LENNTECH
info@lenntech.com
www.lenntech.com
Tel. +31-15-261.09.00
Fax. +31-15-261.62.89

AMBERLITE™ IRA743

Chelating Resin

AMBERLITE IRA743 is a unique ion exchange resin specifically designed and used to remove boric acid and borate from water, magnesium brine or other solutions under a variety of conditions.

The presence of boron compounds, even in very small concentration, is frequently a concern in potable and irrigation water, in ultrapure water as used in the semiconductor industry, and in other chemical processes.
Boric acid can be removed from water with conventional ion exchange resins, but the exchange is not selective and therefore impractical. The selectivity of AMBERLITE IRA743 for boric acid is so high, that removal is very efficient irrespective of the background salinity of the solution.

AMBERLITE IRA743 owes its high selectivity for boric acid to a unique, sugar-like active group. The borate ion makes a very stable complex with the glucamine group, whilst other anions do not react at all.

PROPERTIES

Matrix	Macroporous polystyrene
Functional group	N-Methylglucamine
Physical form	Beige-coloured beads
Ionic form as shipped	Free Base (FB)
Total capacity	0.7 eq/L
Moisture holding capacity	48 to 54 % (FB form)
Shipping weight	700 g/L (43.7 lbs/ft^3)
Particle size	
Harmonic mean size	0.500 – 0.700 mm
Uniformity coefficient	1.6
< 0.300 mm	1 % max

SUGGESTED OPERATING CONDITIONS

Maximum operating temperature	75 °C
Flow rate	4 to 30 BV/h
Regeneration	Several regeneration procedures are available depending on the application

APPLICATIONS

a. Removal from irrigation water

Boron is known to improve plant growth, but within tight limits: excess boron has a very detrimental effect on agriculture. The usually considered limit is 1 mg/L.

b. Drinking water

For boron removal from drinking water, the use of AMBERLITE PWA10 is recommended.

c. Ultra-pure water

Boron is used as a dopant in the production of semiconductors. Therefore waste water in this industry contains variable amounts of B. However, boron must be totally absent from the water used in certain production steps. AMBERLITE IRA743 can reduce boron concentrations to ng/L (parts per trillion) levels.

d. Removal from waste

Boron is present in ceramic tiles and enamels used to decorate them. These boron compounds can be selectively removed from the waste streams using AMBERLITE IRA743.

e. Purification of magnesium brine

Magnesium is produced by electrolysis. The presence of boron prevents the coalescence of magnesium during the electrolysis of fused Mg salts. The brines must be decontaminated, bringing the B concen-tration from about 100 to less than 10 mg/L. Another excellent field for the use of AMBERLITE IRA743 which can operate even in a solution with extremely high salt background.

The above applications are examples, and each of them require a specific regeneration procedure. Potential users should contact Rohm and Haas for more details.

LIMITS OF USE

Rohm and Haas manufactures special resins for food processing and potable water applications. As governmental regulations vary from country to country, it is recommended that potential users seek advice from their AMBERLITE representative in order to determine the best resin choice and optimum operating conditions

HYDRAULIC CHARACTERISTICS

Figure 1 shows the pressure drop data for AMBERLITE IRA743 in water, as a function of service flow rate and water temperature. Pressure drop data are for clean, classified beds which have not been contaminated with suspended solids during the service run. If the bed accumulates solids, the pressure drop will increase.
Figure 2 shows the bed expansion of AMBERLITE IRA743, as a function of backwash flow rate and water temperature.

Figure 1 : Bed Expansion

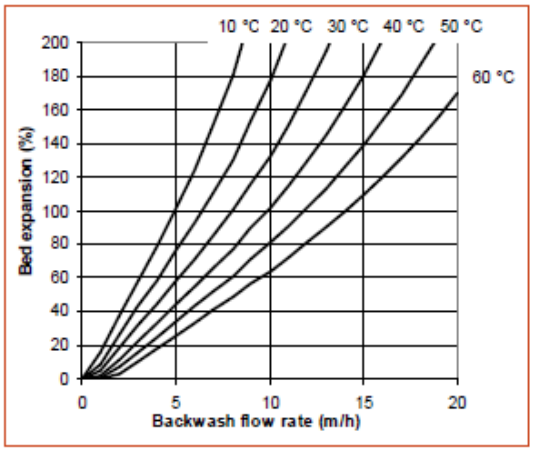
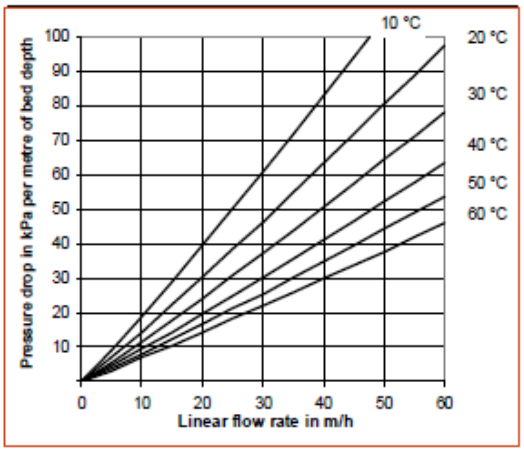


Figure 2 : Pressure Drop



ROHM AND HAAS

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Ion exchange resins and polymeric adsorbents, as produced, contain by-products resulting from the manufacturing process. The user must determine the extent to which organic by-products must be removed for any particular use and establish techniques to assure that the appropriate level of purity is achieved for that use. The user must ensure compliance with all prudent safety standards and regulatory requirements governing the application. Except where specifically otherwise stated, Rohm and Haas Company does not recommend its ion exchange resins or polymeric adsorbents, as supplied, as being suitable or appropriately pure for any particular use. Consult your Rohm and Haas technical representative for further information. Acidic and basic regenerant solutions are corrosive and should be handled in a manner that will prevent eye and skin contact. Nitric acid and other strong oxidising agents can cause explosive type reactions when mixed with Ion Exchange resins. Proper design of process equipment to prevent rapid buildup of pressure is necessary if use of an oxidising agent such as nitric acid is contemplated. Before using strong oxidising agents in contact with Ion Exchange Resins, consult sources knowledgeable in the handling of these materials.

Rohm and Haas Company makes no warranties either expressed or implied as to the accuracy or appropriateness of these data and expressly excludes any liability upon Rohm and Haas arising out of its use. We recommend that the prospective users determine for themselves the suitability of Rohm and Haas materials and suggestions for any use prior to their adoption. Suggestions for uses of our products of the inclusion of descriptive material from patents and the citation of specific patents in this publication should not be understood as recommending the use of our products in violation of any patent or as permission or license to use any patents of the Rohm and Haas Company and its affiliates. Material Safety Data Sheets outlining the hazards and handling methods for our products are available on request.

LENNTECH
Water treatment and air purification
Rotterdamseweg 402M, 2629HH Delft, The Netherlands
Tel: +31(0)15 261 0900 / Fax: +31(0)15 261 6289
info@lenntech.com / http://www.lenntech.com