AMEREX TECH Tip № 43

SELECTION OF FIRE EXTINGUISHERS FOR FIRES INVOLVING OXIDIZERS

Oxidizers have specific requirements for storage and fire protection. These requirements can be found in *NFPA 400: Hazardous Materials Code 2025 Edition Chapter 15, Oxidizer Solid and Liquids*.

Examples of the most common types of oxidizers:

- Chlorine, commonly used in pools.
- Hydrogen Peroxide—Commonly found in bulk in pharmacies and hospitals.
- Bleach—commonly found in cleaning supplies.
- Nitrate or Nitrite based fertilizers.
- Ozone, used in water treatment.

It is important to know that using the wrong type of portable fire extinguisher on certain oxidizers could result in a violent reaction or explosion. Always review the SDS (Safety Data Sheet) for compatibility between the products being protected and the agent being used in the portable fire extinguisher.

- **NFPA 400 dictates the types of fire extinguishers that are "prohibited" or that "shall not" be used around oxidizers.**
- **NFPA 400 - 15.2.5.3 Portable Extinguishers.**
- **15.2.5.3.1 * Dry Chemical and CO2 Extinguishers.**
  The placement and use of carbon dioxide (CO2) or dry chemical extinguishers containing ammonium compounds (Class A:B:C) shall be **prohibited** in areas where oxidizers that can release chlorine or bromine are stored.
- **15.2.5.3.2 * Halon Extinguishers.**
  Halon extinguishers **shall not** be used in areas where oxidizers are stored.
- **15.2.5.3.3 * Halocarbon Clean Agent Extinguishers.**
  Halocarbon clean agent extinguishers **shall not** be used in areas where oxidizers are stored, unless they have been tested to the satisfaction of the AHJ.

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- **NFPA 10 dictates the acceptable fire extinguishers to be used and reinforces NFPA 400 and the fire extinguishers it prohibits.**

- **5.5.4.7 * Areas Containing Oxidizers.**

- **5.5.4.7.1**
  Only water or foam extinguishers shall be installed in areas where pool chemicals containing chlorine or bromine are stored.

- **5.5.4.7.2**
  Multipurpose dry chemical fire extinguishers **shall not** be installed in areas where pool chemicals containing chlorine or bromine are stored.

- **5.5.4.7.3**
  Fire extinguishers intended for use where oxidizers are stored or used shall be selected and installed based on the specific recommendations contained within the material's safety data sheet (SDS) for the oxidizer, surrounding conditions, and NFPA 400.

- **A.5.5.4.7**
  The purpose for providing portable fire extinguishers in areas where oxidizers are stored is to provide first aid fire suppression for incipient fires in materials adjacent to or in the same area as the oxidizers. Fires involving oxidizers are typically beyond the capability of portable fire extinguishers. **The use of some types of portable fire extinguishers on oxidizers could generate a chemical reaction, resulting in potential explosive compounds or otherwise exacerbating the emergency, and should not be permitted in the area where oxidizers are stored or used**.

- **H.2 Health and Safety Conditions That Affect Selection.**

  (6) A dry chemical fire extinguisher containing ammonium compounds **should not** be used on oxidizers that contain chlorine. **The reaction between the oxidizer and the ammonium salts can produce the explosive compound nitrogen trichloride (NCl3)**.

  (7) Halogenated extinguishers **should not** be used on fires involving oxidizers, since **they can react** with the oxidizer.

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