Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AEROSPACE MATERIAL SPECIFICATION

AMS 7235A
Superseding AMS 7235
Issued 1-15-62
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RIVETS, STEEL, CORROSION AND HEAT RESISTANT
15Cr - 26Ni - 1.3Mo - 2.1Ti - 0.30V
1650 F (898.9 C) Solution Heat Treated and Partially Precipitation Heat Treated

1. SCOPE:

1.1 Type: This specification covers high quality rivets made of a precipitation-hardenable, corrosion resistant steel.

1.2 Application: Primarily for joining parts where joints having high strength up to 1200 F (649 C) and oxidation resistance up to 1500 F (816 C) are required.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) shall apply; the applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, New York 10001.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 5734 - Steel Bars, Forgings, and Tubing, Corrosion and Heat Resistant, 15Cr - 26Ni - 1.3Mo - 2.1Ti - 0.30V, Consumable Electrode Melted, 1650 F (898.9 C) Solution Heat Treated

2.2 Government Publications: Available from Superintendent of Documents, Government Printing Office Washington, D. C. 20402.

2.2.1 Military Standards:

MIL-STD-1312 - Fasteners, Test Methods

3. TECHNICAL REQUIREMENTS:

3.1 Material and Fabrication: Rivets shall be cold headed from AMS 5734 corrosion resistant steel heading stock unless purchaser permits machining from AMS 5734 bar or wire.

3.2 Condition: Rivets which have been cold headed shall be solution heat treated as in 3.3.1; all rivets shall be partially precipitation heat treated as in 3.3.2.

3.3 Heat Treatment: Rivets shall be heat treated as follows; furnace atmospheres shall be such as will not cause surface hardening.

3.3.1 Solution Heat Treatment: Cold headed rivets shall be solution heat treated by heating to a temperature within the range 1650 - 1700 F (898.9 - 926.7 C), holding at the selected temperature within ±25 F (±14 C) for not less than 15 min., and quenching in oil.

3.3.2 Precipitation Heat Treatment: All rivets shall be partially precipitation heat treated by heating to a temperature within the range 1250 - 1450 F (676.7 - 787.8 C), holding at the selected temperature within ±15 F (±8.3 C) for not less than 30 min., and cooling in air.

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3.4 Properties:

3.4.1 Shear Strength: The shank shall have shear strength of 80,000 - 95,000 psi (552 - 655 MN/m^2) as heat treated and not lower than 90,000 psi (621 MN/m^2) after being driven, determined in accordance with MIL-STD-1312, Test 4.

3.4.2 Formability: Solid rivets shall be capable of being driven satisfactorily with a full head free from cracks as determined by metallurgical examination.

3.4.3 Flarability: Hollow end rivets shall be capable of being flared to an angle of 90 deg (0.787 rad) and a diameter of 1.5 times the nominal shank diameter without bending the shank and without showing cracks in the flared end of more than 10% of the rivets flared.

3.5 Quality: Parts shall be uniform in quality and condition, clean, sound, smooth, and free from foreign materials and from internal and external imperfections detrimental to their performance.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to assure that parts conform to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Routine Control Tests: Tests to determine conformance to the material (3.1) and shear strength (3.4.1) requirements are classified as routine controlled tests.

4.2.2 Periodic Control Tests: Tests to determine conformance to the formability (3.4.2) and flarability (3.4.3) requirements are classified as qualification and/or periodic control tests.

4.3 Sampling:

4.3.1 Routine Control Tests:

4.3.1.1 Material: One sample from bars, wire, or heading stock from each heat.

4.3.2.2 Shear Strength: One sample, consisting of five pieces, from each lot. A lot shall be all rivets of the same part number precipitation heat treated in a single furnace charge.

4.3.2 Periodic Control Tests: Samples for qualification and/or periodic control tests shall be taken as agreed upon by purchaser and vendor.

4.4 Reports: Unless otherwise specified, the vendor of parts shall furnish with each shipment three copies of a report stating that the chemical composition of the parts conforms to the applicable material specification, showing the results of tests to determine conformance to the shear strength requirements, and stating that the parts conform to all other technical requirements of this specification. This report shall include the purchase order number, specification number and its revision letter, contractor or other direct supplier of material, part number, nominal size, and quantity.

4.5 Resampling and Retesting: If any part or specimen used in the above tests fails to meet the specified requirements, disposition of the product may be based on the results of testing three additional parts or specimens for each original nonconforming specimen. Failure of any retest parts or specimens to meet the specified requirements shall be cause for rejection of the parts represented and no additional testing shall be permitted. Results of all tests shall be reported.