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No. 46c

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR
HOSE, TENDER (CORRUGATED)

[Revised October 28, 1926]

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 46c

This specification was officially promulgated by the Federal Specifications Board on October 6, 1922, for the use of the departments and independent establishments of the Government in the purchase of tender hose (corrugated).

[The latest date on which the technical requirements of this revision shall become mandatory for all departments and independent establishments of the Government is January 28, 1927. They may be put into effect, however, at any earlier date after promulgation]

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I. GENERAL SPECIFICATIONS

All tests 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. TYPE AND GRADE

Hose shall be of the type known as "corrugated tender hose" and shall be of one grade only.

III. MATERIAL AND WORKMANSHIP

Hose shall be free from defects in material and workmanship.

IV. GENERAL REQUIREMENTS

1. **CONSTRUCTION.**—Hose shall consist of (a) an inner rubber tube, (b) two plies of cotton duck, (c) a helix of wire, (d) a layer of rubber, (e) two plies of cotton duck, and (f) an outer cover of rubber. At each end of the hose there shall be an extra ply of fabric extending 3 inches beyond the end of the nipple. Length of hose shall be as specified in the proposal.

2. **TUBE, COVER, AND LAYER.**—Tube and cover shall be smooth, free from pitting, and of uniform thickness. The rubber layer shall be formed completely around the wire and securely frictioned to the duck. The rubber compounds shall be free from all substances which might injuriously affect their quality.

3. **COTTON DUCK.**—Cotton duck shall be well, evenly, and firmly woven, as free from unsightly defects, dirt, knots, lumps, and irregularities of twist as is consistent with the best manufacturing practice. The layers shall be applied on a bias of 45°, with edges lapped at least one-half inch (not sewed), and shall be well impregnated with a rubber compound. There shall be a distinct layer of rubber between the plies.

4. **WIRE REINFORCEMENT.**—The helix shall be of heavily galvanized or copperized, round spring steel wire, No. 9 B. W. G. (0.148-inch diameter). It shall be wound with not over 1-inch pitch throughout the length of the hose up to points the length of the nipple (which must be specified) from each end. At these points the wire shall be turned to a straight line parallel with the axis of the hose and shall extend to points 1 inch from the ends of the hose.

V. DETAIL REQUIREMENTS

Hose shall meet all requirements stated in the table.

Physical test requirements

Size, inside diameter.....inches..	2½	3	3½
Outside diameter.....do.....	3¼	3¾	4¼
Tolerance:			
Inside diameter (plus or minus).....do.....	⅛	⅛	⅛
Outside diameter (plus or minus).....do.....	⅜	⅜	⅜
Length (as specified in proposal):			
Length tolerance (plus or minus).....do.....	¼	¼	¼

Thickness, tube and cover, minimum.....inches..	0.07	0.07	0.07
Thickness of rubber layer, minimum.....do....	0.07	0.07	0.07
Weight of duck, minimum.....ounces square yard..	16.2	16.2	16.2
Friction: ¹			
Before steaming—			
Between cover and fabric, minimum.....pounds..	15	15	15
Plies of fabric, minimum.....do....	18	18	18
Fabric and tube, minimum.....do....	15	15	15
After steaming ² —			
Between cover and fabric, minimum.....do....	12	12	12
Plies of fabric, minimum.....do....	15	15	15
Fabric and tube, minimum.....do....	12	12	12
Tensile strength, before steaming:			
Tube, minimum.....pounds per square inch..	750	750	750
Cover, minimum.....do....	600	600	600
Tensile strength after steaming:			
Tube, minimum.....do....	550	550	550
Cover, minimum.....do....	450	450	450
Ultimate elongation:			
Before steaming, tube and cover, minimum.....inches..	2-6	2-6	2-6
After steaming, ² maximum decrease in tensile strength and elongation			
.....per cent..	50	50	50
Bend test of hose. ³			

VI. INSPECTION, SAMPLING, AND TESTS

1. The manufacturer shall notify the purchaser sufficiently in advance of the completion of the hose to permit of arrangements for inspection. Inspection and tests shall be made at place of manufacture unless otherwise specified, manufacturer providing a place for conducting tests; also necessary help, equipment, etc.

2. One length of hose shall be selected from each 100 lengths or less delivered for test. The manufacturer shall furnish with each order 1 foot of unfriktioned duck the full width of the bolt.

3. The inspector shall, after tests, mark the remainder of samples with manufacturer's name, order, requisition, and item numbers and forward them to the testing laboratory. 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. Brands shall contain the manufacturer's name and trade-mark. Hose 25 feet or over in length shall have brands of a distinctive color inlaid in the rubber cover at two places on each length approximately 4 feet from the ends, letters to be at least one-fourth inch high. Hose less than 25 feet in length shall have one inlaid brand approximately in the center. Use word "Tender" on tender hose.

¹ The rate of separation shall not be greater than 1 inch per minute under the specified loads.

² A short section of hose is subjected to the action of steam in an autoclave for 48 hours at a pressure of 45 lbs./in.² After this test the sample shall show no blisters nor loosening of any parts.

³ Hose shall show no kinking when bent 180° around a circle of diameter equal to three times the nominal inside diameter of hose.

VIII. NOTES

The technical requirements of this specification are the same as those of the specification for class A tender hose adopted by the American Railway Association as revised in 1923.

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