

PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers are designed to cope with fires of limited size, making them necessary and desirable even though the property may be equipped with automatic sprinkler protection, standpipe and hose systems, or other fixed protective equipment.

FIRE HAZARD LEVELS

The National Fire Protection Association "Standard for the Installation, Maintenance, and Use of Portable Fire Extinguishers" (NFPA No. 10) has established three hazard levels, providing a simplified method of determining the probable size and potential severity of a fire.

Light Hazard: areas where the amount of combustibles present is such that fires of small size may be expected. These may include offices, school rooms, churches, assembly halls, telephone exchanges.

Ordinary Hazard: areas where the amount of combustibles present is such that fires of moderate size may be expected. These may include mercantile storage and display areas, auto showrooms, parking garages, light manufacturing areas, warehouses not classified as extra hazard, school shop areas.

Extra Hazard: areas where the amount of combustibles present is such that fires of severe magnitude may be expected. These may include woodworking areas, auto repair shops, aircraft servicing areas, warehouses with high-piled combustibles, and areas involved with processes such as flammable liquid handling, painting, dipping.

In addition to the hazard rating of areas, the NFPA also identifies classification of fires according to the types of combustibles present.

FIRE TYPE CLASSIFICATION

Class "A" fire occurs in ordinary combustible materials such as wood, cloth, and paper. The most commonly used extinguishing agent is water which cools and quenches. Fires in these materials are also extinguished by special dry chemicals for use on Class A, B, and C fires. These chemicals provide a rapid knock down of flame and form a fire retardant coating to inhibit reflash.

Class "B" fire occurs in the vapor-air mixture over the surface of flammable liquids such as greases, gasoline and lubricating oils. A smothering or combustion inhibiting effect is necessary to extinguish Class "B" fires. Dry chemical, foam, vaporizing liquids, carbon dioxide and water fog can all be used as extinguishing agents.

Class "C" fire occurs in electrical equipment where non-conducting extinguishing agents must be used. Dry chemical, carbon dioxide and vaporizing liquids are suitable. Because foam, water (except as a spray) and water-type extinguishing agents conduct electricity, their use can kill or injure the person operating the extinguisher and also do severe damage to the electrical equipment.

Class "D" fire occurs in combustible metals such as magnesium, titanium, zirconium, and

sodium. Specialized techniques, extinguishing agents and extinguishing equipment have been developed to control and extinguish fires of this type. Normal extinguishing agents generally should not be used on metal fires as there is danger in most cases of increasing the intensity of the fire because of a chemical reaction between some extinguishing agents and the burning metal.

WATER-BASE EXTINGUISHERS

With the discontinuance of all inverting type of extinguishers (soda-acid, cartridge operated water, and foam) the remaining selection of water types for Class A fires are limited to stored-pressure and pump tanks. Although the pump tank extinguisher does not have the stored-pressure unit's ability to be operated while being carried, it does have the advantage of being easily refilled and it can be used without the need for pressurization. Use chemical additives for freezing conditions.

CARBON DIOXIDE EXTINGUISHERS

Carbon dioxide does not leave a residue after use. This may be a significant factor where protection is required for delicate equipment, laboratories or food preparation areas. Since the agent is discharged in the form of a gas/snow cloud, it has a relatively short range of 3 to 8 feet. This extinguisher is not recommended for locations where winds or strong air currents may rapidly dissipate the agent and prevent extinguishment.

LIQUIFIED GAS EXTINGUISHERS

In general, liquified gas extinguishers - bromotrifluoromethane (Halon 1301) and bromochlorodifluoromethane (Halon 1211) have features and characteristics similar to carbon dioxide (CO₂) extinguishers. The Halon 1301 extinguisher is not available in a size larger than 2-1/2 pounds which is below the minimum NFPA rating for extinguisher size and placement for Class B hazards. The Halon 1211 extinguisher is available in a wider range of sizes and like CO₂, it is suitable for cold weather installation, is noncorrosive, and leaves no residue.

DRY CHEMICAL EXTINGUISHERS

There are five available types of dry chemical agent, listed in ascending degree of extinguishing capability: sodium bicarbonate base, ammonium phosphate base, potassium chloride base, potassium bicarbonate base and urea-potassium bicarbonate base. The residue of potassium chloride is somewhat more corrosive than other dry chemicals. A multipurpose base agent (Class A:B:C) is more difficult to remove because it hardens when it cools.

Consult the NFPA standards for size and placement of extinguishers.