



EVERPURE®



EVERPURE 4SI/7SI CARBONLESS ICE FILTERS

# ICE MACHINE COMPLIANCE WITH ASHRAE STANDARD 188

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Pentair Everpure has earned its worldwide reputation as a trusted name in water treatment. Our more than 80 years of expertise has yielded filtration solutions that provide superior quality water. We have specially-designed filtration systems to help protect patients and staff from the waterborne bacteria that causes Legionnaires' Disease. We invite you to take a few minutes to review the following facts about this disease, and how you can take preventive action before your facility has an outbreak.

## HOW TO PREPARE HOSPITAL ICE MACHINES FOR COMPLIANCE WITH ASHRAE STANDARD 188

### WHAT IS LEGIONNAIRES' DISEASE AND HOW CAN YOU PREVENT IT?

**Legionnaires' Disease** is not very common, but when there is an outbreak in a hospital, hotel or casino, the story makes headlines. This is because an outbreak often results in severe illness or, more tragically, loss of life, and millions of dollars in lawsuits.

Legionnaires' Disease, also known as *Legionellosis*, is caused by a bacteria (*L. pneumophila*) that is found in certain water supplies. For people with weakened immune systems, the disease can lead to a fatal case of pneumonia which is why there is high concern about the risk of *Legionella* in hospitals. According to the World Health Organization (WHO), hospital patients who contract *Legionella* only have a 20%-60% chance of surviving.<sup>1</sup>



<sup>1</sup>Bartram, Chartier, Lee, Pond, Surman-Lee (2007). *Legionella* and the prevention of legionellosis. World Health Organization, 1.1.1:2.

## WHAT IS ASHRAE STANDARD 188?

According to the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), one of the reasons that *ASHRAE Standard 188-2015 Legionellosis: Risk Management for Building Water Systems* has been developed is to help prevent the high fatality rate for hospital patients that contract *Legionella*. This standard is designed to prevent the bacteria from entering and/or reproducing in a hospital water system. The standard places responsibility for water safety on everyone associated with the design, construction, installation, ownership, operation, management, and maintenance of a building's water system.

The new standard recommends the formation of a "Designated Team" who is responsible for developing and implementing a *Legionellosis Risk Management Plan* (Annex Section A2).

- The plan requires a water system flow diagram that maps all water supply sources as well as water use end points, which include ice machines.
- All risk areas must be identified and control limits applied.
- Monitoring procedures must be established, along with corrective actions should risks be identified.

According to Annex Section A2.1, a member of the facilities management staff familiar with the *building water systems* must be part of the designated team.



## WHY COMPLY WITH ASHRAE STANDARD 188?

1. **Legionella is Deadly.** Approximately 120,000 people have died from Legionnaires' Disease in the U.S. in the last 30 years, according to ASHRAE.
2. **Legionella is Expensive.** Outbreaks can be expensive in terms of remediation, liability exposure, litigation, damage to a hospital's reputation, and more.
3. **Legionella Consumes Resources.** If *Legionella* is detected in an ice machine, corrective actions following established Infection Prevention and Control (IC) processes must be taken, and be compliant with the most recent requirements of the U.S. Centers for Disease Control and Prevention (CDC) or other regional or national authority. This is a resource drain and headache that you don't need.

## HOW DOES ASHRAE STANDARD 188 IMPACT ICE MACHINES?



The cold water dispensers of hospital ice machines have been proven to be a potential source of *Legionella*. Two studies, in 1985 and 1997, traced *Legionella* directly to the ice.<sup>2</sup>

ASHRAE Standard 188 requires that the *Legionellosis* risk management plan include a *monitoring* method and schedule for measuring the chemical *disinfectant residual* in the cold water system (Section A5.2), which includes the ice machines. Maintaining a residual of 0.5 mg/l disinfectant such as chlorine in the ice machine may help reduce the risk of *Legionella*.

<sup>2</sup> Stout JE, Yu VL, Muraca P (1985). Isolation of *Legionella pneumophila* from the cold water of hospital ice machines: implications for origin and transmission of the organism. *Infection Control*, 6:141-146.



## WHAT CAN BE DONE TO ENSURE THAT THE ICE MACHINES ARE IN COMPLIANCE?

ASHRAE Standard 188 currently states “to control *Legionella* numbers in the distribution system, a disinfectant residual should be maintained.” This means allowing municipal disinfected water to pass into the ice machines. This residual chlorine can range from 1 mg/L to 4 mg/L, depending on the type of disinfectant used (chlorine or chloramines), the dosage (mg/L) and the distance the hospital is from the municipal treatment plant.

**One option to achieve this target is to not put any water treatment on the tap water entering the ice machine. While this can address the need for chlorine in the ice machine, it does not solve three potential problems:**

- **Parasitic cysts** are very resilient against chlorine and can cause serious, potentially fatal diseases such as *cryptosporidiosis* and *giardiasis* in humans.
- **Calcium and magnesium limescale deposits** on the plumbing, valves and evaporator plate of the ice machine can cause costly damage to this expensive equipment and result in higher energy costs to operate.
- **Particulates** such as sediment and ferric metals can clog orifices inside the ice machine which can result in costly service calls, equipment downtime or damage.



**PARASITIC CYSTS**



**CALCIUM AND MAGNESIUM LIMESCALE DEPOSITS**

## COMPLIANCE WITH STANDARD 188 DOES NOT MEAN GIVING UP THE IMPORTANT BENEFITS OF WATER FILTRATION

Pentair offers water filtration solutions which deliver both. Our Everpure 4SI/7SI Carbonless Ice Filters feature a proprietary carbonless media which allows chlorine to pass through while still providing scale inhibition, cyst and particulate reduction – all in a single cartridge! These unique solutions:

**Help With ASHRAE Standard 188 Compliance:**

In healthcare and hospital facilities, they allow chlorine to pass into the ice machines.

**Help Reduce Slime:** Allow chlorine present in the influent municipal water stream to pass through to the ice machine, reducing the growth of bacteria leading to biofilm in the machine and bin. They also help reduce the risk of a health inspection violation due to bacteria inside the ice machine.

**Deliver Superior Dirt-Holding Capabilities:** Submicron particulate reduction by mechanical means\* helps

reduce the clogging of screens, valves and tubing, and improves the clarity of produced ice.

**Help Protect Ice-Making Equipment:** Integrated scale inhibition reduces scale damage that can increase service costs by causing “freeze-up” on the evaporator plate and in the ice bin, clogging of distribution lines, and any disruption of probes, pumps, solenoids, and valves.

**Offer Peace of Mind:** Reduce cysts that can cause waterborne diseases such as *Cryptosporidium* and *Giardia* by mechanical means\*.

# BENEFITS BEYOND PATIENT PROTECTION

Pentair® Everpure® has cost-effective, application-specific filtration systems that will allow a hospital to keep its ice machines in compliance with ASHRAE Standard 188, and help provide critical protection from protozoan cysts and scale damage: the 4SI and 7SI Carbonless Water Filters from Pentair Everpure. These unique water filters provide a number of important benefits:

- **Compliance with ASHRAE Standard 188.** Allow municipal chlorine and chloramine residual to pass through to the ice machine.
- **Slime Reduction.** Chlorine can help to reduce the growth of slime and bacteria inside the ice machine.
- **Cyst Reduction.** Submicron media reduces cysts such as *Cryptosporidium* and *Giardia* that can cause waterborne diseases in humans (reduction occurs by mechanical means\*).
- **Scale Protection.** Scale inhibitor reduces scale deposits that can cause downtime, maintenance calls and increased service costs. Scale can also result in the clogging of distribution lines, freeze-up on evaporator plates, and cause pumps, solenoids and probes to malfunction or fail.
- **Particulate Reduction.** Pentair's proprietary Fibredyne™ media has superior dirt-holding capabilities versus conventional carbon block filters.



EV9606-51  
4SI

EV9606-01  
7SI

- **Retrofits Everpure Brand Filter Heads.** Quickly and easily convert Everpure Insurice®, 4/7CB5-S and 7FC-S Systems to 4SI and 7SI Systems simply by swapping out the filter cartridges. There's no need to remove an old filter head and invest in a new one, which saves you money and labor.
- **The 4SI System Fits in Tight Spaces.** Its space-saving size allows for easy placement behind a countertop ice machine or inside a cabinet.
- **Easy to Install and Maintain.**
- **Certified to NSF Standards 42 and 53.**
- **Carries the Pentair Everpure Name.** Everpure has been providing water solutions for over 80 years, and is one of the most respected brands in water filtration worldwide.

\*See individual system specification sheets for performance claims and FIFRA registration information.

# SUPERIOR RATINGS AND PERFORMANCE

## SYSTEM SPECIFICATIONS

### INSURICE SINGLE-4SI SYSTEM (EV9324-60)

**Ice Machine Applications:**

Cubers 500 lbs/day; Flakers 1,500 lbs/day

**Service Flow Rate:** Maximum 2.0 gpm (7.57 Lpm)

**Rated Capacity:**

15,000 gal (56,700 L) of particulate and scale reduction\*

**Pressure Requirements:** 10-125 PSI (0.7-8.6 bar), non-shock

**Temperature Requirements:** 35-100°F (2-38°C)

**Overall Dimensions:**

18.1" H x 7.91" W x 5.25" D  
(45.97 x 20.07 x 13.3 cm)

**Inlet Connection:** 3/8"

**Outlet Connection:** 3/8"

**Shipping Weight:** 4 lbs (1.8 kgs)

**Operating Weight:** 7 lbs (3.2 kgs)

**Electrical Connection:** None required

### INSURICE SINGLE PF-4SI SYSTEM (EV9324-61)

**Ice Machine Applications:**

High Capacity; High Volume; High Flow

**Service Flow Rate:** Maximum 2.0 gpm (7.57 Lpm)

**Rated Capacity:**

15,000 gal (56,700 L) of particulate and scale reduction\*

**Pressure Requirements:** 10-125 PSI (0.7-8.6 bar), non-shock

**Temperature Requirements:** 35-100°F (2-38°C)

**Overall Dimensions:**

18" H x 14" W x 6.47" D  
(45.72 x 35.56 x 16.4 cm)

**Inlet Connection:** 3/4"

**Outlet Connection:** 3/8"

**Shipping Weight:** 10 lbs (4.5 kgs)

**Operating Weight:** 19 lbs (8.6 kgs)

**Electrical Connection:** None required

## REPLACEMENT CARTRIDGE SPECIFICATIONS

### 4SI CARTRIDGE (EV9606-51)

**Service Flow Rate:** 2 gpm (7.57 Lpm)

**Micron Rating:** 0.5 by mechanical means\*\*

**Particulate and Scale Inhibitor Capacity:**  
15,000 gallons (56,781 litres)\*

**Pressure Requirements:** 10-125 PSI (0.7-8.6 bar)

**Temperature Requirements:** 35-100°F (2-28°C)

**Overall Dimensions:**

14.5" H x 3.25" diameter (36.8 x 8.26 cm)

**Shipping Weight:** 1.6 lbs (0.7 kgs)

**Electrical Connection:** None required



### 7SI CARTRIDGE (EV9606-01)

**Service Flow Rate:** 3.5 gpm (13.25 Lpm)

**Micron Rating:** 0.5 by mechanical means\*\*

**Particulate and Scale Inhibitor Capacity:**  
25,000 gallons (94,635 litres)\*

**Pressure Requirements:** 10-125 PSI (0.7-8.6 bar)

**Maximum Temperature:** 35-100°F (2-28°C)

**Overall Dimensions:**

20.75" H x 3.25" diameter (52.7 x 8.26 cm)

**Shipping Weight:** 2 lbs (0.9 kgs)

**Electrical Connection:** None required



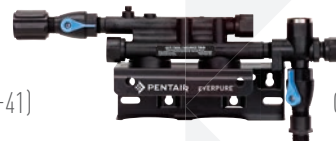
## MANIFOLD HEADS



QL3B HEAD (EV9259-24)



QC71 SINGLE HEAD (EV9272-41)



QC71 TWIN HEAD (EV9272-22)

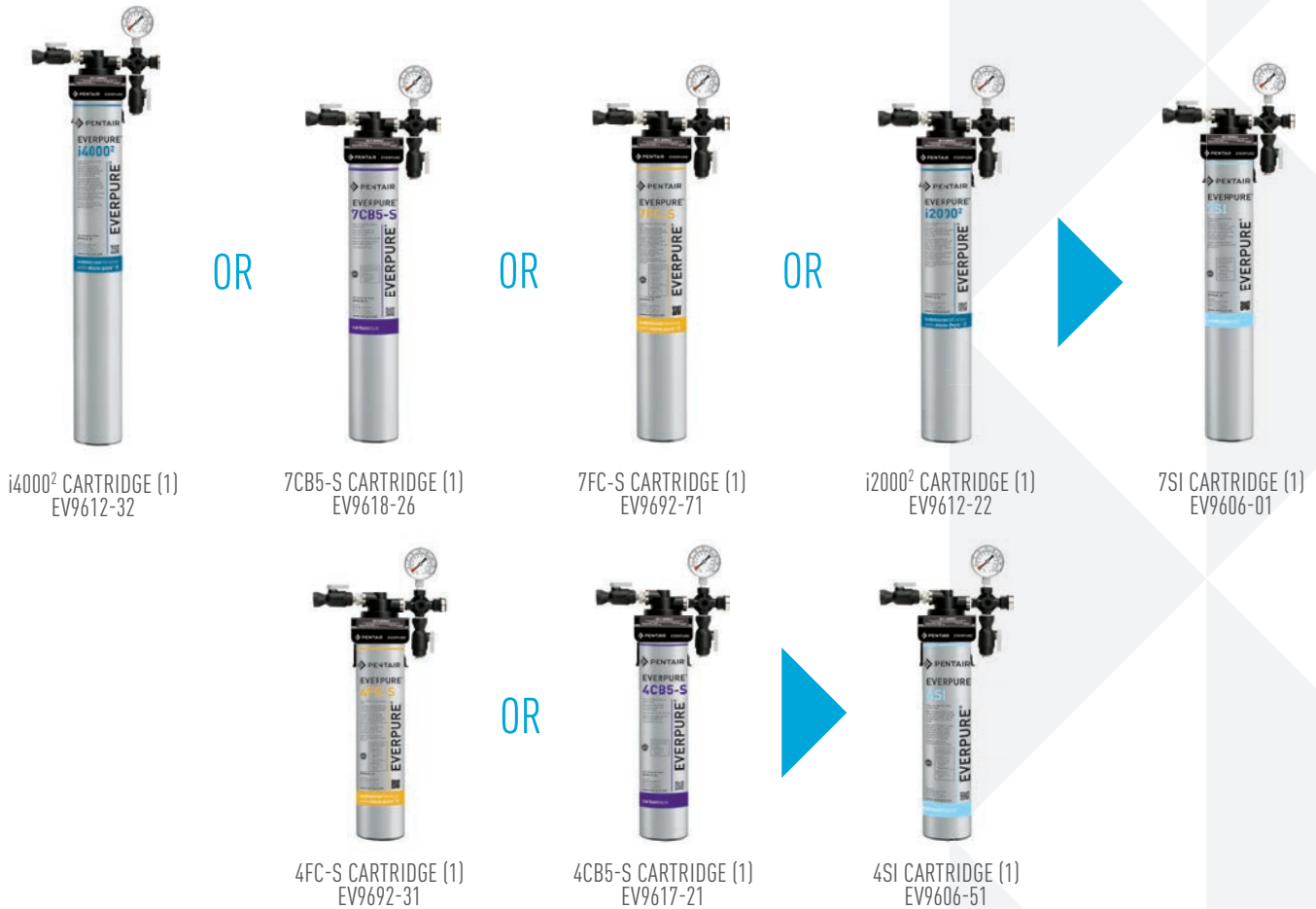
\*Estimated. Actual capacity may vary depending on volume of particulate in incoming water.

\*\*See individual system specification sheets for performance claims and FIFRA registration information.

## ALREADY OWN AN EVERPURE SYSTEM? ASHRAE 188 COMPLIANCE IS EASY!

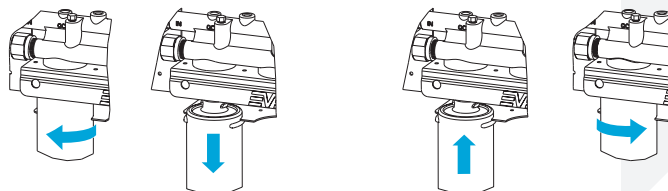
Simply replace your existing Everpure Filter Cartridges (Models i2000<sup>2</sup>, i4000<sup>2</sup>, 4CB5-S, 4FC-S, 7CB5-S, 7FC-S) with the 4SI or 7SI Cartridges to save labor and head replacement costs.

An existing Everpure System can easily be converted to a 4SI or 7SI System, without having to replace the filter head (see models below). All systems feature the QC71 Single Head: EV9272-41.



## CHANGE OUT CARTRIDGES IN 4 EASY STEPS!

- 1 Shut off water.
- 2 Turn, then pull down to remove cartridge.
- 3 Insert new cartridge, then turn to lock in place.
- 4 Flush



Learn more about how this unique filtration solution helps you with ASHRAE Standard 188

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