NFPA

1961

FIRE HOSE 1979

NATIONAL FIRE PROTECTION ASSOCIATION, INC.
470 Atlantic Avenue, Boston, MA 02210

3M-7-79-FP
Printed in U.S.A.

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See Official NFPA Definitions at the back of this pamphlet.

Standard for
Fire Hose

NFPA 1961 — 1979

The 1979 Edition of NFPA 1961

This 1979 edition of NFPA 1961, *Standard on Fire Hose,* was prepared by the Committee on Fire Hose and was adopted by the National Fire Protection Association, Inc., on May 17, 1979, at its Annual Meeting in St. Louis, Missouri. It was released by the Standards Council for publication on June 11, 1979.

Origin and Development of NFPA 1961

Action on this subject by the National Fire Protection Association dates from 1897, with various editions, the history of which may be found in the NFPA Proceedings. Standards for fire hose both for mill use and for fire department use were among the earliest standards adopted by NFPA. The present Standard includes amendments to the 1974 edition and was prepared by the NFPA Committee on Fire Hose. It was adopted at the 1979 NFPA Annual Meeting in May, 1979.

This *Standard for Fire Hose* is designed to provide users of fire hose with a good practical standard for woven-jacketed, rubber-lined fire hose of either single or multiple jacket construction. The Standard is not intended to serve as a detailed manufacturers' specification.

Details regarding standard threads for all standard nominal sizes of fire hose connections appear in NFPA 194, *Screw Threads and Gaskets for Fire Hose Connections*; and NFPA 1962 is the *Standard for the Care, Use, and Maintenance of Fire Hose Including Connections and Nozzles.*

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Standard for
Fire Hose

NFPA 1961 — 1979

NOTICE
An asterisk (*) following the number or letter designating a paragraph indicates explanatory material on that paragraph in the Appendix.

Chapter 1 Administration

1-1 Scope. These requirements shall apply to the trade sizes of 1½-, 2-, and 2½-in. (38-, 51-, 65-mm) single- or multiple-jacket and 3-, 3½-, and 4-in. (76-, 89-, 102-mm) multiple-jacket rubber-lined fire hose; and 3½-, 4-, 4½-, 5-, and 6-in. (89-, 102-, 114-, 127-, 152-mm) single-jacket relay-supply hose. Single-jacket hose may be provided with a protective cover.

1-2 Purpose. The purpose of this Standard is to specify minimum standards which will provide a reasonable degree of safety and will assist those manufacturing and purchasing hose for fire protection purposes. It is not the intention of this Standard to bar from consideration hose of improved quality or of special design that will meet or exceed provisions of this Standard.

It is the intent of this Standard that single-jacket hose be used by industrial fire departments and at private fire hydrants, standpipes, and similar places where hard usage is not expected, and multiple-jacket hose be used by all fire fighting organizations where service conditions require the additional protection provided.

A visual inspection alone will not ensure that the hose meets specifications. Selecting hose by specification is only effective when standard tests are performed under each item of this Standard.

1-3* General.

1-3.1 Examination.

1-3.1.1 Hose shall be considered acceptable if it meets all the requirements, and passes all the required tests, of this Standard.

1-3.2 Certification.

1-3.2.1 When requested, the manufacturer shall provide a certification that the hose furnished has been tested and is in compliance or exceeds the provisions as outlined in this Standard.

1-3.3 Test Methods.

1-3.3.1 Tests, other than those outlined in this Standard, shall be performed in accordance with testing procedures as specified in Underwriters Laboratories Standard 19, *Woven-Jacketed Rubber-Lined Fire Hose*, March, 1978.

1-4 Definitions.

1-4.1 Acceptance Hydrostatic Tests. Hydrostatic tests performed on new hose under specified control conditions.

1-4.2* Approved. Means "acceptable to the authority having jurisdiction."

1-4.3* Authority Having Jurisdiction. The "authority having jurisdiction" is the organization, office, or individual responsible for "approving" equipment, an installation, or a procedure.

1-4.4 Booster Hose. A small diameter, reinforced, rubber cover, rubber-lined, high pressure hose.

1-4.5 Coating. Jacket where the yarn is impregnated or saturated with the protective materials or coated with the protective material so the outside of the jacket is relatively smooth.

1-4.6 Covered (other than rubber covered). Jacket covered and lined with a continuous synthetic rubber or plastic, this cover usually being thicker than that of a coating.

1-4.7 Fire Hose. A woven-jacket, lined, flexible conduit for conveying water for fire fighting purposes.

1-4.8 Forestry Fire Hose. A very lightweight, small diameter, single-jacket fire hose that may be either lined or unlined.

1-4.9 Labeled. Equipment or materials to which has been attached a label, symbol or other identifying mark of an organization acceptable to the "authority having jurisdiction" and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

1-4.10 Lined Hose. A hose having a nonpermeable lining of a rubber, synthetic rubber, plastic or latex coated fabric.

1-4.11* Listed. Equipment or materials included in a list published by an organization acceptable to the "authority having jurisdiction" and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

1-4.12 May. This term is used to state a permissive use or an alternative method to a specified requirement.

1-4.13 Multiple Jacket. A construction consisting of a combination of two separately woven jackets (double-jacket), or two or more jackets interwoven.

1-4.14 Relay-Supply Hose. A large diameter, lightweight, single-jacket fire hose designed to move large volumes of water at low pressure.

1-4.15 Service Test. Hydrostatic test conducted, as specified in *Standard for the Care, Use, and Maintenance of Fire Hose,* NFPA 1962, on all in-service hose to determine that it shall remain in service.

1-4.16 Shall. This term indicates a mandatory requirement.

1-4.17 Single Jacket. A construction consisting of one woven jacket.

1-4.18 Suction (Hard). A rubber-lined, rubber covered hose whose reinforcement contains a semi-rigid or rigid helix to resist collapse under vacuum.

1-4.19 Suction (Soft). A rubber-lined, large diameter hose of woven jacket construction that will collapse at zero psi.

1-4.20 Unlined Hose. A hose consisting of only the woven jacket and having such qualities that the yarn of the jacket swells when wetted, sealing the hose, which is usually made of linen yarns.

1-5 Units.

1-5.1 Metric units of measurement in this Standard are in accordance with the modernized metric system known as International Systems of Units (SI). The unit liter, outside of, but recognized by SI, is commonly used in international fire protection. The SI units used in this Standard are listed in Table 1-5.1 with conversion factors. (*See ANSI Standard Z210.1–1973, Metric Practice Guide, for additional information.*)

1-5.2 In this Standard, values for measurements are followed by an equivalent in SI units. The first stated value shall be regarded as the requirement as the given equivalent value may be approximate. As all 2½-in. hose shall have an internal waterway of 2$^{9}/_{16}$ in., as specified in Section 3-1, the SI unit for 2$^{9}/_{16}$ in. (65 mm) is used.

Table 1-5.1

Quantity	US Unit/Symbol	SI Unit/Symbol	Conversion Factor
Length	inch/in. foot/ft	millimeter/mm meter/m	1 in. = 25.4 mm 1 ft = 0.305 m
Volume	gallon/gal	liter/L	1 gal = 3.785 L
Flow Rate	gallon per minute/gpm	liter per minute/L/m	1 gpm = 3.785 L/m
Pressure	pounds per square inch/psi	kilopascal/kPa	1 psi = 6.894757 kPa
Mass	pounds/lb	kilograms/kg	1 lb = .454 kg

Chapter 2 Construction

2-1 Jackets.

2-1.1* Jackets shall be made from a good grade of an approved natural or synthetic thread or approved combinations thereof.

2-1.2 Jackets shall be well, evenly, and firmly woven, and as free from unsightly defects, dirt, knots, lumps, and irregularities of twist as is consistent with good manufacturing practice.

2-1.3 All knots shall be tucked under the warp threads.

2-1.4 Jackets made of fibers or filaments other than cotton shall have been submitted to a testing laboratory satisfactory to the authority having jurisdiction and determined suitable for fire service use.

2-1.5 Each jacket shall be seamless and shall have the filling woven around the hose throughout its length and the warps interwoven with and substantially covering the filling.

2-1.6 The jackets of multiple-jacket hose may be separate or interwoven.

2-2 Lining.

2-2.1 The lining shall be made of a properly vulcanized natural, synthetic, or combination thereof, rubber compound of uniform thickness which shall comply with all tests specified. It may be made from calendered sheets, lap-jointed and vulcanized into one solid body, a single-ply extruded tube, or a latex-coated fabric lining.

2-2.2 The waterway surface of the lining shall be practically free from pitting, corrugations, or other irregularities or imperfections.

2-2.3 Thickness. For linings made from vulcanized natural rubber, synthetic rubber or combination rubber compounds thereof, the thickness of the lining shall not be less than the values indicated in Table 2-2.3.

Table 2-2.3
Average Thickness of Vulcanized-Rubber Lining Exclusive of Backing

Size of Hose in. (mm)	Minimum in. (mm)
1½, 2, 2½ (38, 51, 65)	.040 (1.02)
3 (76)	.050 (1.27)
3½, 4 (89, 102)	.060 (1.52)
Relay-Supply Hose, 3½, 4, 4½, 5, 6 (89, 102, 114, 127, 152)	.070 (1.78)

2-2.3.1 Special Linings.

2-2.3.1.1 For the 1½-in. (38-mm) size, single-jacket hose, the average thickness of lining made of polychloroprene (neoprene) shall not be less than 0.035 in. (.89 mm).

2-2.3.1.2 The average thickness of lining made from unmilled natural rubber latex shall not be less than 0.032 in. (.81 mm).

2-2.3.1.3 The average total thickness of lining made from natural rubber latex-coated fabric shall not be less than 0.015 in. (.38 mm) and the average thickness of the inner waterway latex coating shall not be less than 0.010 in. (.25 mm).

2-2.4 Adhesion Tests.

2-2.4.1 The adhesion between the lining and the jacket shall be such that the rate of separation of a 1½-in. (38-mm) strip of the lining from the jacket shall not be greater than 1 in. (25.4 mm) per minute with a weight of 12 lbs (5.4 kg) for a period of 10 minutes or until complete separation occurs.

2-2.4.2 If a rubber backing is used between the lining and the jacket, the adhesion between the lining and the backing, and between the backing and the jacket shall be such that the rate of separation of a 1½-in (38-mm) strip of the lining from the jacket shall not be greater than 1 in. (25.4 mm) per minute with a weight of 12 lbs (5.4 kg).

2-2.4.3 When the construction provides no adhesion between the jacket and lining along the fold, the surface over which there is no adhesion shall not be greater than 35 percent of the total surface. The remaining 65 percent shall meet the requirements of 2-2.4.1 or 2-2.4.2.

2-2.5 Physical Tests of Lining.

2-2.5.1 The tensile strength of specimens of vulcanized rubber taken from the lining shall not be less than 1,200 psi (8274 kPa).

2-2.5.2 The tensile strength of specimens of unmilled natural rubber latex taken from the lining shall not be less than 1,800 psi (12 411 kPa).

2-2.5.3 The ultimate elongation, when rupture occurs in the tensile strength test of vulcanized rubber linings, shall not be less than 400 percent (2 to 10 in. [51-254 mm]).

2-2.5.4 The ultimate elongation, when rupture occurs in the tensile strength test of unmilled natural rubber latex taken from the linings, shall not be less than 700 percent (2 to 16 in. [51-405 mm]).

2-2.5.5 The ultimate elongation may not be less than 250 percent (2 to 7 in. [51-178 mm]) for neoprene linings, provided the neoprene compound is capable of withstanding immersion in petroleum-base oil at 121° ± 1°C (248.8° ± 1.8°F) for a duration of 18 hours without a decrease of more than 50 percent of its original tensile strength and elongation.

2-2.5.6 The oil referred to in 2-2.5.5 is a medium-swelling petroleum base oil having a viscosity of 100 ± 5 seconds (Saybolt Universal) at 98.9°C (210°F), an aniline point of 93° ± 3°C (199.4° ± 5.4°F) and a flash point (open cup) of 246.1° ± 5.6°C (475° ± 10°F).

2-2.5.7 The permanent elongation (or set) of specimens elongated 300 percent (2 to 8 in. [51-203 mm]), held for two minutes, released and measured two minutes after release, shall not exceed 25 percent.

2-2.6 Accelerated Aging Test of Lining. The tensile strength and ultimate elongation of specimens of the lining which have been subjected to the action of oxygen at a pressure of 300 ± 10 psi (2070 ± 69 kPa), and a temperature of 70° ± 1°C (158° ± 1.8°F) for a period of 96 hours, shall not be less than 60 percent of the tensile strength and ultimate elongation of specimens which have not been heated in oxygen.

2-3 Rubber Cover.

2-3.1 The cover, when required by the authority having jurisdiction, shall be made of a properly vulcanized natural, synthetic, or combination thereof, rubber compound of uniform thickness.

2-3.2 The average thickness of the cover shall not be less than 0.050 in. (1.27 mm).

2-3.3 The adhesion between the cover and the woven jacket shall be such that the rate of separation of a 1½-in. (38-mm) strip of the cover from the jacket shall be not greater than 1 in. (25.4 mm) per minute with a weight of 10 lbs (4.5 kg) for a period of 10 minutes or until complete separation occurs.

2-3.4 The tensile strength of the cover shall be not less than 1,500 psi (10 342 kPa).

2-3.5 The ultimate elongation when rupture occurs in the tensile strength test shall be not less than 400 percent (2 to 10 in. [51-254 mm]).

2-3.6 The permanent elongation (or set) of specimens elongated 300 percent (2 to 8 in. [51-203 mm]), held for two minutes, released, and measured two minutes after release, shall not exceed 25 percent.

2-3.7 The tensile strength and ultimate elongation of specimens of the cover which have been subjected to the action of oxygen at a pressure of 300 ± 10 psi at a temperature of 70° ± 1°C (158° ± 1.8°F) for a period of 96 hours shall be not less than 60 percent of the tensile strength and ultimate elongation of specimens which have not been heated in oxygen.

2-4 Relay-Supply Hose.

2-4.1 The lining, or cover, or both for relay-supply hose may be made of a synthetic rubber or plastic compound approved by the authority having jurisdiction, and suitable for the intended use.

2-4.2 Single-jacket relay-supply hose shall not be used to directly supply attack lines, or to supply a manifold to which attack lines are attached.

2-5 Finished Hose. The construction shall be such that the hose is flexible and shall be easily folded and coiled. The workmanship shall be such as is characteristic of good manufacturing practice.

Chapter 3 Diameter and Length

3-1* Diameter. The hose shall have an internal diameter of not less than the trade size of the hose; however, the internal diameter for 2½-in. (65-mm) hose shall be at least 2$^{9}/_{16}$ in. (65 mm).

3-2 Length.

3-2.1 Unless otherwise specified, the hose shall be in lengths averaging not less than 50 ft (15 m).

3-2.2 No nominal 50 ft (15 m) length shall be less than 48 ft (14.6 m) except the length from which a burst test sample was taken, which may be 47 ft (14.3 m).

3-2.3 No nominal 75 ft (22.5 m) length shall be less than 73 ft (22.3 m) except the length from which a burst test sample was taken, which may be 72 ft (22 m). The hose shall be in lengths averaging not less than 75 ft (22.5 m).

3-2.4 No nominal 100 ft (30 m) length shall be less than 98 ft (29.9 m) except the length from which a burst test sample was taken, which may be 97 ft (29.6 m). The hose shall be in lengths averaging not less than 100 ft (30 m).

3-2.5 The length shall be measured from back to back of couplings with the hose at a hydrostatic pressure of 10 psi (69 kPa).

Chapter 4 Acceptance Hydrostatic Tests

4-1 Hydrostatic Tests.

4-1.1 All nondestructive hydrostatic tests shall be conducted on hose equipped with couplings to be delivered, unless otherwise specified by the purchaser.

4-1.2 Burst tests may be conducted with special couplings attached.

4-1.3 There shall be no leakage, distortion, or movement of the couplings during the prescribed hydrostatic tests at pressures up to and including those pressures specified for the tests.

4-1.4 These tests shall be conducted under controlled conditions employing equipment capable of supplying a uniform pressure.

4-1.5 Tests shall be conducted at the point of manufacture, or at a facility properly equipped and staffed for these tests.

4-2 Acceptance Pressure Test.

4-2.1 Each length of fire hose shall be subjected to the Acceptance Pressure Test as specified in Table 4-2.

4-2.2 The hose shall be subjected to a hydrostatic pressure increasing at a rate of not less than 300 psi (2070 kPa) nor more than 1,000 psi (6900 kPa) per minute. Pressure shall be held for at least 15 seconds and not more than one minute during which time the hose shall not leak nor shall any jacket thread break during this test.

4-2.3 The Acceptance Pressure Test pressure shall appear on each length of hose as stated in Chapter 7.

4-2.4 Single-jacket relay-supply hose shall withstand the acceptance pressures shown in Table 5-1.

Table 4-2
Acceptance Pressure Test

Trade Size of Hose in. (mm)	Number of Jackets	Acceptance Pressure psi (kPa)
1½, 2, 2½ (38, 51, 65)	Single	300 (2010)
1½, 2, 2½ (38, 51, 65)	Single	400 (2760)
1½, 2, 2½ (38, 51, 65)	Single	500 (3450)
1½, 2, 2½, 3, 3½, 4 (38, 51, 65, 76, 89, 102)	Multiple	400 (2760)
1½, 2, 2½, 3, 3½ (38, 51, 65, 76, 89)	Multiple	600 (4140)

4-3 Burst Test.

4-3.1 The Burst Test shall be conducted on a 3-ft (66-mm) sample of hose that shall be subjected to a hydrostatic pressure increasing at a rate of not less than 300 psi (2070 kPa) nor more than 1,000 psi (6900 kPa) per minute, while lying either straight, or curved on a surface having a radius of 27 in. (686 mm); the pressure will be increased until the burst occurs or the maximum pressure of the test equipment is reached. The hose in any event shall not burst at less than that pressure indicated in Table 4-3.

4-3.2 Single-jacket relay-supply hose shall withstand the minimum burst pressures shown in Table 5-1.

Table 4-3
Burst Pressure Test

Trade Size of Hose in. (mm)	Numbers of Jackets	Acceptance Pressure psi (kPa)	Minimum Burst Pressure psi (kPa)
1½, 2, 2½ (38, 51, 65)	Single	300 (2070)	500 (3450)
1½, 2, 2½ (38, 51, 65)	Single	400 (2760)	600 (4140)
1½, 2, 2½ (38, 51, 65)	Single	500 (3450)	750 (5171)
1½, 2, 2½,3, 3½, 4 (38, 51, 65, 76, 89, 102)	Multiple	400 (2760)	600 (4140)
1½, 2, 2½, 3, 3½ (38, 51, 65, 76, 89)	Multiple	600 (4140)	900 (6205)

4-4 Kink Test.

4-4.1 A full length of the hose, while kinked, shall withstand, without rupturing or breaking any thread in the jacket or jackets, the hydrostatic pressure as indicated in Table 4-4.

4-4.2 This test shall be conducted on a full length of hose. The hose shall be filled with water with the petcock open to allow all air to escape. The petcock shall then be closed, the pressure raised to approximately, but not exceeding, 10 psi (69 kPa) and the hose kinked 18 in. (460 mm) from the free end by tying the hose back against itself as close to the fittings as practicable so that there will be a sharp kink. The pressure shall then be increased at a rate not less than 300 psi (2070 kPa) nor more than 1,000 psi (6900 kPa) per minute to the required pressure and then immediately released.

4-4.3 Single-jacket relay-supply hose shall withstand the minimum kink pressures shown in Table 5-1.

Table 4-4
Kink Pressure Test

Trade Size of Hose in. (mm)	Number of Jackets	Acceptance Pressure psi (kPa)	Minimum Kink Pressure psi (kPa)
1½, 2, 2½ (38, 51, 65)	Single	300 (2070)	300 (2070)
1½, 2, 2½ (38, 51, 65)	Single	400 (2760)	350 (2415)
1½, 2, 2½ (38, 51, 65)	Single	500 (3450)	400 (2760)
1½, 2, 2½ (38, 51, 65)	Multiple	400 (2760)	350 (2415)
3, 3½, 4 (76, 89, 102)	Multiple	400 (2760)	250 (1725)
1½, 2, 2½ (38, 51, 65)	Multiple	600 (4140)	450 (3105)
3, 3½ (76, 89)	Multiple	600 (4140)	300 (2070)

4-5 Elongation Test.

4-5.1 The elongation of the hose of sizes up to and including 2½ in. (65 mm), when tested to the acceptance pressures indicated in Table 4-2, shall not exceed 10 percent of the length for single-jacket hose, or eight percent of the length for multiple-jacket hose from an initial measurement taken at a pressure of 10 psi (69 kPa).

4-5.2 For hose sizes larger than 2½ in. (65 mm), when tested to the acceptance pressures as indicated in Table 4-2, the elongation shall

not exceed the percentages indicated in Table 4-5 of the length from an initial measurement taken at a pressure of 10 psi (69 kPa).

4-5.3 Single-jacket relay-supply hose shall only be required to meet the acceptance hydrostatic tests specified in Chapter 5 of this Standard.

Table 4-5
Maximum Elongation — Percent

	All Cotton Jackets	Cotton-Synthetic Jackets	All Synthetic Jackets
400 psi (2760 kPa) Acceptance Pressure Test			
3-in. (76-mm)	10	8	8
3½-in. (89-mm)	10	10	8
4-in. (102-mm)	12	12	10
600 psi (4140 kPa) Acceptance Pressure Test			
3-in. (76-mm)	12	10	10
3½-in. (89-mm)	13	13	13

4-6 Twist Test.

4-6.1 The hose, when tested to the acceptance pressure, shall not twist more than that indicated in Table 4-6.

4-6.2 The figures in Table 4-6 shall be the maximum number of turns per 50 ft (15 m) and the final twist shall be in a direction that shall tighten, rather than loosen, the couplings. A twist to tighten shall be indicated by a clockwise rotation of the free end of the hose when viewed from the fixed end.

4-6.3 A maximum twist in a counterclockwise direction of two degrees per ft (6.6°/m) shall be permitted while pressure is being raised; however, the final twist, if any, shall be in a clockwise direction from the point of origin.

4-6.4 The amount of twist shall be measured by following the color line, if provided, or by noting the turns of the fitting at the free end of the hose during the period the pressure is being applied.

4-6.5 The amount of twist shall be recorded to the nearest one-eighth turn.

4-6.6 Single-jacket relay-supply hose shall only be required to meet the acceptance hydrostatic tests specified in Chapter 5 of this Standard.

Table 4-6
Twist — Number of Turns

Trade Size of Hose, in. (mm)	Acceptance Pressure psi (kPa)	Number of Jackets	Maximum Turns per 50 ft (15 m)
1½, 2 (38, 51)	300 (2070)	Single	7½
1½, 2 (38, 51)	400-500 (2760-3450)	Single	10
2½ (65)	300 (2070)	Single	3¼
2½ (65)	400-500 (2760-3450)	Single	5
1½, 2 (38, 51)	400-600 (2760-4140)	Multiple	4¼
2½, 3, 3½ (65, 76, 89)	400-600 (2760-4140)	Multiple	1¾
4 (102)	400 (2760)	Multiple	1¾

4-7 Warp.

4-7.1 The hose, when tested to acceptance pressures indicated in Table 4-2, shall not warp more than 20 in. (510 mm) per 50 ft (15 m) of hose measured from the free end. The warp shall be measured from an initial straight line drawn from center to center of the couplings.

4-7.2 For hose having nominal length greater than 50 ft (15 m) and up to 100 ft (30 m), the amount of warping shall be the maximum deviation of any 50-ft (15-m) portion of the hose from an initial straight line drawn from the center of the fittings at each end of the hose.

4-7.3 The warp shall be measured as the distance from the referenced straight line to the center line of the hose at the point of maximum deviation.

4-7.4 As an alternate method of test, when desired by the manufacturers, the position of the hose relative to the water supply may be reversed, end for end, when the test is repeated, following the first measurement for warping.

4-7.5 Single-jacket relay-supply hose shall only be required to meet the acceptance hydrostatic tests specified in Chapter 5 of this Standard.

4-8 Rise.

4-8.1 No rise from the level of the test table shall be permitted for multiple-jacket hose when subjected to the acceptance pressures as indicated in Table 4-2.

4-8.2 Single-jacket hose shall not rise from the level of the test table more than that indicated in Table 4-8.

4-8.3 Single-jacket relay-supply hose shall only be required to meet the acceptance hydrostatic tests specified in Chapter 5 of this Standard.

Table 4-8
Rise in Single-Jacket Hose

Size of Hose, Single-Jacket in. (mm)	Permissible Rise in. (mm)
1½, 2 (38, 51)	7 (178)
2½ (65)	4 (102)

Chapter 5 Acceptance Hydrostatic Tests for Single-Jacket Relay-Supply Hose

5-1 Hydrostatic Tests.

5-1.1 The following are the only hydrostatic pressure tests that shall be required for single-jacket relay-supply hose.

5-1.2 All nondestructive hydrostatic tests shall be conducted on hose equipped with couplings to be delivered, unless otherwise specified by the purchaser.

5-1.3 Burst tests may be conducted with special couplings attached.

5-1.4 There shall be no leakage, distortion, or movement of the couplings during the prescribed hydrostatic tests at pressure up to and including those pressures specified for the tests.

5-1.5 These tests shall be conducted under controlled conditions employing equipment capable of supplying a uniform pressure.

5-1.6 Tests shall be conducted at the point of manufacture or at a facility properly equipped and staffed for these tests.

5-2 Acceptance Pressure Test.

5-2.1 Each length of fire hose shall be subjected to the Acceptance Pressure Test as specified in Table 5-1.

5-2.2 The hose shall be subjected to a hydrostatic pressure increasing at a rate of not less than 300 psi (2070 kPa) nor more than 1,000 psi (6900 kPa) per minute. Pressure shall be held for at least 15 seconds and not more than one minute during which time the hose shall not leak nor shall any jacket thread break during this test.

5-2.3 The Acceptance Pressure Test pressure will appear on each length of hose as stated in Chapter 7.

Table 5-1
Test Requirements for Relay-Supply Hose

Trade Size of Hose in. (mm)	Acceptance Pressure psi (kPa)	Minimum Burst Pressure psi (kPa)	Minimum Kink Pressure psi (kPa)
3½ (89)	400 (2760)	600 (4140)	250 (1720)
4 (102)	400 (2760)	600 (4140)	250 (1720)
4½ (114)	400 (2760)	600 (4140)	250 (1720)
5 (127)	300 (2070)	500 (3450)	200 (1380)
6 (152)	300 (2070)	500 (3450)	200 (1380)

5-3 Burst Test.

5-3.1 The Burst Test shall be conducted on a 3-ft (.9-m) sample of hose which shall be subjected to a hydrostatic pressure increasing at a rate of not less than 300 psi (2070 kPa) nor more than 1,000 psi (6900 kPa) per minute, while lying either straight, or curved on a surface having a radius of 27 in. (686 mm); the pressure will be increased until the burst occurs or the maximum pressure of the test equipment is reached. The hose, in any event, shall not burst at less than that indicated in Table 5-1.

5-4 Kink Test.

5-4.1 A full length of the hose, while kinked, shall withstand, without rupturing or breaking any thread in the jacket or jackets, the hydrostatic pressure as indicated in Table 5-1.

5-4.2 This test shall be conducted on a full length of hose. The hose shall be filled with water with the petcock open to allow all air to escape. The petcock shall then be closed, the pressure raised to approximately, but not exceeding, 10 psi (69 kPa) and the hose kinked 18 in. (460 mm) from the free end by tying the hose back against itself as close to the fittings as practicable so that there will be a sharp kink. The pressure shall then be increased at a rate not less than 300 psi (2070 kPa) nor more than 1,000 psi (6900 kPa) per minute to the required pressure and then immediately released.

Chapter 6 Mildew Resistance

6-1 If mildew treatment is specified by the purchaser, the manufacturer shall certify that the mildew treatment meets the requirements of USDA Forest Service Specification 5100-186a.

Chapter 7 Marking

7-1 Each length of fire hose shall be indelibly marked in letters and figures at least 1 in. (25.4 mm) high with the maker's name or other acceptable identification, the month and the year of manufacture, and the words "Tested to (the Acceptance Pressure specified in Table 4-2 or Table 5-1) PSI."

7-2 These markings shall be in two places on each length of hose, beginning approximately 4 ft (1.22 m) from the ends of the hose.

7-3 If a manufacturer produces hose at more than one factory, each length of hose shall have a distinctive marking to identify it as the product of a particular factory.

Chapter 8 Special Types

8-1 Forestry.

8-1.1 Lined forestry fire hose shall comply with USDA Forest Service Specification 5100-186a, cotton synthetic.

8-1.2 Unlined forestry fire hose shall comply with USDA Forest Service Specification 5100-183f.

8-2 Unlined fire hose shall comply with the requirements of ANSI Standard A152.1.

8-3 Suction.

8-3.1 Hard suction hose shall be reinforced smooth-bore rubber, of a design having a low friction loss and which will not collapse under a vacuum of 23 in. (584 mm) of mercury and will also withstand a hydrostatic pressure test of 200 psi (1380 kPa).

8-3.2 Soft suction hose shall be of multiple-jacket rubber-lined construction, withstand a hydrostatic pressure test of 200 psi (1380 kPa), and meet specifications satisfactory to the authority having jurisdiction.

8-4 Booster Hose.

8-4.1 Conventional booster hose shall comply with the requirements of ANSI/UL 92, *Fire Extinguisher and Booster Hose.*

8-4.2 High pressure booster hose, intended for acceptance pressure test over 400 psi (2760 kPa), shall comply with the requirements of Rubber Manufacturers Association *Standard for High Pressure Fire Engine Booster and Fire Extinguisher Hose.*

8-5 Others.

8-5.1 Coated or covered, woven-jacket, rubber-lined hose that does not meet the requirements of Section 2-3 of this Standard may be used in locations where some specific protection to the jacket is required.

The degree of protection shall determine the type and thickness of the coating or cover. This hose shall also meet all other applicable requirements of this Standard.