



## DOWEX™ MONOSPHERE™ 650C (H) Resin

A Uniform Particle Size Strong Acid Cation Exchange Resin

For Mixed Bed Demineralization and Condensate Polishing Applications

### Description

DOWEX™ MONOSPHERE™ 650C (H) cation exchange resin is a premium quality gel resin with uniform particle size designed specifically for use in mixed beds. It is ideally suited to the high flow rate demands of condensate polishing applications. The bead size uniformity is tailored to complement the smaller, less dense DOWEX MONOSPHERE 550A (OH) Anion Resin. Together, these resins offer near perfect separation in mixed beds.

The color distinction between the two resins allows easy visual confirmation of separation following backwash. DOWEX MONOSPHERE 650C (H) Resin has outstanding mechanical strength and very good stability to oxidation.

### Typical Physical and Chemical Properties

Physical form		Dark amber translucent spherical beads
Matrix		Styrene-DVB gel
Functional group		Sulfonic acid
Ionic form as shipped		H <sup>+</sup> form
Total volume capacity, min.	eq/L kgr/ft <sup>3</sup> as CaCO <sub>3</sub>	2.0 43.7
Moisture retention capacity	%	46–51
Particle size		
Harmonic mean diameter	μm	650 ± 50
Uniformity coefficient, max.		1.1
> 850 μm, max.	%	5
< 300 μm, max.	%	0.5
Whole uncracked beads, min.	%	95
Friability		
Average, min.	g/bead	500
> 200 g/bead, min.	%	95
Ionic conversion, min.	%	99.7
Trace metals, dry resin, max.	ppm	Na (100); Fe (50); Cu (50); Al (50); Heavy metals [as Pb] (20)
Total swelling	(Na <sup>+</sup> to H <sup>+</sup> ) %	7
Particle density	g/mL	1.22
Shipping density**	g/L	785
	lbs/ft <sup>3</sup>	49

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	130°C / 265°F
pH range	0–14
Bed depth, min.	450 mm (1.5 ft)
Flow rates:	
Service/fast rinse	5–60 m/h (2–24 gpm/ft <sup>2</sup> )
Service/condensate polishing	40–150 m/h (16–60 gpm/ft <sup>2</sup> )
Backwash	See figure 1
Co-current regeneration/displacement rinse	1–10 m/h (0.4–4 gpm/ft <sup>2</sup> )
Total rinse requirement	3–6 BV*
Regenerant	1–10% H <sub>2</sub> SO <sub>4</sub> or 4–8% HCl

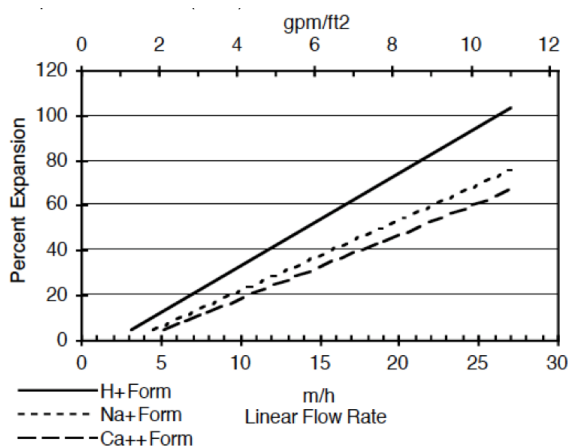
\*1 BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin or 7.5 gals per ft<sup>3</sup> resin

## Hydraulic Characteristics

Figure 1 shows the bed expansion of DOWEX™ MONOSPHERE™ 650C (H) Resin as a function of backwash flow rate and water temperature. Figure 2 shows the pressure drop data for DOWEX MONOSPHERE 650C (H) Resin as a function of service flow rate and water temperature. Pressure drop data are valid at the start of the service run with clear water and a correctly classified bed.

**Figure 1. Backwash Expansion Data**

Temperature = 25°C (77°F)



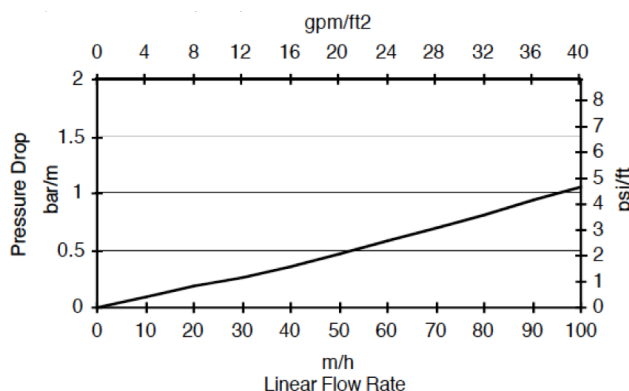
For other temperatures use:

$$F_T = F_{77°F} [1 + 0.008 (T_F - 77)], \text{ where } F \equiv \text{gpm/ft}^2$$

$$F_T = F_{25°C} [1 + 0.008 (1.8T_C - 45)], \text{ where } F \equiv \text{m/h}$$

**Figure 2. Pressure Drop Data**

Temperature = 20°C (68°F)



For other temperatures use:

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

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

## Packaging

25 liter bags or 5 cubic feet fiber 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 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:

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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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