

Reference book not to be  
loan from the Library.

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

George K. Burgess, Director

CIRCULAR OF THE BUREAU OF STANDARDS, No. 308

[Issued April 19, 1926]

UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR  
STOPPERS, RUBBER

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 383

This specification was officially promulgated by the Federal Specifications Board on March 1, 1926, for the use of the departments and independent establishments of the Government in the purchase of rubber stoppers.

[The latest date on which the technical requirements of this specification shall become mandatory for all departments and independent establishments of the Government is June 1, 1926. They may be put into effect, however, at any earlier date after promulgation]

CONTENTS

	Page
I. General specifications.....	1
II. Grade.....	1
III. Material and workmanship.....	2
IV. General requirements.....	2
V. Detail requirements.....	2
1. Material.....	2
2. Compressibility.....	2
(a) Definition.....	2
(b) Testing machine.....	2
(c) Method of test.....	2
3. Steaming test.....	3
4. Acid test.....	3
VI. Method of tests.....	3
VII. Packing and marking.....	3
VIII. Notes.....	3

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 proposal.

II. GRADE

Stoppers shall be of a single grade.

## III. MATERIAL AND WORKMANSHIP

Stoppers shall be free from defects in material and workmanship.

## IV. GENERAL REQUIREMENTS

The diameters at top and bottom shall not vary more than 5 per cent from the dimensions given in the table.

*Table of dimensions of stoppers*

Stopper number	Diameter of top	Diameter of bottom	Height	Stopper number	Diameter of top	Diameter of bottom	Height
	<i>mm</i>	<i>mm</i>	<i>mm</i>		<i>mm</i>	<i>mm</i>	<i>mm</i>
00.....	14	10	25	7.....	37	30	25
0.....	17	12	25	8.....	41	33	25
1.....	18	15	25	9.....	45	37	25
2.....	20	16.5	25	10.....	50	42	25
3.....	23	18	25	11.....	56	50	25
4.....	25	20	25	12.....	65	59	25
5.....	27	23	25	13.....	70	60	25
6.....	32	26	25	14.....	88	75	25
EXTRA LONG SIZE							
20.....	22	17	26	24.....	30	23	33
21.....	25	19	32	25.....	34	28	38
22.....	26	20	32	26.....	40	34	38
23.....	28	22	32				

## V. DETAIL REQUIREMENTS

1. MATERIAL.—Stoppers shall contain at least 65 per cent by volume of rubber. High-grade reclaimed rubber may be used, but no ground rubber or oil substitute will be permitted.

2. COMPRESSIBILITY.—(a) *Definition.*—Compressibility of rubber stoppers represents the change in height of a No. 2 solid stopper, which is caused by the application of a load of 50 pounds to the flat surface of the sample.

(b) *Testing machine.*—The machine used for this test shall fulfill the following requirements: (1) The scale for indicating the applied load shall be accurate within 0.25 pound for a 50-pound load. (2) The pressure shall be applied uniformly and be equally distributed over the active surface of the sample. (3) The micrometer which is used for measuring the change in height shall be accurate to 0.0254 mm (0.001 inch).

(c) *Method of test.*—The load is applied to the stopper gradually until a pressure of 50 pounds is reached. The load is maintained for two minutes and the amount of compression determined by means of the micrometer. The stopper shall have a compression of not less than 6.35 mm (0.35 inch).

3. **STEAMING TEST.**—The steaming test shall be carried out in an autoclave or other suitable container, the temperature and pressure of which are properly controlled. A No. 2 solid stopper is suspended in an atmosphere of steam at 100° C. for five days, then taken out and kept at room temperature for 24 hours. The diameters of the top and bottom shall not have changed more than 10 per cent. The compressibility shall not vary more than 1.02 mm (0.04 inch) from that of the untreated sample. (See V, 2, (a).)

4. **ACID TEST.**—This test is to be applied only to stoppers which are to be used in contact with acid.

When a No. 2 solid stopper has been heated on the steam bath for 30 minutes in a solution of hydrochloric acid prepared by mixing one volume of concentrated (37 per cent) hydrochloric acid with an equal volume of water, the following conditions must be met: (a) The dissolved material in the acid must not be more than one-tenth of 1 per cent of the weight of the stopper. (b) The diameters of the top and bottom after the sample has been washed and dried shall not have changed more than 10 per cent. (c) The compressibility of this washed and dried sample shall not vary more than 1.02 mm (0.04 inch) from that of the untreated sample. (See V, 2, (a).)

## VI. METHOD OF TESTS

On all orders the manufacturer shall submit six No. 2 solid stoppers for test. Any lot represented by a sample which fails in one or more tests may be retested at the expense of the contractor. For this purpose two additional samples shall be selected. Failure of either in any respect shall be cause for rejection.

## VII. PACKING AND MARKING

Packing shall be as called for in the proposal. Each stopper shall have the number indicating the size molded on the top.

## VIII. NOTES

---

ADDITIONAL COPIES  
OF THIS PUBLICATION MAY BE PROCURED FROM  
THE SUPERINTENDENT OF DOCUMENTS  
GOVERNMENT PRINTING OFFICE  
WASHINGTON, D. C.  
AT  
5 CENTS PER COPY

▽

