



## AMBERLITE™ IRN97 H Resin

Nuclear Grade Strong Acid Cation Resin for the power industry

### Description

AMBERLITE™ IRN97 H Resin is a uniform particle size, high capacity strong acid gel polystyrene cation exchanger supplied in the hydrogen form. This resin is Nuclear Grade and processed to the highest purity standards to meet the most stringent requirements of the nuclear power industry. AMBERLITE IRN97 H Resin contains a minimum of 99% of its exchange sites in the hydrogen form. The uniform particle size and the absence of fine resin beads results in a lower pressure drop compared to conventional resins.

The manufacturing process for this resin is controlled to keep inorganic impurities at the lowest possible level. Special treatment procedures are also used to remove traces of soluble organic compounds. These high standards of resin purity will help keep nuclear systems free of contaminants and deposits, and prevent increases in radioactivity levels due to activation of impurities in the reactor core. AMBERLITE IRN97 H Resin has proved highly effective in the following applications:

#### Primary water treatment

Removal of fission products, activated corrosion products, and suspended matter. It is also used to control the pH of the reactor coolant stream by removing the excess <sup>7</sup>Lithium.

#### Radwaste treatment

Removal of radioactive cations such as <sup>137</sup>Cesium from waste streams.

#### Decontamination

Removal of cationic radioactive material from spent decontaminating solutions.

#### Stream generators blowdown purification

The high capacity of AMBERLITE™ IRN97 H Resin provides a long service cycle in the removal of cationic impurities in the presence of ammonia.

### Typical Physical and Chemical Properties

Physical form	Dark amber translucent spherical beads
Matrix	Polystyrene divinylbenzene copolymer
Functional group	Sulphonic acid
Ionic form as shipped	H <sup>+</sup>
Total volume, min.	2.0 eq/L (47.0 kgr/ft <sup>3</sup> as CaCO <sub>3</sub> )
Moisture retention capacity, min.	45–51%
Shipping density**	800 g/L (50 lbs/ft <sup>3</sup> )
Particle size	
Uniformity coefficient, max.	1.2
< 0.300 mm, max.	0.1%
Whole beads, min.	98%
Friability average, min.	350 g/bead average, min. 95% > 200 g/bead
Ionic conversion, min.	99% H <sup>+</sup>
Metals, dry resin basis, ppm max.	Na: 50, Fe: 50, Al: 50, Cu: 10, Pb: 10

\*\*As per the backwashed and settled density of the resin, determined by ASTM D-2187

## Suggested Operating Conditions

Operating temperature, max.	120°C / 250°F
Minimum bed depth	800 mm (2.6 ft)
Service flow rate	8–50 BV*/h (1.0–6.3 gpm/ft <sup>3</sup> )
Service velocity	60 m/h (25 gpm/ft <sup>2</sup> ) max.

\* 1 BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin or 7.5 gals per ft<sup>3</sup> resin

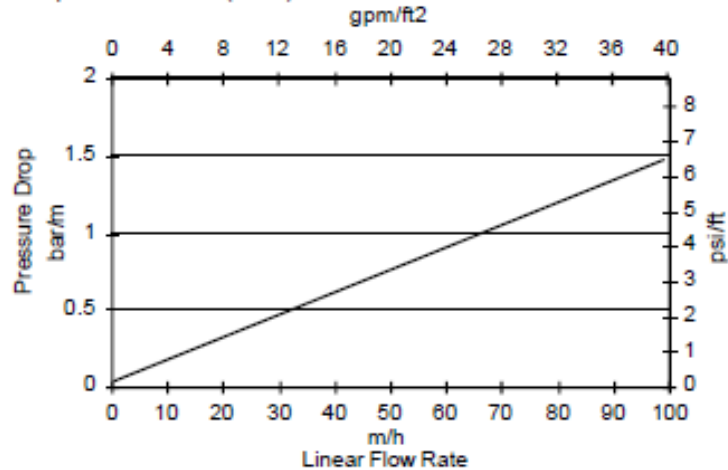
## Hydraulic Characteristics

### Pressure drop

The approximate pressure drop for each meter of bed depth of AMBERLITE™ IRN97 H Resin in normal downflow operation at various temperatures and flow rates is shown in Figure 1. Pressure drop data are valid at the start of the service run with a clear water.

**Figure 1. Pressure Drop**

Temperature = 20° C (68° F)



For other temperatures use:

$$P_T = P_{20^\circ\text{C}} / (0.026 T_{\text{C}} + 0.48), \text{ where } P \equiv \text{bar/m}$$

$$P_T = P_{68^\circ\text{F}} / (0.014 T_{\text{F}} + 0.05), \text{ where } P \equiv \text{psi/ft}$$

## Packaging

25 liter bags or 7 cubic foot drums

## **Product Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

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**DOW™ Ion Exchange Resins**  
For more information about DOW™ resins, call the Dow Water & Process Solutions business:

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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.

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