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Standard Specification for Rubber Sheet Gaskets[1]

This standard is issued under the fixed designation D 1330; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers gaskets cut from sheet rubber that are intended for general gasket applications on water, air, and low-pressure steam. They are not intended for use with oils and strong acids.

1.2 The values stated in SI units are to be regarded as the standard.

2. Referenced Documents

2.1 *ASTM Standards:*

D 395 Test Methods for Rubber Property—Compression Set[2]

D 412 Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers—Tension[2]

D 573 Test Method for Rubber—Deterioration in an Air Oven[2]

D 865 Test Method for Rubber—Deterioration by Heating in Air (Test Tube Enclosure)[2]

D 1415 Test Method for Rubber Property—International Hardness[2]

D 2240 Test Method for Rubber Property—Durometer Hardness[2]

D 3182 Practice for Rubber—Materials, Equipment, and Procedures for Mixing Standard Compounds and Preparing Standard Vulcanized Sheets[2]

D 3183 Practice for Rubber—Preparation of Pieces for Test Purposes From Products[2]

3. Materials and Manufacture

3.1 Compounds furnished under this specification shall be manufactured from natural rubber, reclaimed rubber, synthetic rubber, or mixtures thereof, together with added compounding materials. The compound shall be suitably vulcanized. The material shall be of a uniform quality and thickness, and shall have a smooth or fine fabric surface.

4. Color

4.1 The material shall be red or black as specified.

5. Physical Properties

5.1 This material shall conform to the requirements as to physical properties prescribed in Table 1.

6. Dimensional Tolerances

6.1 The material shall conform to the requirements as to dimensional tolerances prescribed in Table 2.

7. Workmanship, Finish, and Appearance

7.1 All materials and workmanship shall be in accordance with good commercial practice, and the resulting stock shall be free from porous areas, air pockets, foreign matter, or other defects affecting serviceability.

8. Sampling

8.1 When proof of conformance with this specification is required, the samples shall be taken from the finished product whenever possible. When the thickness of the finished product is less than 1.6 mm (1⁄16 in.), the manufacturer shall, upon request of the purchaser, at the time of ordering, furnish a sufficient number of test slabs or blocks prepared in accordance with Practice D 3182 for the proper performance of the required tests. The slabs or blocks shall be prepared from a batch of compound similar to that used in the lot. In the case of gaskets cut from sheet, the manufacturer shall furnish a 305-mm (12-in.) square sample of the uncut sheet. Unless otherwise specified, a lot shall consist of all products of the same thickness, submitted for inspection at the same time. All samples shall be prepared in accordance with Practices D 3182 and D 3183.

9. Test Methods

9.1 The properties enumerated in this specification shall be determined in accordance with the following methods, except as modified in accordance with certain of the references given below:

9.1.1 *Hardness*—Test Methods D 1415 (preferred) or D2240, except that superimposed buffed specimens, taken from sheet 1.6 mm (1⁄16 in.) thick and over, may be used.

9.1.2 *Tensile Strength*—Test Methods D 412. Percentage change in tensile strength shall be determined after air-aging for 94± 2 h at 70 ± 2°C (158 ± 3.6°F).

9.1.3 *Compression Set*—Test Method B of Test Methods

[1] This specification is under the jurisdiction of the ASTM Committee D11 on Rubber and is the direct responsibility of Subcommittee D11.36 on Seals.

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[2] *Annual Book of ASTM Standards,* Vol 09.01.

TABLE 1 Physical Requirements

	Grade I	Grade II	Steam
Hardness number	70–85	70–85	70–85
Tensile strength, min, MPa (psi)	4.9 (700)	2.8 (400)	4.9 (700)
Elongation, min, %	150	150	150
Change in tensile strength:			
Air aged 94 ± 2 h at 70± 2°C (158 ± 3.6°F), max, %	25	25	...
Air aged 94 ± 2 h at 125± 2°C (257 ± 3.6°F), max, %	...	...	25
Change in elongation:			
Air aged 94 ± 2 h at 70± 2°C (158 ± 3.6°F), max, %	25	25	...
Air aged 94 ± 2 h at 125± 2°C (257 ± 3.6°F), max, %	...	...	25
Compression set, max,% :			
22 ± 0.25 h at 70 ± 2°C (158 ± 3.6°F)	40	40	...
22 ± 0.25 h at 125 ± 2°C (257 ± 3.6°F)	...	...	40

TABLE 2 Dimensional Tolerances

Nominal Thickness		Tolerance,±	
mm	in.	mm	in.
Under 0.80	1/32	0.25	0.010
0.80–1.60	1/32–1/16	0.30	0.012
1.60–3.20	1/16–1/8	0.40	0.016
3.20–4.80	1/8–3/16	0.50	0.020
4.80–9.50	3/16–3/8	0.80	0.031
9.50–14.30	3/8–9/16	1.20	0.047

D 395. The sample under test shall be held for 22 ± 0.25 h at 70 ± 2°C (158 ± 3.6°F). Buffed specimens, taken from sheet 1.5 mm (0.06 in.) thick and over, may be plied to obtain the required thickness.

9.1.4 *Air-Aging*—Test Method D 865 (preferred) or Test Method D 573.

10. Inspection and Rejection

10.1 All tests and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified. The manufacturer shall afford the inspector all reasonable facilities, without charge, for tests and inspection.

10.2 The purchaser may make the tests and inspection to govern acceptance or rejection of the material at his laboratory, or elsewhere. Such tests and inspection shall be made at the expense of the purchaser, and not later than 30 days after receipt of the material.

10.3 All lots for testing, provided as specified in Section 8, shall be visually inspected to determine compliance with the material, workmanship, and color.

10.4 Any material that fails to conform to one or more of the test requirements may be retested at the expense of the manufacturer. For this purpose, two additional tests shall be made for the requirement in which failure occurred. Failure of either of the retests shall be cause for final rejection.

10.5 Rejected material shall be disposed of as directed by the manufacturer, and at his expense.

11. Packaging and Package Marking

11.1 *Packaging*—Unless otherwise specified, the material shall be furnished in rolls between 860 and 1070 mm (35 and 42 in.) wide and approximately 45 kg (100 lb) in mass, and each roll may contain a maximum of two pieces. It shall be suitably packaged to give adequate protection in transit.

11.2 *Marking*—Unless otherwise specified, each roll shall be marked on one side with the manufacturer's identification or trademark. The purchase order number shall appear on the wrapping.

12. Keywords

12.1 air; low-pressure steam; rubber; sheet gaskets; water