

**Made in Germany**

# OXYCHLOR

## Granular-Calcium Hypochlorite

### Introduction

Calcium hypochlorite for drinking water disinfection is most commonly encountered as: chlorinated lime or bleaching powder; **Watch Water OXYCHLOR**.

Chlorinated lime or bleaching powder is a white powder which is mixture of calcium hydroxide, calcium chloride and calcium hypochlorite. It is variable in quality, that is, in the amount of chlorine which it contains. It typically 65 to 70 percent. It is also more stable. **OXYCHLOR** is sold under a number of proprietary names.

All forms of calcium hypochlorite contain a proportion of inert material. This varies from 30-35 percent in the case of **OXYCHLOR**, to 65-80 percent in the case of bleaching powder.

Where transportation or storage costs are high, such costs may represent a significant proportion of total costs.

Calcium hypochlorite is generally unstable and all forms lose potency with time. Chlorine loss may be rapid and is accelerated by light, warmth, humidity and ventilation. **OXYCHLOR** is more stable than bleaching powder, although all forms must be properly stored.

### USE of OXYCHLOR

**OXYCHLOR** may be dosed as a solution into a flow of water at a constant rate. It can be used for disinfection installations. It is also used for disinfection of water in batches, typically in disaster situation and for disinfection of water in the home.

### Storage and handling

**OXYCHLOR** is commonly supplied in sealed plastic bags or in drums or sometimes jars. Individually sealed plastic bags contains a suitable volume for immediate use (for example 1, 2 or 5 kg) are preferable.

**OXYCHLOR** should be stored in cool, dark, dry place in closed corrosion resistant containers (for instance wood, plastic, ceramic, dark glass or cement). In hot climates, containers may burst if not stored correctly.

When stored in a container opened daily for 10 minutes, **OXYCHLOR** loses about 5 percent of its initial available chlorine in 40 days. If left open for 40 days, about 18 percent loss is suffered.

As with other disinfecting chemicals, stocks should be dated and controlled, and used in rotation to minimize the effect of deterioration.

**OXYCHLOR** which has stored badly or which may have deteriorated with time may be tested to determine its available chlorine content as described below.

### Making OXYCHLOR solutions

For many disinfection purposes it is necessary to dissolve **OXYCHLOR** in water and the clear chlorine solution produced is used as disinfectant.

**OXYCHLOR** contain some inert material which is insoluble. This must be separated otherwise it may cause clogging and blockages. In general, therefore, the powder is mixed with water in one tank, left to settle and the clear supernatant decanted off into a storage tank.

The concentration of chlorine in solution, once they are prepared, should not exceed 5 percent. If it does, then considerable chlorine may be lost in the sediment. The weight of powder to be added to tank to prepare a chlorine solution of a given strength can be easily calculated as below.

$$\text{Weight of OXYCHLOR required [grams]} = \frac{1000 \times V \times C}{S}$$

where: V = volume of tank in liters

C = concentration of solution required in percent (percentage by weight available chlorine)

S = strength of OXYCHLOR in percent weight chlorine.

Example: A solution of concentration 0.5% (5 grams available chlorine per 1 liter water) is to be prepared, using a tank of 80 liters volume and a powder with a strength of 20% weight chlorine.

$$\begin{aligned} \text{Weight of OXYCHLOR required [grams]} \\ = \frac{1000 \times 80 \times 0.5}{20}; \text{ therefore, } W = 2000 \text{ grams} \end{aligned}$$

A volume, v, of this solution of concentration 0.5% (500 mg/l can be diluted into a new volume of water V<sub>1</sub> to give new solution of concentration C<sub>1</sub>,

$$C_1 = \frac{v \times C}{V_1}$$

Example: 2 ml of the 0.5% solution is added to 1 liter of water. The concentration of new solution will be:

$$C_1 = \frac{2 \text{ ml} \times 0.5}{1000 \text{ ml}} = 0.001\% = 10 \text{ mg/l}$$

Chlorine solutions are less stable than OXYCHLOR in powder form. They can be stored for several weeks but may deteriorate rapidly. The same general precautions for storing powder should be applied. It is especially important that the solution is protected from light in a close container.

## Safety

Chlorine is hazardous substance. In solution it is highly corrosive and splashes can cause burns and damage the eyes.

When handling concentrated solution, appropriate precautions should be taken. Ideally, gloves and protective eye glasses should be worn. In the event of splashes and especially splashes to the eyes, it is important immediately rinse thoroughly with water.

When disinfecting agent has to be transported under difficult conditions (for instance on foot), then solid forms (rather than OXYCHLOR solution or pure chlorine in cylinders) are advantageous because they are less hazardous to handle. Although solid forms are generally less hazardous to handle, it is good practice to wash hands after handling.

All containers in which chlorine is stored should be labelled, identifying the contents, and with hazard warning in a form which is readily understood locally.

Storage sites for chlorine in any form should be secure against unauthorized access and especially against children.

## Assessing OXYCHLOR solutions

A representative sample of the powder is taken (or several sample), mixed thoroughly and small amount (say 1 gram) is accurately weighed. This is dissolved in distilled water to produce a solution of less than 5 percent available chlorine. This is then diluted in distilled water to within the range of chlorine measurement (depending upon the equipment and method used) and the concentration of chlorine accurately determined. The percentage of available chlorine in the original powder may then be calculated.

### Manufactured by:

**WATER.**

**Watch Water®, Germany**  
A Water Company

**Address:**

Fahrlachstraße 14  
Mannheim, D-68165, Germany

**Tel:**

+49 621 87951-0

**Fax:**

+49 621 87951-99

**Email:**

info@watchwater.de