

# Slow Release Tank Chlorinator

Source  
Protection

Safe  
Transportation

Sedimentation

Filtration

Disinfection

Safe  
Storage

## What is it?

The slow release tank chlorinator is made of a perforated/pierced clay or plastic container that floats or hangs in a storage tank. The container holds solid chlorine tablets or granular chlorine. The water infiltrates the container and slowly dissolves the chlorine tablet/granules. Sand or gravel is included in the hanging chlorinators to slow the dissolving rate. The resulting chlorine solution is then released into the stored water. This kind of chlorinator is also called a pot-style chlorinator. This type of chlorinator has been used in wells, but often does not achieve a successful disinfection dosage.

## Performance

### Microbiological effectiveness

The table below summarizes the disinfection effectiveness of chlorine when correctly dosing:

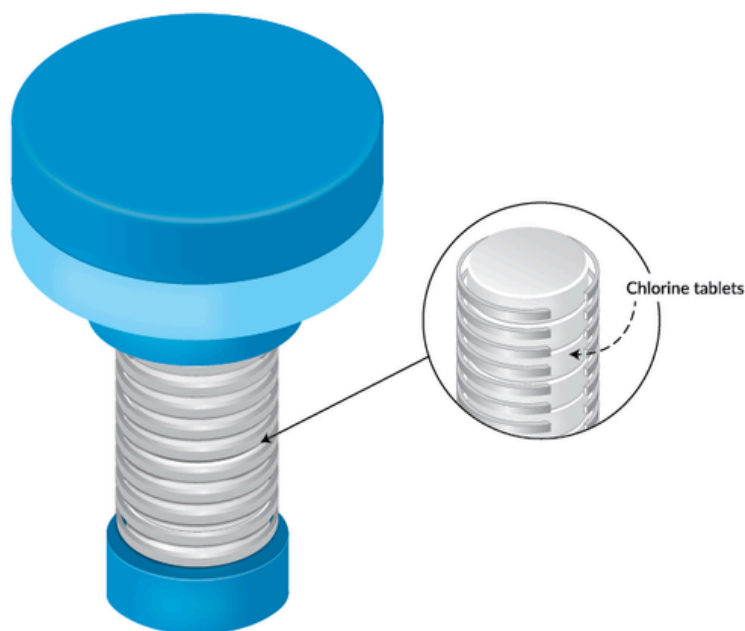
Parameter	Effectiveness
Bacteria	Very Effective (>99%)
Viruses	Very Effective (>99%)
Cryptosporidium (Protozoa)	Not effective (<80%)
Ascaris (Helminth)	Not effective (<80%)

### Other parameters

Not effective for chemical contaminants or turbidity. When installed in wells with higher turbidity and, therefore, higher organic content, it can lead to the formation of disinfection byproducts. These byproducts can have potential human health impacts under long exposure.

### Source water requirements

Turbidity, organic matter, pH, and temperature affect how well chlorine works and how much chlorine is required. When possible, cloudy water should be pre-treated through sedimentation or filtration before using chlorine. Ideal turbidity should be below 5 NTU. Disinfection is less reliable if the pH is below 5.5 or above 7.5.



## Capacity

Slow release chlorinators can serve large storage tanks. They have been reported to be used in tanks ranging from 5,000-90,000L.

## Life span

Varies per device and depends on the number of users. Increased usage can cause breaks or cracks in the container. Replace the device when damage is noted. The lifespan of the chlorine product can vary. Solid chlorine tablets have a shelf life of 3-5 years and granular chlorine 2-3 years when stored properly. Refer to product packaging.

## Calibration and Dosage Adjustment

Regularly test the free-residual chlorine at the outlet to ensure proper dosage. Adjusting the dosage can be challenging due to varying water quality. Users may need to adjust the size or number of holes/slits in the chlorinator to adjust dosage.

Chlorine disinfection requires a contact time before consumption of at least 30 minutes. Variable flow may cause difficulty in achieving complete mixing, therefore not full disinfection. Ensure the collected water has met this time requirement either in the tank or in the users' covered container after collection.

## Ease of use and acceptability

### Operation and maintenance

To begin using slow-release chlorinators, the community requires a storage tank for disinfecting drinking water. The chlorinator is placed in the storage tank where it can float or hang suspended in the water. These devices require minimal operation and maintenance, no daily user input and no electricity. Generally only the following is required:

- Free-residual chlorine testing at the outlet of tank and at household, when possible, to ensure proper dosage and to meet odour/taste preferences.
- Other general maintenance for pot-chlorinators includes washing the sand/gravel before implementation and inspection of the container for damage to ensure the device is working as intended.
- Routine checks for chlorine replenishment.
- When floating chlorinators are installed in a tank prior to feeding a piped system, granular chlorine may settle in the pipes creating blockages, requiring additional maintenance and impacting dosage consistency.
- If this device is used in wells, more consistent free residual chlorine testing is recommended with similar operation and maintenance to tanks

### Repair and replacement

Excessive impacts from water containers if they are put into the tank or well can damage the device. Replace container if damage is noted. New chlorine (tablet or granular) refills are required, and should be purchased before the device is low or empty.

## User considerations and preferences

Slow-release chlorinators in wells can get in the way when a user is trying to collect water. Floating chlorinators can be easily accessible to children for play and at risk for theft. Steps should be taken to limit accessibility to any untrained personnel as direct chlorine exposure can irritate the eyes, nose, and throat. An ongoing supply chain is needed for replacement chlorine tablets/granules. Chlorine products degrade over time and must be stored in a dry, dark and secure location. See *Store Chlorine Products Safely Poster* and *Handle Chlorine Products Safely Poster* for more information. Some users do not like the taste or smell of chlorine.

## Feasibility

### Availability

Commercially available, but commonly constructed out of local products including clay pots, jerry cans, or PVC piping, depending on what is available.

### Cost

The cost of slow release chlorinator devices and the cost of refill chlorine product can vary based on local market prices. Approximately in the range of US\$3-30 for the device. Estimated costs for maintenance, labour, and chlorine refills are \$0.01–\$1.07 per 1,000 L (according to a study done by Lukas Dossegger in Uganda in 2021).

### Size and weight

These chlorinators vary in weight and size based on the container chosen. Pot style chlorinators with sand and gravel weigh more (approx. 3-10kg) than the floating chlorinators (approx. 1-3kg).

### More information

1. [Store Chlorine Products Safely Poster](#)
2. [Handle Chlorine Products Safely Poster](#)
3. [Check Before You Disinfect: Turbidity, pH, and Temperature in Drinking Water Chlorination](#)
4. [Chlorine Disinfection of Household Drinking Water](#)
5. [Crider, Yoshika S., et al. "Passive In-Line Chlorination for Drinking Water Disinfection: A Critical Review." \*Environmental Science & Technology\*, vol. 56, no. 13, 2022, pp. 9164–9181. <https://doi.org/10.1021/acs.est.1c08580>\[pubs.acs.org\]\(https://pubs.acs.org\)](#)

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