

INCH-POUND  
MIL-C-24707/6  
27 January 1989

## MILITARY SPECIFICATION

### CASTINGS, FERROUS, CHROMIUM STEEL, FOR PRESSURE-CONTAINING PARTS SUITABLE FOR HIGH-TEMPERATURE SERVICE

This specification is approved for use by all Departments and Agencies of the Department of Defense.

#### 1. SCOPE

1.1 Scope. This specification covers 12 percent chromium steel castings for high temperatures and for impact at low temperatures.

1.2 Classification. Castings shall be furnished in the following grades and classes as specified (see 6.2). Grades and classes are identified in ASTM A 217, A 487, or A 757, as appropriate (see 6.2).

| Grade           |  |
|-----------------|--|
| CA-15           | - 12 Chromium (ASTM A 217)                     |
| CA-15M, Class A | - 12 Chromium modified molybdenum (ASTM A 487) |
| E3N             | - 12 Chromium x 4 Nickel (ASTM A 757)          |

#### 2. APPLICABLE DOCUMENTS

##### 2.1 Government document.

2.1.1 Specification. The following specification forms a part of this document to the extent specified herein. Unless otherwise specified, the issue of this document is that listed in the issue of the Department of Defense Index of Specifications and Standards (DoDISS) and supplement thereto, cited in the solicitation (see 6.2).

#### SPECIFICATION

##### MILITARY

MIL-C-24707 - Castings, Ferrous, General Specification for.

(Unless otherwise indicated, copies of federal and military specifications are available from the Naval Publications and Forms Center (ATTN: NPODS), 5801 Tabor Avenue, Philadelphia, PA 19120-5099.)

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Naval Sea Systems Command, SEA 55Z3, Department of the Navy, Washington, DC 20362-5101 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

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2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DoDISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DoDISS are the issues of the documents cited in the solicitation (see 6.2).

## AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A 217 - Standard Specification for Steel Castings, Martensitic Stainless and Alloy, for Pressure Containing Parts, Suitable for High-Temperature Service. (DoD adopted)
- A 487 - Standard Specification for Steel Castings Suitable for Pressure Service.
- A 757 - Standard Specification for Steel Castings, Ferritic and Martensitic, for Pressure-Containing and Other Applications, for Low-Temperature Service.

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Nongovernment standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

## 3. REQUIREMENTS

3.1 General. Requirements shall be in accordance with MIL-C-24707, ASTM A 487, A 217 or A 757, depending on grade specified.

3.2 Material. Unless otherwise specified (see 6.2), the steel shall be made by the electric furnace process, with or without separate refining or degassing.

3.3 Heat treatment. CA-15M castings shall be normalized and tempered only. Tempering temperature shall be not less than 1100 degrees Fahrenheit (°F). Liquid quench shall not be used without permission of the Command or agency concerned.

3.4 Mechanical properties. The mechanical properties shall conform to the grade and class specified in the contract or order.

## 4. QUALITY ASSURANCE PROVISIONS

4.1 Quality assurance provisions shall be in accordance with MIL-C-24707.

4.2 Sampling. Unless otherwise specified (see 6.2), method of sampling shall be in accordance with MIL-C-24707.

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## 5. PACKAGING

5.1 Packaging shall be in accordance with MIL-C-24707.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. These materials are intended for use in pump casings, compressor housings, gas turbine engines and other applications requiring 12 percent chromium, corrosion resisting steel castings. Grade CA-15 and CA-15M are intended for use in load carrying applications for elevated temperature service. The maximum operational temperature should not exceed 100°F below the minimum tempering or post weld heat treatment temperatures. For maximum corrosion resistance, alloys should be final tempered between 1100°F and 1200°F.

6.1.1 Grade E3N castings are intended for use where either CA-15 or CA-15M is used. Grade E3N has better weldability, corrosion and erosion resistance, and improved soundness and casting characteristics over CA-15 and CA-15M. Low temperature properties; that is, notch toughness, are superior for grade E3N.

6.2 Acquisition requirements. In addition to the acquisition requirements of MIL-C-24707, the acquisition documents must specify the following:

- (a) Title, number, and date of this specification.
- (b) Grade and class required (see 1.2).
- (c) Issue of DoDISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- (d) When the melting practice is other than electric furnace (see 3.2).
- (e) Method of sampling, if other than required (see 4.2).

6.3 Supersession data. The supersession data for the applicable specification grades are as follows:

| <u>Previous specification</u> | <u>Replacement specification</u>  |
|-------------------------------|-----------------------------------|
|                               | MIL-C-24707/6                     |
| MIL-S-16993, class 1          | ASTM A 217, grade CA-15           |
| class 2                       | ASTM A 487, grade CA-15M, class A |

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6.4 Subject term (key word) listing.

Heat treatment  
Mechanical properties

Custodians:

Army - MR  
Navy - SH  
Air Force - 20

Preparing activity:

Navy - SH  
(Project MECA-0334)

Review activities:

Army - AR, MI  
Navy - AS, YD, OS  
Air Force - 84

User activities:

Navy - MC  
Army - ME