MEDIUM- AND HIGH-EXPANSION FOAM SYSTEMS

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1.0 SCOPE

FM has accepted and adopted NFPA 11A , *Standard for Medium- and High-Expansion Foam Systems*, 1999 Edition. FM comments including any differences between the NFPA and FM are provided in the FM Interpretation Section.

This data sheet provides general information on medium- and high-expansion foam systems including guidelines for their use design, installation, testing and maintenance. FM Property Loss Prevention Data Sheet 4-0, *Special Protection Systems*, also applies to medium- and high-expansion foam systems.

1.1 Changes

September 2010. Minor editorial changes were made for this revision.

January 2010. This data sheet technically supersedes the May 1993 edition of Data Sheet 4-3N which was editorially revised/reformatted in September, 1998. The previous version of this data sheet was based on the 1988 Edition of NFPA 11A.

The 1999 Edition of NFPA 11A is a reconfirmation of the 1994 Edition of NFPA which superseded the 1988 Edition of NFPA 11A. The 1994 Edition of NFPA 11A was revised to provide foam concentrate pump guidance (Section 1-12.3). This data sheet is now a separate document to be used with the 1999 Edition of NFPA 11A.

2.0 FM INTERPRETATION

2.1 Introduction

Design, install, test and maintain medium- and high-expansion foam systems in accordance with NFPA 11A, *Standard for Medium- and High-Expansion Foam Systems*, 1999 Edition. In its application, use the following interpretations.

2.1.1 Shall versus Should

In most if not all instances, the widespread use in the text of the mandatory shall, within the NFPA Standard, can be replaced by the more permissive should. This is in keeping with other FM standards.

2.1.2 Authority Having Jurisdiction

There are many references in the NFPA Standard to the term ‘‘authority having jurisdiction.’’ Legally, this could mean the state fire marshal, the local fire department, or some other state or municipal office. In the application of this data sheet, the reference is solely to FM unless the legal authority takes precedence.

2.1.3 Related NFPA Standards

There may be a number of references to other NFPA standards. In many instances FM has a corresponding Data Sheet. FM Data Sheets will generally take precedence.

2.1.4 Listed or Approved

Within the NFPA Standard, Listed means equipment approved by Factory Mutual Research and listed in the Factory Mutual Research Approval Guide.

Within the NFPA Standard, Approved means acceptable to the Factory Mutual Insurance Company. Factory Mutual Research Approved equipment should be used whenever possible.

2.2 Comments and Exceptions

NFPA 11A provides submergence (i.e., fill) times for total flooding high-expansion foam systems in unsprinklered buildings. This should not be considered a recommendation for the use of high-expansion foam in lieu of automatic sprinkler protection; rather, it indicates that a shorter fill time would be needed in the absence of automatic sprinklers to minimize the fire exposure to the structure/building. FM’s position is that high-expansion foam should not be used as sole protection. These foam systems require a high level of maintenance to ensure reliable operation and have more possible modes of failure than automatic sprinkler systems.

Medium or high-expansion foam systems should not be used to protect occupancies that are highly susceptible to liquid damage because these systems are designed to discharge over the entire protected area rather than only over the area involved in fire as is the case with automatic sprinklers.

The following comments provide FM interpretations of specific sections, identified by paragraph number, of the 1999 Edition of NFPA 11A.

1-6.4.1 — Provide a connected reserve concentrate supply for any medium- or high-expansion foam system protecting more than one hazard.

1-8.3 — Submit plans and calculations for medium- and high-expansion foam systems to FM for review and acceptance prior to system installation.

Consider Appendix A material as recommended practice for FM purposes.

A-2.3.5.2(b) — The sprinkler demand flow rate using the demand density and areas as specified in the applicable FM data sheet for the hazard area should be used when estimating the total discharge, (Q), from operating sprinklers.

3.0 SUPPORT FOR RECOMMENDATIONS

3.1 General

Satisfactory performance of a medium- or high-expansion foam system can best be assured by following the loss prevention guidance, particularly the maintenance guidance, provided within this document.

4.0 REFERENCES

4.1 FM

Data Sheet 4-0, *Special Protection Systems*.

4.2 NFPA

NFPA 11A, *Standard for Medium- and High-Expansion Foam Systems*, 1999 Edition.