SAE Aerospace
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AEROSPACE MATERIAL SPECIFICATION

SAE AMS 4150L

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Reaffirmed MAY 2008

Superseding AMS 4150K

Aluminum Alloy, Extrusions and Rings
1.0Mg - 0.60Si - 0.28Cu - 0.20Cr - (6061-T6)
Solution and Precipitation Heat Treated

(Composition similar to UNS A96061)

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1. SCOPE:

1.1 Form:

This specification covers an aluminum alloy in the form of extruded bars, rods, wire, profiles, and tubing, flash welded rings fabricated from extruded stock, and stock for flash welded rings.

1.2 Application:

These products have been used typically for parts requiring moderate strength, especially where such parts require brazing or welding during fabrication, 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 supplied 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, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.

AMS 2355	Quality Assurance Sampling and Testing, Aluminum Alloys and Magnesium Alloys, Wrought Products, Except Forging Stock, and Rolled, Forged, or Flash Welded Rings
AMS 2772	Heat Treatment of Aluminum Alloy Raw Materials
AMS 7488	Rings, Flash Welded, Aluminum and Aluminum Alloys
AS1990	Aluminum Alloy Tempers

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2.2 ASTM Publications:

Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or www.astm.org.

ASTM B 660	Packaging/Packing of Aluminum and Magnesium Products
ASTM B 666/B 666M	Identification Marking of Aluminum and Magnesium Products

2.3 ANSI Publications:

Available from ANSI, 25 West 43rd Street, New York, NY 10036 or www.ansi.org.

ANSI H35.2	Dimensional Tolerances for Aluminum Mill Products
ANSI H35.2M	Dimensional Tolerances for Aluminum Mill Products (Metric)

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
Silicon	0.40	0.8
Iron	--	0.7
Copper	0.15	0.40
Manganese	--	0.15
Magnesium	0.8	1.2
Chromium	0.04	0.35
Zinc	--	0.25
Titanium	--	0.15
Other Elements, each	--	0.05
Other Elements, total	--	0.15
Aluminium	remainder	

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3.2 Condition:

The product shall be supplied in the following condition:

3.2.1 Bars, Rods, Wire, Shapes, and Tubing: Extruded and solution and precipitation heat treated to the T6 temper (See AS1990) in accordance with AMS 2772.

3.2.1.1 Extrusions shall be supplied with an as-extruded surface finish; light polishing to remove minor surface imperfections is permissible provided such imperfections can be removed within specified dimensional tolerances.

3.2.2 Flash Welded Rings: Manufactured in accordance with AMS 7488 from extruded stock and solution and precipitation heat treated to the T6 temper in accordance with AMS 2772.

3.2.3 Stock for Flash Welded Rings: As ordered by the flash welded ring manufacturer.

3.3 Properties:

The product shall conform to the following requirements, determined on the mill produced size in accordance with AMS 2355 (See 8.2).

3.3.1 Bars, Rods, Wire, Profiles, Tubing, and Flash Welded Rings:

3.3.1.1 Tensile Properties: Shall be as shown in Table 2.

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

Nominal Diameter or Least Thickness (See 8.3) (bars, rods, wire, shapes, and flash welded rings) or Nominal Wall Thickness (tubing) Inches	Tensile Strength ksi	Yield Strength at 0.2% Offset ksi	Elongation in 2 Inches or 4D %
Up to 0.250, excl	38.0	35.0	8
0.250 and over	38.0	35.0	10

TABLE 2B - Minimum Tensile Properties, SI Units

Nominal Diameter or Least Thickness (See 8.3) (bars, rods, wire, shapes, and flash welded rings) or Nominal Wall Thickness (tubing) Millimeters	Tensile Strength MPa	Yield Strength at 0.2% Offset MPa	Elongation in 50.8 mm or 4D %
Up to 6.35, excl	262	241	8
6.35 and over	262	241	10

3.3.2 Stock for Flash Welded Rings: Specimens taken from the stock after solution and precipitation heat treatment in accordance with AMS 2772 shall conform to the requirements of 3.3.1.1.

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3.4 Quality:

The product, 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 product.

3.5 Tolerances:

Bars, rods, wire, profiles, and tubing shall conform to all applicable requirements of ANSI H35.2 or ANSI H35.2M.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection:

The vendor of the product 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 product conforms to specified requirements.

4.2 Classification of Tests:

Composition (3.1), tensile properties (3.3.1.1), and tolerances (3.5) are acceptance tests and, except for composition, shall be performed on each inspection lot.

4.3 Sampling and Testing:

Shall be in accordance with AMS 2355.

4.4 Reports:

4.4.1 The vendor of extrusions or flash welded rings shall furnish with each shipment a report stating that the product conforms to the composition and tolerances, and showing the numerical results of tests on each inspection lot to determine conformance to the other acceptance test requirements. This report shall include the purchase order number, inspection lot numbers, AMS 4150L, size or section identification number, and quantity. The report shall also identify the producer and the size of the mill product.

4.4.2 The vendor of stock for flash welded rings shall furnish with each shipment a report stating that the stock conforms to the composition. This report shall include the purchase order number, inspection lot number, AMS 4150L, size, quantity, vendor of stock, and identifying inspection lot numbers.

4.5 Resampling and Retesting:

Shall be in accordance with AMS 2355.

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