PITTCLOR®

PITTCLOR® is a chlorinating chemical containing 65% available chlorine. Chemically, it is known as calcium hypochlorite. Physically, it is a granular solid. Pittclor is a product of the Chemical Division of PPG Industries, Inc.

Pittclor is chiefly used as a water treating chemical. Like many chemicals beneficial to mankind, Pittclor requires a reasonable measure of care in handling, storing, and using. The purpose of this booklet is to explain the proper methods of exercising this care. A thorough reading is recommended. On the reverse side of this sheet is a wall chart outlining a simplified guide to handling Pittclor. We suggest you post it in any area where Pittclor is handled and require anyone who handles the product to read it.

open for convenient wall chart

Things to remember about PITTCLOR

1. Pittclor can be corrosive to the eyes, skin, and respiratory system. Follow precautions stated in this booklet.

2. Pittclor does much of its useful work by oxidation. However, being a strong oxidizing agent it can cause fires when overheated or brought in contact with combustible materials such as clothing, paper, paint, rags, petroleum products, trash, garbage, soap products, etc.

3. Dampness and heat are the enemies of Pittclor in storage. Either or both will initiate decomposition and accelerate corrosion of the container.

4. In case of fire, drench with water. Smothering fire with wet blanket, carbon dioxide or a dry chemical extinguisher is ineffective because calcium hypochlorite supplies oxygen.

5. Pittclor is toxic to fish. Treated or contaminated effluent should not be discharged where it will drain into lakes, streams, ponds or public water.

6. Apply Pittclor only as specified on label.

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Guide for handling and storing PITTCLOR

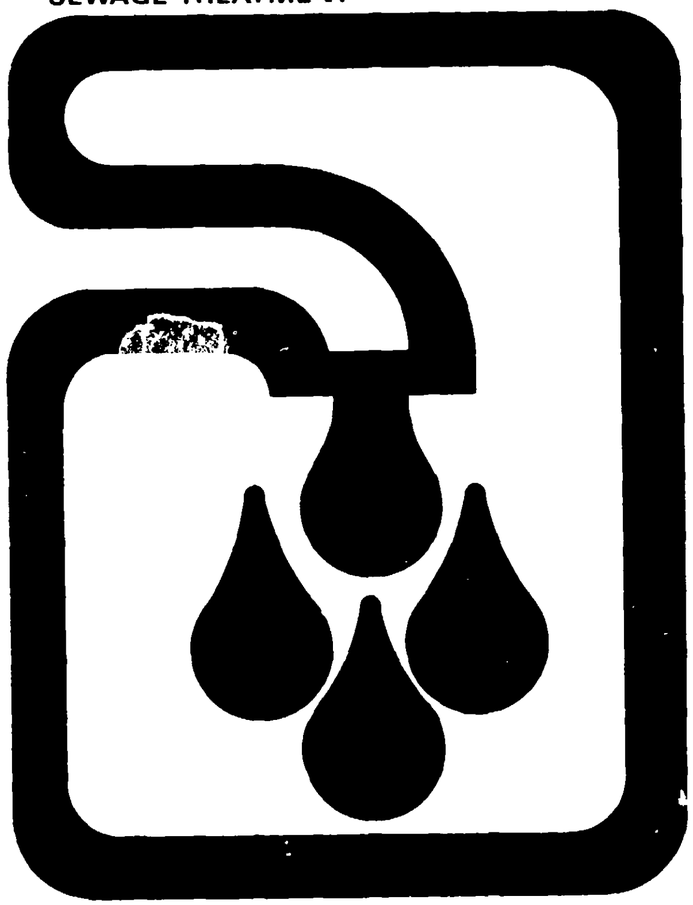
1. Each shipment should be examined for broken or damp packages. If any are found, they should be handled with particular care. Isolate such packages until disposition is decided. A claim should be filed with the carrier, and the supplier should be notified immediately.
2. Do not skid, drop or roll drums.
3. Pittclor containers should not be reused for packaging other materials because of the hazards involved in mixing a strong oxidizing material with other chemicals. This could result in rapid decomposition and create a serious fire or explosion. Empty containers should be washed thoroughly and disposed of in a safe place.

continued under flap

PITTCLOR

Calcium Hypochlorite 65% Available Chlorine

FOR WATER SANITIZATION
SEWAGE TREATMENT



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PITTCLOR® is a granular water treating agent and general sanitizer widely used by cities and towns throughout the nation. It is produced by the Chemical Division of PPG Industries, Inc. Pittclor® is calcium hypochlorite in free-flowing granular form. It contains 65% available chlorine, and provides sanitation through chlorinating action.

Municipalities, institutions, industries and other groups utilize Pittclor to meet many sanitizing needs. *Here are some of the reasons:*

PITTCLOR® means efficient chlorination. It reliably destroys chlorine-susceptible bacteria, algae, and other microorganisms, and is used to treat water supplies and sewage, chlorinate swimming pool water and as a general sanitizer.

PITTCLOR® means convenient chlorination. It is easy to use, and may be added to water manually, or with automatic feeding devices. Pittclor's inherent stability means that it can be easily stored. Many cities keep a supply on hand just for emergency purposes.

PITTCLOR® means economical chlorination. It does the job without waste and without elaborate equipment. When stored in sealed containers for a reasonable length of time, there is no appreciable chlorine loss. Leading distributors sell Pittclor at prices and in quantities which make it economical for the small user.

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PITTCLOR'S many uses

PITTCLOR serves municipalities and commercial users in many ways. Probably its most important task is water sanitization. Although large cities generally use continuously-fed gaseous chlorine to treat their water, small communities often use Pittclor. This is especially true where water consumption is not sufficient to justify the cost of the equipment needed for continuous chlorine feeding, or where chlorine demand is so low that less than three pounds of chlorine per day are required.

Surface water supplies, such as reservoirs, are often treated with Pittclor to kill many bacteria and algae. Algae problems in water works and filters are frequently solved with Pittclor.

Pittclor is an excellent emergency water-treating agent. It is always ready for immediate service. When regular water supplies are disrupted by flood, fire, drought, or other uncontrollable causes, Pittclor can provide quick chlorination of new or supplementary water sources.

Water wells may be initially sanitized with Pittclor, and their water can receive continuous treatment with it. All new water mains should be sanitized with intensive treatments of Pittclor, as should all new equipment used in the processing and distribution of drinking water.

With growing emphasis on clean rivers and streams, Pittclor finds increasing use as a sewage treatment chemical. It is employed to reduce biological oxygen demand, to control odors, to treat effluent, and to aid coagulation.

For municipal and institutional swimming pools, Pittclor is an efficient and accepted means of chlorination.

How PITTCLOR works

Chlorination is the recognized method of treating water supplies. Whether achieved by continuous feeding of gaseous chlorine or by addition of Pittclor, the chlorinating, sanitizing action is the same. Both gaseous chlorine and Pittclor form hypochlorous acid (HOCl) when introduced into water. Hypochlorous acid is generally believed to kill microorganisms by penetrating their cell walls and attacking the vital, living parts.

It is the concentration of hypochlorous acid in the water—expressed as "percent available chlorine"—that determines germicidal strength.

"Chlorine demand" is the amount of chlorine required to destroy bacteria and other organic

matter in the water. Available chlorine remaining after the chlorine demand has been filled is known as "residual chlorine." This remaining chlorine aids in the protection against new contamination. The amount of "residual chlorine" is usually expressed in "parts per million (ppm) of free, available chlorine."

Regular, accurate testing of water supplies for adequate residual chlorine is extremely important. It should be carried out on a systematic basis because it is the only way to determine the chlorine residual and, therefore, the acceptability of the water.

How to use PITTCLOR in water systems

All water intended for human consumption should be chlorinated. Turbid water should be clarified before it is chlorinated. It is important to remember that any water supply can be contaminated by seepage or carelessness.

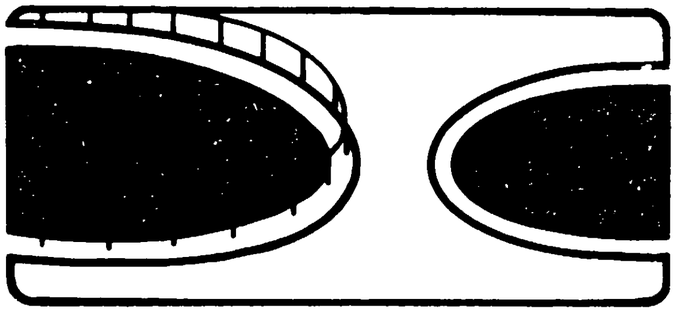
Although large water systems usually use gaseous chlorine, many smaller systems use Pittclor. Pittclor can be used at any stage in the water purification process.

Large water systems using gaseous chlorine for continuous feeding often stock Pittclor for special purposes such as killing sudden algae growths, treatment of mains, conditioning of filters, and for emergency chlorination.

RESERVOIRS

Contamination of reservoirs is an always present possibility. Careless people and undetected seepage from ground contamination are frequent causes. To keep reservoir water bacteriologically acceptable, it is necessary to chlorinate sufficiently to provide a residual of 0.2 ppm free available chlorine. This would be equivalent to 1.2 oz. Pittclor per 30,000 gallons of water after the chlorine demand has been satisfied.

Continuous feeding of Pittclor at the input



source is usually the most effective means of maintaining an adequate chlorine residual. If continuous treatment is not practical, intermittent broadcasting of Pittclor over the surface of the water is recommended. Take care to reach all parts of the reservoir.

Test regularly, taking samples daily from areas a good distance from the water inlet, if possible. If samples must be taken near the inlet, let them stand for at least 20 minutes before testing. Chlorine demand will be higher during periods of dryness, heat, and heavy rainfall.

When algae becomes a problem in a reservoir, special action is necessary. Rapid algae growth is an indication of increased chlorine demand. There are several methods of treatment.

Continuous chlorination is generally effective in killing algae when sufficient chlorine or Pittclor is fed to produce a chlorine residual of 0.2 to 0.5 ppm free available chlorine. When continuous feeding is not possible, intermittent feeding can be practiced. Broadcast Pittclor across the surface of the water. It dissolves as it sinks to the bottom, carrying its chlorinating action to all depths. Add sufficient Pittclor to produce a residual of 0.2 to 1.5 ppm for up to 24 hours. Take special care to introduce Pittclor to shallows and edges.

Where fish are present, special precautions must be observed.

Treatment of algae can result in oxygen loss from decomposition of dead algae. This loss can cause fish suffocation. Therefore, to minimize this hazard, treat 1/3 to 1/2 of the water area in a single operation and wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas.

New reservoirs and newly cleaned reservoirs should be disinfected with Pittclor. Spray all parts with a 0.5% solution (5,000 ppm) or 1 oz. Pittclor to 1 gallon of water. As a safety precaution, do not store a Pittclor solution. Always use immediately the Pittclor solution that is prepared. After the reservoir is filled, chlorinate as described above.

MAINS

New water mains, as well as old mains that have been repaired, should be treated before being placed into service because contamination is always present in construction conditions. There are several techniques:

One is to flush the main, then inject a 1% available chlorine solution. Run water through the main, continuously feeding the Pittclor solution, until a 50 ppm available chlorine reading is obtained at the far end. Let stand 24 hours, then flush. Refer to page 18 for the preparation of the 1% available chlorine solution.

When constructing new mains, take care to

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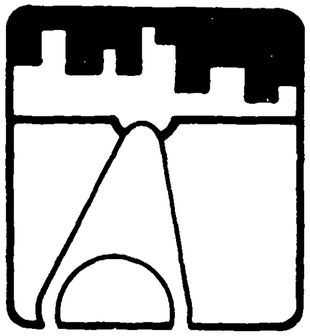
keep out trench water and other contaminants. Ends of pipes should be capped when being lowered into place.

Two days after initial treatment, water in the system should be tested again for bacteria and chemicals. If results of the test are not satisfactory, maintain a 0.4 ppm free chlorine residual in the pipe until test samples for two successive days are acceptable.



WELLS

Contamination of well water is always possible. This is true even of deep wells. The general rule that all water intended for human consumption should be chlorinated holds true for well water. Municipal authorities frequently take an active interest in helping residents of surrounding rural areas, particularly dairy farmers, to safeguard their water supplies. This serves the municipality, because disease originating in outlying areas can easily spread into the community.

The best method of chlorinating well water with Pittclor is to feed it into the intake line of the pump. Automatic hypochlorination equipment for this purpose is available and easy to use. This helps keep the filter free of slime. If this location is not possible, feed Pittclor anywhere in the pump discharge line. A free chlorine residual of 0.2 ppm should be maintained after a contact time of 20 minutes. Regular testing is necessary, and a record of tests and readings should be kept.

New wells must be treated. Add enough Pittclor to the well to provide a 50 ppm available chlorine reading. When testing is not possible, a treatment of 1 ounce of Pittclor for each 100 gallons of water is suggested. After allowing the water to stand in the system 24 hours, run all outlets until the chlorine taste is negligible. The practice of regular chlorination to maintain a 0.2 ppm residual of free chlorine as directed above should then be followed.

TREATMENT PLANTS

When water is chlorinated in a treatment plant, Pittclor may be used when the plant is too small to require gas chlorine equipment. Or Pittclor treatment in the purification plant may supplement well or reservoir chlorination

Another major use of Pittclor in treatment plants of all sizes is algae control Algae are the source of many objectionable tastes and odors

in water. They can cause mud balls and slime in filters, pipes, and pumps. Iron bacteria and slime reduce pipeline capacity. Algae contribute to black or red water in dead-end pipelines. Pittclor is effective in fighting these problems.

The presence of algae is often first indicated by slimy, gelatinous film on the insides of pumps, lines, mixers, etc. To eliminate it, chlorinate with Pittclor in the forebay or pump well with sufficient quantities to obtain a 5.0 to 10.0 ppm residual chlorine reading after 20 minutes. The dosage to arrive at this reading will vary with conditions and should be controlled by test. Hot weather may increase the need for treatment. All new or repaired equipment should be treated with Pittclor solutions.

FILTERS

Algae growth is one of many possible causes of filter difficulties. Trouble of this type is generally indicated by slime and discoloration of walls, filter cracking, mud ball, and disagreeable tastes and smells.

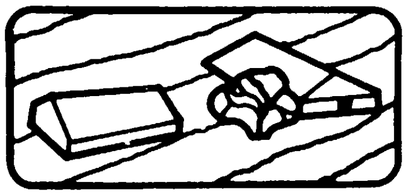
Pittclor can help combat algae problems in filters when used periodically in the following manner: Drain the filter until the water level is approximately one foot above the sand. Then sprinkle dry Pittclor in the amount of 3 to 4 pounds per 100 sq ft. over the standing water. Let the Pittclor dissolve (about 30 minutes), then drain the water until it just reaches the

top of the sand. Let it stand 6 to 12 hours longer. Finish draining, and backwash the filters in the usual way.

EMERGENCY USES

Violent acts of nature or failure of man-made works may jeopardize a community's water supply. Flood waters may contaminate reservoirs and wells; drought may dry up water supplies; fires or power failures may interrupt the operation of pumping or purification facilities; mains may break; and unknown sources can pollute water. All of these emergencies demand prompt action by responsible authorities. Many communities keep standby supplies of Pittclor ready to meet these problems. Pittclor is well suited to such duties. It can be stored in closed containers for reasonable periods without appreciable loss of effectiveness. When needed, Pittclor flows easily, and may be applied to water with feeders, or manually. Solutions can be quickly prepared to meet many requirements.

During emergencies, Pittclor may be used to chlorinate water supplies which have been contaminated, or to purify new sources of



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water quickly and dependably. It may supplement chlorine gas systems during unusually high demand. Dose raw water with sufficient Pittclor to produce a free chlorine residual of 0.2 ppm after a 20-minute contact period. When circumstances do not permit testing, add Pittclor until a faint chlorine taste remains. This will assure an adequate margin of safety.

PITTCLOR for sewage treatment

B.O.D. REDUCTION

B.O.D., or Biochemical Oxygen Demand, is the quantity of oxygen required to oxidize the polluting substance to a biochemically inert material. As little as 1 part per million of chlorine may bring about a reduction of 2 to 3 ppm in B.O.D. Pittclor for this purpose may be added at virtually any point in the system.

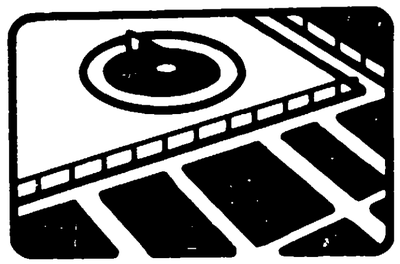
To get maximum results in terms of desirable aerobic action and retardation of anaerobic decomposition, hypochlorination should be complete. The treatment will still be of value, however, even if the amount of Pittclor applied is less than the total amount which could be utilized.

ODOR CONTROL

The most offensive of the odors encountered in sewage treatment is due to the formation of hydrogen sulfide. This is caused by the sulphate-splitting bacteria normally present in sewage.

Hydrogen sulfide can be very effectively controlled by Pittclor hypochlorination of the fresh sewage, thus destroying the sulfide-producing bacteria. If treatment of fresh sewage is not practicable, Pittclor may be added at any point where the odors have become objectionable. The amount required will, however, be increased, as the available chlorine in Pittclor will react not only with the hydrogen sulfide but also with bacteria and organic material.

For a sulfide reduction of 1 ppm, from 8 to 10 ppm of available chlorine probably will be required.



DISINFECTION OF EFFLUENT

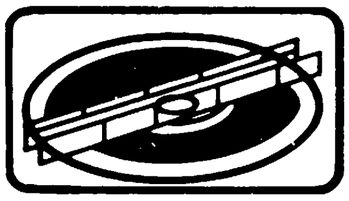
With Pittclor, an effluent can be obtained that is free from dangerous bacteria. Every effort is made to locate modern plants where the effluent will not reach places where it may be harmful. Nevertheless, in many communities the possibility exists that the effluent may enter into bathing beaches, etc. To be on the safe side, Pittclor treatment should be used to destroy these bacteria.

The amount of Pittclor that may be required depends on the type of sewage Raw sewage may require as much as 30 ppm of available chlorine, while secondary treated sewage may need as little as 3 ppm. However, the action of the available chlorine in Pittclor is very rapid, and a test of residual chlorine made 15 minutes after treatment will provide a satisfactory check of its efficiency. With a residual chlorine of 0.5 ppm, the treatment should be adequate.

AID IN COAGULATION

The value of Pittclor's available chlorine as an aid in coagulation is due primarily to its oxidizing power—a property which is of particular value in sewage treatment because there is almost no oxygen in sewage.

Pittclor hypochlorination is particularly helpful when iron salts are used as the primary coagulant. Ferric iron, in the absence of oxygen, tends to revert to ferrous iron which is of little value as a precipitant. The hypochlorite supplies sufficient oxygen to retard or prevent this change. It should be used just before the primary coagulant in the proportion of 3 to 5 ppm



PITTCLOR ...

swimming pools

POOL WATER CHLORINATION

Pittclor provides a simple, effective chlorination treatment for swimming pool water. Its use is especially desirable for indoor pools. For best results, Pittclor solution is introduced in controlled quantities into the recirculated water. Equipment may be obtained which operates automatically.

For complete recommendations and information see PPG Chemicals booklet A-707 "Pittclor Program for Pool Protection."

POOL ACCESSORY TREATMENT

Since opportunities for the spread of infection are present at any place where bathers gather or in facilities which they share, an adequate protective program is provided with a minimum of trouble and expense through the germicidal properties of Pittclor. Pittclor solutions effectively kill Athlete's Foot fungus, or other disease germs present on swimming pool premises including: shower and locker rooms, urinals, toilets, halls, floors, walkways, diving boards,

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platforms, ladders, beaches, etc.

This product is toxic to fish. Treated pool water should not be discharged where it will drain into lakes, streams, ponds, or public waters.

How to make various quantities of 1% (10,000 ppm) PITTCLOR supply solution.

Quantity of Granular Pittclor	Amount of Lukewarm Water
7½ lbs.	60 gal.
10 ounces	5 gal.
2 ounces (or 12 teaspoons)	1 gal.
½ ounce (or 3 teaspoons)	1 quart

To prepare a Pittclor solution, use a clean, non-metallic vessel free of grease, oil or any residue. Add granular Pittclor to lukewarm water and stir for 3-5 minutes.

Prepare no more Pittclor solution than required. As a safety precaution, never store a Pittclor solution. Always use immediately the Pittclor solution that is prepared.

Keep PITTCLOR out of the reach of children. PITTCLOR may be fatal or harmful if swallowed. PITTCLOR is a strong oxidant; it may produce severe chemical burns. Do not get in eyes, on skin or on clothing. Do not use ammonia or other bowl cleaners with this product. To do so

will release hazardous gases.

First Aid:

External – In case of skin and eye contact, flush with plenty of water. If skin irritation persists, get medical attention. For eyes, get prompt medical attention.

Internal—Give milk, water, or egg whites. Call physician immediately.

Handling and Storing PITTCLOR

Do not skid or drop PITTCLOR. Keep PITTCLOR in original container in a cool, dry place. Keep PITTCLOR container closed when not in use. Keep PITTCLOR away from heat sources, sparks, open flames and lighted tobacco products. Use only a clean, dry scoop made of metal or plastic *each time* PITTCLOR is taken from the container. Add PITTCLOR only to water. PITTCLOR may cause fire or explosion if mixed with other chemicals. Fire may result if PITTCLOR is contaminated with acids, or easily combustible material, such as oil, kerosene, gasoline, paint products, and most other organic materials. In case of fire, drench with water. PITTCLOR supplies oxygen, therefore, attempts to smother fire with a wet blanket, carbon dioxide or a dry chemical extinguisher are ineffective. Wash hands after handling PITTCLOR. Do not re-use empty PITTCLOR container. Destroy when empty.

Each effective [illegible] PITTCLOR [illegible] for Pool Protection [illegible]

BALANCED WATER

Your pool contains more than water. It also contains [illegible] organisms and other substances. Some may spoil the water's appearance; some may interfere with [illegible]. It's practically impossible to keep chemicals in the water in your pool, but it is possible to balance the water.

Basically, to keep your water [illegible] to control three water conditions:

1. pH

The term "pH" refers to [illegible] a solution. [illegible] Some people refer to "pH" as "alkalinity." [illegible] pH [illegible] 7.0 [illegible] 7.0 [illegible] after treatment. High pH [illegible] for a scale [illegible] 7.6 to 7.8. Normal water [illegible] pH [illegible] 7.0. [illegible] pH [illegible] 7.0 [illegible] 7.6 [illegible] 7.8 [illegible] 7.6 [illegible]

2. ALKALI CONTENT

[illegible] pH [illegible] pH [illegible] pH [illegible]

FREE CHLORINE RESIDUAL

[illegible]

You never [illegible] what might crop up in your pool

TESTING (THE PITTCLOR PROGRAM WAY)

First, you have to test for alkali content, pH and free chlorine residual. Some test kits can test for three. Many test only pH and free chlorine in a single case but, an additional kit to test for alkali content. Make sure the test kit you purchase tests for free chlorine residual, not combined chlorine residual. Test kits [illegible] expensive. You can get them from your pool builder or pool chemical supplier.

TESTING FOR ALKALI CONTENT.

The water you fill your pool with has probably come a long way through earthen materials including soluble alkalis. Excessive amounts of alkalis in pool water may cause cloudiness, calcium scale on pool walls, deposits in pipes, and irritation to swimmers' body tissues. When PITTCLOR is used for chlorination, alkali should be maintained between 50 and 300 ppm.

TESTING FOR pH

After the alkali content of your pool has been lowered to 300 ppm or less, now is the time to measure for pH. The yardstick for measuring acidity or basicity. The proper pH reading for a pool sanitized by PITTCLOR is 7.2 to 7.6. If the pH drops below 7.0, acid conditions are created that cause eye, nose and throat irritation. When swimmers complain about "chlorine irritating the eyes" the culprit is usually acidity — not chlorine.

On the other hand, a high pH may slow down the bacteria kill rate, and cause cloudiness in the water.

The message: keep that pH reading between 7.2 and 7.6.

TESTING FOR FREE CHLORINE RESIDUAL

Chlorine is consumed when it attacks organic materials and bacteria in the water. The amount of chlorine consumed is called "chlorine demand". A heavily used pool or one close to sources of contamination, will have a high chlorine demand. When chlorine consumption is high, too, you'll find chlorine is doing its job of keeping the pool sanitary.

It's easy to test and treat your pool the PI

TTCLOR PROGRAM WAY)

test for [illegible] pH and [illegible] me test kits [illegible] Many e chlorine [illegible] acid alkali content Make sure the test ts for free chlorine residual test com tai. Test kits are inexpensive You our pool dealer or pool chemical

.KALI CONTENT.

your pool with has probably come a other materials including soluble nounts of alkalis in pool water may lcium scale on pool walls, deposits in to swimmers' body tissues When for chlorination, alkali should be 50 and 100 ppm

I

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REE CHLORINE RESIDUAL

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It's easy to test and treat your pool the PITTCLOR way.

[illegible] This acid is considered [illegible] scientific testing and it [illegible] acid provided by PITTCLOR kills undesirable bacteria at the fast rate acceptable by health authorities

TREATING (THE PITTCLOR PROGRAM WAY)

Before you add any chemicals to your pool you should know how much water it contains Here are a couple of simple formulae to determine your pool water capacity based on its dimensions (measured in feet).

For rectangular pools:
Length X Width X Average Depth X 7.5 = Gallons
For circular pools:
Diameter X Diameter X Average Depth X 5.9
Gallons

TREATING FOR HIGH ALKALI CONTENT

If you find the alkali content of your pool water exceeds 100 ppm, add an acid, such as muriatic acid, until the level is reduced to 50 to 100 ppm Acidic materials must be handled with care Read and follow the directions and precautions on the label before use

TREATING TO BALANCE pH

When the alkali content of your pool tests below 100 ppm, it's time to test and treat pH The ideal pH range is between 7.2 and 7.6 If the pH is below 7.2, treat the water with soda ash (sodium carbonate)

Sodium bisulfate (pH Lower Plus) or muriatic acid should be added to lower the pH to 7.2-7.6. Allow no one in pool while treating.

After chemical addition, recirculate the water for two to three hours, then retest. Add more chemical if necessary. But allow no one in pool while treating.

The following table is a guide to show how much soda ash or muriatic acid should be used to balance water pH. Because the treatment needs of pools are different, you may find the dosage levels in this table do not give the exact pH indicated. However if the final pH is within the 7.2 to 7.6 range, the pH is satisfactory.

How to Balance pH Under Average Water Conditions.

Find your pH on the scale at left. Read across the chart to the column under your desired pH. Red numbers indicate the required ounces of soda ash to be added per *1000 gallons of water in your pool*. Blue numbers indicate the number of fluid ounces of 20° Baume (32%) muriatic acid to be added per *1000 gallons of water*.

DESIRED pH

Present pH	7.0	7.5	8.0	8.5	*Ounces of soda ash needed for 1,000 gallons of water.*
5.0	**19**	**23**	**26**	**30**	
5.5	**18**	**22**	**25**	**29**	
6.0	**15**	**19**	**22**	**26**	
6.5	**9**	**13**	**15**	**19**	
7.0		**4**	**6**	**10**	
7.5	**0.8**		**2**	**6**	
8.0	**1.1**	**0.3**		**2**	
8.5	**1.3**	**0.6**	**0.2**		
9.0	**1.8**	**1.0**	**0.7**	**0.5**	
9.5	**3.2**	**2.5**	**2.1**	**1.9**	
10.0	**5.5**	**4.7**	**4.4**	**4.1**	

Fluid ounces of 20° Baume (32%) muriatic acid needed for 1,000 gallons of water.

EXAMPLE: Your pool has 50,000 gallons of water. Your pH is 8.0. You want to lower it to 7.5. According to the chart, add 0.3 ounces of 20° Baume (32%) muriatic acid per 1000 gals. of water. Multiply 50 x 0.3 = 15 fl. oz. = a little at one pint of acid.

Eye irritation may be the result of too much acidity or chloramines, not necessarily chlorine.

ESTABLISHING A FREE CHLORIN (New Pool)

A newly filled pool or one that hasn't b
water can be certain to contain unwanted
other organic matter. The chlorine dem
Don't use the pool until it has been pro
Treat the water initially with 1 oz. of PI
1,000 gallons. If after 30 minutes, your
chlorine residual, you can assume the d
is satisfied. If no residual is detected, re
ment. If a free chlorine residual shows
add 1-2 ounces of PITTCLOR for every
If this does not raise the free chlorine re
the 0.6 to 1.0 ppm range after 30 minut
treatment.

METHODS OF ADDING PITTCLO

If your pool is equipped with an erator
see instructions for preparing a PITTCL
quid feeders on page 11. For manual t
CLOR is best added as a solution. To p
use one gallon of water to dissolve each
PITTCLOR that you need. The solution
pared in a plastic watering can. Also, a
a convenient means for adding the solut
Pour in the PITTCLOR solution as you
pool. As a safety precaution, never stor
solution. Always use immediately the PI
how you prepare it. To assist PITTCLO
by broadcasting the dry granules around
of the pool.

**WARNING: Never mix PITTCLOR w
acid or other pool chemicals. . . .**

Once your pool's alkali content has been reduced to 50 to 100 ppm, the pH balanced, and the free chlorine residual raised to 0.6 to 1.0 ppm, your job is done, right?

Wrong. From this point on your job is to *keep* the pool water balanced, and it's easy with the PITTCLOR program.

PERIODIC TESTING

Your best check is your test kit, used on a regular basis. If your pool gets heavy use, check frequently. If the pool's alkali content, pH and free chlorine residual fluctuate rapidly, you need to test more often.

The best way to be certain that your pool water stays balanced is to test daily for alkali content and pH. Chlorine residuals must be checked daily, preferably 30 to 60 minutes before you expect the pool to be used. If you have heavy traffic in the pool, check chlorine residual during the occasion.

And, of course, if your pool water begins to look discolored, cloudy, or unusual in any way, test it.

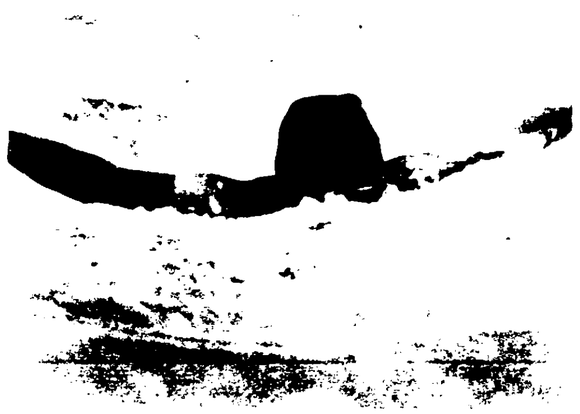
SUPPLEMENTAL PITTCLOR TREATMENT

Routine tests will indicate changes in alkali content and pH, which means you'll have to add muriatic acid or soda ash to balance the water.

Excessive use of chlorine contained in your pool water is a sign of how much use the pool gets. The best time to use the PITTCLOR additives is at night when the pool is not in use. Add 1 ounce (28 cc) "shock" treatment of PITTCLOR per 5,000 gallons of water. Treat your pool with this dosage each day.

Note: When testing for free chlorine residual, if test shows residual to be over 2.0 ppm, add 1.2 ounces of PITTCLOR per 20,000 gallons of water. Check residual again after 24 hours.

The more use your pool gets, the more often water needs treatment.



Exercise chlorine spectacular and check your pool water frequently.

If no residual is found after adding P
you get the required 0.6 to 1.0 ppm lev
too, to test when swimmers are using th
residual is low, add PITTCLOR when th

The following table lists the quantity
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PITTCLOR needed to add equival
free chlorine residual after chlorine
satisfied. (This dosage may be requi
per day to maintain the desired chlo

Gallons of Water	Ounces	T
5,000	0.6	
10,000	1.2	
15,000	1.8	
20,000	2.4	
25,000	3.0	

**ADJUSTING ALKALI AND pH AFT
OF PITTCLOR**

PITTCLOR addition
content and pH of
the pH W
procedure
CLOR

of jets, the more the water needs

If no residual is found, keep adding PITTCLOR until you get the required 0.6 to 1.0 ppm level. It's a good idea, too, to test while swimmers are using the pool. If the residual is low, add PITTCLOR when the pool is not in use.

The following table lists the quantity of dry PITTCLOR that will add an equivalent of 0.6 ppm free chlorine residual to a pool after the chlorine demand has been satisfied. PITTCLOR can also be added to a pool as a solution. Use one gallon of water to dissolve each tablespoon of PITTCLOR. As a safety precaution, PITTCLOR solutions must never be stored. Always use immediately all the PITTCLOR solution you prepare.

PITTCLOR needed to add equivalent of 0.6 ppm free chlorine residual after chlorine demand has been satisfied. (This dosage may be required several times per day to maintain the desired chlorine residual.)

Gallons of Water	Ounces	Dry PITTCLOR Tablespoons
5,000	0.6	1
10,000	1.2	2
15,000	1.8	3
20,000	2.4	4
25,000	3.0	5

ADJUSTING ALKALI AND pH AFTER ADDITION OF PITTCLOR

PITTCLOR additions may have an effect on the alkali content and pH of your water. PITTCLOR tends to raise the pH. When you treat your pool with PITTCLOR, we recommend that a separate quantity of acid sufficient to neutralize the equivalent alkaline influence of PITTCLOR be added. It takes 2.67 fluid oz. of 20° Baumé (32% by wt.) acid to neutralize the alkaline effect contributed by 1 lb. of PITTCLOR.

WARNING: Never add acid directly to PITTCLOR or vice versa. The spontaneous decomposition resulting from such mixing would be extremely hazardous.

When alkali content is kept at 50 to 300 ppm, and pH properly controlled, you shouldn't encounter problems of cloudy water, scaling and deposits in pipes. There may be momentary clouding when PITTCLOR is added but as the chemical goes to work and the water becomes balanced, cloudiness will disappear.

The key to successful use of PITTCLOR in your pool is the proper control of alkali content and pH.

PITTCLOR SOLUTION FOR LIQUID FEEDERS

A PITTCLOR solution can be prepared for liquid feeders by dissolving sufficient PITTCLOR in water to produce a 1% concentration. The 1% solution is easily made, as follows:

PITTCLOR	LUKEWARM WATER
1⅓ lbs.	10 gals.

To prepare a PITTCLOR solution, use a clean, grease-free container. Measure out the water first. Then add the PITTCLOR to the water. Stir until dissolved. Allow to settle until the solution is clear.

Smaller quantities of 1% solution may be prepared by dissolving 4 tablespoons of PITTCLOR per gallon of water.

Prepare no more PITTCLOR solution than is needed to fill the liquid feeder. As a safety precaution, never store a PITTCLOR solution. Always use immediately the PITTCLOR solution you prepare.

For best results, the pool water should be tested at least twice a day.

SUPERCHLORINATION FOR ALGAE CONTROL

[illegible] algae [illegible] Be sure [illegible] superchlorination [illegible] when the [illegible]

Superchlorinate at least once a week to prevent the [illegible] and other microorganisms

SUPERCHLORINATION TO ELIMINATE CHLORAMINES

[illegible] Superchlorination [illegible] PITTCLOR [illegible]

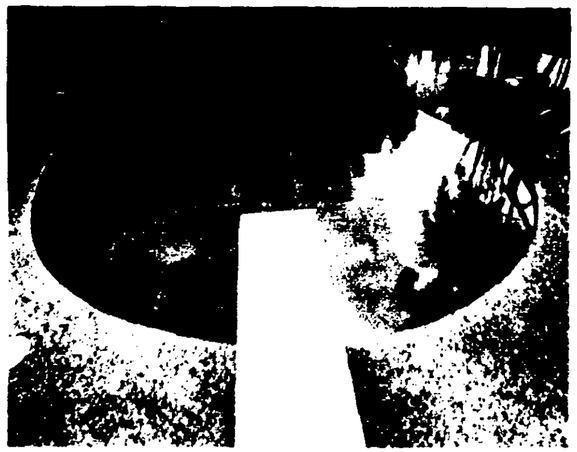
POOL WATER STABILIZATION

[illegible]

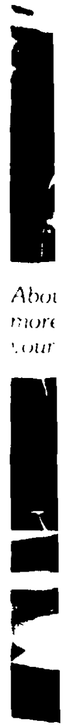
Take it easy and enjoy your pool.

to sustain pool water, even if the pool is lightly used. A major source of this problem is sunlight which dissipates free chlorine. The best way to slow down the rate of consumption is to stabilize your pool water. But don't expect it to compensate for heavy chlorine consumption caused by poor pool sanitation or contamination by organic matter entering the pool. You can stabilize your pool water by [illegible] according to these procedures:

1. Clean out [illegible]
2. Test pH [illegible] adjust to 7.2 to 7.6 if necessary.
3. Superchlorinate.
4. Once superchlorination is completed, start [illegible] system and add stabilizer. Follow [illegible] directions for use. Caution: Use only the proper stabilizer for swimming pools.
5. Circulate water through filter for 6 hours after stabilizer addition.
6. Maintain a free chlorine residual of 1.0 to 3.0 ppm in [illegible] pool.
7. Maintain pH between 7.2 and 7.6.



Superchlorination is recommended at least once a week to prevent the [illegible] algae and other microorganisms



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your

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Above ground pools have less water per bather so check more frequently, to make sure the water is sanitary for your family and friends.

8. Superchlorinate once a week. Follow the same directions you have noted to do "Shock Chlorination for Algae Control."

ABOVE-GROUND POOLS

Above ground pools require more chlorination because they generally have less water per bather. Water can become saturated or polluted more quickly. Sides of above ground pools are exposed to sunlight, promoting a warmer environment in which bacteria might multiply.

A free chlorine residual of 1.5 to 2.0 is recommended. Test for free chlorine residual each day, preferably before the pool is used. If the chlorine residual is less than 1.5 ppm, add 0.3 oz. of PITTCLOR per 1,000 gal. of water.

In some areas sunlight dissipates free chlorine.

Repeat the treatment every 30 minutes if the 1.5 ppm level has not been reached. Alkalinity, control and pH should also be checked daily to maintain balanced water conditions.

POOL CLEANING

Periodic draining of the pool gives you the opportunity to insure cleanliness. (Consult your pool builder for a schedule.) While the pool is drained, thoroughly clean it. During the cleaning, make use of PITTCLOR's disinfecting power. Use a strong PITTCLOR solution (5,000 ppm available chlorine—see below) to wash the pool sides, walls, and bottom. Pay particular attention to getting into boring cracks and crevices by making sure they are wetted by the solution. Use all the PITTCLOR solution you prepare. Never store a PITTCLOR solution.

CLEANING AROUND THE POOL

Proper sanitation doesn't stop with your pool. Make sure decks, diving boards, ladders and floats are cleaned and then wetted with a 5,000 ppm PITTCLOR solution.

In public pools, it is done daily to cut down on the spread of bacteria and fungi. A 1250 ppm solution of PITTCLOR is also useful as a disinfectant on sinks and toilet facilities. Apply it as a rinse, spray, swab, or douse. All surfaces should be thoroughly wetted.

How to Make PITTCLOR Solutions of 1,250 and 5,000 ppm

Concentration Needed (ppm available chlorine)	Using Granular PITTCLOR	
	Teaspoons PITTCLOR	Gallons Water
1,250	$1\frac{1}{2}$	1
5,000	$6\frac{1}{4}$	1

[illegible] PITTCLOR [illegible]
PITTCLOR [illegible]

The following basic steps will help you to keep your pool water happy. However, they're not the complete pool care story, and we recommend that you read this booklet thoroughly for a full understanding of pool care methods.

INITIAL TREATMENT (NEW POOLS)

1. Check alkali content and pH. Proper ranges are: Alkali content—50 to 200 ppm; pH—7.2 to 7.6.
   Testing 6
2. Adjust if necessary. To lower alkali content and pH, add muriatic acid. To increase pH, add soda ash.
   Treating 7
3. Add 2 oz. of PITTCLOR per 2,000 gal. of water.
   PITTCLOR 3
   Chlorine 5, 12
   Pool 9
4. Neutralize the chlorine contained in PITTCLOR by adding 2 oz. of soda ash per 20 Baume (32 ounces) and broadcast PITTCLOR with it.
   Adjusting Alkali Content and pH 22
5. Next day, test for chlorine residual. 30 to 60 minutes before swimming use. If residual is less than 0.6 ppm, add 2 oz. of PITTCLOR per 20,000 gal. of water. Heavy organic loads or cool conditions may also retard chlorine dissipation. Use pool test set and add PITTCLOR as required.
   Superchlorinate PITTCLOR treatment 10
6. Water is now ready for use. Keep pool clean.
   Swimming pool 12

DAILY FOLLOW-UP TREATMENT

1. Test for free chlorine, pH and total alkalinity.
   Pool Testing 10
2. Adjust alkali content and pH if necessary. Use muriatic acid to lower alkali content and pH. Use soda ash to raise pH.
   Treating 7
3. At night, after swimmers have left the pool, add four ounces of PITTCLOR per 5,000 gal. of water. Next morning, test for free chlorine residual. Add PITTCLOR as needed to obtain a 0.6 to 1.0 ppm residual. If tests show low residual during the day, add PITTCLOR.
   Supplemental PITTCLOR Treatment 10

MOST COMMON WATER PROBLEMS*

CONDITION	CAUSE	REMEDY
Algae infested water	Chlorine level too low	Superchlorinate, adjust pH, adjust alkali content. Vacuum and filter.
Green water	Heavy rainfall, algae, acid water, metallic ion from copper piping	Adjust pH, adjust alkali content, superchlorinate. Vacuum and filter.
Cloudy turbid water	Heavy rainfall, imbalance in make-up water, improper alkalinity, algae, too much aluminum sulfate (alum)	Test alkali content and adjust. Check pH. Superchlorinate, adjust pH to 7.2 to 7.6 range. Do not use alum with Diatomite filters.
Yellow or greenish yellow water	Dirt, silt, heavy rainfall	Superchlorinate, adjust pH and alkali content. Vacuum and filter.
Red or reddish brown water	Iron or other minerals	Superchlorinate, adjust alkali content and pH. Vacuum and filter.
Black water	Copper or manganese, certain strains of algae	Superchlorinate, adjust alkali content and pH. Vacuum and filter.
Brown water	Mud or minerals	Superchlorinate, adjust alkali content. Vacuum and filter

*If recommended treatment does not clear water after approximately 24 hours, consult a local water treatment company for a correct water analysis.

EMS*	
	REMEDY
	Superchlorinate, adjust pH, adjust alkali content. Vacuum and filter.
	Adjust pH, adjust alkali content, superchlorinate. Vacuum and filter.
	Test alkali content and adjust. Check pH. Superchlorinate, adjust pH to 7.2 to 7.6 range. Do not use alum with Diatomite filters.
	Superchlorinate, adjust pH and alkali content. Vacuum and filter.
	Superchlorinate, adjust alkali content and pH. Vacuum and filter.
	Superchlorinate, adjust alkali content and pH. Vacuum and filter.
	Superchlorinate, adjust alkali content. Vacuum and filter

hours, consult a local water treatment

It takes a lot less work than you might think to keep your pool water happy

Keep PITTCLOR out of the reach of children PITT CLOR may be fatal or harmful if swallowed PITTCLOR is a strong oxidant, it may produce severe chemical burns Do not get in eyes, on skin or on clothing Do not use ammonia or other bowl cleaners with this product To do so will release hazardous gases

First Aid

External In case of skin and eye contact, flush with plenty of water If skin irritation persists, get medical attention For eyes, get prompt medical attention

Internal Give milk, water, or egg whites Call physician immediately

Do not skid or drop PITTCLOR Keep PITTCLOR in original container in a cool, dry place Keep PITTCLOR container closed when not in use Keep PITTCLOR away from heat sources, sparks, open flames and lighted tobacco products. Use only a clean, dry scoop made of metal or plastic *each time* PITTCLOR is taken from the container Add PITTCLOR only to water PITTCLOR may cause fire or explosion if mixed with other chemicals Fire may result if PITTCLOR is contaminated with acids, or easily combustible material, such as oil, kerosene, gasoline, paint products, and most other organic materials In case of fire, drench with water PITTCLOR supplies oxygen, therefore, attempts to smother fire with a wet blanket, carbon dioxide or a dry chemical extinguisher are ineffective Wash hands after handling PITT CLOR Do not re-use empty PITTCLOR container Destroy when empty

PPG Industries packages PITTCLOR in drums, cans and plastic containers Containers should be tightly closed after use and always stored in a cool, dry place Read all label directions before using PITTCLOR

Ask your pool builder or service company for PITTCLOR

PITTCLOR®

(CALCIUM HYPOCHLORITE)

Handling and Storage Procedures

KEEP OUT OF REACH OF CHILDREN.

Harmful or fatal if swallowed.

Strong oxidant. Fire may result from contact with heat, acids, organic or combustible materials.

May produce severe chemical burns. Avoid contact with skin or with eyes.

Do not use ammonia or acid cleaners with this product. To do so will release hazardous gases.

Do not mix with any other chemicals. Mix only with water.

EXTERNAL - In case of skin or eye contact, flush with plenty of water. If skin irritation persists, get medical attention. For eyes, get medical attention immediately.
INTERNAL - Give milk, water or egg whites. Call a physician immediately.

Handle container with care. Do not skid, drop or roll.

Use only *clean, dry* measuring devices and scoops.

If spilled on clothing, remove and wash the contaminated clothing immediately.

Dispose of spilled material by flushing with large amounts of water. Do not throw it into waste baskets or trash cans.

In case of fire, drench with water.

Repackaging or blending is not recommended.

Do not reuse empty containers. Rinse empty container thoroughly and dispose of in a safe place.

Wash hands after handling.

This product is toxic to fish. Treated or contaminated effluent should not be discharged where it will drain into lakes, streams, ponds or public water. Apply

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Wash hands after handling.

This product is toxic to fish. Treated or contaminated effluent should not be discharged where it will drain into lakes, streams, ponds or public water. Apply this product only as specified on label.

Store all containers in well-ventilated areas away from direct sunlight.

Keep away from heat sources, open flames, and lighted tobacco products.

Containers should be kept closed when not in use.

Keep material cool and dry for maximum storage life.

Temperatures in excess of 90° F should be avoided.

Store separately from combustible materials, acids and organic material.

PPG INDUSTRIES, Inc.
Chemical Division
One Gateway Center
Pittsburgh, Pa. 15222

HANDLING. *continued*

4. Repackaging of Pittclor is not recommended without a thorough knowledge and understanding of all possible hazards. Pittclor should never be mixed with any other chemical. It should be mixed with water only.

5. Avoid contamination by exercising extreme caution when taking portions of the material from the package. Use only clean, dry scoops or other measuring devices. The larger the package and more frequent the entries into the package, the greater are chances of contamination. Such contamination may result in rapid decomposition and fire.

6. If dry Pittclor is spilled on dry clothing, it could catch fire, so remove and wash the contaminated clothing immediately.

7. Spilled Pittclor should be disposed of by flushing with large volumes of water.

8. Employees should understand the hazards involved in handling Pittclor and know the proper safety precautions to protect themselves and others. They should be acquainted with the purpose, use, and maintenance of proper ventilation.

Instruct employees to promptly report any defective or damp containers to the proper authority.

1. KEEP OUT OF REACH OF CHILDREN.

2. Storage areas for Pittclor should be located in dry, well-ventilated buildings. Adequate ventilation is necessary so that hot, stagnant air will not overheat the material.

3. Pittclor should be kept away from heat sources, open flames, lig products and out of the dir sun. Temperatures in exces accelerate decomposition (pochlorite. When calcium decomposes, oxygen is li may create a serious fire h position also liberates toxic gases which are hazardous and equipment. Remove a decomposing material from ities or other buildings.

4. Pittclor must be kept ir Moisture, like heat causes of calcium hypochlorite w associated hazards stated ab

5. Pittclor containers should ly closed when not in use to ination and accidental spillag

6. In order to obtain full usa duct, it should not be storec periods. Inventory rotation Extended storage sometime

open for convenient wall chart

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sources, open flames, lighted tobacco products and out of the direct rays of the sun. Temperatures in excess of 90°F will accelerate decomposition of calcium hypochlorite. When calcium hypochlorite decomposes, oxygen is liberated which may create a serious fire hazard. Decomposition also liberates toxic and corrosive gases which are hazardous to personnel and equipment. Remove and isolate any decomposing material from storage facilities or other buildings.

4. Pittclor must be kept in a dry place. Moisture, like heat causes decomposition of calcium hypochlorite with the same associated hazards stated above.

5. Pittclor containers should be kept tightly closed when not in use to avoid contamination and accidental spillage.

6. In order to obtain full usage of the product, it should not be stored for extended periods. Inventory rotation is imperative. Extended storage sometimes causes corrosion and deterioration of containers. For this reason, once the container is opened, every effort should be made to use all of the material within 30 days. Selection of a package size that will permit use of all the contents within 30 days after initial opening is recommended. It is also good practice to select a package size that requires a minimal number of openings in proportion to the amount of material in the package.

7. Pittclor should be stored away from other materials such as acids, organic, or combustible substances. It reacts with any of these to produce fire and/or hazardous gases.

The following materials, commonly found around swimming pools, should *not* be stored near Pittclor: alum (aluminum sulphate or ammonium aluminum sulphate), sodium bisulphate, muriatic acid, oil, grease, gasoline, ortho tolidine, phenol red (or other testing reagents), paints, paint removers and thinners, soap products, trash and garbage.


PPG
PITTCLOR® HOW TO HANDLE AND STORE
CALCIUM HYPOCHLORITE
with handy reference wall chart