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

AEROSPACE MATERIAL SPECIFICATION

AMS 7225E
Superseding AMS 7225D

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UNS G10100

RIVETS, CARBON STEEL

1. SCOPE:

1.1 Type: This specification covers rivets fabricated from a carbon steel.

1.2 Application: Primarily for joining steel parts where a low shear strength is adequate and destruction of the fastener for repair or replacement is permissible.

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 2259 - Chemical Check Analysis Limits, Wrought Low-Alloy and Carbon Steels
AMS 2350 - Standards and Test Methods

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM E18 - Rockwell Hardness and Rockwell Superficial Hardness of Metallic Materials
ASTM E350 - Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

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

2.3.1 Federal Standards:

Federal Test Method Standard No. 151 - Metals; Test Methods

2.3.2 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of

3. TECHNICAL REQUIREMENTS:

3.1 Composition: Rivets shall conform to the following percentages by weight, determined by wet chemical methods in accordance with ASTM E350, by spectrographic methods in accordance with Federal Test Method Standard No. 151, Method 112, or by other analytical methods approved by purchaser:

	min	max
Carbon	0.05	0.15
Manganese	0.20	0.50
Phosphorous	--	0.040
Sulfur	--	0.050

3.1.1 Check Analysis: Composition variations shall meet the applicable requirements of AMS 2259.

3.2 Condition: Cold-headed from cold-drawn wire or bar and annealed, unless purchaser permits machining.

3.3 Properties: Rivets shall conform to the following requirements:

3.3.1 Hardness: Shall be not higher than 60 HRB or equivalent, determined in accordance with ASTM E18 on a flat, smooth, filed or ground surface near the midlength of the shank.

3.3.2 Formability: Solid-shank rivets shall withstand being driven cold to form a crack-free head having a diameter of 1.25 - 1.66 times the nominal shank diameter and a height within the range shown below and with expansion of the shank to the full diameter of the hole in which it is installed, provided that the hole diameter is not more than 0.006 in. (0.15 mm) greater than the nominal shank diameter.

Nominal Rivet Diameter		Head Height
Inch	(Millimetres)	Proportion of Nominal Diameter
0.062 - 0.094	(1.57 - 2.39)	0.33 - 1.0
0.125 - 0.250	(3.18 - 6.35)	0.33 - 0.8
0.312 - 0.375	(7.92 - 9.52)	0.33 - 0.7

3.3.3 Flarability: Hollow-end rivets shall withstand being flared to a diameter of 1.5 times the nominal shank diameter without bending the shank and without cracking in the flared end.

3.4 Quality: Rivets, as received by purchaser, shall be uniform in quality and condition, 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 of rivets shall supply all samples for vendor's tests 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 sample and 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 composition (3.1) and hardness (3.3.1) are classified as acceptance tests and shall be performed on each heat or lot as applicable.

4.2.2 Periodic Tests: Tests to determine conformance to requirements for formability (3.3.2) or flarability (3.3.3) 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 part number annealed in a single furnace charge or in an 8-hr period if annealing is performed in a continuous process furnace:

4.3.1 For Acceptance Tests:

4.3.1.1 Composition: One sample from bars or wire from each heat.

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

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

4.4 Reports: The vendor of rivets shall furnish with each shipment three copies of a report showing Ø the results of tests for chemical composition and hardness and stating that the rivets conform to the other technical requirements of this specification. This report shall include the purchase order number, lot number, AMS 7225E, part number, and quantity.

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

5. PREPARATION FOR DELIVERY:

5.1 Identification and Packaging:

5.1.1 Rivets of each different part number shall be packaged in separate containers.

5.1.2 Each container shall be marked to show not less than the following information:

RIVETS, CARBON STEEL
AMS 7225E
PART NUMBER _____
PURCHASE ORDER NUMBER _____
QUANTITY _____
MANUFACTURER'S IDENTIFICATION _____

5.1.3 Containers of rivets shall be prepared for shipment in accordance with commercial practice Ø and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the rivets to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.1.4 For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Ø Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.1 and 5.1.3 will be acceptable if it meets the requirements of Level C.

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Rivets not conforming to this specification or to modifications authorized by purchaser will be subject to rejection.

8. NOTES:

8.1 Marginal Indicia: The phi (Ø) symbol is used to indicate technical changes from the previous issue of this specification.

8.2 For direct U.S. Military procurement, purchase documents should specify not less than the following:

Title, number, and date of this specification
Size or part number of rivets desired
Quantity of rivets desired
Applicable level of packaging (See 5.1.4).