Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AEROSPACE MATERIAL SPECIFICATION

AMS 7235B
Superseding AMS 7235A

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RIVETS, STEEL, CORROSION AND HEAT RESISTANT
15Cr - 26Ni - 1.3Mo - 2.1Ti - 0.30V
1650°F (900°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 and heat resistant steel.

1.2 Application: Primarily for joining parts where joints having high strength up to 1200°F (650°C) and oxidation resistance up to 1500°F (815°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., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 5734 - Steel Bars, Forgings, and Tubing, Corrosion and Heat Resistant, 15Cr - 25.5Ni - 1.3Mo - 2.1Ti - 0.006B - 0.30V, Consumable Electrode Melted, 1650°F (890°C) Solution Heat Treated

2.2 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.2.1 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of
MIL-STD-1312 - Fasteners, Test Methods

3. TECHNICAL REQUIREMENTS:

3.1 Material and Fabrication: Rivets shall be cold headed from AMS 5734 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° - 1800°F (900° - 980°C), holding at the selected temperature within ± 25°F (±15°C) for not less than 15 min., and cooling at a rate equivalent to air cool or faster.

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 (680° - 785°C), holding at the selected temperature within ±15°F (±8°C) for not less than 30 min., and cooling in air.

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3.4 Properties: Rivets shall conform to the following requirements:

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

3.4.2 Formability: Solid rivets, when driven, shall satisfactorily form a full head free from cracks, determined by metallurgical examination.

3.4.3 Flarability: Hollow end rivets, when flared to an angle of 90 deg and a diameter of 1.5 times the nominal shank diameter, shall neither show evidence of bending of the shank nor show cracks in the flared end of more than 10% of the rivets flared.

3.5 Quality: Rivets, as received by purchaser, shall be uniform in quality and condition, clean, sound, ø 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 of rivets 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 ensure that the rivets conform to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for material (3.1) and shear strength (3.4.1) are classified as acceptance tests and shall be performed on each lot.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for formability (3.4.2) and flarability (3.4.3) are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.

4.3 Sampling: Shall be in accordance with the following; a lot shall be all rivets of the same size and ø configuration made from a single heat of steel, precipitation heat treated in a single furnace load, and presented for vendor's inspection at one time:

4.3.1 Acceptance Tests:

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

4.3.1.2 Shear Strength: One sample, consisting of five rivets from each lot.

4.3.2 Periodic Tests: As agreed upon by purchaser and vendor.