

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE

AMS 4440E

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Noncurrent JAN 1992
Cancelled NOV 1999

Superseding AMS 4440D

Magnesium Alloy Castings, Sand
3.5Ce - 0.70Zr (EK41A-T5)
Precipitation Heat Treated

UNS M12410

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1. SCOPE:**1.1 Form:**

This specification covers a magnesium alloy in the form of sand castings.

1.2 Application:

Primarily for parts operating in service in the range 300° - 500°F (150° - 260°C).

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications:

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

2.1.1 Aerospace Material Specifications:

AMS 2350	Standards and Test Methods
AMS 2360	Room Temperature Tensile Properties of Castings
AMS 2361	Elevated Temperature Tensile Properties of Castings
AMS 2475	Protective Treatment, Magnesium Alloys
AMS 2635	Radiographic Inspection
AMS 2645	Fluorescent Penetrant Inspection
AMS 2646	Contrast Dye Penetrant Inspection
AMS 2694	Repair Welding of Aerospace Castings
AMS 2804	Identification, Castings

2.2 ASTM Publications:

Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM B557	Tension Testing Wrought and Cast Aluminum- and Magnesium-Alloy Castings
ASTM E10	Brinell Hardness of Metallic Materials
ASTM E21	Elevated Temperature Tension Tests of Metallic Materials
ASTM E35	Chemical Analysis of Magnesium and Magnesium Alloys
ASTM E155	Reference Radiographs for Inspection of Aluminum and Magnesium Castings

2.3 U.S. Government Publications:

Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Specifications:

MIL-M-6857 - Magnesium Alloy Castings, Heat Treatment of

2.3.3 Military Standards:

MIL-STD-649 - Aluminum and Magnesium Products, Preparation for Shipment and Storage

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E35, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods acceptable by purchaser:

	min	max
Cerium (Total Rare Earths)	2.5	4.5
Zirconium, total	0.40	1.0
Zirconium, soluble (3.1.1)	0.40	--
Zinc	--	0.30
Copper (3.1.2)	--	0.10
Nickel (3.1.2)	--	0.01
Other Impurities, each (3.1.2)	--	0.10
Other Impurities, total	--	0.30
Magnesium	remainder	

3.1.1 Soluble zirconium is that portion of the zirconium which is soluble in 1:4 hydrochloric acid held below its boiling point.

3.1.2 Determination not required for routine acceptance.

3.2 Condition:

Precipitation heat treated.