



## DOWEX™ MARATHON™ 650C (H) Resin

Uniform Particle Size Strong Acid Cation Exchange Resin for Industrial Water Applications

### Description

DOWEX™ MARATHON™ 650C (H) cation exchange resin is a high quality gel resin with uniform particle size for use in mixed beds in industrial water or condensate polishing applications. The bead size uniformity is tailored to complement DOWEX MARATHON 550A (OH) anion resin to give a clear separation in mixed beds. The color distinction between the two resins allows visual confirmation of separation following backwash.

For mixed bed applications with internal regeneration distributors, DOWEX MONOSPHERE™ 600BB buffer bead inert resin is recommended to maintain a wider separation zone, allowing the regenerant off-take distributor to maintain its location between the cation and anion resin, even with the swelling that occurs during regeneration.

DOWEX MARATHON 650C resin has very good mechanical strength and stability to oxidation.

### Typical Physical and Chemical Properties

Physical form		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
Ion conversion, min.*	%	99.5
Friability		
Average, min.	g/bead	500
> 200 g/bead, min.	%	95
Whole uncracked beads	%	95
Particle density	g/mL	1.22
Total swelling	(Na <sup>+</sup> → H <sup>+</sup> ) %	7
Shipping density**	g/L lbs/ft <sup>3</sup>	785 49

\* Certified Conformance

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

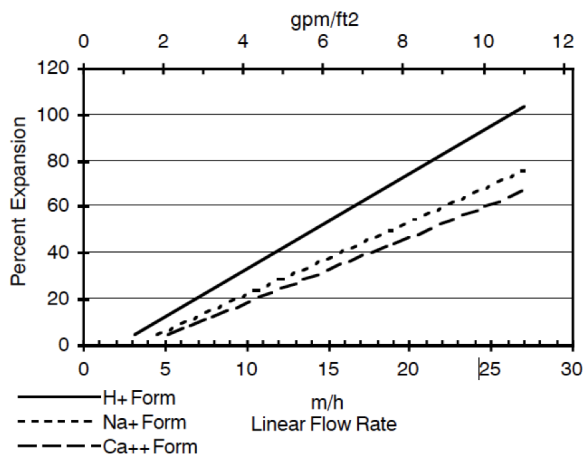
\*1 BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin or 7.5 gals per ft<sup>3</sup> resin

## Hydraulic Characteristics

Figure 1 shows the bed expansion of DOWEX MARATHON 650C (H) as a function of backwash flow rate and water temperature. Figure 2 shows the pressure drop data for DOWEX MARATHON 650C (H) 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)



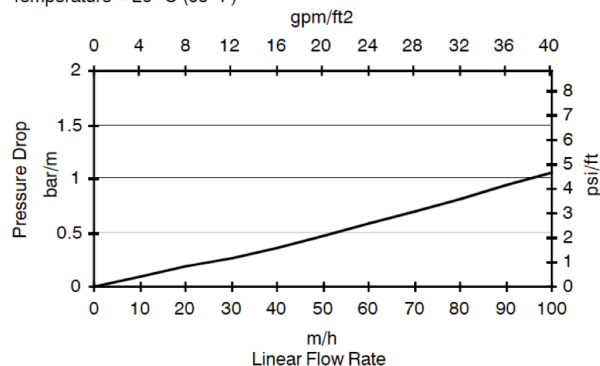
#### For other temperatures use:

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

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

### 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.

**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:

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China: +86 21 2301 1000  
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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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