# AMBERLITE® IRC747

Industrial Grade Chelating Resin

## PRODUCT DATA SHEET

AMBERLITE IRC747 is a resin of macroporous structure. Its polystyrenic matrix, crosslinked with DVB, contains aminophosphonic groups. The chemical nature of these groups is such that they form complexes with metal ions.

The operating capacity for Calcium can be 20 % more than, and the capacity for Strontium and Barium as much as double, that for Duolite C467. This brings improved cycle times, especially for brine with higher Sr content.

## PROPERTIES

| | |
|---|---|
| Matrix | Styrene divinylbenzene copolymer |
| Functional groups | $-CH_2-NH-CH_2-PO_3Na_2$ |
| Physical form | Beige beads |
| Ionic form as shipped | $Na^+$ |
| Total exchange capacity [1] | ≥ 1.75 eq/L ($Na^+$ form) |
| Moisture holding capacity [1] | 64 to 69 % ($Na^+$ form) |
| Specific gravity | 1.10 to 1.14 ($Na^+$ form) |
| Shipping weight | 755 g/L (47.1 lb/ft$^3$) |
| Harmonic mean size | 0.520 - 0.660 mm |
| Uniformity coefficient | ≤ 1.8 |
| Fine contents [1] | < 0.300 mm : 2.0% max |
| Coarse beads | > 1.000 mm : 5.0% max |
| Maximum reversible swelling | $H^+ \rightarrow Na^+$ : 45 % |

[1] *Contractual value*

*Test methods are available on request*

## SUGGESTED OPERATING CONDITIONS

| | |
|---|---|
| Maximum operating temperature | 80°C (175 °F) |
| Minimum bed depth | 700 mm (28 inches) |
| Service flow rate | up to 40 BV/h (5 gpm/ft$^3$) |
| Regeneration | HCl (1N to 2N) |
| Conversion to $Na^+$ form | NaOH (1N to 2N) |
| Operating pH | Function of applications |

** 1 BV (Bed Volume) = 1 m$^3$ solution per m$^3$ resin*

## PERFORMANCE

### Characteristic Reaction

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

$$R\text{-}CH_2\text{-}NH\text{-}CH_2\text{-}PO_3M + 2\ Na^+$$

## RELATIVE AFFINITY

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

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

## OPERATING PH RANGE

The resin can operate in a neutral, acidic or alkaline medium, but since its capacity depends on the pH, we recommend the following minimum pH values.

| | | | | |
|---|---|---|---|---|
| pH minimum | 2 | 2.5 | 3 | 4.5 |
| Cations | $Cu^{2+}$ | $Zn^{2+}$ | $Cd^{2+}$ | $Mg^{2+}$ |
| | $Pb^{2+}$ | | $Ca^{2+}$ | $Ni^{2+}$ |
| | | | | $Co^{2+}$ |

## APPLICATIONS

### Brine Purification

AMBERLITE IRC747 is a very efficient resin for the 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 in which this metal is present (corrosion preventive products in cooling towers).

### Lead separation

Separation of lead from industrial effluents (oil refinery and battery factory wastes, solvents and wastes from the manufacture of paints and printing inks)

## HYDRAULIC CHARACTERISTICS

Figure 1 shows the bed expansion of AMBERLITE IRC747 as a function of backwash flow rate and temperature.

Figure 1 : % Bed Expansion in Water

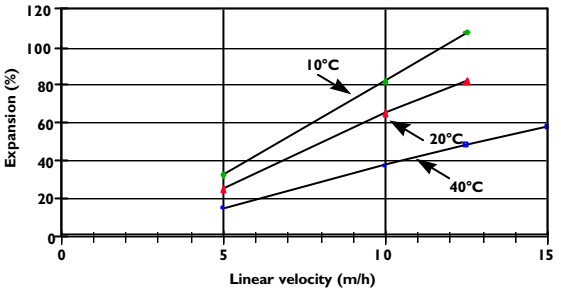
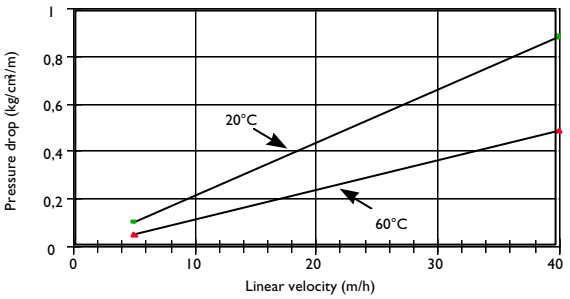



Figure 2 provides the pressure drop profile for AMBERLITE IRC747 in brine.

Figure 2 : Pressure Drop in Brine




## LIMITS OF USE

AMBERLITE IRC747 is suitable for industrial uses. For 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.

All our products are produced in ISO 9002 certified manufacturing facilities.

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