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Specification
No. 63a

DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR
OIL SUCTION AND DISCHARGE HOSE

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 63a

[Revised March 28, 1925]

This specification was officially promulgated by the Federal Specifications Board on September 1, 1923, for the use of the Departments and Independent Establishments of the Government in the purchase of oil suction and discharge hose.

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I. GRADE

Hose shall be of a single grade.

II. MATERIAL AND WORKMANSHIP

Hose shall be free from defects in material and workmanship.

III. GENERAL REQUIREMENTS

1. CONSTRUCTION.—Hose shall consist of—

- (a) A helix of wire.
- (b) Cotton duck reinforcement.
- (c) A rubber layer.
- (d) Cotton duck reinforcement.
- (e) A helix of wire embedded in rubber.
- (f) Outside rubber cover.
- (g) Nipples attached with clamps.

Both ends of hose shall be capped with the same rubber compound as is used in the cover.

Length of hose shall be as specified in the proposal, but shall not exceed 30 feet.

2. COTTON DUCK.—Cotton 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.

3. WIRE REINFORCEMENT.—The helix shall be of heavily galvanized round spring steel wire, providing a cross sectional area of wire per linear foot of hose as stated in table. The wire cut on one side of the hose by a longitudinal radial section is used in the calculation.

4. RUBBER FILLING STRIPS.—The space between adjacent coils of the outer helix shall be filled with strips of the same quality of rubber compound as is used in the cover. The thickness of strip shall be not less than the diameter of the wire.

5. RUBBER LAYER AND COVER.—The rubber layer and cover shall be of a uniform thickness, as shown in table.

6. NIPPLES.—Each length of hose shall be fitted with nipples (except 4-inch hose when couplings are specified), securely vulcanized into the hose and firmly fastened with two heavy clamps for 4-inch hose and three heavy clamps for 6-inch and 8-inch hose, using suitable bolts and nuts. The nipples shall be cut from standard pipe and threaded at one end. Threads shall be adequately protected for shipment. The length of the nipples shall be not less than that stated in table unless otherwise specified.

7. **FLANGES.**—Each nipple shall be fitted with a standard flange for 125 pounds working pressure.

Nipples and flanges shall both be of ferrous metal.

8. **COUPLINGS.**—If couplings are required on 4-inch hose, purchaser shall give details of design.

IV. DETAIL REQUIREMENTS

Hose shall meet all requirements stated in table.

Physical test requirements

Size:			
Inside diameter.....inches..	4	6	8
Outside diameter.....do....	5	7 $\frac{1}{8}$	9 $\frac{1}{4}$
Tolerance, plus or minus.....do....	±	±	±
Length of hose to be as specified in proposal, but not to exceed 30 feet.			
Cross sectional area of wire per linear foot of hose:			
Inside helix, minimum.....square inch..	0.40	0.60	0.80
Outside helix, minimum.....do....	.20	.30	.40
Plies of duck:			
Next to inside wire, minimum.....	1	2	2
Next to outside wire, minimum.....	3	5	6
Weight of duck:			
Next to inside wire, minimum.....ounces per square yard..	12	12	12
Next to outside wire, minimum.....do....	18	18	18
Thickness:			
Rubber layer, minimum.....inches..	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
Rubber cover, minimum.....do....	$\frac{1}{16}$	$\frac{1}{16}$	$\frac{1}{16}$
Length of nipples, minimum.....do....	10	16	20
Hydrostatic test pressure ¹pounds per square inch..	250	200	150
Friction: ²			
Between plies, fabric and rubber layer, filling, or cover, minimum.....pounds..	15	15	15
Tensile strength:			
Original test—			
Layer, minimum.....pounds per square inch..	800	800	800
Cover, minimum.....do....	700	700	700
After gasoline test ³ —			
Layer, minimum.....do....	600	600	600
Cover, minimum.....do....	500	500	500
Ultimate elongation:			
Layer, minimum.....inches..	2-8	2-8	2-8
Cover, minimum.....do....	2-7	2-7	2-7
Set, stretch 10 minutes:			
Layer.....inches..	2-6	2-6	2-6
Cover.....do....	2-6	2-6	2-6
Set after 10 minutes rest, maximum.....per cent..	25	25	25

V. SAMPLING, INSPECTION, AND TESTS

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 the place of manufacture unless otherwise specified, manufacturer providing a place for conducting tests; also necessary help, equipment, etc.

With each lot of 50 lengths or less the contractor shall furnish a section of hose 12 inches long, which he shall guarantee to be made of the same materials and to be of the same construction and cure as the hose delivered, except that the helices of wire shall be omitted.

¹ Hose complete with nipples and flanges shall withstand the pressure indicated without leakage or any indication of weakness.

² The rate of separation shall be not greater than 1 inch per minute under the specified load.

³ This test shall be made on test pieces cut from the layer and cover which have been immersed in gasoline for 48 hours at a temperature between 70 and 80° F. and then allowed to stand in air at the same temperature for 24 hours. The gasoline shall be distilled from gasoline purchased as 57 to 62° Baumé, using only the fraction distilled below 130° C. (266° F.).

He shall also furnish with each order 1 foot of unfriictioned duck the full width of the bolt.

The inspector shall, after tests, mark the remainder of samples with manufacturer's name, order, requisition, and item numbers and forward them to the proper laboratory for any further tests.

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.

VI. 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 more in length shall have brands 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.

VII. ADDITIONAL INFORMATION

No details specified.

VIII. GENERAL SPECIFICATIONS

All tests shall be made in accordance with the methods described in Federal Specifications Board Specification No. 59, General Specifications for Rubber Goods in effect on date of proposal.

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