NFPA 13 – 2002
FAQs

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1. Do I need sprinklers in my building?

NFPA 13 is the NFPA document that specifies the minimum requirements for designing and installing sprinkler systems. It does not specify which buildings require a sprinkler system. The requirement to install a sprinkler system complying with NFPA 13 can usually be found in one of the following sources: building code; federal, state or local regulations; insurer's requirements; accreditation requirements; or owner's request.

2. If I have a dry-pipe sprinkler system under a pitched roof exceeding a slope of 16.7%, do I apply both area increases from Section 11.2.3.2.4 and Section 11.2.3.2.5?

Yes, both sections would be applied cumulatively to the design area chosen from Figure 11.2.3.1.5 in accordance with Section 11.2.3.2.7. This is shown in the following example: The application area determined from Figure 11.2.3.1.5 is 1500 square feet. As required by Section 11.2.3.2.4, 1500 square feet is increased by 30% to 1950 square feet for the steeply pitched roof. As required by Section 11.2.3.2.5, the 1950 square feet is increased by 30% for the dry pipe system. Therefore, the original density chosen from Figure 11.2.3.1.5 must be applied over 2535 square feet. Ensure that there are no other design area modifications required for the system being installed.

3. Can plastic pipe be used on a sprinkler system complying with NFPA 13?

Section 6.3.6 allows the use of plastic pipe that has been specifically listed for fire protection use. This pipe must be installed in accordance with its listing limitations, including installation instructions.

4. What is the limit for the calculated water velocity in a sprinkler system complying with NFPA 13?

NFPA 13 does not specify a maximum limit for the calculated water velocity.

5. Do walk-in type freezers, coolers, vaults and safes require sprinklers?

Yes. As explained by A.8.1.1, these areas require sprinklers because they are part of the premises. NFPA 13 requires that sprinklers be installed throughout the premises in accordance with Section 4.1. There are no exceptions provided which allow for sprinkler
omission in these areas.

6. In applying the ‘Three Times Rule' for sprinkler obstructions (i.e. Section 8.6.5.2.1.3), what dimension is the 24 inch maximum referring to?

This maximum dimension is the dimension measured from the sprinkler to the nearest edge of the obstruction. Isolated obstructions that are more than 24 inches away from standard upright and pendent sprinklers do not generally create a significant obstruction.

7. Are sprinklers required in closets?

Yes. There are limited exceptions specified in Section 8.14.8.2 for certain small closets in the dwelling units of hotels and motels.

8. Can a supply control valve be installed downstream of the fire department connection?

The confusion that brings about this question is usually caused by Section 8.16.2.5.2, Section 8.15.1.1.1.3, and Section 8.15.1.1.4.2. These sections are necessary to differentiate the fire department connection from other types of water supplies. Normally, a control valve is required before and after each check valve in a source of supply. The valves are required so that the check valve can be isolated and serviced. As well, a control valve is normally required in each automatic source of supply in accordance with Section 8.15.1.1.2. However, these control valves are not necessary, nor allowed, in the fire department connection piping. While the control valves are not allowed in the fire department connection piping itself, control valves can be installed downstream from the fire department connection piping in accordance with 8.15.1.1. It would be impractical to require a fire department connection after all control valves in a multi-zone or multi-system arrangement. Furthermore, Section 8.15.1.1.2.1 of NFPA 13 requires that all valves controlling water supplies be supervised in the open position. In all cases, the arrangement for the fire department connection must comply with Section 8.16.2.4.

9. If a water curtain is installed, what is the equivalent fire separation rating?

NFPA 13 does not specify an equivalent fire separation rating for water curtains installed in accordance with Section 8.14.4.1 and designed in accordance with Section 11.2.3.8.

10. What is the allowable reduction in fire separation ratings in a building where a sprinkler system is installed?

NFPA 13 does not address such reductions. Some building/fire codes will specify an allowable reduction in fire separation ratings for certain buildings where sprinklers are provided in accordance with NFPA 13. You would need to consult with the applicable building/fire code for your particular project to determine if there are any allowable reductions.

11. Are sprinklers required in the upper portion of an architectural ceiling feature, even when there are no openings to above and the sprinklers at the lower portion do not exceed area
of coverage limitations?

This question usually arises with architectural features such as skylights and rooms with multi-level ceilings. The general concern with these types of features is the potential for heat to ‘pocket’ and the negative impact to the operation of the sprinklers. This could be true even if sprinklers are spaced within their limitations for allowable area of protection. The applicable sections of Chapter 8 address the distance below the ceiling that sprinklers must be positioned. The need for sprinklers in the upper portion can be determined based on the distance from the upper level to the position at which the sprinklers would be installed on the lower level. If this distance exceeds the allowable distances specified in Chapter 8, then sprinklers would be required at the upper level. Obstructions specified by Chapter 8 to any of the sprinklers would also need to be examined and accounted for. Section 8.6.7 and Section 8.8.7 offer provisions that permit the omission of sprinklers in the upper level under certain conditions. Where Section 8.6.7 and 8.8.7 are appropriately applied, the design area reduction for quick-response sprinklers cannot be taken in accordance with Item (4) of Section 11.2.3.2.3.1

12. Are sprinklers required within furniture?

No. Sprinklers are required within all permanent spaces of the structure, such as closets, in accordance with Section 4.1. Moveable furniture items, such as desks, dressers and wardrobes, do not require sprinklers within them even when they are affixed to the permanent structure of the building.

13. Must I design the sprinkler system to protect the same hazard throughout the structure?

No. NFPA 13 does not require that the entire structure be protected as a single hazard classification. There are three important things to keep in mind, however, when designing a system with multiple hazard classifications. The first is that you will lock the building use into the hazard configuration that the sprinkler system is designed for. If the entire space was protected for the highest hazard, however, the building user would not have to worry about the general locations of the different hazards. Additionally, the hydraulic calculation procedure and system layout become more complex with multiple hazard classifications than where the highest hazard is used throughout. Lastly, Section 11.1.2 specifies requirements for buildings with two or more adjacent hazard occupancies.

14. If there are no hose connections inside a building sprinklered to comply with NFPA 13, will the water demand need to include a hose stream allowance?

Yes. An outside hose stream demand would be required in accordance with Section 11.2.3.1.1.

15. Is there a ceiling height at which NFPA 13 permits the omission of sprinklers?

No.
16. Does NFPA 13 address fire sprinkler systems protecting storage above 12 feet?

Yes. Starting with the 1999 edition, NFPA 13 incorporated the fire sprinkler system design and installation requirements from NFPA 231 (Standard for General Storage), NFPA 231C (Standard for Rack Storage of Materials), NFPA 231D (Standard for Storage of Rubber Tires), NFPA 231E (Recommended Practice for the Storage of Baled Cotton) and NFPA 231F (Standard for the Storage of Roll Paper). The other requirements of NFPA 231, NFPA 231C, NFPA 231D, NFPA 231E and NFPA 231F were incorporated into a new standard NFPA 230 (Standard for the Fire Protection of Storage).

17. How are the NFPA 13 design requirements arranged for systems protecting storage of normal combustibles and plastics?

Such requirements are located in a separate chapter - Chapter 12. A detailed table of contents for Chapter 12 is as follows:

12.1 General
12.1.1 Roof vents and Draft Curtains
12.1.2 Building Height
12.1.4 Wet Pipe Systems
12.1.5 Adjacent Occupancies
12.1.6 Dry Pipe and PReaction Systems
12.1.7 Ceiling Slope
12.1.9 Protection of Idle Pallets
12.1.10 Miscellaneous Storage and Storage of Class I - IV up to 12 ft
12.1.11 High-Expansion Foam Systems
12.1.12 In-Rack Sprinklers
12.1.13 Storage Applications (K-factor & density)
12.2 Palletized, Solid Piled, Bin Box or Shelf Storage of Class I - IV & Plastic
12.2.1 General
12.2.2 Class I - IV Commodities
12.2.2.1 Control Mode (Density/Area) Sprinklers
12.2.2.2 Large Drop & Specific Application Sprinklers
12.2.2.3 ESFR Sprinklers
12.2.2.4 Special Design Approaches
12.2.3 Plastic Commodities
12.2.3.1 Control Mode (Density/Area) Sprinklers
12.2.3.2 Large Drop & Specific Application Sprinklers
12.2.3.3 ESFR Sprinklers
12.2.3.4 Special Design Approaches
12.3 Rack Storage of Class I - IV & Plastic
12.3.1 General
12.3.2 Class I - IV Commodities up to 25 ft
12.3.2.1 Control Mode (Density/Area) Sprinklers
12.3.2.2 Large Drop & Specific Application Sprinklers
12.3.2.3 ESFR Sprinklers
12.3.2.4 In-Rack Sprinklers
12.3.2.5 Special Design Approaches
12.3.3 Plastic Commodities up to 25 ft
12.3.3.1 Control Mode (Density/Area) Sprinklers
12.3.3.2 Large Drop & Specific Application Sprinklers
12.3.3.3 ESFR Sprinklers
12.3.3.4 In-Rack Sprinklers
12.3.3.5 Special Design Approaches
12.3.4 Class I - IV Commodities over 25 ft
12.3.4.1 Control Mode (Density/Area) Sprinklers
12.3.4.2 Large Drop & Specific Application Sprinklers
12.3.4.3 ESFR Sprinklers
12.3.4.4 In-Rack Sprinklers
12.3.4.5 Special Design Approaches
12.3.5 Plastic Commodities over 25 ft
  12.3.5.1 Control Mode (Density/Area) Sprinklers
  12.3.5.2 Large Drop & Specific Application Sprinklers
  12.3.5.3 ESFR Sprinklers
  12.3.5.4 In-Rack Sprinklers
12.4 Rubber Tire Storage
12.5 Baled Cotton Storage
12.6 Roll Paper Storage
12.7 Special Storage
  12.7.1 Plastic Motor Vehicle Components
    12.7.2 Class I - IV & Non-Expanded Plastics in Retail Stores