Navigating the Relationship between NFPA 30 & NFPA 13

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Learning Outcomes

- Explain the scope and fundamental application of both NFPA 30 and NFPA 13.
- Identify common situations where NFPA 30 applies to sprinkler installation.
- Identify common situations where NFPA 30 relies on specific NFPA 13 protection criteria.
- Identify the parts of NFPA 13 applicable throughout NFPA 30.

Referenced Editions

- Sprinklers for Flammable and Combustible Liquids
- NFPA 30: Flammable and Combustible Liquids Code

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1.1 Scope. This standard shall provide the minimum requirements for the design and installation of automatic fire sprinkler systems and exposure protection sprinkler systems covered within this standard.

A.1.1 This standard provides a range of sprinkler system approaches, design development alternatives, and component options that are all acceptable…

5.4.1* Extra Hazard (Group 1). Extra hazard (Group 1) occupancies shall be defined as occupancies or portions of other occupancies where the quantity and combustibility of contents are very high and dust, lint, or other materials are present, introducing the probability of rapidly developing fires with high rates of heat release but with little or no combustible or flammable liquids.

5.4.2* Extra Hazard (Group 2). Extra hazard (Group 2) occupancies shall be defined as occupancies or portions of other occupancies with moderate to substantial amounts of flammable or combustible liquids or occupancies where shielding of combustibles is extensive.

Combustible and Flammable Liquids Classification Guidelines from Annex A Commentary

<table>
<thead>
<tr>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Up to 20% alcohol in metal, glass, or ceramic; or in plastic bottles or jars up to 5 gallons</td>
</tr>
<tr>
<td>Class II</td>
<td>Up to 20% alcohol in containers &gt;5 gallons with walls ≤ ¼&quot; or in wood containers</td>
</tr>
<tr>
<td>Class III</td>
<td>Aerosol, Level 1</td>
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<tr>
<td>Class IV</td>
<td>–</td>
</tr>
<tr>
<td>Group A</td>
<td>Butane lighters in blister packs, cartonned; Up to 20% alcohol in containers &gt;5 gallons with walls &gt; ¼&quot;</td>
</tr>
</tbody>
</table>
11.2.1.2.3 Occupancies or portions of occupancies shall be classified according to the quantity and combustibility of contents, the expected rates of heat release, the total potential for energy release, the heights of stockpiles, and the presence of flammable and combustible liquids, using the definitions contained in Section 5.2 through Section 5.5.

22.2.1 Design Requirements. Sprinkler system discharge criteria for the protection of flammable and combustible liquids shall comply with NFPA 30.

1.1 Scope.
1.1.1* This code shall apply to the storage, handling, and use of flammable and combustible liquids, including waste liquids, as herein defined and classified.

A.1.1.1 This code is recommended for use as the basis for legal regulations…

(5)*Any aerosol product
(6) Any mist, spray, or foam
(7)*Transportation of flammable and combustible liquids as governed by the U.S. Department of Transportation
(8)*Storage, handling, and use of fuel oil tanks and containers connected with oil-burning equipment
(9)*Use and installation of alcohol-based hand rub (ABHR) dispensers

1.1.2 This code shall not apply to the following:
(1)*Any liquid that has a melting point of 100°F (37.8°C) or greater
(2)*Any liquid that does not meet the criteria for fluidity given in the definition of liquid in Chapter 3 and in the provisions of Chapter 4
(3) Any cryogenic fluid or liquefied gas, as defined in Chapter 3
(4)*Any liquid that does not have a flash point, but which is capable of burning under certain conditions
NFPA 30

6.7.6 Where provided, fire control systems shall be designed, installed, and maintained in accordance with the following NFPA standards, as applicable:

1. NFPA 11, Standard for Low-, Medium-, and High-Expansion Foam
2. NFPA 12, Standard on Carbon Dioxide Extinguishing Systems
3. NFPA 12A, Standard on Halon 1301 Fire Extinguishing Systems
4. NFPA 13, Standard for the Installation of Sprinkler Systems
7. NFPA 17, Standard for Dry Chemical Extinguishing Systems
8. NFPA 750, Standard on Water Mist Fire Protection Systems

Classification of Combustible and Flammable Liquids

- Flash point: minimum temperature of a liquid at which sufficient vapor is given off to form an ignitable mixture with the air
- Boiling point: temperature at which the vapor pressure of a liquid equals the surrounding atmospheric pressure

Safety Data Sheet (SDS) (MSDS prior to 2012)
- Viscosity
- Miscibility

Sprinklers for Flammable and Combustible Liquids

Identify common situations where NFPA 30 applies to sprinkler installation.

Part I

Maximum Allowable Quantity (MAQ)
- NFPA 13, +100%
- Chapter 16, unlimited
Special Occupancy Limits
- Assembly
- Ambulatory health care
- Business
- Day care
- Detention and correctional
- Educational
- Health care
- Residential

Identify common situations where NFPA 30 relies on specific NFPA 13 protection criteria.

Storage of Liquids in Containers

Mercantile Occupancies

Identify common situations where NFPA 30 applies to sprinkler installation.

(Part II)

Storage Occupancies

Sprinklers for Flammable and Combustible Liquids
For the purposes of this chapter, protected storage shall mean storage installed after January 1, 1997, that is protected in accordance with Chapter 16. All other storage shall be considered unprotected storage unless an alternate means of protection has been approved by the authority having jurisdiction. (See 16.3.5 and Section 16.9.)

12.8.1* Class IB and IC liquids in containers of 1.3 gal (5 L) or less capacity, Class II liquids in containers of 5.3 gal (20 L) or less capacity, Class IIIA liquids in containers of 60 gal (230 L) or less capacity, and Class IIIB liquids in containers, intermediate bulk containers, or portable tanks of 275 gal (1040 L) or less capacity shall be permitted to be stored in warehouses that handle combustible commodities, as defined in NFPA 13, Standard for the Installation of Sprinkler Systems, provided that the storage area for liquids is protected with automatic sprinklers in accordance with either of the following:

1. The applicable provisions of NFPA 13 for 20 ft (6 m) high storage of Class IV commodities based on the storage configuration of the liquids
2. The provisions of Chapter 16

Problem. The annex comment says NFPA 13 won’t work.
**NFPA 30**

- Decision Trees
  - FIGURE 16.4.1(a) Fire Protection Criteria Decision Tree for Miscible and Nonmiscible Flammable and Combustible Liquids in Metal Containers
  - FIGURE 16.4.1(b) Fire Protection Criteria Decision Tree for Miscible and Nonmiscible Flammable and Combustible Liquids in Nonmetallic Containers
  - FIGURE 16.4.1(c) Fire Protection Criteria Decision Tree for Miscible Flammable and Combustible Liquids in Nonmetallic Containers

**NFPA 30**

- Decision Tree Dispositions
  - Out of Scope
  - Refer to NFPA 13
  - Refer to Table 16.5.2.x

**NFPA 30**

- Design criteria from tables and associated text
- See NFPA 13 for installation details

**NFPA 30**

- Identify the parts of NFPA 13 applicable throughout NFPA 30.

**NFPA 13**

- How to layout, detail, and install a sprinkler system
  - System components
  - System requirements
  - Installation requirements
  - Hanging and Bracing
- How to design a sprinkler system
  - Hazard classification
  - Design approaches
  - Plans and calculations

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