

INCH-POUND
MIL-C-24707/1
27 January 1989

MILITARY SPECIFICATION

CASTINGS, FERROUS, FOR MACHINERY AND STRUCTURAL APPLICATIONS

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

1. SCOPE

1.1 Scope. This specification covers steel castings for machinery and structural applications below 775 degrees Fahrenheit (°F) where impact strength may be a consideration.

1.2 Classification. Castings shall be of the following grades, as specified (see 6.2).

Grade A1Q of ASTM A 757	Grade E2Q of ASTM A 757
A2Q of ASTM A 757	WCA of ASTM A 216
C1Q of ASTM A 757	WCB of ASTM A 216
E1Q of ASTM A 757	WCC of ASTM A 216
E2N of ASTM A 757	4B of ASTM A 487
	14A of ASTM A 487

2. APPLICABLE DOCUMENTS

2.1 Government documents.

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.

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 5523, 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.

AREA MECA

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

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(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.)

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 issue of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A 216 - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, 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. The requirements for castings covered by this specification shall be in accordance with MIL-C-24707, ASTM A 216, A 487, or A 757, and as specified herein.

3.2 Supplementary requirements. When specified (see 6.2), additional supplementary requirements shall be met.

3.3 Chemical analysis. Chemical analysis shall meet the requirements in the specified commercial specification. In addition, for carbon steels, the specified residual elements shall be determined.

3.4 Impact requirements. Unless otherwise specified (see 6.2), the Charpy V-notch impact requirements shall be those listed in the specified commercial specification. When no requirements are listed in the commercial specifications, they shall be 20 foot-pounds at 10°F except when ordered for deck applications (see 6.2). Deck application requirements shall be 20 foot-pounds at minus 20°F.

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3.5 Stress relief heat treatment. When specified (see 6.2), the stress relieving temperature shall be at least 50°F (30 degrees Celsius (°C)) but not more than 100°F (60°C) below the tempering temperature. The mechanical properties shall be determined after the stress relief heat treatment.

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), the method of sampling shall be in accordance with MIL-C-24707.

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 castings are intended for structural and machinery applications below 775°F where impact strength may be a consideration.

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

- (a) Title, number, and date of this specification.
- (b) Grade of steel 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) If any additional supplementary requirements of ASTM A 216, A 487, or A 757 or other requirements are required (see 3.2).
- (e) If castings are for deck applications (see 3.4).
- (f) If other impact requirements are to be specified (see 3.4).
- (g) If a stress relief heat treatment is required (see 3.5).
- (h) If sampling is other than specified (see 4.2).

6.3 Supersession data. The supersession data are as follows:

Previous specificationReplacement specification

MIL-S-15083B
Grade CW
Grade B
Grade 65-35

MIL-C-24707/1
A 757, Gr AlQ or A 216, Gr WCA
A 757, Gr AlQ or A 216, Gr WCA
A 757, Gr AlQ or A 216, Gr WCB

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Previous specification

MIL-S-15083B
 Grade 70-36
 Grade 80-40
 Grade 80-50
 Grade 90-60
 Grade 100-70
 Grade 105-85
 Grade 120-95
 Grade 150-125 1/

Replacement specification

MIL-C-24707/1
 A 757, Gr A2Q or A 216, Gr WCB, WCC
 A 757, Gr A2Q or A 487, Gr 2, Cl A,B,C
 A 757, Gr ClQ or A 487, Gr 2, Cl A,B,C
 A 757, Gr E1Q or A 487, Gr 4, Cl A
 A 757, Gr E2N1/E2Q1
 A 757, Gr E2N2/E2Q2 or A 487, Gr 4, Cl B
 A 757, Gr E2N3/E2Q3 or A 487, Gr 14, Cl A
1/

1/ Special application only; use with concurrence of Command or agency concerned.

The following grades of MIL-C-24707/1 are equivalent to the grades of QQ-S-681F, or ASTM A 27 and A 148 but ASTM A 27 and A 148 cannot be substituted for MIL-C-24707/1 grades.

QQ-S-681F
Grade

MIL-C-24707/1
Equivalent grade

ASTM A 27, Gr N-1	A 757, Gr A1Q or A 216, Gr WCA or A 217, Gr WC1
ASTM A 27, Gr N-2	A 757, Gr A1Q or A 216, Gr WCA or A 217, Gr WC1
ASTM A 27, Gr U60-30	A 757, Gr A1Q or A 216, Gr WCB or A 217, Gr WC1
ASTM A 27, Gr 60-30	A 757, Gr A1Q or A 216, Gr WCB or A 217, Gr WC1
ASTM A 27, Gr 65-35	A 757, Gr A1Q or A 216, Gr WCB or A 217, Gr WC1
ASTM A 27, Gr 70-36	A 757, Gr A2Q or A 216, Gr WCB, WCC
ASTM A 27, Gr 70-40	A 757, Gr A2Q or A 216, Gr WCC
ASTM A 148, Gr 80-40	A 757, Gr A2Q or A 487, Gr 2, Cl A,B,C
ASTM A 148, Gr 80-50	A 757, Gr ClQ or A 487, Gr 2, Cl A,B,C
ASTM A 148, Gr 90-60	A 757, Gr E1Q or A 487, Gr 4, Cl A
ASTM A 148, Gr 105-85	A 757, Gr E2N2/E2Q2 or A 487, Gr 4, Cl B
ASTM A 148, Gr 120-95	A 757, Gr E2N3/E2Q3 or A 487, Gr 14, Cl A

6.4 Subject term (key word) listing.

Impact strength
 Steel
 Stress relief heat treatment

Custodians:

Army - MR
 Navy - SH
 Air Force - 20

Preparing activity:

Navy - SH
 (Project MECA-0329)

Review activities:

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

User activities:

Navy - MC
 Army - ME