CLASSIFY THE COMMODITY

The first step in evaluating what fire protection systems are required for high-piled storage is to determine the commodity classification for the storage. In reviewing sprinkler system plans it is very common to find that an incorrect or non-conservative commodity classification is one of the most frequent errors associated with sprinkler system design.

- **Class I commodities** are essentially noncombustible products on wooden or non-expanded polyethylene solid deck pallets. Commodities can be in ordinary corrugated cartons with or without single thickness dividers or in ordinary paper wrappings with or without pallets.

- **Class II commodities** are Class I products (noncombustible) in slatted wooden crates, solid wooden boxes, or multiple-thickness paperboard cartons with or without pallets.

- **Class III commodities** are commodities of wood, paper, natural fiber cloth with or without pallets.

- **Class IV commodities** are Class I, II or III products containing Group A plastics in ordinary corrugated cartons with or without pallets. It also includes Class I, II and III products with Group A plastic packaging in the range of 10-15% by weight or 10-25% by volume. To determine the exact classification, use Figure on the next page.

- **Plastic commodities** are divided into three groups; Group A (highest hazard), Group B, and Group C (lowest hazard). If the hazard of the plastic is unknown, a Group A designation should be selected. Group A plastics are considered high hazard commodities.

- Plastics are manufactured in two basic forms. Unexpanded plastics are high-density materials that may be blown into different shapes such as drums, containers, electronics housings, toys, tote bins etc. Expanded plastics are usually made from the same plastic resins, but during the manufacturing process, small bubbles are trapped in the plastic resulting in a much lower density. These expanded plastics are sometimes called foamed plastics and may include materials such as insulation board, packing beans, polystyrene foam coffee cups/plates, and pipe insulation. Because of their lower density, expanded plastics tend to have a higher heat release rate than expanded plastics.

**Mixed commodities**
- When different commodity classes are stored in the same area, the protection required for the storage must be based on the highest class of commodity stored. For limited storage of commodities with a higher classification than the remainder of the storage, designation of the classification should be based on an engineering analysis. When using such an engineering analysis, the sprinkler protection is still required to be adequate to protect the higher hazard commodity, although over a smaller area of operation.
PLASTICS

CLASS I, II or III
CLASS IV

PERCENTAGE BY WEIGHT OF UNEXPANDED PLASTIC

PERCENTAGE BY WEIGHT OF EXPANDED PLASTIC

PERCENTAGE BY VOLUME OF EXPANDED PLASTIC

PLASTICS

CLASS IV

CLASS I, II or III