

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

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**UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR
TUBING, RUBBER**

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 39b

[Revised March 1, 1926]

This specification was officially promulgated by the Federal Specifications Board on September 15, 1922, for the use of the departments and independent establishments of the Government in the purchase of rubber tubing.

[The latest date on which the technical requirements of this revision 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]

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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 Specification for Rubber Goods, Federal Specifications Board Specification No. 59, in effect on date of proposal.

II. GRADES

Tubing shall be of the following grades: Grade A, pure gum; grade B, compounded.

III. MATERIAL AND WORKMANSHIP

Tubing shall be free from defects in material and workmanship.

IV. GENERAL REQUIREMENTS

This specification covers the requirements for rubber tubing to be used in chemical laboratories.

Tubing shall be of uniform dimensions and free from porosity. Its surface shall be smooth and free from pits or other imperfections.

V. DETAIL REQUIREMENTS

1. DIMENSIONS.—Tubing shall be of the dimensions given in Table 1. A tolerance of plus or minus $\frac{1}{64}$ inch in the inside diameter and plus $\frac{1}{64}$ inch in the wall thickness shall be allowed for both grades of tubing.

TABLE 1.—Dimensions

A.—PURE GUM¹

Light wall		Heavy wall		Pressure		Gooch, vacuum pump connections, width inside, measured flat
Diameter inside	Wall thickness	Diameter inside	Wall thickness	Diameter inside	Wall thickness	
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inches</i>
$\frac{1}{8}$	$\frac{1}{32}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{4}$
$\frac{3}{16}$	$\frac{1}{16}$	$\frac{3}{16}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{1}{8}$	$\frac{1}{2}$
$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{3}{4}$
$\frac{5}{16}$	$\frac{1}{8}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{5}{16}$	$\frac{1}{8}$	-----
$\frac{3}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{8}$	$\frac{1}{4}$	-----
$\frac{1}{2}$	$\frac{3}{32}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{1}{2}$	$\frac{1}{4}$	-----
-----	-----	-----	-----	-----	-----	-----
-----	-----	1	-----	-----	-----	-----
-----	-----	-----	$\frac{3}{4}$	-----	-----	-----
-----	-----	-----	$\frac{1}{2}$	-----	-----	-----

¹ Pure gum tubing shall be delivered in twelve-foot lengths.

B.—COMPOUNDED

Light wall		Heavy wall		For vacuum connections	
Diameter inside	Wall thickness	Diameter inside	Wall thickness	Diameter inside	Wall thickness
<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>	<i>Inch</i>
$\frac{1}{8}$	$\frac{3}{64}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{3}{16}$	$\frac{3}{16}$
$\frac{3}{16}$	$\frac{1}{16}$	$\frac{3}{16}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$
$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	-----	-----
$\frac{5}{16}$	$\frac{1}{8}$	$\frac{5}{16}$	$\frac{3}{8}$	-----	-----
$\frac{3}{8}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	-----	-----
$\frac{1}{2}$	$\frac{1}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	-----	-----
-----	-----	-----	$\frac{3}{4}$	-----	-----
-----	-----	1	$\frac{1}{2}$	-----	-----
-----	-----	-----	$\frac{1}{8}$	-----	-----

2. CHEMICAL REQUIREMENTS.—(a) *Rubber content.*—The rubber compounds shall contain at least the volumes of new wild or plantation rubber specified in Table 2.

(b) The compounds shall be free from all substances which might injuriously affect their quality.

3. PHYSICAL REQUIREMENTS.—(a) *Tensile strength, ultimate elongation, and set.*—The tubing shall meet the requirements specified in Table 2.

TABLE 2.—*Test requirements*

Material	Rubber by volume, minimum	Tensile strength, minimum	Ultimate elongation, minimum	Set test	
				Stretch for 10 minutes	Set after 10 minutes rest, maximum
	<i>Per cent</i>	<i>Lbs./ in.²</i>	<i>Per cent</i>	<i>Inches</i>	<i>Per cent</i>
A, pure gum.....	90	1,200	700	2-12	12
B, compounded.....	60	1,200	400	2- 8	25

(b) *Accelerated aging test.*—The tensile strength and ultimate elongation of samples after having been subjected to the action of dry air for 96 hours at 158° F. ± 2 shall not decrease more than 40 per cent.

VI. METHOD OF TEST AND ANALYSIS

Three feet of tubing shall be selected from each order for test and analysis. 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

Tubing shall be packed in paper boxes, marked with the size and with the manufacturer's name and date of manufacture.

VIII. NOTES

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