AMBERLITE™ IRC86
Industrial Grade Weak Acid Exchanger

AMBERLITE IRC86 resin is a gel type high capacity weak acid cation exchange resin containing carboxylic acid groups. The principal application of this resin is dealkalization of industrial waters. AMBERLITE IRC86 resin, in the hydrogen cycle, removes hardness associated with alkalinity. When used in combination with a strong acid cation exchanger in demineralizer systems, it reduces acid regenerant consumption. Due to its high swelling, it is not recommended to use AMBERLITE IRC86 in applications where the resin is fully converted from H⁺ to Na⁺ form.

PROPERTIES

- Physical form: Clear amber spherical beads
- Matrix: Gel polyacrylic copolymer
- Functional group: Carboxylic acid
- Ionic form as shipped: H⁺
- Total exchange capacity: ≥ 4.10 eq/L (H⁺ form)
- Moisture holding capacity: 47 to 53 % (H⁺ form)
- Shipping weight: 790 g/L
- Particle size:
  - Uniformity coefficient: ≤ 1.80
  - Harmonic mean size: 0.580 to 0.780 mm
  - < 0.300 mm: 2.0 % max
- Reversible swelling:
  - H⁺ → Na⁺ ≤ 100 %
  - H⁺ → Ca²⁺ ≤ 15 %
  - H⁺ → Mg²⁺ ≤ 50 %

[*] Contractual value
Test methods are available on request.

SUGGESTED OPERATING CONDITIONS

- Maximum operating temperature: 100°C
- Minimum bed depth: 700 mm
- Service flow rate: 5 to 70 BV/h
- Regenerant:
  - HCl
  - H₂SO₄
  - Level: 104 to 110 % of operating capacity
  - Concentration (%): 2 to 5, 0.5 to 0.7
  - Minimum contact time: 30 minutes
  - Slow rinse: 2 BV at regeneration flow rate
  - Fast rinse: 2 to 4 BV at service flow rate

*1 BV (Bed Volume) = 1 m³ solution per m³ resin
PERFORMANCE

Operating capacity
The operating capacity of AMBERLITE IRC86 resin is a function of analysis, temperature and service flow rate of water. Data providing information to calculate the capacity are given in the engineering data sheet (EDS 0235 A).

Regeneration
AMBERLITE IRC86 resin is readily regenerated with little over stoichiometric amounts of strong acids. If sulfuric acid is used, care must be taken to apply a low concentration of $H_2SO_4$ (≤ 0.7 %) in order to avoid calcium sulfate precipitation.

LIMITS OF USE

AMBERLITE IRC86 resin is suitable for industrial uses. For all other specific applications such as pharmaceutical, food processing or potable water applications, it is recommended that all potential users seek advice from Rohm and Haas in order to determine the best resin choice and optimum operating conditions.

HYDRAULIC CHARACTERISTICS

Figure 1 shows the bed expansion of AMBERLITE IRC86 resin as a function of backwash flow rate and water temperature. Figure 2 shows the pressure drop data for AMBERLITE IRC86 resin, as a function of service flow rate and water temperature. Pressure drop data are valid at the start of the service run with clear water and a correctly classified bed. The hydraulic curves are for $H^+$ form resin.

![Figure 1: Bed Expansion](image1)
![Figure 2: Pressure Drop](image2)

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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 oxidizing 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.

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