



AEROSPACE MATERIAL SPECIFICATION

AMS5395™**REV. D**

Issued	1957-01
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Noncurrent	1995-01
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Stabilized	2018-03

Superseding AMS5395C

Alloy Iron Castings, Ductile, Sand, Corrosion Resistant
22Ni (2.5 - 3.0C)
As Cast

UNS F43030

RATIONALE

AMS5395D has been declared "STABILIZED" by SAE AMS Committee F because it contains mature technology that is not expected to change and thus no further revisions are anticipated.

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AMS5395D has been declared "STABILIZED" by SAE AMS Committee F Corrosion and Heat Resistant Alloys. This document was stabilized because this document contains mature technology that is not expected to change and thus no further revisions are anticipated. Previously this document was non-current. The last technical update of this document occurred in July, 1983. Users of this document should refer to the cognizant engineering organization for disposition of any issues with reports/certifications to this specification; including exceptions listed on the certification NOTE: In many cases, the purchaser may represent a sub tier supplier and not the cognizant engineering organization.

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395D

1. SCOPE:

1.1 Form:

This specification covers a corrosion-resistant alloy ductile iron in the form of sand castings.

1.2 Application:

Primarily for parts, which may operate in service up to 800°F (425°C), requiring an austenitic material with good castability and corrosion resistance and which may require welding during fabrication.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Materials 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 2635	Radiographic Inspection
AMS 2645	Fluorescent 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 A370	Mechanical Testing of Steel Products
ASTM E351	Chemical Analysis of Cast Iron - All Types
ASTM E446	Reference Radiographs for Steel Castings Up to 2 in. (51 mm) in Thickness

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 Standards:

MIL-STD-794 Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Composition:

Shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E351, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

	min		max
Carbon	2.50	-	3.00
Manganese	1.90	-	2.50
Silicon	2.00	-	3.00
Phosphorus	--		0.15
Sulfur	--		0.05
Nickel	20.00	-	24.00
Chromium	--		0.50
Molybdenum	--		0.30

3.2 Condition:

As cast.

3.3 Casting:

A melt shall be the metal poured from a single magnesium-treated ladle of 10,000 lb (4500 kg) or less. A lot shall be all castings, poured from a single melt in not more than eight consecutive hours and presented for vendor's inspection at one time.

3.4 Test Specimens:

- 3.4.1 Chemical Analysis Specimens: Shall be of any convenient size, shape, and form for vendor's tests. When chemical analysis specimens are required by purchaser, specimen shall be cast to a size, shape, and form agreed upon by purchaser and vendor.

3.4.2 Tensile Coupons: Shall be standard keel blocks conforming to ASTM A370 unless purchaser permits use of "Y" blocks as shown in Fig. 1. Coupons shall be cast with each melt of metal for casting, shall be cast in open molds made of suitable core sand, shall be poured directly after pouring the castings, and shall be kept in the mold until black. Metal for coupons shall be part of the melt which is used for the castings. Molding practice, and the coupon size when use of "Y" blocks is permitted, shall, insofar as practicable, be such that cooling rates of castings and coupons are substantially the same. Tensile specimens in accordance with ASTM A370 shall be machined from the coupons.

3.5 Properties:

Castings and representative tensile coupons produced in accordance with 3.4.2 shall conform to the following requirements; hardness and tensile testing shall be performed in accordance with ASTM A370.

3.5.1 Separately-Cast Specimens:

3.5.1.1 Tensile Properties: Shall be as follows:

Tensile Strength, min	50,000 psi (345 MPa)
Yield Strength at 0.2% Offset, min	25,000 psi (170 MPa)
Elongation in 4D, min	20%

3.5.2 Castings:

3.5.2.1 Microstructure: Shall consist of spheroidal graphite with small amounts of carbide in a matrix of austenite, essentially free from flake graphite.

3.5.2.2 Tensile Properties: Shall be as follows, determined on specimens cut from castings; these properties apply only to castings with section thickness of 0.250 in. (6.25 mm) and over:

Tensile Strength, min	50,000 psi (345 MPa)
Yield Strength at 0.2% Offset, min	25,000 psi (170 MPa)
Elongation in 4D, min	15%

3.5.2.2.1 Specimens cut from castings are not required for acceptance testing; however, properties obtained from such specimens may be the basis for acceptance of castings.

3.5.2.2.2 Tensile property requirements for specimens cut from castings under 0.250 in. (6.25 mm) in section thickness shall be as agreed upon by purchaser and vendor.

3.5.2.3 Hardness: Should be 74 - 86 HRB or equivalent but castings shall not be rejected on the basis of hardness if the tensile property requirements of 3.5.2.2 are met.