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400 Commonwealth Dr., Warrendale, PA 15096

AEROSPACE MATERIAL SPECIFICATION

Submitted for recognition as an American National Standard

SAE AMS 7325E

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Superseding AMS 7325D

RINGS, SEALING, TUBULAR METAL, CORROSION AND HEAT RESISTANT STEEL

UNS S32100

1. SCOPE:

1.1 Type: This specification covers sealing rings, commonly called hollow metal O-rings, made from corrosion and heat resistant steel.

1.2 Application: Primarily for seals in fluid systems at temperatures above or below those at which elastomeric or plastic materials may be used.

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

2.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2635 - Radiographic Inspection
AMS 5570 - Steel Tubing, Seamless, Corrosion and Heat Resistant, 18Cr - 11Ni - 0.40Ti (SAE 30321), Solution Heat Treated
AMS 5576 - Steel Tubing, Welded, Corrosion and Heat Resistant, 18Cr - 10.5Ni - 0.40Ti (SAE 30321), Solution Heat Treated

2.2 U.S. 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

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be AMS 5570 or AMS 5576 steel tubing.

3.2 Fabricating:

3.2.1 Forming: Rings shall be formed from suitably rolled or formed tubing.

3.2.2 Preparation for Welding: Formed rings shall be clean and free from foreign materials at the surfaces to be welded.

3.2.3 Welding: The ends of the formed rings shall be welded together by flash butt welding or resistance welding. The welding process shall be so performed and controlled as to prevent formation of excessive internal flash.

3.2.4 Final Forming: The welded rings may be formed to final dimensions by rolling or coining. OD welding flash shall be removed with a smooth blend to adjacent surfaces. If the drawing specifies a maximum reduction in OD of the tube in the flash removal area, the reduction from the actual measured tube OD away from the flash removal area shall be not greater than shown on the drawing. If the drawing specifies a minimum wall thickness after flash removal, the wall thickness shall not be reduced below that value.

3.3 Properties: Rings shall conform to the following requirements:

3.3.1 Compression Deflection: The load required to produce, at the weld, the minimum gland depth shown below shall not exceed the average of the loads required to produce the same gland depth at two points away from the weld by more than the specified maximum load increase. Only one determination of load away from the weld shall be made on rings under 4 in. (100 mm) in circumference. Determinations shall be made as in 3.3.1.1.

Nominal Tube OD		Nominal Wall Thickness		Gland Depth min		Load Increase
Inch	mm	Inch	mm	Inch	mm	% max
0.035	0.88	0.006	0.15	0.023	0.58	50
0.062	1.55	0.006	0.15	0.042	1.05	40
		0.010	0.25	0.042	1.05	50
0.094	2.35	0.006	0.15	0.074	1.85	35
		0.010	0.25	0.074	1.85	40
0.125	3.12	0.010	0.25	0.105	2.62	35

3.3.1.1 A specimen embracing at least 4 in. (100 mm) of the circumference shall be cut from a ring or an entire ring shall be used as the specimen. The specimen shall be held flat on the support plate while being compressed. The support plate shall be so designed that the area of the ring being compressed rests on a 0.250 in. ± 0.010 (6.25 mm ± 0.25)

3.3.1.1 (Continued):

diameter surface. The specimen shall be compressed to the minimum gland depth at two points, when size permits, at least 1 in. (25 mm) on either side of the weld and the average load determined. The specimen shall then be compressed to the minimum gland depth at the weld. Load shall be applied through the end of a 0.250 in. ± 0.010 (6.25 mm ± 0.25) diameter rod.

3.4 Ø Quality: Rings, as received by purchaser, shall be uniform in quality and condition, sound, and free from foreign materials and from imperfections detrimental to usage of the rings. Weld shall show complete fusion through the joint.

3.4.1 Rings shall be produced under radiographic control. This control shall consist of radiographic examination of the weld joint in accordance with AMS 2635 until proper welding technique, which will produce rings with weld joints free from harmful imperfections, is established for each part number and of production rings as necessary to ensure maintenance of satisfactory quality.

3.4.1.1 To assist in locating the weld, each ring 2.500 in. (62.50 mm) and over in OD shall bear a mark of yellow paint or ink on the OD located 180 deg ± 10 from the weld.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Ø Responsibility for Inspection: The vendor of rings 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 any confirmatory testing deemed necessary to ensure that the rings conform to the requirements of this specification.

4.2 Ø Classification of Tests: Tests to determine conformance to all technical requirements of this specification are classified as acceptance tests and shall be performed on each lot.

4.3 Sampling: Shall be in accordance with the following; a lot shall be all rings of one size of tubing of the same heat of steel welded under the same conditions in a period of not longer than eight hours:

4.3.1 Compression-Deflection: At least one ring from each lot.

4.4 Reports: The vendor of rings shall furnish with each shipment a report stating that rings conform to the technical requirements of this specification. This report shall include purchase order number, AMS 7325E, part number, size, and quantity.

4.5 Resampling and Retesting: If any specimen used in the above tests fails to meet the specified requirements, disposition of the rings may be based on the results of testing three additional specimens for each original nonconforming specimen. Failure of any retest specimen to meet the specified requirements shall be cause for rejection of the rings 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 Rings shall be packaged in such a manner as to ensure that the rings, during shipment and storage, will be protected against mechanical injury.

5.1.2 Each package shall be marked with not less than the following information:

AMS 7325E
PART NUMBER _____
PURCHASE ORDER NUMBER _____
MATERIAL SPECIFICATION _____
QUANTITY _____
MANUFACTURER'S IDENTIFICATION _____

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

5.1.4 Ø For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, 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: Rings 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 Dimensions in inch/pound units are primary; dimensions in SI units are shown as the approximate equivalents of the primary units and are presented only for information.