

Product Data Sheet

AmberSep™ IRC747 UPS Chelating Resin

Industrial-grade, Uniform Particle Size, Chelant for Chemical Processing

Description

AmberSep™ IRC747 UPS Chelating Resin is a uniform particle size resin of macroporous structure. Its polystyrenic matrix, crosslinked with divinylbenzene, contains amino-phosphonic groups. The chemical nature of these groups is such that they form complexes with metal ions. The narrow particle size distribution affords an exceptional pressure drop profile.

AmberSep™ IRC747 UPS features very high operating capacity for calcium and is especially useful when treating brines that do not have a very high strontium content. Under these conditions, the resin offers an improved cycle time, displaying also very good removal efficiency for barium and strontium.

AmberSep™ IRC747 UPS is also used for metal recovery in hydrometallurgical applications.

Applications

- Chlor-alkali (brine purification)
- Zinc separation
- · Lead separation

Typical Properties

Physical Properties			
Copolymer	Styrene-divinylbenzene		
Matrix	Macroporous		
Туре	Chelant		
Functional Group	-CH ₂ -NH-CH ₂ -PO ₃ -Na ₂		
Physical Form	Beige, hard, opaque, spherical beads		
Chemical Properties			
Ionic Form as Shipped	Na [⁺]		
Total Exchange Capacity	≥ 1.75 eq/L		
Water Retention Capacity	64 – 69%		
Particle Size §			
Particle Diameter	$550 \pm 50 \mu m$		
Uniformity Coefficient	≤1.2		
Stability			
Swelling	$H^+ \rightarrow Na^+: 45\%$		
Density			
Particle Density	1.10 – 1.14 g/mL		
Shipping Weight	755 g/L		

[§] For additional particle size information, please refer to the <u>Particle Size Distribution Cross Reference Chart</u> (Form No. 45-D00954-en).

Suggested Operating Conditions

Maximum Operating Temperature	80°C (180°F) in non-aqueous media
Operating pH Range	Depends on the application
Bed Depth, min.	700 mm (2.3 ft)
Operating Flowrate	Up to 40 BV*/h (5 gpm/ft ³)
Regeneration	1 – 2N HCI
Conversion to Na ⁺ form	1-4% NaOH at flowrate of 2-4 BV/h

^{* 1} BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gal per ft³ resin

Hydraulic Characteristics

Bed expansion of AmberSep™ IRC747 UPS Chelating Resin as a function of backwash flowrate and fluid specific gravity is shown in Figure 1.

Pressure drop data for AmberSep™ IRC747 UPS as a function of service flowrate at 40°C (104°F) in brine is shown in Figure 2.

Figure 1: Backwash Expansion
Specific gravity = 1.00, 1.10, 1.17

gpm/ft²
100

sp.gr.=1.17 sp.gr.=1.10

80

80

80

0 sp.gr.=1.17 sp.gr.=1.10

80

100

100

100

100

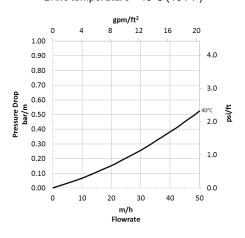
100

15

100

15

Figure 2: Pressure DropBrine temperature = 40°C (104°F)



Application Information

The characteristic reaction of AmberSep™ IRC747 UPS Chelating Resin is:

$$R-CH_2-NH-CH_2-PO_3Na_2 + M^{2+} \rightarrow R-CH_2-NH-CH_2-PO_3M + 2 Na^+$$

The relative affinity of this resin for the various cations decreases in the order shown below:

$$Pb^{2+} > Cu^{2+} > Zn^{2+} > Ma^{2+} > Ca^{2+} > Cd^{2+} > Ni^{2+} > Co^{2+} > Sr^{2+} > Ba^{2+}$$

The resin can operate in a neutral, acidic, or alkaline medium, but since its capacity depends on the pH, the following minimum pH values are recommended for various cations:

Minimum pH	2	2.5	3	4.5
Cations	Cu ²⁺	Zn ²⁺	Cd ²⁺	Mg ²⁺
	Pb ²⁺		Ca ²⁺	Ni ²⁺
				Co ²⁺

Application Information (Cont.)

AmberLite™ IRC747 UPS Chelating Resin is a very efficient resin for:

Brine Purification

 Removal of Ca, Mg, and other metals present in trace quantities (a few ppm) in concentrated brine, e.g., chlor-alkali electrolysis

Zinc Separation

 Separation of zinc from media; for example, in corrosion preventive products in cooling towers

Lead Separation

 Separation of lead from industrial effluents, such as waste from oil refineries and battery factories, or solvents and wastes from the manufacture of paints and printing inks

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Please be aware of the following:

WARNING: Oxidizing agents such as nitric acid attack organic ion exchange resins
under certain conditions. This could lead to anything from slight resin degradation
to a violent exothermic reaction (explosion). Before using strong oxidizing agents,
consult sources knowledgeable in handling such materials.

Have a question? Contact us at:

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