Iron Removal Media Units
Removal of Iron, Manganese and Hydrogen Sulfide

Item Number & Description

Units to be installed at well or municipal main water supply. Specific filtration only.

Residential and Light Commercial

**EWS-1054-P**
10x54 tank with 1.4 cu. ft. of High Grade Iron Removal Media with a Digital High Flow DTV Valve with air injection for better automatic backwash of heavy media. System requires 8-10 GPM and 40 PSI for media lift during backwash.

**EWS-1354-11/2”-P**
Greater Water Usage or Greater Removal Capacities 13x54 tank with 2.2 cu. ft. of High Grade Iron Removal Media with a Digital 11/2” (2850) Valve for larger service line connection, does not include air injection, automatic backwashing. System requires 12-15 GPM and 40 PSI for media lift during backwash.

**Technical Information: Iron Removal Series**

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Tank Size</th>
<th>Media cu. ft. / lbs</th>
<th>Line Size</th>
<th>Valve-head</th>
<th>Installed Unit Size</th>
<th>Water Flow (GPM)</th>
<th>Backwash (GPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EWS-1054-P</td>
<td>10 in.x 54 in</td>
<td>1.4</td>
<td>3/4 - 1”</td>
<td>Digital</td>
<td>10 in. x 63 in</td>
<td>15</td>
<td>7</td>
</tr>
<tr>
<td>EWS-1354-11/2-P</td>
<td>13 in.x 54 in</td>
<td>2.2</td>
<td>11/4 - 11/2</td>
<td>2850</td>
<td>13 in. x 63 in</td>
<td>35</td>
<td>10</td>
</tr>
</tbody>
</table>

**Caution:** Please note the following:

- Proper specifications of tank valve and media will be the key to your success with the proven media. Proper sizing of the valve and backwash flow against the proper tank size and water service flow rate will result in satisfactory media performance. (Be sure the valve has adequate water supply for full backwash cycle.)
- If the media is not properly backwashed it will not lift the 20% necessary to break loose the contaminants of particulate hydrogen sulfide, iron and manganese. Without proper backwash (we recommend up to a daily backwash) you will slowly foul the bed and make the media useless. Therefore know your water problems and conditions, your PSI and GPM.

**Limitations and solutions:** See additional information on problems and their solutions. Direct any inquiries to your local wholesaler or manufacturer’s representative. Manufacturer will accept faxed questions to assist in technical support. Due to the weight of the media, freight should be quoted along with any pricing.

**MEDIA SPECIFICATIONS:**

- Color: Black
- Odor/Taste: none
- Physical Form: Granular
- Screen Size: 8-20 (US mesh)
- Specific Gravity: 1.93
- Bulk Density (pounds/cu. ft.): 120
- Life Expectancy: 10 - 15 % attrition per year (due to lost media fines in the backwash cycle)
- pH Range: 5.0 - 9.0 (best performance - 6.5 pH and higher)
- PSI and Flow Rate Required: Minimum 40 PSI; Minimum 8 GPM (1054 tank), 12 GPM (1354 tank)

Units do not include stainless covers and all units must be assembled on site due to excessive shipping weight. Simple instructions for proper loading and assembly, install and start-up available with each unit.
IRON REMOVAL MEDIA REMOVAL CAPACITIES (per cubic foot)

***Hydrogen sulfide: 10 mg/1; ***Iron: 10 mg/1; ***Manganese: 8 mg/1

REMOVAL CAPACITIES BASED ON PROPER APPLICATION AND INSTALLATION, AND
PRESSURE AND FLOW RATE CHARACTERISTICS - SEE ADDITIONAL INFORMATION

Caution: Filters or media representing percentages of removal “up to” do not provide the minimum removal rate or the quantitative amount that can actually be removed. In addition, any removal may be over a limited amount of water and may meet only the minimum of the standard for that filter. Better marketing does not provide better consumer protection.

IRON REMOVAL HIGH PURITY MEDIA

Media is a high capacity filtration media for the removal of iron, manganese and hydrogen sulfide. This media works on the principle of a catalyst reaction, but itself remains relatively unchanged. This reaction is accompanied with the formation of an intermediate compound or compounds, such as higher oxides of manganese, so that by the alternative composition and decomposition of them on the media is left unchanged. As a result, the iron, manganese and hydrogen sulfide are actually oxidized in the media and simple backwashing cleans the bed. No chemical regeneration is required, nothing is imparted into the drinking water and an essentially unlimited removal capacity for low containment concentrations.

Media works equally well on three main classes of water.

1) Those waters which begin to precipitate hydrogen sulfide, iron and manganese on exposure to air, usually hard water containing carbonates and/or sulfates.

2) Those waters which will hold hydrogen sulfide, iron and manganese in solution indefinitely, even when chlorinated and/or aerated. The elements usually combine with organic acids and appear in the colloidal form.

3) Those waters which contain hydrogen sulfide, iron and manganese, or all, in each of the above forms and therefore deposit a part, but not all, of the element after aeration, chlorination or ozone, and cannot be removed entirely by simple filtration. Media has been proven to be an excellent compliment to aeration, chlorination and/or ozone. Media acts not only as a turbidity filter, but also as a polishing filter for any breakthrough of iron, manganese and hydrogen sulfide with the use of other pre-treatment methods.

HEME IRON - PINK IRON

This iron removal media cannot completely remove organic complexes from biological degradation of vegetable and/or from bacterial metabolism. When well water is sporadically or totally untreatable by standard or simple methods and samples appear yellow or pink but have little or no settled iron oxide, one should suspect heme iron. Heme iron takes on many different forms depending on the organism available for it to complex with. This problem seems to be localized in certain areas in the United States. Heme iron stays in solution rather than settling out due to the iron complex and is unusable for oxidation.

In most cases this media can remove all of the free iron and greater than 80% of heme iron. The resulting residual of heme iron can be run through a CWL or EWS System (check specifications). The carbon will absorb the remaining organic heme iron complex.

TECHNICAL SPECIFICATIONS AND DISCUSSION ON POTENTIAL PROBLEMS AND THEIR SOLUTIONS.

LOW pH: Iron removal media will work extremely well between a pH range of 5.0 to 9.0. However, the higher the pH the higher the oxidation capabilities. A pH of 6.5 or higher is considered ideal. A pH lower than 6.5 may require extra media for contact time. Another approach may be a pH neutralizing filter prior to the media to increase the pH to 6.5 or greater. Please reference the information on the EWS pH balancing systems for correction of low pH problems.

IRON AND/OR MANGANESE BACTERIA: The iron and/or manganese bacteria keeps the media from its oxidation capabilities. The ideal solution may be to super-chlorinate the well and piping system for 24 hours, then establish an on-going residual chlorination system of your choice to control the bacteria. Once you have controlled the bacteria there will be no problem removing the hydrogen sulfide, iron and manganese with the media, otherwise unchecked this bacterial problem would foul the media and render it useless.

EXCESSIVE MANGANESE: While iron removal media is effective on hydrogen sulfide, iron and manganese (see Removal Capacity), the reaction time on manganese is slower. Without the presence of other problems, this does not generally present a problem up to 8 parts per million. However, if levels are excessively high you may need to extend the dwell time over the media as long as there is also proper lift of the media for backwashing.

TANNINS: Tannins are not common. When present, tannins often have hydrogen sulfide, iron and/or manganese. To remove tannins, follow the steps as explained with iron/manganese bacteria problems with a holding tank for extended dwell time, then iron removal media to remove the hydrogen sulfide, iron and/or manganese and then the appropriate CWL/EWS System at that point of entry to remove the tannins and chlorine. Tannins will not hurt the iron removal media.
1) Please be advised all the materials and components utilized in producing these POE and POU filtration, drinking water, and reverse osmosis systems comply with, but not limited to, one or more of the following regulating standards:

- NSF STANDARD 14
- FDA 21 CFR 177.1520
- FDA 21 CFR 177.1640
- FDA 21 CFR 177.1350
- FDA 21 CFR 175.105
- CAS # 7440-44-0
- ANSI 304
- CDA C360000
- NSF STANDARDS 60 AND 61
- NSF STANDARD 58
- ANSI 302
- ANSI 316
- FDA 21 CFR 177.2600
- FDA 21 CFR 175.300
- FDA 21 CFR 177.2550
- NSF STANDARD 52
- FDA 21 CFR 177.1620
- NSF STANDARD 18
- FDA 21 CFR 177.2550
- FDA 21 CFR 177.1655
- FDA 21 CFR 177.2800
- FDA 21 CFR 175.300
- FDA 21 CFR 177.2260
- FDA 21 CFR 181.32
- FDA 21 CFR 177.2260
- FDA 21 CFR 177.1950
- FDA 21 CFR 177.2910
- FDA 21 CFR 177.2250
- FDA 21 CFR 177.1680
- NSF STANDARD 53
- NSF STANDARD 55

Most of these standards relate to the Code of Federal Regulations of the United States of America, Title 21, Charter 1, Subchapter B set forth by the U.S. Food and Drug Administration. The NSF (National Sanitation Foundation) standards correlate to materials and potable water.

2) Without exception every component included in any and/or all of our systems are compliant for food and beverage contact and/or meet or comply with the most current appropriate and applicable standards without exception.

3) Performance Guidelines:
Follow EWS, Inc. detailed installation, start-up and maintenance instructions and follow all local plumbing codes. The feed water must comply with the following conditions for the system capabilities, compliances and warranties to remain valid.

- Water Temperature Range: 40-80°F; Water Pressure: 40-75PSI; All systems must be connected to main or cold water supplies (hot water not to flow through systems). Units always contain water-Do not allow unit to freeze. Do not use where water is micro-biologically unsafe or with water of unknown quality without adequate disinfection before or after the unit.

- Reverse Osmosis Systems Only - Never allow reject water to be stopped, without the reject water flow or improper drain connection impurities may build up on membrane. POE Units - Do not prevent backwash or brine lines to be stopped or restricted.

4) Factory Preparation:
All systems are factory prepared and checked to assure proper function and if applicable, quality tests of product water produced to assure that minimum standards of rejection have been met, tests of specific components to assure correct function and flow rate measurements to assure efficiency specifications are met.

5) Know your water:
- If on a municipal system, large or small, it is your right as a consumer to have access to the most recent test results and to expect adherence to federal guidelines, as well as, any state or local requirements. Any problems should be reported to the appropriate agencies. Please acquire those municipal test results to become an informed consumer.

- If on your own individual well, have your water completely and independently tested. Local code may require a simple test for coliform bacteria to approve a well, however you may be unaware of potential problems for you and/or your home. Review our section on well water testing and applications in our complete catalog or visit our website.

The contaminants or other substances removed or reduced by these and other water filtration devices are not necessarily in your water. Performance may vary based on local water conditions. To confirm the presence of any contaminants, have your water supply analyzed by an independent and approved facility. Not intended for use where water is micro-biologically unsafe or with water of unknown quality without adequate disinfection before or after unit(s). To ensure proper operation, follow installation procedures. Filter maintenance schedule will vary and must be replaced, as necessary, as determined by usage and local water conditions. Contaminants and/or constituents, primary and secondary and aesthetic aspects of water, as known and acknowledged by the EPA and The Clean Water Act, will be the only basis with which test results and information will be accepted and validated.

Proper application (systems being used for the correct reason), setup, installation, startup and maintenance are crucial to insure proper water quality and warranties. Taste and aesthetics are personal and subjective. See additional information for all filtration removal capabilities, r.o. rejection rates and system tolerances.
## CONDITIONS

<table>
<thead>
<tr>
<th>Source water - Test Results</th>
<th>APPLICATIONS</th>
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<tbody>
<tr>
<td></td>
<td>Based on Test Results</td>
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### Pre-Treatment:

<table>
<thead>
<tr>
<th>Microorganism problems</th>
<th></th>
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<tbody>
<tr>
<td>Coliform/Bacterial/E-Coli</td>
<td>Chlorination</td>
</tr>
<tr>
<td>Iron/manganese bacteria</td>
<td>Ozonation</td>
</tr>
<tr>
<td>Tannins</td>
<td></td>
</tr>
</tbody>
</table>

### Oxidation/aeration (as needed)

<table>
<thead>
<tr>
<th>(as needed)</th>
<th></th>
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<tbody>
<tr>
<td>Iron Removal</td>
<td>Storage tank</td>
</tr>
<tr>
<td>Manganese</td>
<td>Pipe length</td>
</tr>
</tbody>
</table>

### pH Balancing (as needed):

<table>
<thead>
<tr>
<th>Low pH, corrosive, acid water</th>
<th>Custom Blended</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH Increasing Reagent Media</td>
<td>pH Increasing</td>
</tr>
</tbody>
</table>

### Pre-Sediment Filtration (as needed):

<table>
<thead>
<tr>
<th>Silt, dirt, heavy particulate matter</th>
<th>5-micron Pre-Sediment Filter</th>
</tr>
</thead>
</table>

### Point of Entry Filtration (as needed):

<table>
<thead>
<tr>
<th>Chlorine, VOC’s, herbicides, pesticides, solvents, odor, taste, clarity</th>
<th>CWL Series - Filtration only</th>
</tr>
</thead>
<tbody>
<tr>
<td>EWS Series - Filtration and Conditioning vs. Softening</td>
<td></td>
</tr>
</tbody>
</table>

### Point of Use Filtration (as needed):

<table>
<thead>
<tr>
<th>Dependent upon test results, removal and/or safeguard, as applicable</th>
<th>Various Drinking Water Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUGAC250, UU250 or Reverse Osmosis Units</td>
<td></td>
</tr>
</tbody>
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**Pre-Treatment:**

The need to disinfect, remove iron, manganese, pre-filter, balance pH and/or generally prepare the water for consumption, additional filtration and/or to minimize water issues for use in the home.

**Point of Entry: Whole-Home Filtration and Conditioning vs. Softening**

Softeners strictly soften water and have their application. However, softeners replace valuable calcium and magnesium minerals (non-contaminants) with sodium or potassium chloride. The resultant water may be of lesser water quality, has warranty issues with other products and may be legally restricted due to the damaging brine discharge. The EWS Series of appliances keeps the calcium and magnesium minerals (refer to all bottled spring waters) instead of replacing them with salts. Minerals are attracted to each other, not the hard surfaces. The result; easier wipe off of water spots, no sediment build-up in water heater and pipes, use less soaps with no slippery/slimy feeling, no brine discharge or salt bags to lift. Most importantly, the water is drinkable.

**Point of Use: Drinking Water Filtration Systems vs. Reverse Osmosis Systems**

Both types of systems have their advantages, capabilities, and in the case of reverse osmosis, some disadvantages. EWS, Inc. can provide either system with UV disinfection options.

All systems should be correctly applied based on water issues, concerns and/or consumer preference.