

NFPA 13 – 1999 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 7-2.3.2.5 and Section 7-2.3.2.6?

Yes, both sections would be applied cumulatively to the design area chosen from Figure 7-2.3.1.2 in accordance with Section 7-2.3.2.8. This is shown in the following example: The application area determined from Figure 7-2.3.1.2 is 1500 square feet. As required by Section 7-2.3.2.5, 1500 square feet is increased by 30% to 1950 square feet for the steeply pitched roof. As required by Section 7-2.3.2.6, the 1950 square feet is increased by 30% for the dry pipe system. Therefore, the original density chosen from Figure 7-2.3.1.2 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 3-3.5 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 Formal Interpretation 78-6, 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 5-1.1. 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 5-6.5.2.2), 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 5-13.9.2 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 5-15.2.4.2, the Exception to Section 5-14.1.1.2, and Exception No. 1 to Section 5-14.1.1.8. 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 5-14.1.1.2. 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 5-14.1.1. It would be impractical to require a fire department connection after all control valves in a multi-zone or multi-system arrangement. Furthermore, Section 5-14.1.1.3 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 5-15.2.3.

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 5-13.4 and designed in accordance with Section 7-9.7.

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. NFPA 13 does not specifically address the sprinkler requirements for these architectural features. However, the applicable sections of Chapter 5 do 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 5, then sprinklers would be required at the upper level. Obstructions specified by Chapter 5 to any of the sprinklers would also need to be examined and accounted for.

12. Are sprinklers required within furniture?

No. Sprinklers are required within all permanent spaces of the structure, such as closets, in accordance with Section 5-1.1. 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 7-1.2 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 7-2.3.1.1.

15. Does NFPA 13 address fire sprinkler systems protecting storage above 12 feet?

Yes. The 1999 edition of 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).

16. How are the NFPA 13 design and installation requirements arranged for systems protecting storage and special design approaches?

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7-3 Palletized, Solid-Piled, Bin Box & Shelf Storage

7-3.1 General

7-3.2 Class I – IV

7-3.3 Plastics

7-4 Rack Storage

7-4.1 General

7-4.2 Class I – IV (up to 25' storage)

7-4.3 Class I – IV (over 25' storage)

7-4.4 Plastics

7-5 Idle Pallet Storage

7-6 Rubber Tire Storage

7-7 Baled Cotton Storage

7-8 Roll Paper Storage

7-9 Special Design Approaches

7-9.1 General

7-9.2 Residential Sprinklers

7-9.3 Quick-Response Early Suppression Sprinklers – QRES (reserved)

7-9.4 Large Drop Sprinklers (Class I – IV & Plastics)

7-9.5 Early Suppression Fast-Response Sprinklers – ESR (Class I – IV & Plastics)

7-9.6 Exposure Protection

7-9.7 Water Curtains

7-9.8 Protection of Steel Columns

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

No.