

MUNICIPAL DEPARTMENT

REPORT ON FIRE HOSE.

A committee appointed by the National Fire Protective Association of the United States have presented the following report on woven cotton rubber-lined fire hose :

THE COTTON FABRIC.

1. Cotton fabric is to be smoothly, firmly and evenly woven, in circular form, and free from injurious or unsightly defects.
2. It must have not less than seven picks of filling and twenty-six warp strands per square inch of weaving, and filling must be well covered by the warp.
3. The cotton fabric is to weigh not less than thirty-five pounds per 100 feet.
4. The yarn from which fabric is woven must not be coarser than No. 8, and is to be spun and twisted in the best manner from selected long staple cotton. Its minimum strength, when sixty yards (forty turns of one and one-half yard reel) is tested on a Brown Bros.' tester, must be at least twelve and one-half per cent. above Draper standard for average strength, as, for instance, No. 12 yarn must have a strength of not less than eighty pounds.
5. All cotton fabrics are to be antiseptically treated, or mildew-proofed.
6. Diameter of fabric is to be sufficient to provide an internal diameter of the hose of $2\frac{3}{8}$ inches when rubber-lined.

RUBBER LINING.

7. Rubber linings or tubes must be of best quality. They are to be guaranteed by the manufacturer to be of that grade, composition and degree of vulcanization which he believes the best adapted for a durable fire hose lining of any hose lining made by him.
8. They must contain not less than 40 per cent. of Para gum, and compound must not contain any old vulcanized or reclaimed rubber, or so-called rubber substitutes, or any other injurious adulterant.
9. Tubes are to be of uniform thickness and quality throughout, to be smooth and well made, to be free from injurious defects, and to be partly vulcanized before insertion into the tubular fabric.
10. They are to be well and properly cemented to the cotton fabric with the best cement, and in the best manner for adhesion, durability, and smoothness of interior.
11. Fabric and tube when united are to be joined in such manner as to combine best initial results and enduring qualities with the most perfect freedom from corrugation that it is possible to secure with the best methods of manufacture.
12. Linings exclusive of cement or other backing when in the hose is to be not less than No. 17 Stubbs wire gauge (.058-inch) in thickness, and including cement and other backing is not to exceed No. 15 Stubbs wire gauge (.072-inch) in thickness. Soft backing, if used, shall not exceed No. 25 Stubbs wire gauge (.02-in.) in thickness.

13. The tubes without cement are to be of not less than three calendered sheets, i.e., sheets produced by three or more passages of the sheet through the calender machine, about one-third of the thickness of the finished sheet being produced by each passage through the calender; the intention being to remedy in two plies the defects that may occur in one.

14. The tube is to be lap jointed, and the lap is to be as small and as neat as is consistent with best results.

TESTS

15. Fifty-foot lengths, when properly tested on delivery, must not burst with less than 400 lbs. pressure.
16. Every length of hose is to be tested by the manufacturers after coupling, but before delivery, with 200 lbs. pressure, to detect imperfections and insure proper attachment of couplings, and hose so tested is to be branded "Tested to 200 lbs." in letters one inch high.
17. Stretch of hose is not to exceed five per cent. in length when tested by applying 100 lbs. pressure per square inch and then entirely releasing pressure by removal of cap from coupling, and noting the shortening 10 minutes after cap is removed.
18. When tested in 3-foot lengths bursting pressure is to average not less, straight, than 500 lbs.; curved to a 4-foot radius, than 450 lbs.; ends tied together, than 300 lbs.
19. A piece of rubber cut lengthwise of the lining $\frac{1}{2}$ -inch wide and 4 inches in length between jaws must stretch to five times its own length without breaking, and when released the rubber must return in one minute to its original length of four inches within an excess of 25 per cent. of its length.
20. Underwriters reserve the right to reject any brand of hose which for good reason appears to be unsuitable for underwriter hose.
21. Any manufacturer desiring his hose to be accepted as "National Standard" must select as his own trade mark and weave into his fabric a specific color line, and brand the hose with a special name to indicate that it is "National Standard" hose, and such color line or brand must not be used for any hose not conforming to these requirements.
22. Six pieces of the kind of hose desired to be accepted as "National Standard" hose must, on application, be sent to each insurance association, each piece to be $3\frac{1}{2}$ feet long.

23. These pieces will be for test and permanent reference samples, and the manufacturer must guarantee that the hose he will make or sell as "National Standard" will correspond in all respects with such samples.

24. The maker's name with the year and month of manufacture to be stenciled with indelible ink in two places on each length of hose, the marks being five feet from the couplings. Marks to be black and letters one inch high. In addition, the words "National Standard," same color and size, shall be marked in one place on each length. The brass coupling is to be stamped with letters $\frac{1}{4}$ inch high, giving name of manufacturer and year of manufacture.

25. The couplings shall be of U. S. gun metal composition, or 9 parts copper to 1 of tin (not "yellow brass"), shall weigh not less than five lbs., to be of best form to resist strains of expanding the binding ring in the coupling, and shall be made, fitted and finished in a first-class workmanlike manner and provided with rubber washers of best quality accurately fitting the same.

26. No hose is to be sold as "National Standard" until manufacturer has received written notification that his hose is accepted, and the underwriters have the right for good cause to withdraw their acceptance at any time.

27. Hose delivered to purchasers as "National Standard" must be in all respects like sample previously submitted to the purchaser, and like samples on file with the underwriters.

28. Manufacturers will not be required to guarantee hose against defects of wear and tear of use, injury from fire, acids, or any cause not due to defects of manufacture, but if at any time during a period of two years from the date of delivery of a lot of hose, a section or sections of it burst when subjected to a pressure of less than 150 lbs., or show signs of weakness which is evidently due to defects of manufacture and not at all incident to the customary wear and tear of use, such quantity of defective hose shall be replaced by new hose without further cost to the consumer.

29. The defective hose shall be sent to the manufacturer, and the contractor from whom it was bought shall have ample opportunity to inspect and test the defective portions before replacing them by new hose.

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