

AQUALINE

HR Series

SOFTENING CARTRIDGE

SIZE: 9 3/4 in.: Fits all standard 10 in. housings. (Also available in 2.5" X 20" and Big Blue 10" and 20")

POST FILTER: 20 micron spun-bonded polypropylene.

MEDIA:
HR-1 Fine mesh strong acid cation Na+ form
HR-2 High capacity weak acid cation Na+ form
HR-3 Selective chelating resin Na+ form

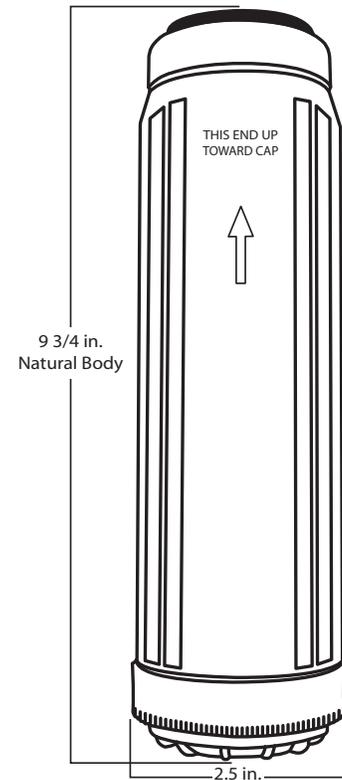
PRE-FILTER: 100 micron reticulated poly foam.

FLOW RATE: 0.1 - .5 gpm

CAPACITY:
HR-1 *15000 ppm gallons
HR-2 *12000 ppm gallons
HR-3 *6000 ppm gallons

pH RANGE: 3 - 11

* See details below



Technical Information

The HR Series are industrial cartridges designed for various softening and/or selective divalent ion removal. Each contains a highly converted virgin cation exchanger designed to operate under a variety of feed conditions. The can be used for heavy metal removal from waste streams or for precious metal recovery from certain plating baths or rinse streams.

Each functions as a softener for the removal of scale causing ions and iron from feed streams up to 300 000 TDS background salt levels. In addition, each of the HR Series filters utilizes different chemistry and operates under different conditions.

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HR-1

The HR-1 cartridge is a regenerable softening cartridge constructed totally of FDA grade materials and media. It contains a highly converted sodium form strong acid fine mesh cation exchanger and has a demonstrated capacity of 15000 ppm for hardness when run on 500 TDS water containing 250 ppm hardness to a 1 grain hardness break. Flow rates up to 1 gpm can be run with essentially no hardness leakage. However, higher capacity will be realized at flow rates of 0.25 gpm.

The HR-1 can be used for hardness and iron removal prior to distillers, steamers, humidifiers, ice and beverage makers, or as a pretreatment for R/O's. The HR-1 can also be used for heavy metal removal such as lead, copper, trivalent chrome, etc... from rinses as low as pH 3. A fresh HR-1 cartridge will exchange virtually all cations (except sodium) in feed streams up to about 5000 ppm TDS.

Regeneration is accomplished with sodium (or potassium) chloride brine

HR-2

The HR-2 cartridge is a non-regenerable softening and heavy metal removal cartridge constructed totally from FDA grade materials and media. It may be used in drinking water applications as a highly selective metal scavenger although it has not been tested for capacity for this application.

The HR-2 contains a purified carboxylic weak acid exchanger fully converted to sodium form and has a demonstrated capacity for 12000 ppm hardness when run on 1000 ppm total hardness feed to a 5 ppm hardness break. This cartridge can be run with background TDS up to 25000 ppm. Higher pH (above 7) and slower flow rates (<0.25 gpm) will favor higher capacity for this cartridge. Do not use the HRC-2 with influent pH < 4.5.

The HR-2 is highly selective for heavy metals, particularly copper, and can remove them even in high TDS salt backgrounds. Heavy metals and iron will be selectively removed over hardness at a pH of 4.5 to 7.0. This makes the HR-2 very useful for cleaning up metal waste streams for dumping or discharge, or for polishing the hardness from moderate TDS streams for similar applications mentioned for the HR-1.

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HR-3

The HR-3 cartridge is a non-regenerable softening and heavy metals removal cartridge designed for industrial use only. It contains a highly converted sodium form chelating resin with a demonstrated capacity to remove metals and hardness to ppb levels, even with very high TDS monovalent salt backgrounds. The HR-3 will remove heavy metals from streams as low as pH 3.5 without interference from calcium or magnesium ions. However, the resin is less selective for heavy metals vs. hardness as the pH goes up. The selectivity for metals for the HRC-3 is listed below:

Acid pH: H > Fe > Pb > Cu > U > Zn > Al > Mg > Ca > Cd > Ni > Co > Na > Ba

Alkaline pH: Cd > Mg > Ca > Sr > Al > Ba > Na or K

The HR-3 is highly selective for heavy metals and is ideal for scavenging traces of metals from neutralized plating waste or rinse streams. The HR-3 can also be used for precious metal recovery from leaches or neutral waters and can even break chelated and anion complexes. Flow rates of 0.1 - 0.2 gpm are recommended.

The HR-3 can be customized for specific applications. Ask our technical staff for details.

