



Storage Practices: Part Three: "Commodity Fire Protection"

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Learning Objective: The student shall be able to explain the significance of properly classifying commodities for fire protection.

Why should an owner, fire inspector, or code official care about the commodity classes stored in a building?

The answer may be found from a complex formula of cost, ease of business operation, required fire protection features, and structural design considerations. Fire protection design in these occupancies takes many factors into consideration: commodity class, storage arrangement, storage height, aisle width, public accessibility, pallet materials, ceiling height, etc. The complexity is too significant for just a few Coffee Break Trainings.

In its simplest form, the level of fire protection must be proportional to the hazard being protected. If, for example, the items stored in a warehouse meet all the requirements for Class I commodities, the fire protection features the owner must install may be simpler and less expensive than for Class IV commodities.

For instance, if all other factors were equal, in a Class I storage array the owner may be able to provide a fire sprinkler system having a design density of 0.21 gpm/ft² over 2,000 ft² (8.33 mm/min/250 m²). In the same space, a Class IV commodity would require a design density of 0.39 gpm/ft² over 2,000 ft² (15.66 mm/min/250 m²), almost twice the water application rate for a Class I commodity.

A change like that could mean significant, expensive alterations might have to be made to the sprinkler system including larger pipes, more sprinklers, larger orifice sprinklers, interconnected cross mains and branch lines, or perhaps the addition of a fire pump with a separate water supply. Larger pipe also might require additional reinforcement to the ceiling or roof structure. The owner would have to make difficult decisions to upgrade the fire protection or not store the higher hazard commodity.

A facility storing a mixture of different commodity classes can be even more complicated. Any commodity classification and corresponding fire protection design should be done only by qualified personnel.

Assuring that the appropriate level of fire protection is provided can be a significant engineering challenge, and should be left to those persons who are competent to do so.



The hazard of these combustible liquids establishes the fire protection requirements.

