

For pools using salt generators you will find the information under Salt Generators more helpful.

Chlorine Explained

The pool and spa industry makes use of many forms of chlorine. The most common ones include sodium hypochlorite (liquid chlorine), calcium hypochlorite, lithium hypochlorite, dichlor and trichlor. There are advantages and disadvantages to using each of these chlorine compounds.

For one thing, dichlor and trichlor contain cyanuric acid (stabilizer). Cyanuric acid helps slow down the rate at which chlorine dissipates from the water due to sunlight. Cyanuric acid plays a helpful role, but too much of it can cause chlorine to work inefficiently. Pool owners who use dichlor or trichlor need to test the cyanuric acid level more frequently.

All three of the hypochlorite compounds are basic (the opposite of acidic): they will raise the pH when you add them to the water. Consequently, pool owners who use one of the hypochlorites will have to add acid (such as muriatic acid or sodium bisulfate) periodically to lower the pH and neutralize the water. We discuss that issue in greater detail in the pH section.

Here are some other features of these various forms of chlorine: Sodium hypochlorite or liquid chlorine contains about 12% Active Chlorine. (This percentage describes the weight of actual chlorine sanitizer in the product; the remaining ingredients do nothing for sanitizing pool water.) However, it is not entirely stable at this concentration and it will dissipate over time in storage. Because heat and sunlight accelerate the dissipation process, you must store this liquid in a cool, dark place.

On the positive side, sodium hypochlorite will react immediately to form hypochlorous acid (the killing form of chlorine) when it is added to the water. It is often used as a shock chemical for this reason. (We'll talk later in this section about how to shock a pool. For now, you should know that it does not involve the use of high-voltage electricity. This type of shocking refers to bringing the chlorine level of the pool to a higher-than-normal level for an extended period of time—hence its other name, superchlorination.)

Calcium hypochlorite (Cal-Hypo) contains approximately 65% Active Chlorine. Cal-Hypo is most commonly available in granular form. This chlorine compound is stable—it has a long shelf life—with no significant loss in active chlorine content. It will quickly form hypochlorous acid upon introduction to the water, making it a good shock (superchlorination) chemical. However, there is something important you must know about Cal-Hypo: because of its chemical properties, you must handle it with care.

Avoid mixing Cal-Hypo with anything other than water, as this may cause a fire.

You must follow the chemical manufacturer's instructions closely when you add Cal-Hypo into the water. The manufacturer will probably direct you to scatter it widely into the pool to avoid concentrating the chemical in any one area.

Cal-Hypo can also cloud the water temporarily since it takes a short time to dissolve completely. Be sure to balance the Alkalinity and pH properly to avoid longer-term cloudiness. Adding Cal-Hypo elevates the water hardness slightly, so the pool owner must test the water more frequently for hardness.

Lithium hypochlorite contains approximately 35% Active Chlorine. It is a powder form of chlorine. It has a long shelf life and dissolves very rapidly, so it is a popular shock chemical.

Dichlor (sodium dichloro-*s*-triazinetrione dihydrate) contains almost 100% Active Chlorine. Dichlor is usually sold in granular form, and it has a long shelf life. It makes a good shock chemical because it dissolves quickly and will not cloud the water. Dichlor has a fairly neutral pH, around 6.8, and does not require the addition of any pH neutralizing chemicals.

Trichlor (trichloro-*s*-triazinetrione) is available as tablets, sticks, and granules, all of which contain approximately 90% active chlorine. It has a long shelf life and dissolves slowly, so it works well in floaters (containers that hold chlorine tablets and float around the pool) and other erosion-style feeders.

The main thing you should remember about trichlor is that it is extremely acidic, with a pH of about 3.0. When using trichlor, the pool owner must add something like soda ash or sodium carbonate to raise the pH and keep the water neutral. Otherwise, the low pH can damage the pool's gel-coat and equipment. In particular, Do not place trichlor directly into the skimmer!

The skimmer filters the water as it leads into the filtration system. Putting trichlor in the skimmer amounts to pouring acid into the pump and heater. As you can imagine, that would not be a good thing. Trichlor dissolves too slowly to act as a shock chemical. However, the granular form can function as a spot algaecide to concentrate on specific, small areas of algae growth. Algae starts growing in a limited area, typically the shadiest, warmest, least bothered part of the pool. If you don't catch it quickly, it spreads over the entire pool. To destroy algae before it gets established, you can concentrate a few granules of trichlor onto the algae-affected area. Do not attempt this in a pool that has a vinyl liner: the trichlor can bleach the vinyl. With any form of chlorine, consult the manufacturer's label on the specific chemical for the recommended dosages.

	Gas Chlorine	Sodium Hypochlorite	Calcium Hypochlorite
PH effect	Lowers	Raises	Raises
Loss to sunlight	Yes	Yes	Yes
Includes cyanuric acid	No	No	No
Good shock chemical	Yes	Yes	Yes
Physical appearance	Gas	Liquid	Granular and tablets

	Lithium Hypochlorite	Dichlor	Trichlor
PH effect	Raises	Neutral	Lowers
Loss to sunlight	Yes	No	No
Includes cyanuric acid	No	Yes	Yes
Good shock chemical	Yes	Yes	No
Physical appearance	Powder	Granular	Granular, sticks and tablets