

DEPARTMENT OF COMMERCE  
BUREAU OF STANDARDS  
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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR  
GASKETS, ASBESTOS METALLIC CLOTH

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 97b

[Revised May 12, 1927. Supersedes F. S. B. No. 97a]

This specification was officially promulgated by the Federal Specifications Board on December 29, 1923, for the use of the departments and independent establishments of the Government in the purchase of asbestos metallic cloth gaskets.

The latest date on which the technical requirements of this revision shall become mandatory for all departments and independent establishments of the Government is August 12, 1927. They may be put into effect, however, at any earlier date, after promulgation]

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I. GENERAL SPECIFICATIONS

All tests and analyses shall be made in accordance with the methods described in United States Government general specifications for rubber goods, Federal Specifications Board specification No. 59, in effect on date of invitation for bids.

## II. TYPES AND GRADES

Gaskets shall be furnished in the following types and grades as required: Type A, seamless; and type B, jointed. Grade 1, not less than 90 per cent asbestos; and grade 2, not less than 75 per cent asbestos.

## III. MATERIAL AND WORKMANSHIP

All gaskets shall be made from woven asbestos wire insertion cloth treated with a rubber compound. All layers of the gasket shall be uniformly impregnated with the rubber compound. The workmanship shall be first class in every respect.

## IV. GENERAL REQUIREMENTS

1. The order shall specify the type, grade, shape, and size desired, and the gaskets shall be so finished as to retain their shape and size under the ordinary conditions of handling, before and during installation. (See Section VIII, 3.)

2. All gaskets  $\frac{1}{8}$  inch in thickness and greater shall be folded and contain not less than 3 plies of cloth. No gaskets less than  $\frac{1}{8}$  inch thick shall be ordered under this specification. (See Section VIII, 3, and VIII, 5.)

3. No minus tolerance will be permitted. Plus tolerance will be permitted as follows:

- 1/32 inch in thickness on all gaskets.
- 1/32 inch in all other dimensions of handhole gaskets.
- 1/16 inch in all other dimensions of all other gaskets.

4. A gasket shall not crack nor show any signs of injury when bent flat on itself.

5. The brass or copper wire shall be 0.007 inch in diameter, plus or minus 0.001 inch.

6. Seamless gaskets shall be composed of an integral piece of the fabric in which the filler threads run continuously around the gasket, while the warp threads run transversely. The fabric shall be folded on itself to form the desired thickness, the fold forming that edge of the gasket which is exposed to steam.

7. Jointed gaskets shall be composed of cloth cut on the bias and folded into the required shape and thickness after the ends have been securely joined together. The fold shall form that edge of the gasket which is exposed to steam.

## V. DETAIL REQUIREMENTS

### 1. GRADE 1.

(a) The cloth shall be woven from yarn, containing not less than 90 per cent, by weight, long fiber asbestos of not less than 12 per cent, by weight, water of composition.

(b) The weave of the cloth shall consist of not less than 20 strands in the warp and 10 strands in the filler per linear inch.

(c) Cloth for  $\frac{1}{8}$ -inch 3-ply gaskets, shall be constructed as follows: Each strand of the warp shall consist of 2 plies of asbestos yarn and 1 brass or copper wire twisted together; each strand of the filler shall be composed of 1 or more plies of asbestos yarn and 1 brass or copper wire twisted together.

(d) Cloth for  $\frac{3}{16}$ -inch 3-ply and  $\frac{1}{4}$ -inch 4-ply gaskets shall be constructed as follows: Each strand of the warp and filler shall consist of 2 plies of asbestos yarn and 1 brass or copper wire twisted together.

(e) The weight of the asbestos metallic cloth before application of the rubber compound shall be not less than 2.25 pounds per square yard for  $\frac{1}{8}$ -inch 3-ply gaskets and 2.75 pounds per square yard for  $\frac{3}{16}$ -inch 3-ply and  $\frac{1}{4}$ -inch 4-ply gaskets.

(f) The rubber compound shall be not less than 40 nor more than 50 per cent, by weight, of the finished gasket.

(g) Gaskets shall show no signs of flowing, cracking, material hardening, or disintegration of the rubber compound when bolted between iron plates and subjected to the action of saturated steam at 275 pounds per square inch, for a total of 24 hours.

## 2. GRADE 2.

(a) The cloth shall be woven from yarn, containing not less than 75 per cent, by weight, long fiber asbestos of not less than 12 per cent, by weight, water of composition.

(b) The weave of the cloth shall be not less than 16 strands in the warp and 8 strands in the filler per linear inch.

(c) Cloth for  $\frac{1}{8}$ -inch 3-ply gaskets shall be constructed as follows: Each strand of the warp shall consist of 2 plies of asbestos yarn and not more than 2 brass or copper wires twisted together; each strand of the filler shall be composed of 1 or more plies of asbestos yarn and not more than 2 brass or copper wires twisted together, providing that not more than 1 wire shall be used in the filler when only 1 ply of yarn is used.

(d) Cloth for  $\frac{3}{16}$ -inch 3-ply and  $\frac{1}{4}$ -inch 4-ply gaskets shall be constructed as follows: Each strand of the warp and filler shall consist of 2 plies of asbestos yarn and not more than 2 brass or copper wires twisted together.

(e) The weight of the asbestos metallic cloth before application of the rubber compound shall be not less than 2.25 pounds per square yard for  $\frac{1}{8}$ -inch 3-ply gaskets and 2.75 pounds per square yard for  $\frac{3}{16}$ -inch 3-ply and  $\frac{1}{4}$ -inch 4-ply gaskets.

(f) The rubber compound shall not exceed 55 per cent, by weight, of the finished gasket.

(g) Gaskets shall show no signs of flowing, cracking, material hardening, or disintegration of the rubber compound when bolted between iron plates and subjected to the action of saturated steam at 200 pounds per square inch for a total of 24 hours.

#### VI. METHOD OF INSPECTION AND TEST

One sample gasket and 1 square foot of untreated fabric shall be taken at random from each lot of 5,000 or less handhole gaskets, 1,000 or less mud drum and pipe flange gaskets or 500 or less manhole gaskets, and forwarded to the testing laboratory.

#### VII. PACKING AND MARKING OF SHIPMENTS

Packing and marking shall be in accordance with the usual commercial practice unless otherwise specified in the proposal.

#### VIII. NOTES

1. Grade 1 gaskets are suitable for steam pressures up to 300 pounds per square inch and temperatures up to 700° F.
2. Grade 2 gaskets are suitable for steam pressures up to 200 pounds per square inch.
3. This specification includes all folded gaskets for boiler manholes, handholes, and flanged joints. Handhole and tube plate gaskets may be either type A or type B; all other gaskets should be type B.
4. When ordered, gasket tape shall conform to the requirements of jointed gaskets, grade 1 or 2 as required.
5. Stamped asbestos gaskets should be made from material described in latest issue of Federal Specifications Board specifications Nos. 94 and 96.

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