

DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
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CIRCULAR OF THE BUREAU OF STANDARDS No. 248
[Issued June 13, 1925]

UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR
RUBBER HOT WATER BOTTLES

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 221a
[Revised June 1, 1925]

This specification was officially promulgated by the Federal Specifications Board on November 5, 1924, for the use of the Departments and Independent Establishments of the Government in the purchase of rubber hot water bottles.

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I. TYPES

Bottles shall be oblong in shape with rounded corners. Cloth inserted bottles are considered in Federal Specifications Board Specification No. 220a.

II. MATERIAL AND WORKMANSHIP

Bottles shall be made with rubber walls suitably reinforced at the seams or edges and throat. The surface shall be smooth and

free from pits and other imperfections. An embossed surface will not be acceptable.

III. GENERAL REQUIREMENTS

No details specified.

IV. DETAIL REQUIREMENTS

1. CAPACITY AND THICKNESS.—The capacity and thickness of walls of bottles shall be in accordance with Table 1. The thickness of walls shall have a tolerance of ± 0.005 inch.

TABLE 1.—Capacity of bottles and thickness of walls

Nominal size (quarts)	Capacity, minimum	Thickness of walls
1.....	Quarts 1	Inch 0.025
2.....	2	.030
3.....	3	.035
4.....	4	.040

2. FITTINGS.—The throat plug shall be of noncorrosive material and shall be threaded to give an accurate fit with the stopper. It shall be cemented and securely held in place. The stopper shall be nickel plated and securely attached to the bottle by means of a strap, chain, or rubber cord. The stopper shall be provided with a rubber washer which shall produce a water-tight seal. The neck of the bottle shall be provided with either a loop handle or a tab having a reinforced eye. The loop handle shall be made of rubberized fabric securely held in place. It shall be not less than $\frac{1}{2}$ inch wide and shall extend at least to the top of the funnel. The tab shall have a reinforced eye which shall show no appreciable distortion or displacement when supporting the filled bottle. The bottom of the bottle shall be provided with a rubber tab having a reinforced eye which shall show no appreciable distortion or displacement when supporting the filled bottle. The top of the funnel shall have a minimum circumference of at least $7\frac{1}{8}$ inches. The depth shall be at least $1\frac{1}{4}$ inches.

3. RUBBER CONTENT.—The rubber compound shall contain at least 65 per cent, by volume, of the best quality new wild or plantation rubber.

4. TENSILE STRENGTH AND ULTIMATE ELONGATION.—See Table 2.

5. RESISTANCE TO HOT WATER.—Samples shall be submerged in boiling water for seven days. Twenty-four hours after removal, the tensile strength and elongation shall conform to the requirements in Table 2.

6. RESISTANCE TO HOT AIR.—Samples shall be aged in a drying oven in circulating air at 70° C. for seven days. Twenty-four hours after removal the tensile strength and elongation shall conform to the requirements in Table 2.

TABLE 2.—*Tensile strength and ultimate elongation*

Sample	Tensile strength, minimum	Ultimate elongation, minimum
As received.....	<i>Lbs./in.²</i> 1,600	<i>Per cent.</i> 400
After seven days in boiling water.....	600	350
After seven days in dry air at 70° C.....	800	200

7. INFLATION.—The bottle when inflated with air at a pressure corresponding to 18 inches of water shall show no leakage nor any indication of weakness.

V. SAMPLING

One bottle shall be selected from each 100 delivered, for test and analysis.

VI. PACKING AND MARKING

Each bottle shall have the manufacturer's name or trade name vulcanized in raised letters. Packing shall be as called for in the proposal.

VII. ADDITIONAL INFORMATION

No details specified.

VIII. GENERAL SPECIFICATIONS

General Specifications for Rubber Goods, F. S. B. Specification No. 59a, in effect on date of issuance of proposal, shall form part of this specification.

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