



AMBERLITE™ IRN150 Resin

Nuclear Grade Mixed Bed Resin for the Power Industry

Description

AMBERLITE™ IRN150 Resin is a stoichiometric equivalent mixture of uniform particle size gel polystyrenic cation and anion exchange resins, supplied in the fully regenerated H⁺/OH⁻ forms. The resin combines the properties of high capacity and excellent physical strength.

AMBERLITE IRN150 Resin is designated as a nuclear grade resin and is manufactured using special processing procedures. These procedures, combined with a Dow process to reduce the chloride content of the anion component, result in material of the ultimate purity to meet the exacting demands of the nuclear industry.

AMBERLITE IRN150 Resin is recommended for use 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. The purity and physical stability of AMBERLITE IRN150 Resin provides unsurpassed performance in nuclear applications such as decontamination of primary water and a variety of radwaste applications.

Typical Physical and Chemical Properties

Physical form		White to amber translucent spherical beads	
Matrix		Styrene divinylbenzene copolymer	
Functional group		Sulphonic acid	Trimethylammonium
Ionic form as shipped		Cation (H ⁺ form)	Anion (OH ⁻ form)
Total volume capacity	eq/L kgr/ft ³ as CaCO ₃	1.8 41.5	1.1 26.2
Moisture retention capacity	%	49–55	54–60
Particle size			
Harmonic mean diameter	mm	0.60–0.70	0.58–0.68
Uniformity coefficient		1.2	1.2
< 0.300 mm, max.	%	0.2	
Whole beads, min.	%	95	
Friability		350 g/bead average, 95% > 200 g/bead	
Ionic conversion, min.	g/bead	99	95
CO ₃ ²⁻ max.	%	—	5
Cl ⁻	%	—	0.1
SO ₄ ²⁻	%	—	0.1
Na, dry resin basis, max.	ppm	50	20
Metals, dry resin basis, ppm, max.		Mg / Fe / Ca / Al: 50, Co: 30, Cu: 10, Pb: 10	
Shipping density**	g/L lbs/ft ³	690 43	

For additional particle size information, please refer to Particle Size Distribution Cross Reference Chart (Form No. 177-01775).

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

Suggested Operating Conditions

Maximum operating temperature	60°C / 140°F
Bed depth, min.	800 mm (2.6 ft)
Service flow rate	8–50 BV*/h (1.0–6.3 gpm/ft ³)
Maximum Service Velocity	60 m/h (25 gpm/ft ²) max.

*1 BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gals per ft³ resin

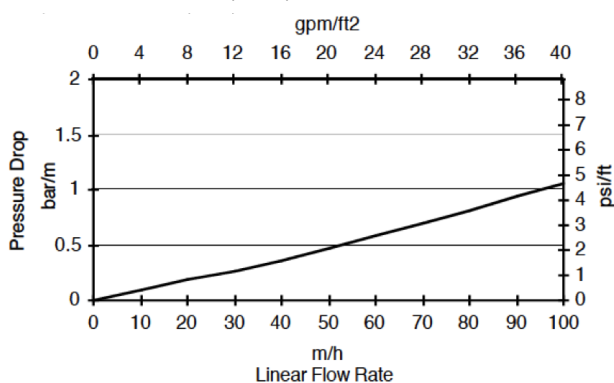
Hydraulic Characteristics

The approximate pressure drop of AMBERLITE™ IRN150 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.

To maintain the high purity of nuclear grade resins, deionized water should be used for all resin handling. Contact of the resin with air should also be minimized to avoid CO₂ pickup and subsequent loss of capacity of the anion resin.

Figure 1. Pressure Drop Data

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.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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

North America: 1-800-447-4369
Latin America: (+55) 11-5188-9222
Europe: (+32) 3-450-2240
Pacific: +60 3 7958 3392
Japan: +813 5460 2100
China: +86 21 2301 1000
<http://www.dowwaterandprocess.com>

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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