

Protecting Storage

When planning the installation of a fire sprinkler system, storage occupancies are some of the more challenging. There are many variations of storage that can occur in the field. Any method that can help to organize complex options is useful. Both the NFSA Engineering and Standards Committee and the UL/FM/NFSA Standards Review Committee have discussed the complex decisions that need to be made when dealing with sprinkler systems in storage occupancies. Based upon those discussions, the following stepped approach may offer a method for examining the building and storage conditions and determining the most appropriate and efficient fire sprinkler layout within NFPA 13 for a storage occupancy.



BECAUSE
WE'RE
 COMMITTED
 TO EXCEEDING
YOUR
 STANDARDS.

Analyze the Building

What is the ceiling height?

Is the ceiling construction Obstructed Combustible, Obstructed Noncombustible, Unobstructed Combustible or Unobstructed Noncombustible?

Will steel column protection be required?

Determine the Commodity Classification

Class I, Class II, Class III, Class IV, or Group A plastic?

Are the products cartoned or exposed?

If it is a Group A plastic, is it expanded or unexpanded?

Is the commodity encapsulated?

Rubber Tire, Rolled Paper? or

Idle Wood Pallets?

Type of Storage

Palletized, Bin-Box, Solid-piled, or Rack?

What is the aisle width?

Storage Height

How high is the product stored?

What is the clearance to the ceiling?

Is the clearance excessive?

Selecting a Sprinkler

Control Mode Density Area (CMDA)?

Control Mode Specific Application (CMSA)?

Early Suppression Fast Response (ESFR)?

What temperature rating is necessary?

Review the Sprinkler Data Sheet

Confirm the revision date for most current information on a specific model (SIN)?

Is the chosen sprinkler standard or extended coverage?

What is the sprinkler orientation, pendent or upright?

Can this sprinkler be used for this ceiling height?

Confirm the inherent model details: K-factor, thread size, approvals/listings, sprinkler dimensions, wrench, finishes or coatings available, warnings, and warranty information?

Are there installation limitations, such as slope, compatibility, or other specific installation rules?

What are the minimum and maximum permitted area of coverage?

What are the minimum and maximum permitted distances between sprinklers? And from a wall?

What is the permitted distance between the sprinkler and the ceiling?

What is the permitted distance between the sprinkler and the top of storage?

What is the obstruction criteria for this sprinkler (NFPA 13 and manufacturer's data sheet)?

Is there a pipe diameter limitation?

What are the compatible accessories for this sprinkler (guard or water shield)?

Hydraulic Design Parameters

What is the area to be calculated? (remote area for CMDA; quantity of sprinklers for CMSA and ESFR)

What is the required hose stream demand?

What is the required water supply duration?

What is the minimum operating pressure for the sprinkler?

Confirm the adequacy of the water supply?

Other

Are there any other specific considerations for this particular storage occupancy?

Obviously, the above list assumes that the user is familiar with storage protection following the guidelines of NFPA 13. However, with the number of variables involved including but not limited to the commodity, storage arrangement, and numerous sprinklers available, a clear path is needed in order reach an appropriate protection scheme. This list highlights many details that need to be considered in order to make the proper decisions about the fire sprinkler system.

One of the most important concepts here is to closely review the sprinkler data sheet for the model(s) selected. Although much of the installation criteria is found in NFPA 13 or other installation guides such as FM 8-9, there may be details that are specific to a certain sprinkler. One of the reasons this occurs is that a sprinkler may be new to the market or an existing model has been newly tested for a different situation/condition and the standards have not had time to include the information yet.

Hopefully, this path can assist in reaching an efficient fire

NFSA MEMBER
SEES
2,052%
GROWTH
OF WEB TRAFFIC



[Learn More](#)


BLUE CORONA

Upcoming Technical Tuesdays

October 18

Protecting Rack Storage for Class I-IV

NEW REDUCED PRICE FOR MEMBERS!

[Register Here](#)



View older issues in the "Member's Only" section

Upcoming In-Class Seminars

Sept 28-29 Modesto, CA
Sprinkler System Plan Review

sprinkler system.

Oct 4 Westbury, NY
Rough & Final Inspections

Register Here

Did You Know??

The NFSA keeps a member of the Engineering Department staff on duty every business day to answer your technical questions live.

We call this the Expert of the Day (EOD) program and it is available to our members by phone, fax or e-mail. Call us at (845) 878-4200 and press 2, or you can send a fax to (845) 878-4215, or you can e-mail us at eod@nfsa.org.

Last year we answered more than 2600 requests for assistance.

NFSA TechNotes is c. 2016 National Fire Sprinkler Association, and is distributed to NFSA members on Tuesdays for which no NFSA Technical Tuesday Online Seminar is scheduled. Statements and conclusions are based on the best judgment of the NFSA Engineering staff, and are not the official position of the NFPA or its technical committees or those of other organizations except as noted. Opinions expressed herein are not intended, and should not be relied upon, to provide professional consultation or services. Please send comments to Victoria B. Valentine, P.E. at valentine@nfsa.org.

