



Accu-Tab[®]

Tablet Chlorination System



Safety, convenience & accuracy...because every drop counts!

THE ACCU-TAB SYSTEM IS FULLY CERTIFIED

- NSF Standard 60 and 61 listed for drinking water
- AWWA Standard B-300
- EPA Registration #748-275, #748-295
- USDA approved uses: G-4, G-5, G-7, D-2 and Q-4 for SI tablets
- FDA approval 21CFR178.1010
- Kosher approved



Accu-Tab is a registered trademark of PPG Industries, Inc. for tablet chlorination systems, chlorinators and calcium hypochlorite tablets.

Statements and methods presented are based upon the best available information and practices known to PPG Industries at present, but are not representations or warranties of performance, result or comprehensiveness, nor do they imply and recommendations to infringe any patent or an offer of license under any patent.

The products mentioned herein can be hazardous if not used properly. Any health hazard and safety information contained herein should be passed on to your customers or employees, as the case may be. PPG Industries also recommends that, before use, anyone using or handling this product thoroughly read and understand the information and precautions on the label, as well as in other product safety publications such as the Material Safety Data Sheet. Like all potentially hazardous materials, this product must be kept out of the reach of children.

Accu-Tab[®] Tablet

Chlorination System

for Potable/Industrial

Water Treatment



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NOW, A SAFER, SIMPLER, MORE CONVENIENT CHOICE – THE ACCU-TAB® TABLET CHLORINATION SYSTEM FROM PPG

Since it was introduced to the water and waste treatment markets in 1993, PPG's *Accu-Tab* System has become the leader in tablet chlorination.

And here's why...

SAFER... The *Accu-Tab* System is a good alternative to chlorine gas. Because there are no chlorine cylinders to handle, leaks can't occur. There's no need for SCBA gear and costly scrubber systems – just rubber gloves and safety glasses. So, generally, Process Safety Management and Risk Management Program compliance concerns are alleviated.

SIMPLE... *Accu-Tab* three-inch calcium hypochlorite tablets are easy to store and handle. They are shipped in convenient 55-pound pails and improved 400-pound bulk bags with lifting straps.

ACCURATE... The *Accu-Tab* System is as accurate as gas, more consistent than bleach and easier to maintain than both. *Accu-Tab* chlorinators have earned the NSF standard 61 certification for drinking water.

LOW MAINTENANCE... Patented erosion chlorinators have no moving parts or small openings to clog, and eliminate the need for metering pumps. That cuts maintenance to a minimum.

THE ACCU-TAB TABLET CHLORINATION SYSTEM IS EVERYWHERE...

The *Accu-Tab* System's simple, patented chlorinators and unique tablets together allow for consistent and controllable chlorine dosages. It's been used to chlorinate water plants as large as 14 million gallons per day, with demands exceeding 400 pounds per day of chlorine. On the other end of the scale, smaller units have turn-down ability to supply the 35 GPM well water user without over chlorination.

In a few short years, the *Accu-Tab* System has been utilized in drinking water applications in nearly 40 states for primary disinfectant treatment or remote booster chlorination stations. Accurate enough to perform under the close daily scrutiny of USDA inspectors, the *Accu-Tab* system is now used in a significant number of poultry processing plants in the U.S. And the number is growing every day. Other applications include:

- Waste water
- Potable water (surface and wells)
- Poultry and meat processing
- Food and beverage processing
- Pulp and paper
- Textile process water
- Cooling towers

"We replaced our chlorine dioxide chilled water treatment with the Accu-Tab system. We found this system to perform adequately and be very safe to use. We then added an Accu-Tab system to our evisceration line, replacing the liquid bleach system. We found that our operating costs were lower, and we recorded less treatment failures with the Accu-Tab system. All of our counts are below acceptable levels for bacteria, and we've had no downtime problems."

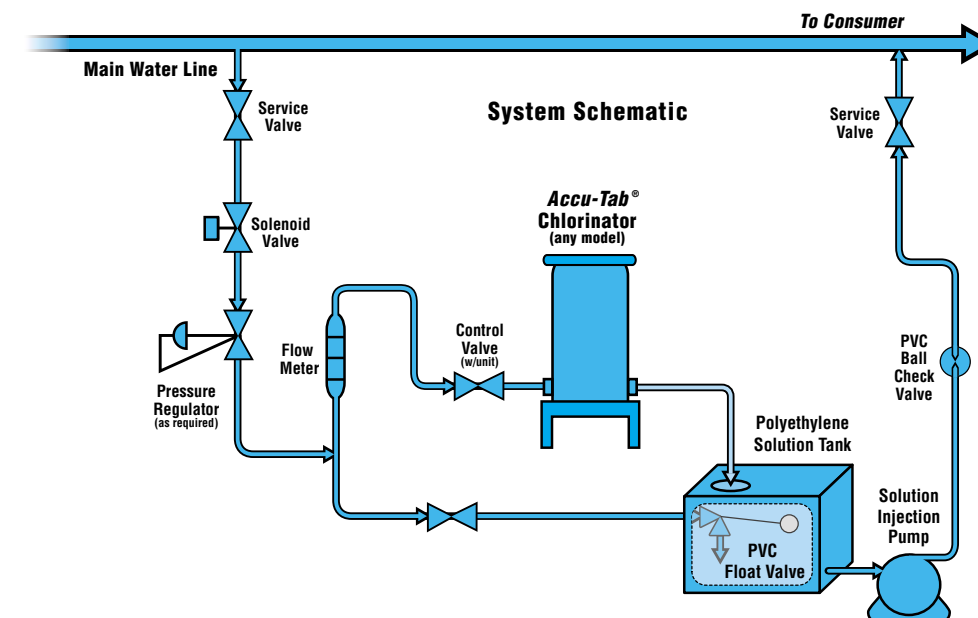
*Michael Pagano
Maintenance Manager, Draper Valley Farms
Mt. Vernon, Washington*

THE PRESSURE RETURN SYSTEM

A pressure return system removes a sidestream of the main water flow and introduces a portion of it into the chlorinator where *Accu-Tab* tablets are eroded at a controlled rate. A centrifugal pump re-injects the resulting chlorinated solution back into the main water line. This sidestream loop is nearly identical to the familiar chlorine gas injection system, without the danger and the hassle.

Pressure return units provide a compact, turnkey system based on any of the *Accu-Tab* chlorinator models. They come complete with valves, piping, pumps, surge tanks and the electronic controls necessary to dose the desired amount of chlorine into the main water system. Systems are also available with multiple chlorinators, automatic controllers and SCADA compatibility.

PPG engineered systems are designed specifically for use with the *Accu-Tab* calcium hypochlorite tablets and chlorinators.



Shown with automated controller and weigh scale options.

"I was 110 percent against putting the Accu-Tab system in our wells. I just didn't think it would work. I have to admit now that I was wrong. The Accu-Tab system is so simple, and it really works great. The other good news is that it only took us a couple of hours to convert to the system, so we were up and running in no time."

*Michelle Cutler
Operations
Superintendent
Charles County
Water District*



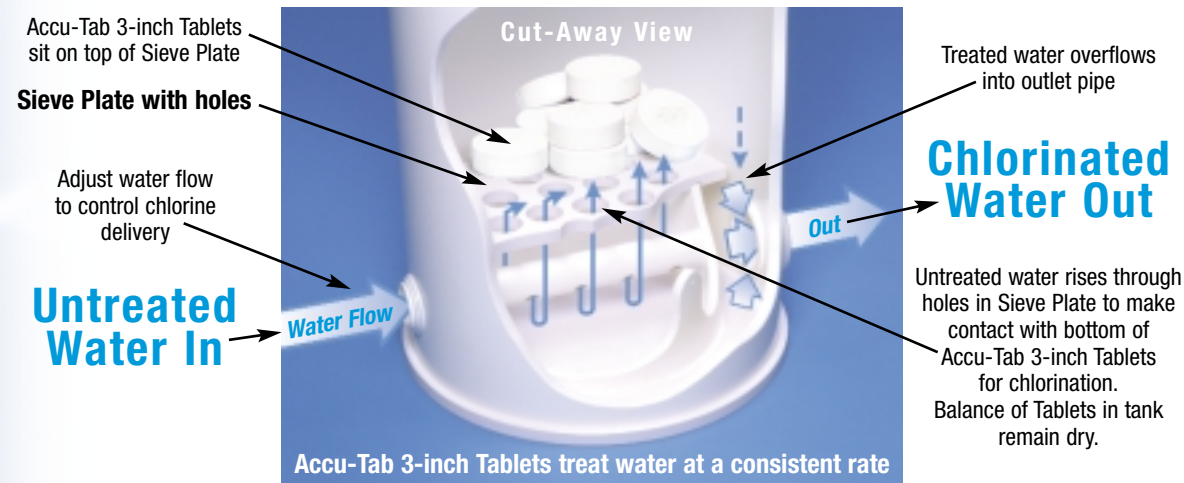
CHLORINATION BY EROSION TECHNOLOGY

The *Accu-Tab* System combines uniquely designed, patented chlorinators with slow release 65% calcium hypochlorite to provide one complete system for tablet chlorination.

Accu-Tab gravity chlorinators are *not* designed to hold pressure, which would cause them to fill with water and erode all the tablets at once. Instead, incoming water from a side stream contacts only the tablets at the bottom of the

feeder, so tablets at the top stay dry. No premature dissolving. *Accu-Tab* tablets erode at a predictable rate according to the amount of water that enters the chlorinator. By controlling the water flow rate, highly accurate chlorine dosage can be achieved. Chlorinator effluent is returned to the unchlorinated main system flow providing the desired level of available chlorine to meet your operational requirements.

Accu-Tab® System (Not Pressurized)



ACCU-TAB® CHLORINATORS...

Accu-Tab chlorinators are made of rigid PVC with four standard sizes available for industrial applications – 3012, 3075, 3150 and 3550. Larger sizes can be specified. PPG has an *Accu-Tab* chlorinator for nearly every requirement – from less than a pound a day to a few hundred pounds a day.



"Accu-Tab SI tablets work, and they work great. We were using calcium tablets at one site, but had continuous scale build-up on the pump's impeller. Now, having used the SI tablets at this site for more than a year, the impeller on the pump looks fine. The SI tablets have really helped us save on maintenance costs."

*Bob Anderson
Maintenance Mechanic II
City of Phoenix Water District*

ACCU-TAB® TABLETS...

PPG manufactures calcium hypo-chlorite tablets for potable and industrial water chlorination, NSF 60 listed.

Accu-Tab SI (scale inhibitor) tablets are specially formulated to inhibit scaling in hard water applications. The scale inhibitor tablets provide:

- Chlorination and scale prevention in one easy step
- Control of scale formation in chlorinator
- Suitable for water with up to 500 ppm calcium

Accu-Tab SI tablets offer accurate, effective chlorination and easy-to-handle packaging in 55-lb. polyethylene pails, as well as improved 400-lb. bulk bags



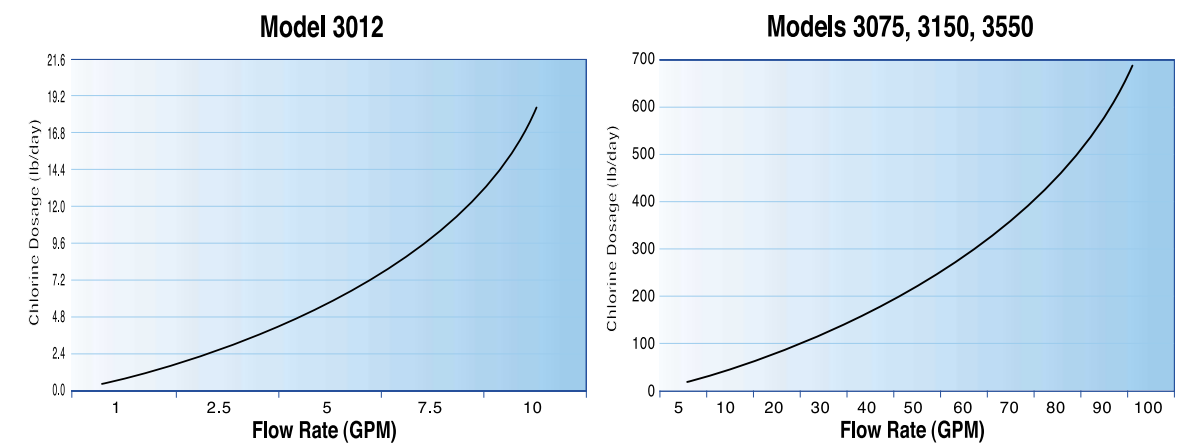
Chlorinator Specifications

	Model 3012	Model 3075	Model 3150	Model 3550
Chlorine Delivery (per day):	2-12 lbs.	5-50 lbs.	24-280 lbs.	Up to 650 lbs.
Tablet Capacity:	12 lbs.	75 lbs.	150 lbs.	550 lbs.
Base (diameter):	9"	13"	18"	24"
Height:	26"	24"	26"	48"
Inlet Connection:	3/4" FPT	1" FPT	1 1/2" FPT	2" FPT
Outlet Connection:	1 1/2" FPT	2" FPT	3" FPT	4" FPT

SIZING AN ACCU-TAB SYSTEM IS AS EASY AS 1-2-3...

1. Determine your chlorine usage rate in lb. of Cl₂/day. (for liquid sodium hypochlorite assume 1 gal. = 1 lb. of Cl₂)
2. Using the Chlorinator Specifications table (above) select the chlorinator that offers the required chlorine delivery and the tablet capacity that suits your desired refilling interval.
3. Refer to the delivery rate graphs (below) to estimate the water flow rate needed to dose your chlorine requirement.

Chlorinator Delivery Rates



INSTALLATION OPTIONS

A **gravity return system** can be specified when the chlorine effluent is to be returned to the main water stream in an open tank, channel or filter, and when the chlorinator can be physically located at an elevation higher than the re-injection point.

A **pressure return system** is required when the chlorinator effluent must be directed to multiple locations, or any time the chlorinated stream is to be re-injected to a pressurized tank or line.

THE GRAVITY RETURN SYSTEM

The gravity system represents the ultimate in reliability with negligible capital costs. Nothing moves but the water. All that's required is the PVC chlorinator, a rotameter, a few valves and some PVC pipe.

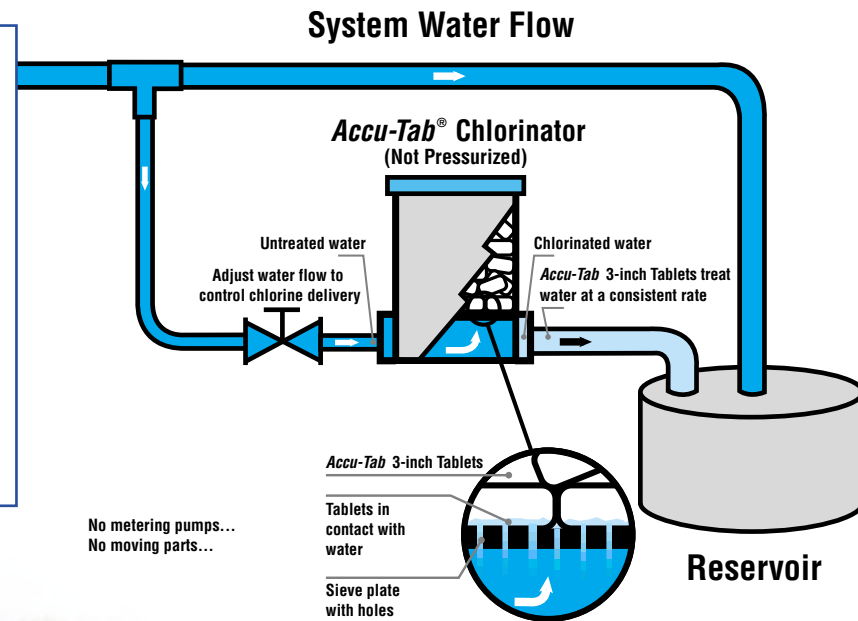
As illustrated below, a gravity return installation routes a sidestream of the main water flow through a simple rotameter and valve used to adjust the flow of the chlorinator. The chlorinator **must** be in an elevated position so that its effluent drains by gravity (to ensure that the chlorinator never fills with water). The specific chlorinator model, rotameter and piping size necessary will vary, depending on the chlorine dosage required.

Being calcium hypochlorite-based, the *Accu-Tab* system is not required to have a separate entry building or room, as is the case with chlorine gas, and takes up a fraction of the space required for a similar bleach system. As a result, the system can often be installed in smaller, more convenient locations, increasing both operational efficiency and reducing chemical delivery problems. Since the chlorinated effluent is never pressurized, the potential of a chlorinated solution spraying out of a corroded or broken pipe is eliminated.

The system is easily adaptable for automatic control with the addition of an actuated control valve to adjust incoming water flow and an ORP or residual chlorine analyzer. What could be simpler?

BENEFITS OF THE GRAVITY RETURN SYSTEM

- Safer – no leaks or spills
- Simple – nothing moves except the water
- Low capital costs – negligible by comparison
- Convenient – located right at the addition point
- Minimal training required



"With PPG's Accu-Tab tablet chlorination system, we're able to maintain a much better chlorine residual than with liquid bleach. Plus, I have to tell you that we don't miss wrestling with those 55-gallon bleach drums."

Charlie Piquet
Water System Technician
Chubbuck, Idaho

A LOW CAPITAL COST ALTERNATIVE

As regulatory requirements and safety issues provide increasing incentive for water treatment plants to reconsider their water treatment systems, it is important to recognize that the *Accu-Tab* System's solid form of chlorine offers safety and low maintenance benefits together with small capital investments.

The *Accu-Tab* System consists of a chlorinator and tablets. Gas and bleach have significant capital costs and require accessories to achieve compliance with regulatory requirements. Then there's the factor of downtime from malfunctioning metering pumps, replacement costs for corroded piping or electrical systems and lost labor time, whether from adjusting chlorine levels – or worse – from accidental spills, splashes and leaks. The charts below tell the story.

"Continuing to chlorinate with gas was going to cost us a fortune in equipment, and gas just isn't that safe to handle or be around. PPG's Accu-Tab System is so accurate and works so easily that it really is one of the best things we've done around here."

James Leonard
Quality Control Manager
U.S. Utilities/Aqua KWS

The Accu-Tab® System vs. Bleach and Gas

	Accu-Tab System	Bleach	Gas
Safety	Easy to handle, no spills	Spill and leak concerns	Major gas leak concerns
Charging chemical	Easy to add tablets, only one person needed	Hard to maneuver, heavy drums or lots of small carboys	Two trained persons needed, breathing protection required
Material compatibility	More neutral pH, less corrosive	High pH, corrosive	Low pH, very corrosive
Convenience	55-lb. pail of tablets is easy to handle	Bleach drums are awkward to handle	Hard to maneuver cylinders, special handling training needed
Maintains chlorine strength	Small change over a year	Significant loss in a week	Consistently 100% chlorine
Chlorine delivery control	Consistent strength makes for easy, reliable control	Ever changing strength makes for control difficulty	Troublesome regulators needed, harder to automate
Storage convenience	55-lb. pails stacked three high, same space as 150-lb. cylinder, no separate room	Drums or bulk tanks require space and possibly containment pad	Separate room with special access needed, fans, scrubbers
Auxiliary equipment	No moving parts in chlorinator itself	Troublesome metering pumps required	Eductors, regulators have small orifices prone to plugging

A WORD ABOUT CHLORINE CHEMISTRY

Chlorine is available in many different forms. The most common include gas, liquid chlorine (sodium hypochlorite or bleach) and solid calcium hypochlorite. All three forms generate hypochlorous acid – the germ-killing form of chlorine – when dissolved in water. Chlorine is the only chemical that provides residual protection, which is very important and required in many water treatment applications.