

## COVID-19 Briefing – Preparing Chlorine Solutions using Calcium Hypochlorite Products

If you have any questions about this guide, please contact [support@kawst.org](mailto:support@kawst.org)

Practising hand hygiene and disinfection of high touch surfaces are two of the precautionary measures recommended for the public to adopt in order to help control the spread of COVID-19. Chlorine based disinfectant solutions can be easily made by diluting household bleach and other chlorine products.

- 0.1% chlorine solution is [recommended for disinfection of hard surfaces](#).
- 0.05% chlorine solution has been [widely used](#) for disinfection of hands in previous [disease outbreak](#) situations. Chlorine can be harsh on the skin so other options for hand hygiene like soap and water or alcohol sanitizers (if available) may be preferred.
- 0.05% chlorine solution can also be used for disinfecting laundry after washing with soap.

### Calcium Hypochlorite Products

Calcium Hypochlorite also known as High Test Hypochlorite (HTH) is typically available in powder or granular form with 65% - 70% chlorine content. It is commonly used for [water treatment and for swimming pool maintenance](#).

HTH is frequently used in emergency situations where large quantities of chlorine solutions are required.

### Preparing Solutions

1. Fill the container with clean water.
  2. Pour in the required amount of HTH and stir well.
  3. Allow the white sludge to settle and pour off and use the resultant clear liquid.
  4. The white residue in the container should be discarded before mixing a new batch.
- Use plastic containers and equipment to mix and store chlorine solutions.
  - Measure quantities accurately; too little chlorine may be ineffective, too much chlorine may damage materials.
  - The chlorine disinfecting solutions lose strength quite quickly. It is advised to [discard and replace the solutions every day](#).

### Safety Considerations when Working with Calcium Hypochlorite

- Great care must be taken when working with HTH (calcium hypochlorite), at 70% strength it is a very strong chlorine product.

- It is a powerful oxidiser, it is corrosive and very reactive.
- HTH can react violently when in contact with different chemicals and compounds, resulting in fire, explosion and release of poisonous chlorine gas.
- Chlorine products can burn skin, they can cause permanent damage to the eyes, and fumes can irritate the lungs.
- Wear eye protection, rubber gloves, and clothing and shoes that cover the skin in case of a spill.
- Always ensure that spoons or scoops used to measure HTH granules are completely dry.
- When mixing, add the chlorine to the water not the other way around.
- Mix in a well ventilated area.
- Do not drink, eat or smoke when handling or mixing
- Store chlorine products in a secure, cool, dry place, and protect from direct sunlight and heat.
- Never mix chlorine products or solutions with any other chemicals or cleaning products, including other chlorine based products.

### Calculating Dilutions Using HTH – Calcium Hypochlorite

The following table can be used to [determine the quantities necessary](#) to make 10l - 120l of the 0.1% and 0.05% chlorine solutions based on HTH granules containing 65–70% chlorine.

	0.1% solution	0.05% solution
Volume of container	# 15ml Tablespoons	# 15ml Tablespoons
10l bucket	1	0.5
20l bucket	2	1
50l container	5	2.5
60l container	6	3
100l container	10	5
120l container	12	6

#### Formula Used

$$\text{Quantity of HTH (g)} = \left( \frac{1000}{\text{product strength (\%)}} \right) \times \text{solution strength required (\%)} \times \text{volume required (l)}$$

#### Online Calculators

There are chlorine dilution calculators available online. These are a good option particularly if you want to make larger quantities of chlorine solution or you are using high strength chlorine products. The link below is to a calculator provided by the Public Health Department of Ontario.

[Chlorine Dilution Calculator](#)