# AMBERLITE® IRN150

**Industrial Nuclear Grade Mixed Bed Resin**

PRODUCT DATA SHEET

AMBERLITE IRN150 is a mixture of uniform particle size gelular polystyrene cation and anion exchange resins. AMBERLITE IRN150 resin as supplied contains a stoichiometric equivalent of the strongly acidic cation and the strongly basic anion exchange resins. It is supplied in the fully regenerated $H^+/OH^-$ form. The resin combines the properties of high capacity and excellent resistance to bead fracture from attrition and osmotic shock.

## PHYSICAL CHARACTERISTICS

| | |
|---|---|
| Physical form | Uniform particle size spherical beads |
| Shipping weight | 690 g/L |
| Harmonic mean size | Cation : 650 ± 50 µm - Anion : 630 ± 50 µm |
| Uniformity coefficient | ≤ 1.2 (for each component) |
| Particle size [1] | < 0.300 mm : 0.2 % max<br>> 1.180 mm : 2.0 % max |
| Whole beads | 95 % minimum |
| Breaking weight (average) | ≥ 350 g/bead |
| > 200 g/bead | ≥ 95 % |

## CHEMICAL CHARACTERISTICS

| | **Cation resin** | **Anion resin** |
|---|---|---|
| Matrix | Polystyrene DVB gel | Polystyrene DVB gel |
| Functional groups | Sulphonic acid | Trimethylammonium |
| Ionic form as shipped | $H^+$ | $OH^-$ |
| Total exchange capacity [2] | ≥ 1.9 eq/L ($H^+$ form) | ≥ 1.2 eq/L ($OH^-$ form) |
| Strong base capacity [1] | - | ≥ 90 % |
| Moisture holding capacity [1] | 49 -55 % ($H^+$ form) | 54 - 60 % ($OH^-$ form) |
| Ionic conversion [1] | 99 % min $H^+$ | 95 % min $OH^-$ |
| $CO_3^=$ | - | 5 % max |
| $Cl^-$ | - | 0.1 % max |
| $SO_4^=$ | - | 0.1 % max |

[1] *Contractual value*

[2] *Average value calculated from statistical quality control*

*Test methods and SQC charts are available on request.*

## PURITY

AMBERLITE IRN150 resin is designated as a nuclear grade resin and is manufactured using special processing procedures. These procedures, combined with a Rohm and Haas process to reduce the chloride content of the anion component, produce material of the ultimate purity and yield a product meeting the exacting demands of the nuclear industry.

AMBERLITE IRN150 resin is recommended in any non regenerable mixed bed application where reliable production of the highest quality water is required and where the "as supplied" resin must have an absolute minimum of ionic and non ionic contamination.

| Purity | Cation | Anion |
|---|---|---|
| | mg/kg dry resin | |
| Al | ≤ 50 | ≤ 50 |
| Ca | ≤ 50 | ≤ 50 |
| Co | ≤ 30 | ≤ 30 |
| Cu | ≤ 10 | ≤ 10 |
| Fe | ≤ 50 | ≤ 50 |
| Hg | ≤ 20 | ≤ 20 |
| K | ≤ 40 | ≤ 40 |
| Mg | ≤ 50 | ≤ 50 |
| Na | ≤ 50 | ≤ 20 |
| Pb | ≤ 10 | ≤ 10 |
| Total Cl | | ≤ 500 |
| $SiO_2$ | | ≤ 100 |
| Total $SO_4$ | | ≤ 600 |

## APPLICATIONS & RECOMMENDED OPERATING CONDITIONS

The purity and physical stability of AMBERLITE IRN150 resin provides unsurpassed perform-ance in nuclear applications such as decontamination of primary water.

AMBERLITE IRN150 resin can also be used for a variety of radwaste applications.

Minimum bed depth _____ 800 mm
Maximum operating temperature _____ 60 °C
Service flow rate _____ 8 to 50 BV*/h
Service velocity _____ 60 m/h maximum

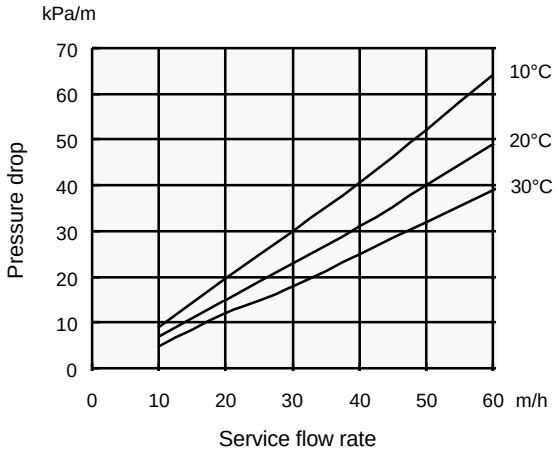
** 1 BV (Bed Volume) = 1 $m^3$ solution per $m^3$ resin*

## HYDRAULIC CHARACTERISTICS

### Pressure drop

The approximate pressure drop for each meter of bed depth of AMBERLITE IRN150 in normal downflow operation at various temperatures and flow rates is shown in the graph below.

Figure 1 : Pressure drop




## RESIN HANDLING

To retain the high purity standards of nuclear grade resins, deionised water should be used for all resin handling. Contact of the resin with air should also be minimised to avoid $CO_2$ pickup and subsequent loss of capacity of the anion resin

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