



Building Construction & Occupancy Specific Hazards

9 & 10 June 2026

When are sprinklers needed?

- Combustible construction, or
- Combustible occupancy

Building Construction

Combustible Construction

- Wood / timber
- Exposed or sprayed on foam insulation, including foil-faced
- Plastic panels (PVC, FRP etc)
- Insulated metal panels e.g., non-FM Approved
- Steel deck roofs (some)



Combustible Construction

- Wood / timber
- Exposed or sprayed on foam insulation, including foil-faced
- Plastic panels (PVC, FRP etc)
- Insulated metal panels e.g., non-FM Approved
- Steel deck roofs (some)



Steel Deck Roofs

- Class 1: FM Approved assembly in RoofNav
- Class 2 (self-propagating):
 - EPS or non-FM Approved PUR foam
 - Thick / bitumenous vapor barriers
 - Bitumen adhesive above the deck



Combustible Construction

- FM Data Sheet 1-57, *Plastic in Construction*
- May require additional protection e.g., thermal barriers, panel fixing
- Perimeter sprinklers
- Intermediate level sprinklers
- **Combustible concealed spaces!**



Ceilings and Concealed Spaces

- What is the minimum depth of void space where protection is not needed to FM Standards?

No Minimum!

- FM Data Sheet 1-12, *Ceilings and Concealed Spaces*
 - Does the void space contain continuous combustibles?
[includes combustible dust, oily deposits]
 - Fire stopping, maximum 185 m²?
 - Combustibility of suspended ceiling or ceiling/roof above?

Ceilings and Concealed Spaces



Ceilings and Concealed Spaces



Occupancy Hazards

Occupancy Hazards

- When are sprinklers not needed for the occupancy?

2-0 Installation Guidelines for Automatic Sprinklers

Page 10

FM Property Loss Prevention Data Sheets

2.1.2 Where Sprinklers Are Needed

2.1.2.1 Install sprinklers throughout all portions of a building in accordance with this data sheet to protect it from fire damage.

2.1.2.2 Sprinkler protection can be omitted from portions of a building in which both the construction and the occupancy of the affected building area are noncombustible.

2.1.2.3 See the relevant occupancy-specific data sheet for design criteria (i.e., sprinkler system design, hose stream allowance, and sprinkler system duration) for the sprinkler system. Determine if there are any specific recommendations in the occupancy-specific data sheet that might supersede the general recommendations given in this data sheet.

2.1.2.4 Fixed special protection extinguishing systems, including oxygen reduction systems, are not an alternative to sprinkler protection unless the relevant occupancy-specific data sheet specifies they are.

Occupancy Hazards

- "Lack of continuity of combustibles"



But maybe there is...

- Paint spraying
- Metal grinding (combustible dust)
- Hydraulic equipment
- Storage of parts
- Process control equipment
- Electrical cables
- Offices, control rooms

Occupancy Hazards

- Some occupancies have guidance e.g.,
 - Wet end of paper machines, DS 7-4
 - Molten materials, DS 7-33
 - Electrical switchgear rooms, DS 5-19
 - Dry-type transformers, DS 5-4
 - Boiler rooms, DS 6-4 & 6-5

Occupancy Hazards

- Is there an occupancy-specific Data Sheet?

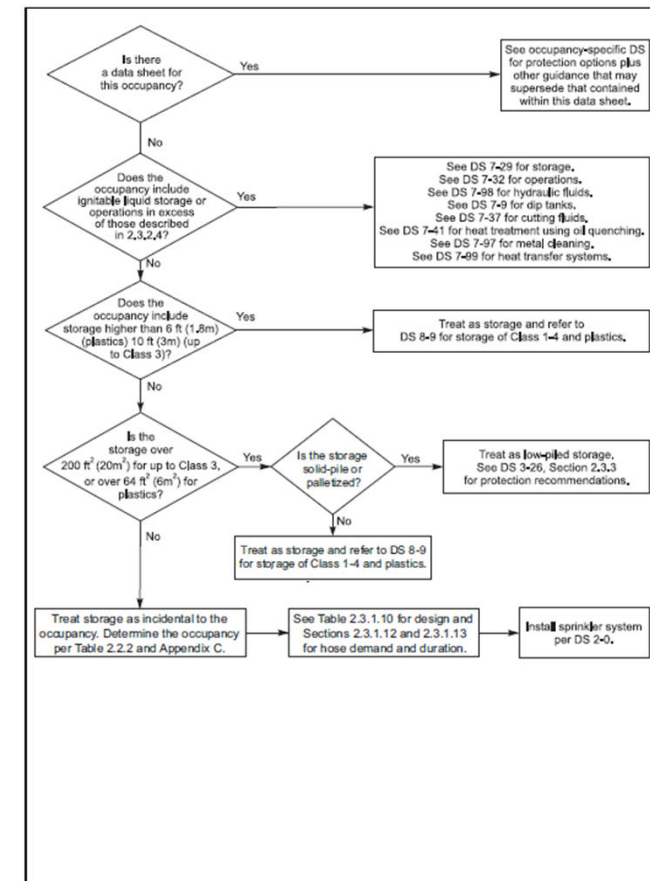


Fig. 2.2.1. Flowchart for determining appropriate use of Data Sheet 3-26

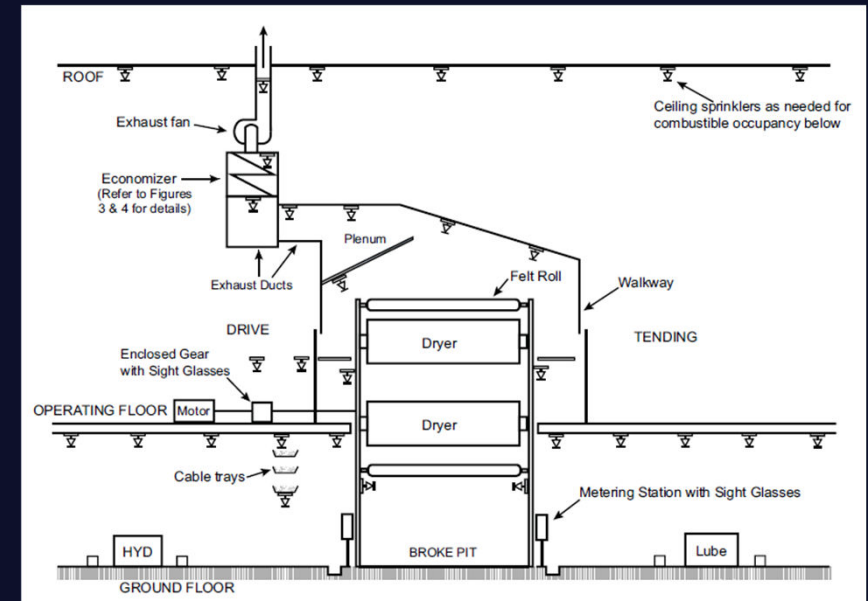
Key Occupancy-Specific Data Sheets

- Ignitable liquid storage, DS 7-29
- Ignitable liquid operations, DS 7-32
- Hydraulic fluids, DS 7-98
- Heat transfer fluid systems, 7-99
- Parking garages, DS 7-15
- Lithium-ion battery manufacturing and storage, DS 7-112
- Printing plants, DS 7-96
- Textile mills, DS 7-1
- Paper machines, DS 7-4
- Pharmaceutical operations, 7-36
- Steam turbines, DS 7-101
- Wood working, DS 7-10
- Oil cookers, DS 7-20
- Conveyors, DS 7-11
- Industrial exhaust systems, DS 7-78
- Waste-fuel fired DS 6-13
- Data centers, DS 5-32
- Cables and busbars, DS 5-31
- Li-ion battery energy storage systems, DS 5-33
- Etc

Paper Machines



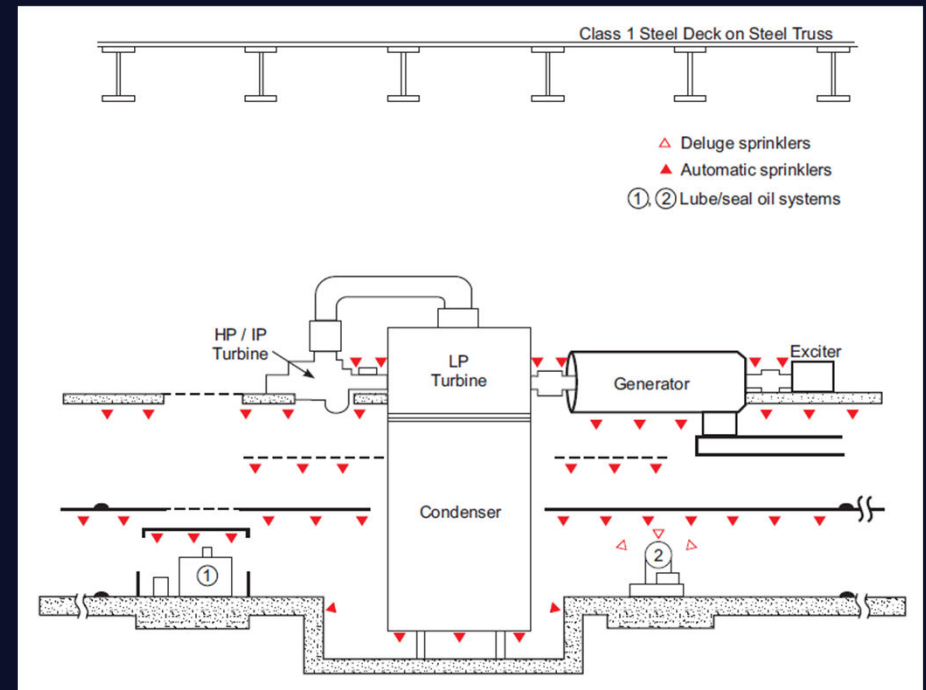
Does not apply from the forming section and beyond, inside hoods, over hydraulic and lube oil, heat transfer fluid systems



Turbine Hall



Does not apply to lubrication oil systems,
around bearings, lube, seal and control oil
skids and tanks



Dry Type Transformers



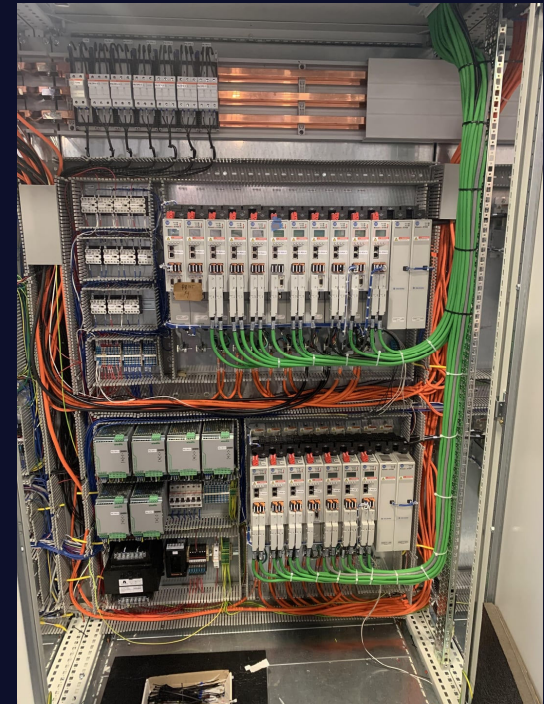
Does not apply to oil-filled transformer (unless it's an FM Approved transformer oil)



Electrical Switchgear Rooms (HV & LV Switchgear)



Does not apply to process control equipment, motor controls, cross-connection rooms, grouped cables



Alternatives to Sprinklers

- Fixed special protection (foam, CO2 etc) are typically there to *supplement* sprinklers
- Fixed special protection systems (foam, inert gas, water-mist, oxygen-reduction etc) are only an *alternative* to sprinklers if allowed by an occupancy-specific data sheet
- Water-mist is an acceptable alternative to sprinklers for HC-1 to HC-3 occupancies (FM Approved!)
- Generally have limitations to Approved specific applications, ceiling heights, volumes, combustible construction, etc.

Thank you. Any questions?



 FM Global

 @FMGlobal

 InsurerFMGlobal

 FM Global



FM



> T ter