



**Lake Havasu City Fire Department
Fire Prevention Bureau**

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**FD Specification #20
Safe Display & Storage of Swimming Pool Chemicals**

2018 IFC, Ch. 50 & 63

**Rev. 9/01/2021
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OVERVIEW

Pool chemicals can cause injury or harm to people if they are improperly stored or handled. The LHCFD has prepared this fire department specification to assist pool chemical handlers, to ensure chemicals are stored in compliance with the International Fire Code (IFC) and, where applicable, standards of the National Fire Protection Association (NFPA).

Please remember that swimming pool chemicals are hazardous materials. Fires involving swimming pool chemicals liberate toxic and corrosive smoke that may threaten life and property, and may also contaminate nearby commodities, potentially increasing the fire loss because of the cost for removal and replacement of fire-damaged products.

The most common swimming pool chemicals stored and displayed are calcium hypochlorite, sodium hypochlorite, hydrochloric acid (aka muriatic acid), trichlor-s-triazotriene (aka Trichlor) and sodium dischloroisocyanurate (aka, SDIC). These chemicals are oxidizers and corrosive to skin and metal.

Oxidizers will not themselves burn, but they are reactive and will rapidly accelerate burning if heated, mixed with water, or become contaminated. ***Calcium hypochlorite is the most reactive*** of all the pool chemicals. It is incompatible with other oxidizing pool chemicals such as muriatic acid, and most other hazardous materials.

Please distribute this specification and discuss the information with your store managers, staff, and loss prevention staff.

PURPOSE:

This specification provides an overview for business owners and employees for the correct and safe display and storage of swimming pool chemicals.

SCOPE:

This specification regulates the display and storage of common pool chemicals found in swimming pool supply businesses. Consult the appropriate codes for other regulations.

DEFINITIONS:

1. **OXIDIZER.** A material that readily yields oxygen or other oxidizing gas, or that readily reacts to promote or initiate combustion of combustible materials and, if heated or contaminated, can result in vigorous self-sustained decomposition.
2. **CORROSIVE.** A chemical that causes visible destruction of or irreversible alterations in, living tissue by chemical action at the point of contact following an exposure period of 4 hours.

REQUIREMENTS:

1. **Permits:**

At this time, a *Fire Department Hazardous Materials operational permit* is not required for businesses that store or display more than 10 pounds of Class III Oxidizers, 100 pounds of Class I Oxidizers, or more than 55 gallons of Corrosive Liquids. However, a permit may be required in the future.

2. **Storage Arrangement:**

- a. A minimum 20-foot separation is required between incompatible materials when stored in containers having a capacity of greater than 5 pounds or 1/2 gallon (i.e.: calcium hypochlorite and muriatic acid) **or** an alternative safety measure is to install minimum 18" noncombustible vertical barriers that completely separate incompatible materials (IFC §5003.9.8).
- b. Storage and display of solids and liquids must not exceed 200 pounds and 20 gallons per square foot, respectively, of floor area, actually occupied by chemical merchandise (IFC §5003.11.3.1).
- c. Storage and displays of pool chemicals is limited to a maximum storage height of 6 feet in display areas and must not exceed 8 feet in height in storage areas (IFC §5003.11.3.2).
- d. Individual containers less than 5 gallons or less than 25 pounds must be stored or displayed on pallets, racks, or shelves (IFC §5003.11.3.3).
- e. Individual containers of swimming pool chemicals must not exceed 100-pounds or 10-gallons capacity for liquids in storage and display areas (IFC §5003.11.3.6).
- f. Liquid products are not permitted to be stored above solid swimming pool chemicals (NFPA 430 § 9.2.2).
- g. Aisles at least 4-feet in width must be maintained on three sides of a palletized or solid-pile display of swimming pool chemicals (IFC §5003.11.3.9).
- h. Hazard identification signs shall be provided in accordance NFPA 704. (IFC §5003.11.3.10).
- i. A storage plan illustrating the intended storage arrangement, including the location and dimensions of aisles, and storage racks shall be provided to the LHCFD (IFC §5003.11.3.11).

Note: When required by the LHCFD Fire Marshal, a Hazardous Materials Management Plan (HMMP) illustrating the intended storage arrangement, including but not limited to the location and dimensions of aisles and storage racks protected with in-rack sprinklers, must be provided **(IFC §407.6 and §5001.5.1)**.

3. **Quantity Limits:**

Lake Havasu City's Fire Code limits the amount of hazardous materials that may be stored and displayed within a retail store. It limits the quantity of swimming pool chemicals based on the classification of hazardous materials and grants increased storage if the store is protected by an automatic sprinkler system. The quantity limits for the identified hazard classes of swimming pool chemicals are indicated in the following table for Group M

(Mercantile) and Group S (Storage) occupancies (See: IFC §5003.11.1 and Table 5003.11.1).
Note: Additional conditions may apply.

Swimming Pool Chemicals	International Fire Code Hazard Classification	Maximum Allowable Quantity in Sprinklered Building	Maximum Allowable Quantity in Non-Sprinklered Building
Calcium Hypochlorite (65% avail. Chlorine)	Solid Class III Oxidizer	2300 lbs	1150 lbs
Sodium dichloro-s-triazinetrione (sodium dichlorisocyanurate)	Solid Class III Oxidizer	2300 lbs	1150 lbs
Sodium dichloro-s-triazinetrione dehydrate	Solid Class I Oxidizer	36,000 lbs	18,000 lbs
Trichloro-s-triazinetrione (trichloroisocyanuric acid)	Solid Class I Oxidizer	36,000 lbs	18,000 lbs
Muratic Acid	Corrosive Liquid	2,000 gal.	1,000 gal.
Sodium Hypochlorite (<15% by volume)	Corrosive Liquid	2,000 gal	1,000 gal.

4. Sprinkler Protection:

If your store is protected by an automatic sprinkler and/or fire alarm system, ensure that the systems have been inspected within 12 months from the last documented inspection. An authorized approval tag should be affixed to the sprinkler riser and alarm panel. If the store staff cannot locate the tags, or it's been more than 12 months since the most recent inspections, an authorized state licensed fire protection company must perform these inspections (IFC §901.6 Inspection, Testing and Maintenance).

5. Fire Extinguishers:

Chemicals used in many portable fire extinguishers can adversely react with most oxidizing swimming pool chemicals. Only water-type extinguishers may be installed in areas containing oxidizers such as pool chemicals (NFPA 10 §5.5.7.1). Multi-purpose (Class A, B, C) dry chemical (MAP) extinguishers contain aluminum and must not be installed in these areas. (NFPA 10 §5.5.7.2).

6. Temperature Control:

Calcium hypochlorite **should** be provided with a means of temperature control that maintains the storage room temperature control that maintains the storage room or area at a temperature of 125°F or less. Storage above this temperature for an extended period of time (5 days or more) may result in decomposition, evolution of chlorine gas, and heat sufficient to ignite some combustible products.

7. Training and Emergency Procedures:

- a. Store employees who handle swimming pool chemicals should be trained in storage, handling practices, manufacturer's instructions, and be in accordance with your company's guidelines for hazardous materials (IFC §2703.9.1).
- b. When a store employee or patron identifies a container that has been damaged, it **should** be removed from the display aisle and moved outside of the building. Disposal of the material should be in accordance with the manufacturer's instructions. If the container is warm to the touch, emitting vapors, hissing, bubbling, or bulging, a chemical reaction is likely to have begun. In such a case summon the Lake Havasu City Fire Department by calling 911.

For further information and questions, please contact:

- Lake Havasu City Fire Department: (928) 855-1141
- National Fire Prevention Association (NFPA): www.nfpa.org
- American Chemistry Council (ACC): (202) 249-7000 <http://www.americanchemistry.com/>

REFERENCES:

2018 International Fire Code, Ch. 50 §5003 General Requirements for *Hazardous Materials*

2018 International Fire Code, Ch. 63 *Oxidizers, Oxidizing Gases*

2018 National Fire Protection Association, Standard NFPA 10 *Portable Fire Extinguishers* §5.5.7

2013 National Fire Protection Association, Standard NFPA **400** *Hazardous Materials Code*

Note: This FD specification is intended to be a guide only. Where conflicts exist between this document and the applicable codes and standards, the above references must supersede.

APPROVED:



Scott Hartman, Fire Marshal

DATE:

9/1/2021