# AEROSPACE MATERIAL SPECIFICATION

| AMS2362™ | REV. E |
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Superseding AMS2362D

## (R) Stress-Rupture Properties of Castings

RATIONALE

AMS2362E is the result of a Five-Year Review and update of the specification. The revision reorganizes the document by making the stress-rupture test methodology a separate section (see 3.2), removing specimen requirements that are included in the base material specifications (see 3.1), addressing rounding (see 3.2.1), adding requirement to report numerical property values when there is a limit (see 3.2.2), and allowing the use of prior revisions (see 8.3).

1. SCOPE

This specification establishes a procedure for designating minimum stress-rupture property requirements of castings by means of this AMS number and a series of dash numbers.

2. APPLICABLE DOCUMENTS

The issue of the following documents in effect on the date of the purchase order forms 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.

AS7766 Terms Used in Aerospace Metals Specifications

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 E8/E8M Tension Testing of Metallic Materials

ASTM E29 Using Significant Digits in Test Data to Determine Conformance with Specifications

ASTM E139 Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials





**TO PLACE A DOCUMENT ORDER:** Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
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**SAE WEB ADDRESS:** http://www.sae.org

**For more information on this standard, visit**
https://www.sae.org/standards/content/AMS2362E/

2.3 Definitions

Terms used in AMS are defined in AS7766.

3. TECHNICAL REQUIREMENTS

3.1 Stress-Rupture Test Specimens

Stress-rupture specimens shall be machined from a representative casting or castings, unless separately cast specimens are agreed upon by the purchaser and producer. Testing shall be performed in the thermal condition required by the material specification. Specimens shall be of standard proportions, in accordance with ASTM E8/E8M unless otherwise specified.

3.1.1 Specimen Location

When property requirements are designated by the procedure of this specification, the location(s) in the casting to which the designated property requirements apply shall be as shown on the purchaser's drawing and as follows:

3.1.1.1 When the property limit dash-number designations of 3.3 apply to a specific area or areas, the designation of 3.3 may be used alone or with the final two-letter designation "DR" to indicate that the drawing shows the location(s) from which specimens shall be taken.

3.1.1.2 Property requirements for specimens from nonspecific locations in castings may be designated as in 3.3, using one of the following two-letter suffixes as applicable:

AO = Requirements apply to all areas of the casting
GR = Requirements apply to all areas except near gate, sprue, and riser locations

3.2 Stress-Rupture Properties

Stress-rupture properties shall be determined in accordance with ASTM E139 unless otherwise specified.

3.2.1 The ASTM E29 rounding method shall be used unless otherwise specified.

3.2.2 Properties required by the material specification shall be reported as numerical values. It is optional to report properties that are not required by the material specification; however, these values shall be recorded.

3.2.3 For round cross sections, the gauge length to diameter ratio required by the material specification is typically 4 (4D). When the ratio is different than 4, it shall be reported.

3.2.4 For rectangular cross sections, it is recommended to use a gauge length that is 4.5 times the square root of the cross-sectional area for determination of elongation. In these cases, elongation and reduction of area measurements shall be taken for information only.

3.3 Stress-Rupture Property Requirements

Stress-rupture property requirements may be designated by AMS2362, followed by four groups of one to four digits indicating, in successive order, the temperature in Fahrenheit or Celsius degrees, the axial stress in ksi or in MPa, the minimum time to rupture in hours, and the minimum elongation in 4D in percent. Designations of stress and temperature shall be assumed to be in U.S. customary (inch/pound) units unless "AMS2362" is followed by "(SI)." When there is no requirement for a particular property, an "X" shall replace the figures for that property.

3.3.1 Examples

3.3.1.1 In U.S. customary units, AMS2362-1800-22-23-5 shall designate that the test is to be conducted at 1800 °F and that the requirements are as shown in Table 1.