Committee Input No. 5-NFPA 1962-2016 [New Section after 4.8.1]

TITLE OF NEW CONTENT

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Committee Statement

Committee Statement: The committee is aware that the fire resistance of attack hose is a source of concern and is looking forward to the Fire Protection Research Foundation Workshop on Fire Hose scheduled for May 2016 to provide us with additional technical information to address Public Input Number 12.

Response Message:

Public Input No. 12-NFPA 1962-2015 [New Section after 4.8.1]

Committee Input No. 6-NFPA 1962-2016 [Section No. 4.8.1]

4.8.1

Hose manufactured prior to July 1987 to meet the requirements of the 1979 and previous editions of NFPA 1961, *Standard on Fire Hose*, shall be removed from service.

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Committee Statement

Committee Statement: A significant change to NFPA 1961 was made in 1987 which is why 1987 is cited in the standard. This change was not intended to indicate a mandatory retirement date after 25 years. No technical substantiation has been provided to indicate that a mandatory retirement age of 25 years is necessary. A task group has been formed and may request research be conducted by the Fire Protection Research Foundation to investigate this subject.

Response Message:

Public Input No. 10-NFPA 1962-2015 [Section No. 4.8.1]

Committee Input No. 7-NFPA 1962-2016 [Section No. 4.8.2 [Excluding any Sub-Sections]]

Hose manufactured during July 1987 or after that date to the 1987 or subsequent editions of NFPA 1961 shall be service tested as specified in Section 4.8.

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Committee Statement

Committee Statement: A significant change to NFPA 1961 was made in 1987 which is why 1987 is cited in the standard. This change was not intended to indicate a mandatory retirement date after 25 years. No technical substantiation has been provided to indicate that a mandatory retirement age of 25 years is necessary. A task group has been formed and may request research be conducted by the Fire Protection Research Foundation to investigate this subject

Response Message:

Public Input No. 11-NFPA 1962-2015 [Section No. 4.8.2 [Excluding any Sub-Sections]]

Committee Input No. 9-NFPA 1962-2016 [Chapter B]

Annex B Specifying and Procuring Fire Hose

This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

B.1 General.

Fire hose is one of the most important tools that a fire fighter uses. Fire hose must provide many years of reliable service along with the couplings, nozzles, adapters, and appliances that are used with fire hose. The purchase of new fire hose involves an important investment and should be treated as such. A purchase should be made only after a detailed study of the fire department's needs, taking into consideration other equipment the department uses or plans to acquire.

B.2 Determining the Qualities and Characteristics Needed for Fire Hose.

B.2.1

The first consideration in planning the purchase of fire hose is determining the characteristics desired of the new hose. Desired characteristics should be identified and then prioritized *(for a guide, see Figure B.2.1)*. Those characteristics can include the following:

(1) *Size/diameter.* The hose size or diameter will affect the flow capabilities of the hose. If the hose is going to be used for handheld hose lines, it is important to match the size of the hose with the flow of the nozzle. A nozzle that flows 200 gpm attached to a hose line that has friction loss of 60 psi/100 ft when flowing 200 gpm is not a good match.

(2) *Length.* In what lengths is the hose to be coupled? Hose is typically coupled in either 50 ft (15 m) or 100 ft (30 m) lengths but can be coupled in any length, which will affect the number of couplings required.

(3) *Application.* How is the hose to be used? For example, a fire department might want attack hose to be used in a standpipe pack to have characteristics different from those of attack hose that will be carried preconnected on a pumper. Large-diameter hose that will be supplying a pumper from a hydrant is different from large-diameter hose that will be supplying elevated stream fire apparatus or a standpipe system in a building.

(4) *Color.* Hose is available in a variety of jacket colors. Fire departments often like to color code hose to specific applications. If specific colors are desired, the purchaser needs to specify the amount of hose to be purchased in each color.

(5) *Construction.* Fire hoses use a variety of natural and synthetic fabrics and elastomers in their construction. These materials allow the hoses to be stored wet without rotting and to resist the damaging effects of exposure to sunlight and chemicals. Modern hoses are also lighter weight than older designs, which has helped reduce the physical strain on firefighters. The synthetic fibers provide additional strength and better resistance to abrasion, and the fiber yarns can be dyed various colors or left natural. Coatings and liners include synthetic rubbers such as styrene butadiene, ethylene propylene, chloroprene, polyurethane, and nitrile butadiene. These compounds provide various degrees of resistance to chemicals, temperature, ozone, ultraviolet (UV) radiation, mold, mildew, and abrasion. Different coatings and liners are chosen for specific applications.

(6) *Packability.* Fire apparatus has limited space for the storage of fire hose, whether that hose is stored preconnected to the pump for initial attack or in a hose bed where the amount needed can be deployed and the remainder left on the apparatus. Some hose is packed lying flat while other hose is packed standing on its edge. It is important to consider the space on the apparatus where the hose will be carried and how a specific type of hose will pack into that space. Does it fold tightly at the ends of the hose bed? Is it easily deployed? A hose bed with a rigid hose bed cover could limit how the hose can be packed or how much hose can be packed in the hose bed and still allow quick and easy deployment. The coupling on the fire hose can affect the packability of the hose into a given space. Hose can be purchased in longer lengths to reduce the number of couplings that must be accommodated in a given space. If preconnected hose lines are in multiples of 100 ft (30 m), consider buying 100 ft (30 m) lengths of hose rather than 50 ft (15 m) lengths.

(7) *Friction loss.* The friction loss per 100 ft (30 m) of fire hose can vary tremendously for the same diameter hose. While a fire department may want a hose with as low a friction loss as possible, other desired characteristics can affect the availability of hose with all the desired characteristics. As part of the planning, the department should look at how the hose will be used and the importance of reducing the friction loss on that application. The effects of various friction loss on the application should be taken into account when considering what is an acceptable friction loss.

(8) *Weight.* If the weight of the hose is a factor, the maximum weight per 50 ft (15 m) or 100 ft (30 m) needs to be considered. Does that weight include the couplings? Weight is especially critical in two areas. If large-diameter hose is to be carried on older fire apparatus, the gross vehicle weight rating (GVWR) of the apparatus can limit the amount of hose that can be carried. Also, if hose is to be carried by fire fighters in bundles such as high-rise or standpipe packs, lighter is better as long as the hose meets the requirements for the operating pressure at which it will be used.

(9) *Kink resistance.* Layflat fire hose has a tendency to fold, or “kink,” when used at low pressures. This is common in operational use, an example being a hose dragged around a doorway. When a hose kinks, two things happen. First, the waterflow through the hose is throttled and therefore reduced. Second, at the point of kinking, a high spot is formed that leads to excessive abrasion and early failure of the hose. Fire hose should be flexible when there is no water in it to allow easy packing but resist bending to the point of kinking when charged with water.

(10) *Cost.* The amount of money budgeted is always part of the purchasing process, but other costs also should be considered, such as higher quality or longer service life relative to the long-term cost of the purchase. Spending a little more money initially can save money in the future because of a less frequent replacement schedule.

(11) *Expected service life.* The expected service life is how long the purchaser expects to be able to use the hose before its scheduled or planned replacement. Fire departments should have an established replacement schedule for fire hose. The characteristics of fire hose can change as new materials and methods of construction are introduced. The improved characteristics of newer hose could warrant replacement of existing hose on an accelerated schedule.

(12) *Warranty.* The expected service life and the warranty period are not the same. The warranty is an assurance by the manufacturer to the buyer that specific facts or conditions are true or will happen for a specified period of time; the buyer is permitted to rely on that assurance and seek some type of remedy if it is not true or not followed. The purchaser should evaluate what the warranty covers and what it does not cover and for what periods of time.

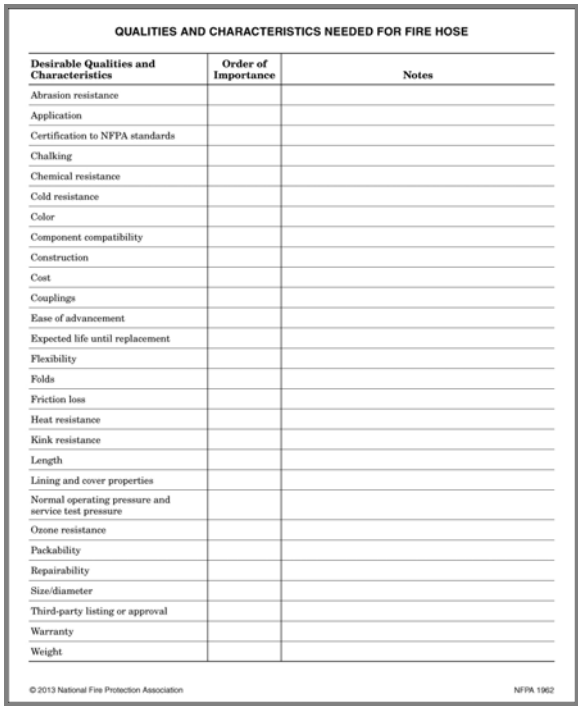
(13) *Manufactured in accordance with NFPA standards.* At a minimum, any hose purchased should meet the edition of NFPA 1961, *Standard on Fire Hose*, that is in effect at the time of purchase. However, it is important to recognize that the standard establishes minimum requirements. The purchaser should carefully review the standard and determine if requirements that go beyond the minimum are desired.

(14) *Independent third-party listing or approval.* Currently, NFPA 1961 does not require fire hose manufacturers to have an independent third-party test or to certify the test results of fire hose. However, such services are available and should be considered, particularly if the purchaser does not have a good program for checking new fire hose before it is placed in service.

(15) *Normal operating pressure.*NFPA 1961 establishes minimum service test pressures for different types of fire hose. These service test pressures are about 110 percent of the expected normal operating pressure. If the hose will be used at pressures above the minimum service test pressure, the hose should be required to have a higher service test pressure and thus a higher operating pressure.

(16) *Service test pressure.* Fire hose often has a designed service test pressure higher than the user plans to operate the hose at or service test it to. NFPA 1961 allows fire hose to be marked with a service test pressure lower than the manufacturer's design service test pressure as long as it is not below the minimum specified in the standard.

Figure B.2.1 Guide to Determining Qualities and Characteristics Needed for Fire Hose.



QUALITIES AND CHARACTERISTICS NEEDED FOR FIRE HOSE

Desirable Qualities and Characteristics	Order of Importance	Notes
Abrasion resistance		
Application		
Certification to NFPA standards		
Chalking		
Chemical resistance		
Cold resistance		
Color		
Component compatibility		
Construction		
Cost		
Couplings		
Ease of advancement		
Expected life until replacement		
Flexibility		
Folds		
Friction loss		
Heat resistance		
Kink resistance		
Length		
Lining and cover properties		
Normal operating pressure and service test pressure		
Ozone resistance		
Packability		
Repairability		
Size/diameter		
Third-party listing or approval		
Warranty		
Weight		

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B.2.2

The second consideration in the purchase of a fire hose is the associated equipment and components. These components include new and existing couplings, nozzles, adapters, and appliances. Are all components compatible in terms of operating pressure, connection, weight limits (GVWR and carrying capacity of the apparatus), and storage space?

It is important that all components in the water delivery system are compatible and that it is understood what the limitations are. The system is only as robust as its weakest link. Many components can be connected together, but that does not mean they can all be used at the same operating pressure. Today, the fire hose may be the strongest component in the system. All components need to have an operating pressure rated at or above the needed fireground pressures to deliver their capacity.

B.3 Writing the Specifications.

B.3.1

Once the desired characteristics have been identified and prioritized, the purchaser needs to write a specification that defines the characteristics needed and the quality desired. NFPA 1961, *Standard on Fire Hose*, provides the minimum technical requirements that new fire hose is expected to meet. Specifications should take into consideration the existing, proposed, and future use of the hose and the components.

B.3.2

The purchaser should also define in the specifications the warranty desired for the hose. The warranty is a written guarantee of the integrity of the hose that defines the manufacturer's responsibility within a given time period. If a second party, such as a dealer, is involved in modifying hose that is warranted by the original manufacturer, the responsibility for warranty work should be clearly understood by the original manufacturer, the second party, and the purchaser.

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Committee Statement

Committee Statement: The Technical Committee has established a task group to revise Annex B in an effort to provide users and procurement officers with more detailed information which will aid them in selecting fire hoses, appliances and nozzles that are appropriate for their intended use.

Response Message: