



AEROSPACE MATERIAL SPECIFICATION

AMS5352™**REV. G**

Issued 1953-07
Reaffirmed 2015-04
Revised 2021-06

Superseding AMS5352F

Steel, Corrosion-Resistant, Investment Castings
17Cr - 0.55Mo (0.95 - 1.20C)
Annealed

(Composition similar to UNS J91639)

RATIONALE

AMS5352G prohibits unauthorized exceptions (3.8, 4.5.1, 8.6), updates composition test method (3.1), adds heat treatment per AMS2761 (3.5), adds standard limits on quality 3.7.4.1, updates reporting to standard format and adds country of melting (4.5), removes purchaser specific requirements (4.5.4), removes redundant definitions (8.2), allows prior revisions (8.5), updates ordering information (8.7), and is the result of a Five-Year Review and update of the specification.

1. SCOPE

1.1 Form

This specification covers a corrosion-resistant steel in the form of investment castings.

1.2 Application

These castings have been used typically for parts requiring hardness up to 58 HRC and having resistance to corrosion and to wear, but usage is not limited to such applications. Optimum corrosion resistance is obtained by hardening from 1850 to 1950 °F (1010 to 1066 °C) and tempering at not higher than 800 °F (427 °C).

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order form a part of this specification to the extent specified 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 International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS2175 Castings, Classification and Inspection of

AMS2248 Chemical Check Analysis Limits, Corrosion and Heat-Resistant Steels and Alloys, Maraging and Other Highly-Alloyed Steels, and Iron Alloys

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Full document details: SAE AMS5352G

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Documents
Document Sharing Hub

AMS2694	In-Process Welding of Castings
AMS2700	Passivation of Corrosion Resistant Steels
AMS2761	Heat Treatment of Steel Raw Materials
AMS2804	Identification, Castings

2.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A751	Chemical Analysis of Steel Products
ASTM E18	Rockwell Hardness of Metallic Materials
ASTM E1077	Estimating the Depth of Decarburization of Steel Specimens
ASTM E1417/E1417M	Liquid Penetrant Testing
ASTM E1444/E1444M	Magnetic Particle Testing
ASTM E1742/E1742M	Radiographic Examination

3. TECHNICAL REQUIREMENTS

3.1 Composition

Shall conform to the percentages by weight shown in Table 1, determined by wet chemical methods in accordance with ASTM A751, or by other analytical methods acceptable to purchaser (see 8.2).

Table 1 - Composition

Element	Min	Max
Carbon	0.95	1.20
Manganese	--	1.00
Silicon	--	1.00
Phosphorus	--	0.04
Sulfur	--	0.03
Chromium	16.00	18.00
Molybdenum	0.35	0.75
Nickel	--	0.50
Copper	--	0.75

3.1.1 Producer may test for any element not otherwise listed in Table 1 and include this analysis in the report of 4.5. Limits of acceptability may be specified by purchaser.

3.1.2 Check Analysis

Composition variations shall meet the applicable requirements of AMS2248.

3.2 Melting Practice

Castings and specimens shall be poured at casting producer's facility either from a melt of a master heat, or directly from a master heat (see 3.4.2 and 8.2).

- 3.2.1 Revert (gates, sprues, risers, and rejected castings) may be used only in the preparation of master heats; revert shall not be remelted directly without refining for pouring of castings. Melting of revert creates a new master heat.
- 3.2.2 Portions of two or more qualified master heats (see 3.4.2) may be melted together and poured into castings using a procedure authorized by purchaser (see 8.2).
- 3.2.3 If melts are modified by replenishment (see 8.2), producer shall have a written procedure acceptable to purchaser which defines the controls, test, and traceability criteria for both castings and separately-cast specimens. Control factors of 4.4.2.2 shall apply.

3.3 Condition

Castings shall be delivered in the annealed condition.

3.4 Test Specimens

Specimens shall be separately-cast, integrally-cast (see 8.2), or machined from a casting, and shall conform to 3.2.

- 3.4.1 If specimens are separately-cast, producer shall have a written procedure acceptable to purchaser (see 8.2). Control factors of 4.4.2.2 shall apply.
- 3.4.2 Each master heat shall be qualified by evaluation of chemical and hardness specimens.
 - 3.4.2.1 If replenishments are made at remelt as in 3.2.3, the frequency of sampling and testing used by the producer for qualification to 3.4.2 shall be acceptable to purchaser.

3.4.3 Chemical Analysis Specimens

Shall be of any convenient size and shape.

3.4.4 Hardness Specimens for Response to Heat Treatment

May be a representative specimen or a casting.

3.5 Heat Treatment

To produce the condition in castings for delivery, anneal in accordance with AMS2761 to conform to the hardness requirements of 3.6.1.

3.5.1 Response to Heat Treatment

Castings or representative test specimens shall be annealed as in 3.5 and shall be heat treated as follows for subsequent testing to demonstrate response to heat treatment.

3.5.1.1 Hardening

Heat to 1875 °F ± 25 °F (1024 °C ± 14 °C), hold at heat for not less than 30 minutes, and cool at a rate equivalent to cooling in still air.

3.5.2 Hardness specimens used for master heat qualification may be heat treated separately from castings.

3.6 Properties

3.6.1 Hardness

Shall be as follows, determined in accordance with ASTM E18.