powder metallurgy product in the form of round extrusions up to 3.5 inches (89 mm) in diameter and rectangular and other solid extrusions up to 10 square inches (64.5 cm^2) in cross-sectional area. The maximum extrusion length is 100 inches (2.5 m).

1.2 Application:

These extrusions have been used typically for parts requiring good strength, 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 2205	Tolerances, Aluminum Alloy and Magnesium Alloy Extrusions
MAM 2205	Tolerances, Metric, Aluminum Alloy and Magnesium Alloy Extrusions
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 2811	Identification, Aluminum and Magnesium Alloy Wrought Products

2.2 ASTM Publications:

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

ASTM B 660	Packaging/Packing of Aluminum and Magnesium Products

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
Iron	8.4	8.9
Silicon	1.7	1.9
Vanadium	1.1	1.5
Oxygen (3.1.1)	--	0.30
Zinc	--	0.25
Titanium	--	0.10
Chromium	--	0.10
Manganese	--	0.10
Other Impurities, each (3.1.1)	--	0.05
Other Impurities, total (3.1.1)	--	0.15
Aluminum	remainder	

3.1.1 Determination not required for routine acceptance.

3.2 Condition:

Strain-hardened by extrusion.

3.2.1 Extrusions cannot be strengthened by precipitation heat treatment.

3.3 Properties:

Extrusions shall conform to the following requirements, determined in accordance with AMS 2355 or MAM 2355:

3.3.1 Tensile Properties: Shall be as shown in Table 2 for round extrusions up to 3.5 inches (89 mm) in diameter and rectangular and other solid extrusions up to 10 square inches (64.5 cm^2) in cross-sectional area.

TABLE 2 - Minimum Tensile Properties

TABLE 2A - Minimum Tensile Properties, Inch/Pound Units

Specimen Orientation	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 4D %
Longitudinal	60.0	49.0	10
Long-Trans.	58.0	44.0	2

TABLE 2B - Minimum Tensile Properties, SI Units

Specimen Orientation	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 4D %
Longitudinal	414	338	10
Long-Trans.	400	303	2

3.3.1.1 Tensile property requirements apply to tests made in the transverse direction only on product from which specimens not less than 2.50 inches (63.5 mm) in length can be taken. Tests in the longitudinal direction are not required on product tested in the transverse direction.

3.4 Quality:

Extrusions, 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 extrusions.

3.5 Tolerances:

Shall conform to all applicable requirements of AMS 2205 or MAM 2205.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of extrusions 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 extrusions conform to the requirements of this specification.

4.2 Classification of Tests:

Tests for all technical requirements 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 2355 or MAM 2355.

4.4 Reports:

The vendor of extrusions shall furnish with each shipment a report stating that the extrusions conform to the chemical composition and showing the results of tests to determine conformance to other technical requirements. This report shall include the purchase order number, lot number, AMS 4309B, size or section identification number, and quantity.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2355 or MAM 2355.