

# STATE OF COLORADO

John W. Hickenlooper, Governor  
Larry Wolk, MD, MSPH  
Executive Director and Chief Medical Officer

Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.  
Denver, Colorado 80246-1530  
Phone (303) 692-2000  
Located in Glendale, Colorado  
[www.colorado.gov/cdphe](http://www.colorado.gov/cdphe)



Colorado Department  
of Public Health  
and Environment

June 6, 2014

Hank Harms  
Owner/CEO  
Harmsco Filtration Products  
7169 North 49<sup>th</sup> Terrace  
West Palm Beach, Florida 33407

Subject: Acceptance of the Harmsco® Model HC/170-LT2 cartridges as an Alternative Filtration Technology to meet the *Colorado Primary Drinking Water Regulations* requirements for *Giardia lamblia* and *Cryptosporidium* Removal

Dear Mr. Harms;

The Colorado Department of Public Health and Environment's (CDPHE) Water Quality Control Division ("the Department") has received and reviewed the information for the Harmsco® Model HC/170-LT2 cartridge filter in accordance with Section 11.8(2)(b)(ii) and 11.10(5)(j) of the *Colorado Primary Drinking Water Regulations* (Regulation 11), 5 CCR 1002-11. The Harmsco Model HC/170-LT2 cartridge filter meets or exceeds the requirements of the *State of Colorado Design Criteria for Potable Water Systems* (DCPWS) Sections 1.11, 4.3.9 and the requirements of Regulation 11. The technology is conditionally accepted for use as an Alternative Filtration Technology and granted the removal credit in Table 4.2, Section 4.3.9.2 of the DCPWS. The filters and filter housings are subject to the conditions outlined in Table 1 of this document and Section 4.3.9 of the DCPWS.

This acceptance supersedes all previous acceptance letters of the Harmsco® Model HC/170-LT2 cartridge filter and associated housings.

This acceptance addresses the following items:

- Harmsco Filter Cartridge Model: HC/170-LT2
- Harmsco Filter Housings (pressure vessels): MUNI-1-2FL-304, MUNI-3-3FL-304, MUNI-5-4FL-304, MUNI-8-6FL-304

This acceptance applies only to the Harmsco Model HC/170-LT2 cartridges and does not constitute construction approval for installation at any public water system. Each individual submittal to the Department must demonstrate conformance with Section 4.3.9 of the DCPWS for each installation of the filters and housings.

**Review and approval for the design of any public water system proposing to use this technology will be handled on a case-by-case basis by the Department as required by Section 11.4 of Regulation 11.**

As part of this review, the Department has evaluated the following documents:

- Harmsco Filtration Products Long Term 2 Enhanced Surface Water Treatment Rule (LT2) Validation Testing Report for HC/170-LT2 Cartridges and MUNI-1-2FL-304 housing (Including Pace Analytical and IBR reports on validation testing – Aug 2011)
- Harmsco Municipal and LT2 Product brochures – Aug 2012
- NSF Website including HC/170-LT2

Any addenda that will modify the module must be submitted to the Department for review and acceptance prior to use in Colorado by a regulated public water system. This requirement includes any changes made to the filter materials of construction and associated interfaces with process piping. The Department will review any additional third party verification reports and issue a revised acceptance letter if appropriate.

**Table 1. Harmsco Model HC/170-LT2 Cartridge Filters Technical Specifications and Conditions of Acceptance:**

<b>Technical Specifications</b>				
<b>Filter Cartridge Model</b>	<b>HC/170-LT2</b>			
<b>Filter Housing Model (pressure vessel)</b>	<b>MUNI-1-2FL-304</b>	<b>MUNI-3-3FL-304</b>	<b>MUNI-5-4FL-304</b>	<b>MUNI-8-6FL-304</b>
Maximum Flow Rate	100 gallons per minute - gpm	300 gpm	500 gpm	800 gpm
Maximum Differential Pressure for Cartridge Change out	30 pounds per square inch differential (psid) <u>total</u>			
Turbidity Performance Standards	< 1 NTU 95% of the time Not to exceed 5 NTU			
<b>Vessels</b>				
Models	Harmsco MUNI-X-XFL-304 Housings are the only acceptable housing for use with this technology – see above			
Materials	304 Stainless Steel			
Pressure Requirements	Rated for 150 pounds per square inch (PSI).			
<b>Prefilters</b>				
Prefilter Models	A gross prefiltration unit is required when influent turbidity exceeds <b>1 NTU</b> .			
<b>Additional Operations and Maintenance Criteria</b>				
<ol style="list-style-type: none"> <li>1. Each public water system must keep a record daily routine pressure differential readings and filter change outs. The document must be available for review by the Department upon request.</li> <li>2. An Operations and Maintenance (O&amp;M) Manual must be provided for all installations including a protocol for filter change out to ensure sanitary conditions and good filter installation practice.</li> <li>3. Spare Parts required to be kept onsite: <ol style="list-style-type: none"> <li>a. O Rings for Pressure Vessels:  <u>Housing P/N</u>                      <u>O-Ring P/N</u></li> </ol> </li> </ol>				

Hank Harms  
Harmsco Filtration Products  
June 6, 2014  
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MUNI-1-2FL-304	361-E
MUNI-3-3FL-304	363-E
MUNI-5-4FL-304	365-E
MUNI-8-6FL-304	368-E

Please direct any further correspondence regarding this acceptance to:

Tyson Ingels, P.E.  
Colorado Department of Public Health and Environment  
Water Quality Control Division  
4300 Cherry Creek Drive South  
Denver, CO 80246

If you have any questions or comments, please call Tyson Ingels at 303-692-3002.

Sincerely,



Digitally signed by Tyson Ingels, P.E.  
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c=US  
Date: 2014.06.06 05:39:52 -06'00'

Tyson Ingels, P.E.  
Lead Drinking Water Engineer  
Engineering Section  
Water Quality Control Division  
Colorado Department of Public Health and Environment

cc: Charles Greaves, Water Technology Group

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June 6, 2014

Hank Harms  
Owner/CEO  
Harmsco Filtration Products  
7169 North 49<sup>th</sup> Terrace  
West Palm Beach, Florida 33407

Subject: Acceptance of the Harmsco® Model PPFS-HC-40-1, PPFS-HC-90-1, and PPFS-HC-170-1 cartridge filters as an Alternative Filtration Technology to meet the *Colorado Primary Drinking Water Regulations* requirements for *Giardia lamblia* and *Cryptosporidium* Removal

Dear Mr. Harms;

The Colorado Department of Public Health and Environment's (CDPHE) Water Quality Control Division ("the Department") has received and reviewed the information for the Harmsco® Model PPFS-HC-40-1, PPFS-HC-90-1, and PPFS-HC-170-1 cartridge filters in accordance with Section 11.8(2)(b)(ii) and 11.10(5)(j) of the *Colorado Primary Drinking Water Regulations* (Regulation 11), 5 CCR 1002-11. The Harmsco® Model PPFS-HC-40-1, PPFS-HC-90-1, and PPFS-HC-170-1 cartridge filters meet or exceed the requirements of the *State of Colorado Design Criteria for Potable Water Systems* (DCPWS) Sections 1.11, 4.3.9 and the requirements of Regulation 11. The technology is conditionally accepted for use as an Alternative Filtration Technology and granted the removal credit in Table 4.2, Section 4.3.9.2 of the DCPWS. The filters and filter housings are subject to the conditions outlined in Table 1 of this document and Section 4.3.9 of the DCPWS.

This acceptance letter supersedes all previous acceptance letters of the PPFS-HC-40-1, PPFS-HC-90-1, and PPFS-HC-170-1 modules and associated hurricane filter housings.

This acceptance addresses the following items:

- Harmsco Hurricane Polypleat Filter Cartridges: PPFS-HC-40-1, PPFS-HC-90-1, PPFS-HC-170-1

This acceptance applies only to the Harmsco Hurricane Filtration housing utilizing the Poly-Pleat cartridge technology and does not constitute construction approval for installation at any public water system. Each individual submittal to the Department must demonstrate conformance with Section 4.3.9 of the DCPWS for each installation of the filters and housings. **Review and approval for the design of any public water system proposing to use this technology will be handled on a case-by-case basis by the Department as required by Section 11.4 of Regulation 11.**

As part of this review, the Department has evaluated the following documents:

- December 8, 2010 letter from Hank Harms with Harmsco Filtration Products and attachments.

- Pace Analytical Laboratory Analysis report, March 31, 2009 – Showing > 3.0 log removal of 3 micron polystyrene microspheres at pressures less than 35 PSID – Signed by Tim Shannon, Project Manager and Report dated July 11, 2007 showing > 3.0 log removal through the PP-HC-40-1 Harmsco Cartridge Filter
- NSF International Official Listing, June 8, 2010 – Listing Harmsco Hurricane Filter Housing and Harmsco Poly-Pleat Cartridge filters as NSF 61 certified.
- Report from Shaw Environmental – Summary of EPA Bag and Cartridge Testing, May 2005 – Summarizing performance of Harmsco Cartridges at different testing conditions.
- Harmsco Filtration Products Installation and Operations Manual for Hurricane Filters – April, 2007

Any addenda that will modify the module must be submitted to the Department for review and acceptance prior to use in Colorado by a regulated public water system. This requirement includes any changes made to the filter materials of construction and associated interfaces with process piping. The Department will review any additional third party verification reports and issue a revised acceptance letter if appropriate.

**Table 1. Harmsco PPFS-HC-40-1, PPFS-HC-90-1, and PPFS-HC-170-1 Cartridge Filters Technical Specifications and Conditions of Acceptance:**

<b>Technical Specifications</b>			
<b>Filter Cartridge Model</b>	<b>PPFS-HC-40-1</b>	<b>PPFS-HC-90-1</b>	<b>PPFS-HC-170-1</b>
<b>Filter Housing Model (pressure vessel)</b>	<b>HUR 40 HP</b>	<b>HUR 90 HP</b>	<b>HUR 170 HP</b>
Maximum Flow Rate	15 gallons per minute (gpm)	30 gpm	50 gpm
Maximum Differential Pressure for Cartridge Change out	25 pounds per square inch differential (psid) <u>total</u>		
Turbidity Performance Standards	< 1 NTU 95% of the time Not to exceed 5 NTU		
<b>Vessels</b>			
Models	Harmsco Hurricane Housings are the only acceptable housing for use with this technology.		
Materials	304 Stainless Steel		
Pressure Requirements	Rated for 150 pounds per square inch (PSI).		
<b>Pretreatment</b>			
Free chlorine or other pretreatment must be authorized in writing from Harmsco.			
<b>Prefilters</b>			
Prefilter Models	A gross prefiltration unit is required when influent turbidity exceeds <b>1 NTU.</b>		

**Additional Operations and Maintenance Criteria**

1. Each public water system must keep a record daily routine pressure differential readings and filter change outs. The document must be available for review by the Department upon request.
2. An Operations and Maintenance (O&M) Manual must be provided for all installations including a protocol for filter change out to ensure sanitary conditions and good filter installation practice.
3. Spare Parts required to be kept onsite:
  - a. One rim gasket (11"), P/N 550
  - b. One retainer nut, P/N 312

Please direct any further correspondence regarding this acceptance to:

Tyson Ingels, P.E.  
Colorado Department of Public Health and Environment  
Water Quality Control Division  
4300 Cherry Creek Drive South  
Denver, CO 80246

If you have any questions or comments, please call Tyson Ingels at 303-692-3002.

Sincerely,



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Tyson Ingels, P.E.  
Lead Drinking Water Engineer  
Engineering Section  
Water Quality Control Division  
Colorado Department of Public Health and Environment

cc: Charles Greaves, Water Technology Group