

# POLY-PLEAT™

*Absolute Rated Filter Cartridges  
for Safe, Cyst-free Drinking Water*



## It's the Law!

In 1996, the U.S. Congress approved legislation that toughens federal regulations designed to protect the nation's drinking water. Subsequently, the President signed the bill to authorize \$7.6 billion dollars over seven years to improve deteriorating municipal and rural water systems.

Part of this comprehensive legislation calls for the EPA to establish more stringent standards to control cryptosporidium, giardia cysts and other common drinking water contaminants that pose significant risks. Cryptosporidium is the protozoan that reportedly infected over 400,000 people in Milwaukee,

Wisconsin, resulting in a significant number of deaths related to the outbreak. To date, the best known method to control cryptosporidium and giardia cysts in water is through the use of microfiltration, or employment of absolute rated filter cartridges fine enough to remove cyst sized particles. Surface waters are most susceptible because animals live nearby, contributing to the cyst population found in water. For this reason the Surface Water Treatment Rule was established to regulate drinking water taken from reservoirs, lakes, rivers, ponds and streams.

## POLY-PLEAT™ Cartridges... For Cyst-Free Drinking Water

Absolute rated POLY-PLEAT™ cartridges meet or exceed the three-log (99.9%) removal requirements described in National Sanitation Foundation Standard 53 for cyst sized particles.

For this reason, POLY-PLEAT™ filter cartridges are ideal to control cryptosporidium, giardia cysts and other harmful microorganisms to help ensure cyst-free drinking water.

## Independent Lab Validated

To demonstrate the performance of POLY-PLEAT™ cartridges and HARMSCO filter housings, Analytical Services, Inc., a highly respected independent testing facility, was selected to conduct challenge studies using live organisms. The challenge system was composed of a reservoir, pump, static mixer, pressure gauges and challenge bleed-off assembly. The test protocol has been reviewed and approved by leading states in the country and is considered the most stringent method used for cyst reduction testing. The protocol includes two separate spikes on two different but identical test filters using live giardia lamblia

cysts and cryptosporidium parvum oocyst. An initial giardia/cryptosporidium spike is performed early in the filter run to document the filter's efficiency. After injection of the challenge organisms, test samples are collected in two phases during an uninterrupted 36 hour run. During the first sampling phase of 1-18 hours, calibrated side-stream samples were collected from both the influent and the effluent of the test filter. Because no cysts are injected during the second phase, only effluent samples are collected during the 19-36 hour test period. Results of the 19-36 hour challenge tests are as follows:

Results of Cryptosporidium and Giardia Cysts Challenge Study

Cartridge Tested	Filter Housing	Tested Flow Rate	Challenge Organisms	Percent Removed
PP-D-1	HIF-14 Filter	50 GPM	Giardia lamblia cysts	99.99%
PP-HC-170-1	HUR-170-HP Hurricane Filter	100 GPM	Cryptosporidium parvum oocysts Giardia lamblia cysts	99.98% 99.99%

Tests conducted by Analytical Services, Inc. / Williston, VT

## Features & Benefits

- ✓ Absolute rated one micron filter media removes cyst sized particles for safe, cyst-free drinking water.
- ✓ Pleated polypropylene filter media provides more surface area for longer filter life and increased particle removal.
- ✓ FDA listed materials for use in potable water and liquid food applications.
- ✓ End caps, center tubes and media are thermally bonded as one integral component for added strength and to provide superior end sealing.



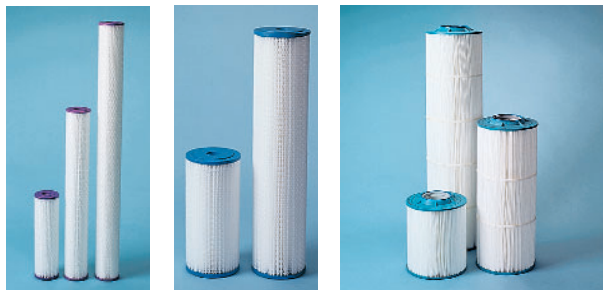
- ✓ Full product line for standard, Big-Blue and Hurricane filter housings.
- ✓ Economical cartridges from the value leader in the industry!

### Substantially removes:

- Cryptosporidium
- Giardia cysts
- Harmful organisms
- Sediment
- Silt
- Turbidity
- And more!

## Types

POLY-PLEAT™ cartridges are available in the following types for a variety of filter housings:



**Standard**  
(2-3/4" O.D.)

**Big Blue**  
(10" & 20")

**Hurricane**  
(40, 90, & 170)

## Product Codes

Product Code	Micron Rating	Type	Length x O.D.	No./Case
PP-S-1	1 absolute	Standard	9-3/4" 2-3/4"	24
PP-D-1	1 absolute	Standard	19-1/2" 2-3/4"	24
PP-T-1	1 absolute	Standard	29-1/4" 2-3/4"	24
PP-20E-1	1 absolute	Standard	20" 2-3/4"	24
PP-BB-10-1	1 absolute	Big Blue	9-3/4" 4-1/2"	8
PP-BB-20-1	1 absolute	Big Blue	20" 4-1/2"	4
PP-HC-40-1	1 absolute	Hurricane	9-5/8" 7-3/4"	1
PP-HC-90-1	1 absolute	Hurricane	19-1/2" 7-3/4"	1
PP-HC-170-1	1 absolute	Hurricane	30-3/4" 7-3/4"	1

Note: The Water Quality Association defines absolute cartridges as being 99.9% efficient or more at stated micron ratings.

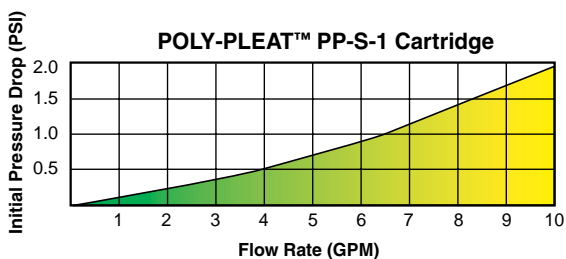
## Specifications

Micron ratings:	One micron absolute for cryptosporidium and giardia cysts.
Filter media:	Meltblown polypropylene inner layer with outer layers of polypropylene scrim material for support.
Center tubes:	Rigid PVC with perforations, or molded polypropylene.
End caps:	Pliable PVC with sealing surface built-in.
Temperature:	140°F / 60°C temperature limit.*
Flow rates:	Up to 6 GPM per 9-3/4" standard cartridge. For Hurricane and Big-Blue cartridges, flow rates are limited by the housing used.
Netting:	Polypropylene netting standard for 2-3/4" O.D. Big-Blue cartridges use polyethylene netting.
Shrink wrap:	Standard for all POLY-PLEAT™ cartridges.

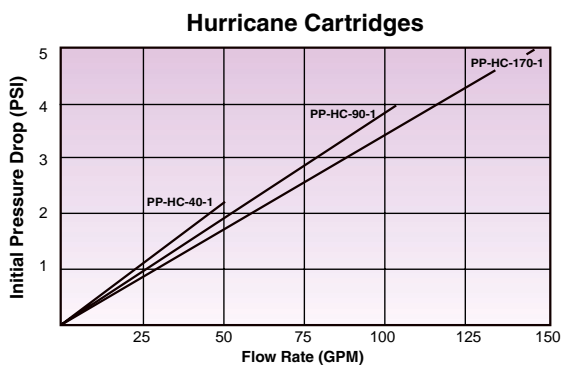
\*Temperature limits vary and depend on pressure and time under load.

## Low Pressure Drop

Initial pressure drop using POLY-PLEAT™ cartridges is exceptionally low due to our pleated design and increased surface area. Pressure drop data is shown below, calculated for new cartridges in clean water:



Data include cartridge and single-cartridge housing.



Data include cartridge and Hurricane filter housing.

## Long Filter Life

POLY-PLEAT™ cartridges are ideal as final filters for municipal water filtration without pre-filtration required. In high turbidity water, pre-filtration is recommended using Harmsco sediment cartridges with two or three step filtration, depending on the source water. POLY-PLEAT™ cartridges provide long filter life due to their pleated design and increased surface area. The data shown below indicates typical filter life with POLY-PLEAT™ cartridges for municipal water filtration or in high turbidity water supplies, following pre-filtration.

### Typical POLY-PLEAT™ Filter Cartridge Life

Cartridge Code	Source Water Tested	Average GPM	Total Gallons to 30 psid
PP-S-1	0.2-0.4 NTU Municipal	5	21,028
PP-HC-170-1	0.2-0.4 NTU Municipal	100	1,846,000

Study conducted at Harmsco test facility.

## Harmsco Filter Housings for POLY-PLEAT™ Cartridges



### Up-Flow

Uses standard cartridges in single, double or triple lengths. Select from ten models, based on flow rate.



### Hurricane

Uses single "jumbo" cartridge for easy cartridge replacement. Select from three models for flow rates to 150 GPM.



## Municipal Water Filtration

POLY-PLEAT™ Cartridges are ideal for municipal water filtration using Harmsco's HUR-850-ASME filter housing shown below.



Harmsco HUR-850-ASME filter

## Harmsco® HUR-850-ASME Filter Housing

Ideal filter housing for high flow applications using standard sediment or POLY-PLEAT™ absolute rated cartridges. Features include:

- Hurricane design for use as standard filter or combination filter/separator.
- Accommodates five HC-170 cartridges.
- ASME design and U-stamp certification.
- Heavy duty 304 stainless steel construction for long equipment life. (3/16" sidewalls).
- Rated for pressures to 200 psi (13 bar).
- Hinged assisted lid for easy opening.
- Swing bolt closure.

HUR-850-ASME filters can be installed in **parallel** using multiple housings for higher flow rates. They may also be installed in **series** with different micron cartridges for two or three stage filtration in high turbidity applications.

## Hurricane Filters are “User Friendly”

Hurricane Filters with POLY-PLEAT™ cartridges are ideal for surface water filtration. The housings are extremely “user friendly” since the cartridges are so easy to remove and service”.

## Satisfied Customers

Following is a typical installation where POLY-PLEAT™ cartridges are used.



Sandbar State Park, Milton, VT

One micron absolute rated POLY-PLEAT™ cartridges and Harmsco Hurricane filter housings are used in series following twenty and five micron sediment cartridges. The three-step filtration system meets the State of Vermont's requirements for cyst reduction according to laser particle counts conducted by an independent testing facility. (System installed by Island Water Systems, S. Burlington, VT.)

## Harmsco Filter Cartridges for Sediment Removal

We make a complete line of pleated polyester filter cartridges to remove sediment and turbidity. These cartridges are ideal, prior to POLY-PLEAT™ cartridges for pre-filtration. We also make activated carbon cartridges for taste, odor, chlorine and lead removal.

Some of the information contained in this publication has been obtained from outside sources and is considered accurate. Temperature ratings, flow rates and chemical resistance can be affected by a number of known factors. For this reason, we do not assume any liability for the accuracy or completeness of the data in this publication. End users should perform their own tests to determine suitability for each application.



**Harmsco Filtration Products**

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