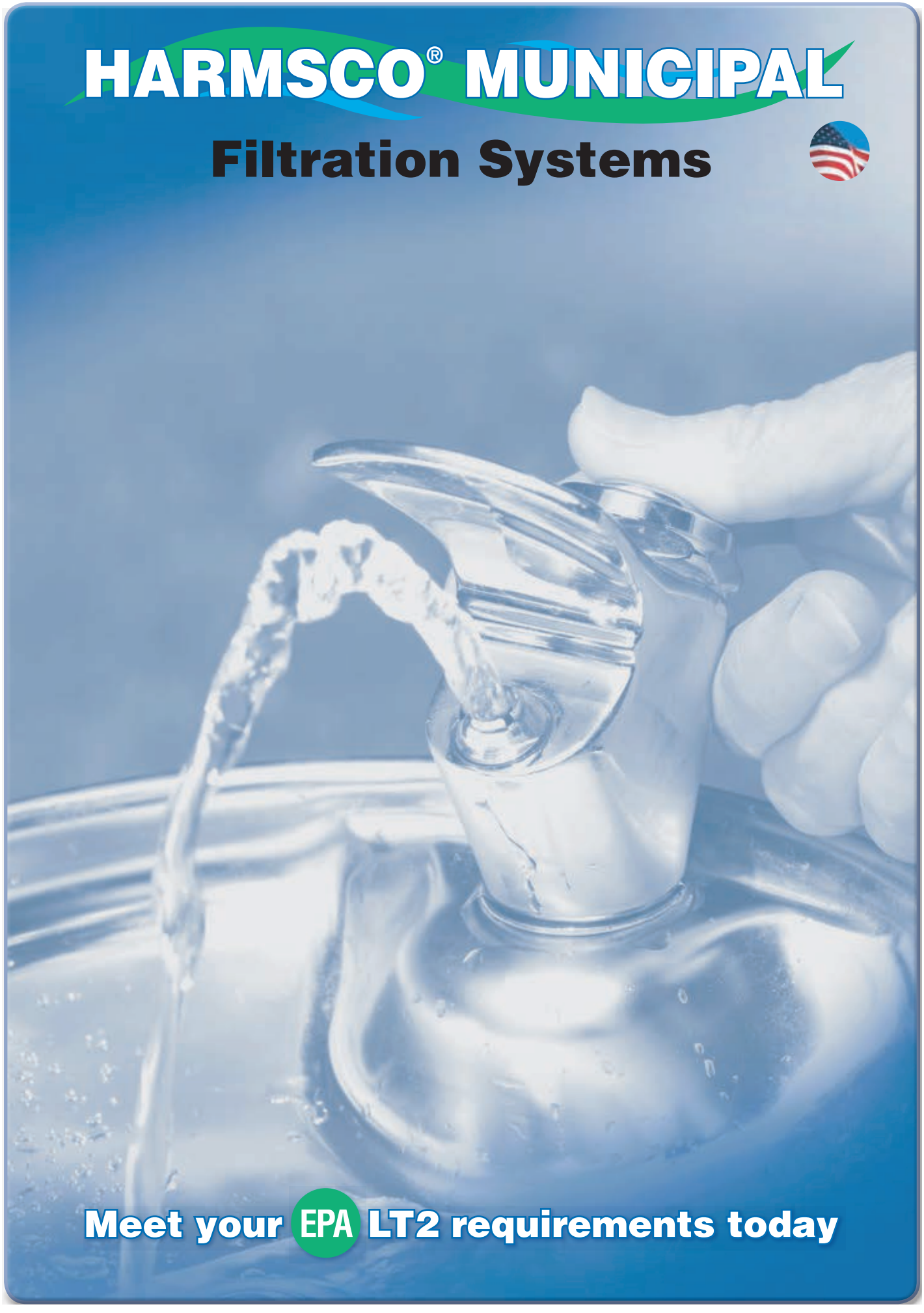
HARMSCO® MUNICIPAL

Filtration Systems



Meet your EPA LT2 requirements today

Harmsco's Cost-effective Solutions for LT2 Compliance

FACTS

What is Long Term 2 Enhanced Surface Water Treatment Rule (LT2 Rule)?

The EPA has developed the LT2 ESWTR (LT2 Rule) to improve your drinking water quality and provide additional protection from disease-causing microorganisms and contaminants.

Why is the EPA concerned about *Cryptosporidium*?

Cryptosporidium is a significant concern in drinking water because it contaminates most drinking water sources, it is resistant to chlorine and other disinfectants, and has caused waterborne disease outbreaks. Consuming water with ***Cryptosporidium*** can cause gastrointestinal illness which may be severe and sometimes fatal for people with weakened immune systems including infants and the elderly. The EPA estimates that full compliance with LT2 ESWTR will reduce the incidence of cryptosporidiosis by 89,000 to 1,459,000 cases per year, with an associated reduction of 20 to 314 premature deaths.

Who does this rule apply to?

The LT2 ESWTR applies to all public water systems that use surface water, or ground water under the direct influence of surface water. This includes about 14,000 systems serving approximately 180 million people.

LT2 ESWTR Toolbox Manual (April, 2010)

COMPLIANCE

- All components used in drinking water treatment process should be evaluated for contaminant leaching and Certified under **ANSI/NSF Standard 61**.
- The **filter housing and cartridge** must be challenge tested per **LT2 ESWTR Toolbox Guidance Manual** with specific instructions regarding:
  - Full scale filter testing, challenge particulate, test solution concentration, challenge test duration, water quality of test solution, maximum design flow rate, challenge particulate seeding method and concentration, sampling procedures and calculation of log removal.
- Testing is product specific, not site specific, meaning it does not have to be tested at every water system seeking removal credit. Instead, a manufacturer or independent third party would challenge test each of its products in order to obtain a 2.0- or 2.5-log Cryptosporidium removal rating:
  - Up to 2.0-log removal for individual cartridge filters showing a minimum of 3.0-log removal in challenge testing.
  - Up to 2.5-log removal for cartridge filters in series showing a minimum of 3.0-log removal in challenge testing.
- A minimum of two (2) bag or cartridge filter housings should be provided to ensure continuous water treatment in the event of failure in the filter operation and to allow for filter maintenance and replacement.

For more information, please visit: http://water.epa.gov/lawsregs/rulesregs/sdwa/lt2/basicinformation.cfm

Harmsco® LT2 Cartridges for Cyst-free Drinking Water

Harmsco® LT2 cartridges and housings exceed the three-log (99.9%) removal requirement described in LT2 ESWTR Toolbox Guidance Manual 8.4.1. for cyst-sized particles. For this reason, Harmsco® LT2 filter cartridge elements are ideal to control cryptosporidium, giardia cysts and other harmful microorganisms to help ensure safe drinking water.

Independent Lab Validated

To verify the performance of the Harmsco® LT2 cartridge and NSF filter housing, Pace/IBR, highly respected independent testing facilities, were selected to conduct challenge tests as outlined in the LT2 ESWTR Toolbox Guidance Manual 8.4.1. This defines the maximum challenge particulate based on detection limit and acceptable cryptosporidium surrogate…2 microns in these tests. The "terminal" pressure drop was determined by Harmsco® to be 30 psi. The Harmsco® LT2 cartridges were tested via single pass protocol per the EPA at 3 separate points: 1.) after initial flushing (clean cartridge), 2.) at 50% of terminal pressure drop (15 psid) and 3.) after terminal pressure loss has been reached (30 psid).

Results of Challenge Test Conducted by IBR

Cartridge Tested	Filter Housing	Tested Flow Rate	Sample Point	Minimum Log Removal
HC/170-LT2	MUNI-1-2FL-304	100 GPM	Initial Efficiency	3.6
			50% Terminal Pressure Drop: 15 psi	3.8
			100% Terminal Pressure Drop: 30 psi	3.7

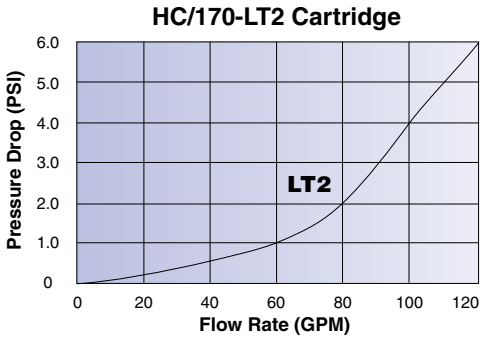
Features & Benefits

- 1 Micron Absolute
- NSF/ANSI Standard 61 Listed cartridge filter system removes cyst-sized particles providing safe drinking water
- Pleated microfiber media provides exceptional surface area for longer filter life and increased particle removal
- Patented Dual Durometer end caps ensure positive end cap sealing
- End caps, center tubes and media are thermally bonded as one integral component for added strength while providing superior sealing
- 125 sq. ft. media (surface area) in a single cartridge design
- FDA Listed Materials: Manufactured from materials which are listed for food contact applications in Title 21 of the U.S. Code of Federal Regulations

LT2 Cartridge
Length and O.D.

Low Pressure Drop

Initial pressure drop using HC/170-LT2 cartridges is exceptionally low due to our pleated design and increased surface area. Pressure drop data is shown below, calculated for new cartridges in clear water.



Specifications

- **Filter Media:** 1 Micron Absolute FDA borosilicate microglass with acrylic binder
- **Support Media:** spun-bonded polyester laminated on both upstream and downstream sides
- **Center Tubes:** rigid PVC with perforations
- **End Caps:** plastisol (pliable PVC)
- **Heat-seal Bags:** standard on HC/170-LT2 cartridge
- **Flow Rate:** 100 GPM (recommended) per HC/170-LT2 cartridge; > 3.6 Log removal
- **Temperature:** 140˚F (60˚C) max*
  * Temperature limits vary and depend on pressure and time under load.
- **Maximum Change Out:** 30 PSI (2.07 Bar) ΔP
- **Surface Area:** 125 sq. ft. (HC/170-LT2)
- **Dimensions:** 7-3/4" O.D.; 4" I.D.; 30-3/4" L.
- **pH:** 3 to 11

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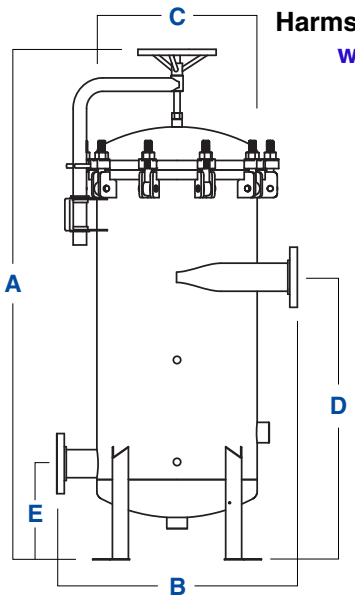

Harmsco HURRICANE Animation:
www.harmsco.com/z/100

Certified: NSF/ANSI Standard 61
Drinking Water System Components - Health Effects

Certified to NSF/ANSI Standard 61


MUNI-1-2FL-304


MUNI-3-3FL-304


MUNI-5-4FL-304


MUNI-8-6FL-304

Filter Model	A Filter Height	B Width	C Diameter	D Inlet	E Outlet	Pipe Size I/O NPS	Drain Size NPT	Floor Space	Service Height	Shipping Wt. (lbs.)
MUNI-1-2FL-304	48”	15-1/2”	11”	23-5/8”	9-3/4”	2” Flange	3/4”	1.6 ft²	77”	150
MUNI-3-3FL-304	64”	30”	20”	35-1/4”	12”	3” Flange	1-1/2”	4.5 ft²	98-1/2”	420
MUNI-5-4FL-304	74”	37-1/2”	30”	38”	14-1/8”	4” Flange	1-1/2”	8.5 ft²	98-1/2”	1,100
MUNI-8-6FL-304	84”	45-1/4”	35-3/8”	44-1/4”	20-1/2”	6” Flange	1-1/2”	14 ft²	104-1/2”	1,600

Design Recommendations

Pre-filtration is always recommended due to potential changes in environmental conditions. Turbidity must not exceed 1-NTU prior to final filtration stage (HC/170-LT2 cartridge). For more information please contact Harmsco Filtration Products.

Pre-Filtration

Filter Model	NO. of Cartridges	Pleated Media Area (sq.ft.)	Max Flow Rate (GPM)	Max Flow Rate (LPM)	Max Flow Rate (M³/HR)
MUNI-1-2FL-304	1	170	150	568	34
MUNI-3-3FL-304	3	510	450	1,703	102
MUNI-5-4FL-304	5	850	750	2,839	170
MUNI-8-6FL-304	8	1,360	1,200	4,542	272

Final Stage

Filter Model	NO. of Cartridges	Pleated Media Area (sq.ft.)	Max Flow Rate (GPM)	Max Flow Rate (LPM)	Max Flow Rate (M³/HR)
MUNI-1-2FL-304	1	125	100	378	23
MUNI-3-3FL-304	3	375	300	1,135	68
MUNI-5-4FL-304	5	625	500	1,892	113
MUNI-8-6FL-304	8	1000	800	3,028	181

Filter Specifications

- 304L or 316L stainless steel, EP or Matte finish
- Built to ASME design standards (not code stamped)
- Standpipe - 304L or 316L stainless steel
- Inlet/Outlet - flanged connections
- NSF 61 Listed Ball Valves (2) - 316 stainless steel
- O-ring housing seal, swing bolt closure
- NSF 61 Listed Pressure Gauges (2) - 316 stainless steel
- Pressure - 150 psi (10 bar) max.
- Temperature* - up to 140˚F (60˚C) with standard cartridges

* Temperature ratings based on pressure and time under load.

HARMSCO® MUNICIPAL Filtration Systems
www.harmsco.com
7169 49th Terrace North, Riviera Beach, FL 33407
(561) 848-9628 • Toll-free: (800) 327-3248 • Fax: (561) 845-2474 • E-mail: sales@harmsco.com