



# Constant Chlor<sup>®</sup> Product Brochure





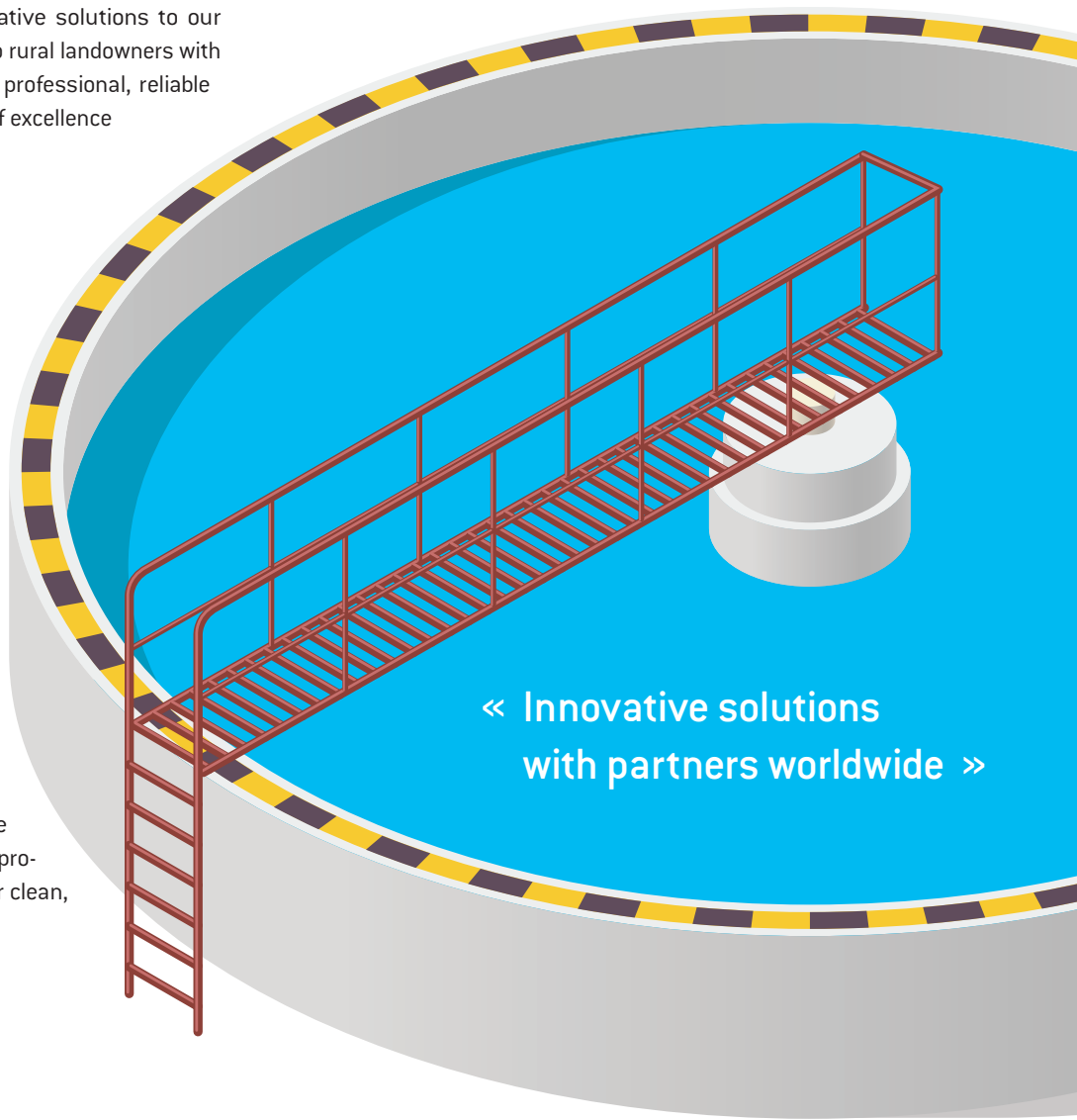
# Clean, Clear, Sanitized Water

Lonza Water Care is dedicated to providing innovative solutions to our customers – from complex drinking water systems to rural landowners with ponds. We build customer relationships by offering professional, reliable services and customer support, backed by a culture of excellence in research and development.





## The Constant Chlor® System

The Constant Chlor® System provides reliable chlorine solutions for both public and private municipal applications like remote wells, booster stations, water treatment plants, waste water plants and water reclamation facilities. It is a cost effective solution for municipal and water treatment applications.

The Constant Chlor® System consistently delivers liquid available chlorine for disinfection applications that kills bacteria, controls algae and removes organic contaminants. The feeders use USEPA registered Constant Chlor® briquettes, a pillow-shaped product made in the USA that creates a well-packed spray bed with its unique shape. The briquette, along with the feeder's spray technology produce a fresh concentrated liquid chlorine solution for clean, clear, sanitized water.



## Feeder Features

-  NSF/ANSI 61 Certified for drinking water
-  Minimal operator dosage adjustment
-  HMI touch screen and SCADA compatible
-  Compatible with positive displacement pumps

## Briquette Features

-  High strength 65% minimum AvCl
-  NSF/ANSI 60 Certified for drinking water
-  Meets AWWA Standard B300
-  Dry, easy-to-handle formulation
-  Scale inhibitor for reliable performance



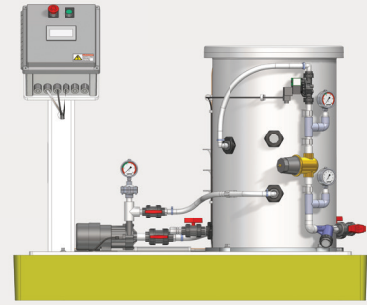
# The Constant Chlor® Advantage

	Constant Chlor® Calcium Hypochlorite	Sodium Hypochlorite	Chlorine Gas
<b>Available Chlorine</b>	65%	12 – 15%	100%
<b>Stability</b>	<ul style="list-style-type: none"> <li>– Stable product</li> <li>– Long shelf life, retains 93% of its concentration strength for 1 year*</li> <li>– Class 3 oxidizer</li> </ul>	<ul style="list-style-type: none"> <li>– Not as stable and difficult to control</li> <li>– Quick degradation, loses up to 1/3 of its strength in one month*</li> </ul>	<ul style="list-style-type: none"> <li>– Not as stable and difficult to control and contain</li> </ul>
<b>Form</b>	<ul style="list-style-type: none"> <li>– Dry product in briquette form</li> <li>– Contains calcium</li> </ul>	<ul style="list-style-type: none"> <li>– Liquid</li> <li>– Contains sodium</li> </ul>	<ul style="list-style-type: none"> <li>– Gas</li> </ul>
<b>Material Compatibility</b>	<ul style="list-style-type: none"> <li>– Mild alkaline</li> <li>– Increases pH</li> <li>– Requires low level of pH correction</li> </ul>	<ul style="list-style-type: none"> <li>– High alkaline</li> <li>– Increases pH</li> <li>– Requires high level of pH correction</li> </ul>	<ul style="list-style-type: none"> <li>– Highly acidic</li> <li>– Decreases pH</li> <li>– Requires very high level of pH correction</li> </ul>
<b>Handling</b>	<ul style="list-style-type: none"> <li>– Produced in a dry form of chemical product, reduces risk of transfer spills</li> <li>– PPE required</li> <li>– Can transport small quantities without permits</li> </ul>	<ul style="list-style-type: none"> <li>– Liquid spillages can be hazardous</li> <li>– PPE required</li> <li>– Dual containment required for concentrated liquid solution</li> </ul>	<ul style="list-style-type: none"> <li>– Major gas leak concerns;</li> <li>– PPE required</li> <li>– Requires additional permits to transport large quantities</li> </ul>
<b>Ease of Use &amp; Application</b>	<ul style="list-style-type: none"> <li>– Pre-plumbed, skid-mounted feeder offers easy install</li> <li>– Easy-to-use touchscreen</li> <li>– Easy to hand dose in emergencies</li> </ul>	<ul style="list-style-type: none"> <li>– Day tank and pump system required with secondary containment</li> <li>– Difficult to hand dose</li> </ul>	<ul style="list-style-type: none"> <li>– Dedicated plant room with specialized equipment needed and high level of staff training required</li> <li>– Impossible to hand dose</li> </ul>
<b>Storage</b>	<ul style="list-style-type: none"> <li>– 50 lb pail takes up less space than drums or totes and does not require separate storage room</li> </ul>	<ul style="list-style-type: none"> <li>– 55 gallon drums weigh 555 lbs and are cumbersome to store, handle and maneuver</li> <li>– Bulk product requires large deliveries and storage area</li> </ul>	<ul style="list-style-type: none"> <li>– Large cylinders require multiple people to maneuver</li> <li>– Special handling and training is needed as contents are under pressure</li> <li>– Dedicated storage area is required</li> </ul>
<b>Maintenance</b>	<ul style="list-style-type: none"> <li>– Requires minimal operator dosage adjustment since solution is produced automatically</li> </ul>	<ul style="list-style-type: none"> <li>– Feed pumps need constant repair and tubing leaks can occur;</li> <li>– Gas locking is common</li> </ul>	<ul style="list-style-type: none"> <li>– Eductors, regulators have small orifices that are prone to plugging</li> </ul>
<b>Delivery Control</b>	<ul style="list-style-type: none"> <li>– Precise control of consistent solution</li> <li>– Compatible with positive displacement pumps</li> </ul>	<ul style="list-style-type: none"> <li>– Rapid strength degradation, especially in hot water</li> </ul>	<ul style="list-style-type: none"> <li>– Requires large pressure differential to operate venturi feed system</li> <li>– Booster pump often needed to operate the feed system</li> </ul>

\*Under normal storage conditions.



# Get to Know the Constant Chlor® Feeders



**Able to Load While in Operation**  
Safety lid switch prevents briquette spraying during basket refills and preventative maintenance scenarios.

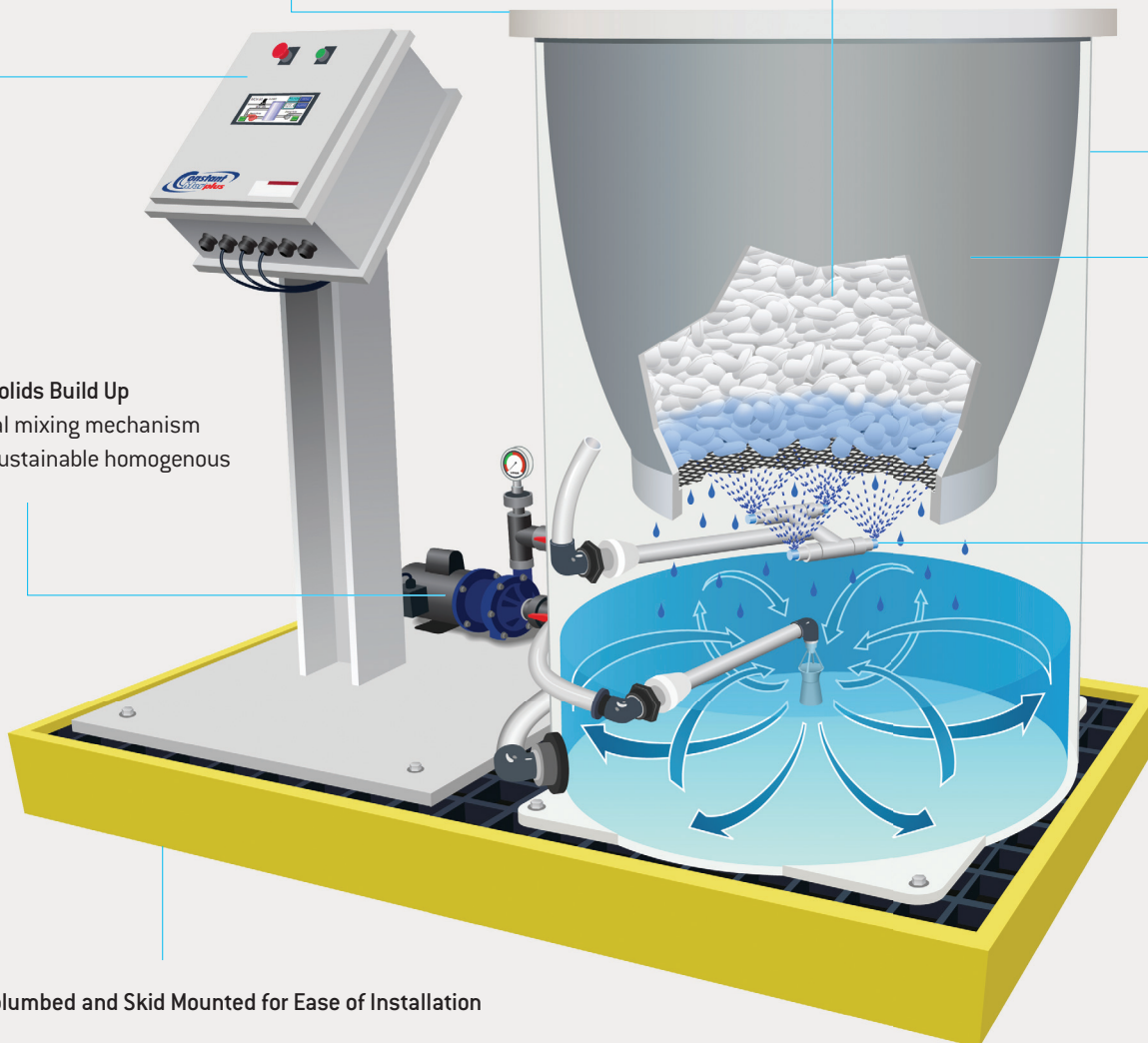
**Touchscreen Controls**  
UL 508A rated, NEMA 4X control panel with HMI interface.

**Clover-shaped Hopper Design**  
Indented sides allow the briquettes to funnel evenly into the spray area, for a more consistent dissolution.

**Automatic Monitoring**  
Three (3) electronic level switches inside the solution tank provide alarms and feedback as to the solution level inside the reservoir.

**Prevent Solids Build Up**  
An internal mixing mechanism enables sustainable homogenous solution

**Operates at Atmospheric Pressure**



**Pre-plumbed and Skid Mounted for Ease of Installation**

## Optional Upgrades

### ChlorTRAK™ Technology

A proprietary system that calculates chlorine solution usage and generation through the Constant Chlor® MC4-Series feeders. After initial setup, ChlorTRAK™ technology is able to record pounds of briquettes used. Available on new and existing feeders.

### Maintenance Reduction System (MRS)

A pre-treatment system designed to reduce cleaning and overall feeder maintenance by reducing the pH of incoming feed water.

### Upwards Spray Technology

A "spray-tree" with upward-facing nozzles intermittently sprays water onto the suspended briquette bed. This timing sequence allows the water contacting the bed of briquettes to saturate a boundary layer of the calcium hypochlorite product while the spray is off, and when the spray is turned back on, the saturated layer is easily washed away. This produces a consistent and concentrated solution of available chlorine.

# Constant Chlor® Feeders and Briquettes



## MC4-50 Specifications

Chlorine Delivery Rate	2.2 – 50.0 lb. (0 – 23 kg) AvCl/day with 70° F (21° C) inlet water temp.
Pressure Range	35 – 45 psig (240 – 310 kPa)
Water Inlet Size	½ inch, FNPT
Solution Outlet Size	½ inch, MNPT
Dry Chemical Capacity	75 lbs. (34 kg)
Site Requirements	
Inlet Water	2.0 gpm @ 45 – 150 psig (7.6 lpm @ 340 – 1040 kPa) without dilution 10.0 gpm @ 45 – 150 psig (37.9 lpm @ 340 – 1040 kPa) with max dilution
Electrical	120V / 1ph / 60Hz (15 amp)
Operating Temperature	40° to 95° F (5° – 40° C)

NSF/ANSI 61 Certified



## MC4-150 Specifications

Chlorine Delivery Rate	20.0 – 150.0 lb. (0 – 68 kg) AvCl/day with 70° F (21° C) inlet water temp.
Pressure Range	35 – 45 psig (240 – 310 kPa)
Water Inlet Size	½ inch, FNPT
Solution Outlet (injector) Size	½ inch, MNPT
Dry Chemical Capacity	225 lbs. (102 kg)
Site Requirements	
Inlet Water	6.0 gpm @ 45 – 150 psig (22.7 lpm @ 340 – 1040 kPa) without dilution 15.0 gpm @ 50 – 150 psig (56.8 lpm @ 340 – 1040 kPa) with max dilution
Electrical	120V / 1ph / 60Hz (20 amp)
Operating Temperature	40° to 95° F (5° – 40° C)

NSF/ANSI 61 Certified



## Briquette Properties

Minimum Available Chlorine (wt%)	65%
Scale Inhibitor (wt%)	.4 – 1.0%
Weight	0.25 oz. (7.0 grams)
Dimensions	1¼ in. × ¾ in. × ½ in. (approx 35mm × 19mm × 13mm)

NSF/ANSI 60 Certified

## Lite Versions

The MC4-50L and MC4-150L models are the streamlined versions of the more feature-packed MC4-50 and MC4-150 model feeders. Using a simpler control panel, these lite versions also use spray technology for an accurate, consistent solution, requiring minimal operator dosage adjustment.





## Constant Chlor® Case Studies

### Chlorine gas replaced by dry calcium hypochlorite system in New York suburb

John Devany, the district's superintendent in Greenburgh, NY, along with Chuck Martins, the district's chief water treatment plant operator, chose the convenience and lower cost of the Constant Chlor® MC4-150 Feeder. "After carefully evaluating calcium hypochlorite systems from leading suppliers, the MC4-150 system's relatively small size and simplicity, its [positive displacement] chemical metering pump, which gives precise control of residual chlorine, plus Lonza's exceptional service, were the deciding factors," Martins says. "Installation was simple, and the system is easy to learn and use."

Martins states, "It's easier for our people to replenish the Constant Chlor® MC4-150 units with 50-pound pails of briquettes than to roll around heavy chlorine gas cylinders, not to mention avoiding the hazards of connecting the cylinders to their manifolds." The Town of Greenburgh now can confidently keep what's been called the "champagne" of water flowing out of their community's taps for decades to come.

### Arkansas water utility successfully switches to dry calcium hypochlorite feeding system

For Robert Stout, general manager of Mid-Arkansas Utilities (MAU), the primary water provider in the area, the Constant Chlor® Plus MC4-50 Feeder was an ideal size for MAU's operations. "We started with one MC4-50 on a pilot basis, and it worked so well that we've installed three more since," he says. "Now our techs only have to ensure the MC4-50's briquette reservoir stays filled," he says. "The system has a highly accurate, positive-displacement chemical pump that injects just the right amount of chlorine into our water system."

Stout estimates that the Constant Chlor® Plus MC4-50 Feeder saves MAU more than 500 hours of payroll, about \$15,000 a year by eliminating manual water treatment using chlorine gas.

### Town of West Springfield, MA installs reliable, operator-friendly Constant Chlor® MC4-150 Disinfection System

It was shown that the Constant Chlor® calcium-hypochlorite feeder can reliably dose and maintain consistent chlorine residuals for treatment of municipal drinking water. It has, in fact exceeded the accuracy and consistency of the current industry standard.

The Massachusetts Department of Environmental Protection requires that all chlorination devices be approved prior to installation for Municipal drinking water applications. The Massachusetts study was developed and run in order to show the overall efficiency of the Plus feed equipment. The purpose of this test was to gather a full set of data regarding the operation of the Constant Chlor® equipment ranging from the residual chlorine in the well house treated line to the amount of chlorine that the feeder delivered per day. Overall, the objectives of this test were met and compared to a gas chlorination system the Constant Chlor® Plus Feeder provided a more consistent chlorination profile.



All trademarks belong to Lonza or its affiliates or to their respective third party owners. Review and follow all product instructions. All product information corresponds to Lonza's knowledge on the subject at the date of publication, but Lonza makes no warranty as to its accuracy or completeness and Lonza assumes no obligation to update it. Product information is intended for use by recipients experienced and knowledgeable in the field, who are capable of, and responsible for, independently determining the suitability the products for intended uses and ensuring compliance with applicable law. Proper use of this information is the sole responsibility of the recipient.

©2017 Lonza