

# Chemicals and Materials

## Swimming Pool Products

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## What are swimming pool products?

Swimming pool products include various kinds of disinfectants and sanitizers which control the growth of algae and bacteria, clear the water, or maintain the pH levels of the pool water. Similiar products may also be used in hot tubs, spas, wading pools, and whirlpools.

Various kinds of disinfectants and sanitizers are used but the "chlorine" type is the most common. The chlorine usually comes from "chlorinating agents" that release chlorine when they are dissolved in the water. Chlorine gas may be used in large pools.

The chlorine-based disinfectants may be called "chlorinating liquid", "dry chlorine", or "liquid chlorine". The so-called "dry chlorine" is actually the chemical in granular or tablet form while "liquid chlorine" and "chlorinating liquid" are solutions of these chemicals dissolved in water. This document will summarize the safe use of these chlorinating agents but it will not discuss the use of chlorine gas.

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## What are the types of chlorinating agents?

There are two main types of chlorinating agents:

- inorganic chlorinating agents such as calcium hypochlorite, lithium hypochlorite, sodium hypochlorite, and

- organic chlorinating agents such as trichloroisocyanuric acid, potassium dichloroisocyanurate, sodium dichlorocyanurate [as anhydrous or dihydrate forms].

Organic and inorganic chlorinating agents are not compatible with each other. Many incidents occur when the same scoop or pail is used for both products without cleaning them or when adding one product after the other in the pool chlorinator. Mixing or cross-contaminating of these products can form an explosive mixture.

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## Why should I be careful when using and storing these products?

Swimming pool products can be oxidizers, and can be corrosive to tissue or metals. In all cases, read and understand the Safety Data Sheets (SDSs) and all product information literature and product labels for procedures to follow for safe use and in case of spills or splashes.

Oxidizing products (such as calcium hypochlorite) have the ability to react chemically to oxidize combustible (burnable) materials. To be an "oxidizer", the product itself provides oxygen which combines chemically with another material and increases the chance of a fire or explosion. This reaction may be spontaneous at either room temperature or may occur with slight heating. Thus, oxidizing products can be severe fire and explosion hazards.

For more information about oxidizing hazardous products and how to work with them safely, please see the OSH Answers [How to Work Safely with Hazardous Products using the "Flame over circle" Pictogram](#).

Some pool products can also be corrosive to metals or cause skin, eye or respiratory irritation. The effects on tissues and metals depends on what the product is and how concentrated it is. They can begin to cause damage as soon as they touch the skin, eyes, respiratory tract, digestive tract, or the metal.

For more information about how to work safely with corrosive hazardous products, please see OSH Answers [How to Work Safely with Hazardous Products using the "Corrosion" Pictogram](#).

For more information about how to work safely with hazardous products that may cause health effects, please see OSH Answers [How to Work Safely with Hazardous Products using the "Health Hazard" Pictogram](#), and [How to Work Safely with Hazardous Products using the "Exclamation Mark" Pictogram](#).

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## What are some tips for handling chlorinated swimming pool products?

Before handling pool products in a workplace, be sure you have received the appropriate education and training.

## DO

- Always check the label before using a product.
- Read and follow instructions carefully. If there is anything you do not understand, ask your employer, manager or pool product supplier for help.
- Keep all hazardous products or chemicals out of the reach of children and pets.
- Keep all products away from food and surfaces such as counters, tables and stovetops where food is prepared.
- Use the original manufacturer's labelled containers for storage.
- Containers should always be kept closed when not in use.
- Store each type of pool chemical separately. Read the SDS for storage information.
- Keep the storage area clean.
- Use separate, clean metal or plastic measuring cups for each chemical to transfer or measure chemicals. (Scoops should not be made of wood.)
- Wear appropriate [protective equipment and clothing](#) including goggles, gloves, and footwear.
- Protect chemicals from moisture and water - such as a cup of water (or coffee). Even putting the wet scoop back into the pail may cause a reaction.
- Keep containers off the floor or ground.
- Always add the product to the pool water - never the other way around (never add water to the product) unless instructed to do so on the product label or SDS.
- Wash your hands thoroughly with soapy water after handling any products.
- Use or handle products in well-ventilated areas only.
- Dispose of unwanted, unlabelled, or old products safely. Follow any local laws that may apply.

## DO NOT

- Do not reuse containers.
- Do not mix different products together.
- Do not use a product if you do not know what it is. If the label is missing or is not readable, dispose of the product.
- Do not store products where they may leak and mix with other products stored below.
- Do not put spilled products back into their containers.
- Do not touch undiluted products with your bare hands.

- Do not smoke, eat, or drink when handling products.
  - Do not expose the products to heat or flame, and do not store with incompatible materials such as gasoline, oil, grease, fertilizer, herbicides, paint, solvents (e.g., turpentine), oily rags, and alcohol.
  - If a fire breaks out, do **not** use a "dry chemical" (ABC) or carbon dioxide fire extinguisher. Only use large amounts of water applied from a safe distance. If you cannot extinguish the flame safely and immediately, leave the area and call the fire department.
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## What are tips for the safe storage of pool products?

- Store in a cool, dry place away from sunlight.
  - Keep out of reach of children and pets.
  - Store products in the original containers.
  - Be sure your storage area is well-ventilated. Vapours may build up inside containers in high temperatures. Nose and throat irritation or more serious respiratory problems (cough or shortness of breath) may result if inhaled.
  - Never store oxidizers and acids near each other. Oxidizers will release chlorine gas if they come in contact with acids.
  - Do not store liquids above powders or solids. Do not stack containers.
  - Do not store products above your head.
  - Do not store pool products near gasoline, fertilizers, herbicides, grease, paints, tile cleaners, turpentine, or flammable materials. This tip is especially important when pool products are stored in sheds or small storage rooms.
  - Do not reuse containers. Wash out the container when empty and then dispose of it.
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## How should I clean up small spills?

Any spills larger than 50 kg should be handled as an emergency, and the fire department should be called immediately. If in doubt about what to do, call the fire department or your local chemical spill emergency response centre.

Before cleaning up a small spill:

- Make sure that the product is dry and has not been mixed with other products.

- Use caution if the product has mixed with other materials (such as grass, paper, etc.), if the product is reacting (hissing, bubbling, smoking, gassing, burning), or if the containers are bulging.
- If there is any sign that a chemical reaction is happening, evacuate the area immediately and contact your local fire department for help.

## **DO**

- Wear protective gloves, boots and aprons made of suitable protective material. Often gloves must be made from butyl rubber or neoprene (or another material as specified in the SDS).
- Wear safety goggles - goggles offer better protection against liquid splashes and airborne dust than glasses. Goggles that are called "indirectly vented" or "non-ventilated" chemical resistant will help prevent liquids from splashing and reaching the eyes. Face shields may be worn in combination with the goggles.
- Ventilate the area if indoors. Wait until the area is ventilated before cleaning.
- Carefully place the spilled product in a clean, dry plastic bag or container. Place this filled plastic bag inside another bag when finished.
- Keep an eye on the product once it has been picked up. A reaction may be delayed.
- Dispose of the product according to manufacturer instructions and according to local regulations.
- Wash your hands with soapy water after handling any chemical.

## **DO NOT**

- Do not place spilled products back in the original container.
- Do not generate dust when cleaning up a powder or solid. The dust may react with the moisture on your skin and cause injury.
- If using a container to hold the spill, do not seal it. If decomposition or a chemical reaction has started, pressure will build in a sealed container.

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## What if I have a saltwater pool?

Saltwater pools use a salt chlorine generator to sanitize the water. Instead of adding chlorine directly to the pool, salt is added to a generator that converts it into chlorine. This electrolysis produces gaseous chlorine, sodium hydroxide, and hydrogen. The gaseous chlorine then combines with water to form hypochlorous acid and hydrochloric acid. Hypochlorous acid is the active ingredient that kills algae, bacteria, and other contaminants in the pool. Other products used may include power or liquid chlorine, similar to what is used in a chlorine water pool.

Always follow the manufacturer's instructions on the product to ensure your safety.

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## In general, what do I do if someone needs first aid?

- Immediately remove the victim from the source of contamination.
- Call for medical help or advice. In case of poisoning of a pet, get veterinary help right away
- Quickly remove contaminated clothing, shoes and leather goods.
- As quickly as possible, flush the contaminated area with (preferably) lukewarm, gently flowing water for at least 15-20 minutes (a longer flushing time may be needed). Do not delay flushing if lukewarm water is not available.

**Tip** – Read and understand the product label and any product literature (such as a Safety Data Sheet (SDS)) before use. It is best to know what to do in advance and what the appropriate first aid procedures are - be prepared!

For more information, please refer to the first aid section of our OSH Answers document on [chlorine](#).

General information on [first aid for chemical exposures](#) is also available.

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