

Commodity classification by fire-testing

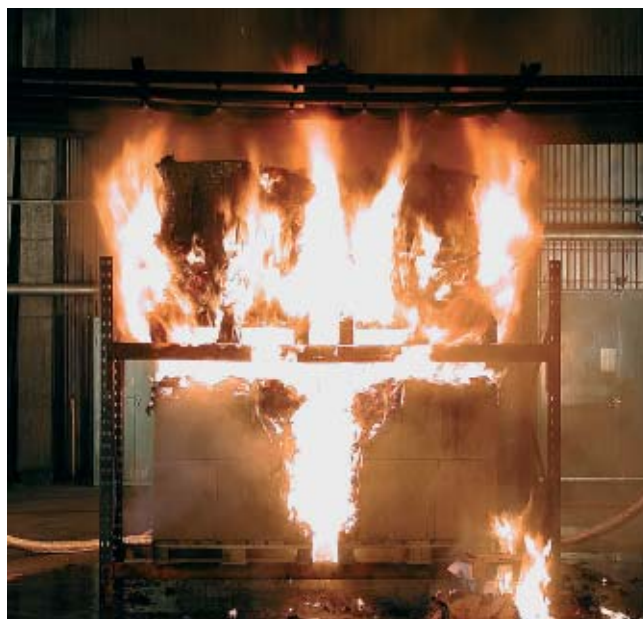
The fire characteristics of stored commodities in a warehouse are important parameters when determining the design and capacity of a sprinkler system. Unfortunately, these parameters are often difficult to assess. Actual fire-testing and classification of the type of commodity to be stored provides considerable information on its fire and suppressability characteristics.

SP Fire Technology is now able to offer commodity classification by fire-testing. The methodology, and its resulting classification limits, allows any type of commodity to be classified with considerably better accuracy and safety than using a simple assessment based on look-up tables.

Fire-testing involves arranging a four pallet-load of the particular commodity in a rack storage arrangement. A water applicator consisting of a matrix of spray nozzles is arranged over the commodity and the entire set-up is positioned underneath a calorimeter to facilitate the measurement of the heat release rate. The commodity is ignited at the centreline of the flue space, and water is applied when the fire reaches a convective heat release rate of 2 MW. At this point, the fire normally involves the whole upper tier of the commodity. Three such trials are conducted for each type of commodity, at three different rates of water application.

With the data obtained from the tests, classification criteria for the four main commodity categories according to the European sprinkler standard, prEN 12845 (categories I, II, III and IV) can be established. It is also possible to determine whether or not a commodity should be treated as a 'Special Hazard'. The commodity classification methodology, and its resulting classification limits, means that any particular type of commodity can be classified with considerably better accuracy and safety than by using simple assessment in accordance with prEN 12845.

This methodology was originally developed by Factory Mutual Research Corporation for classification according to the US commodity classification scheme, and has been used by SP for approximately ten years. Due to the difference in the size of European pallets and US pallets, the methodology has been modified, e.g. regarding the design of the water applicator.



The amount of commodity used in each of the tests has also been reduced, from the eight pallet-load that was originally specified, to a four pallet-load. As three trials are required for each type of commodity, the total quantity of commodity consumed is reduced from a 24 to a twelve pallet-load.

References

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