

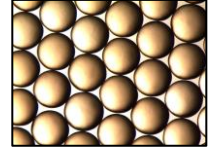


## DOWEX MARATHON™ 1200 Ion Exchange Resin

Uniform Particle Size, Strong Acid Cation Exchange Resin for Industrial Demineralization Applications

### Description

DOWEX MARATHON™ 1200 Ion Exchange Resin is designed for water utility operators and power plant chemists who are concerned with achieving maximum water and chemical efficiency. The chemical properties and particle size of the resin have been optimized to help yield excellent operating capacity and rinse characteristics, reducing chemical regenerant and rinse water usage while maintaining a superior physical stability that users of DOWEX MARATHON™ Resins have come to know through more than 25 years of successful operation. This allows users to simultaneously minimize operating costs and environmental impacts while also preserving precious raw water resources.



While the benefits of DOWEX MARATHON 1200 can be realized in standard co-flow regenerated systems, it is ideal when used in counter-current regenerated systems and packed beds such as the AMBERPACK™ and UPCORE™ Ion Exchange Systems. Additionally, DOWEX MARATHON 1200 H can be used in regenerable polishing mixed beds when combined with DOWEX MARATHON 4200 OH, allowing users to inventory only one strong acid cation resin for their demineralization needs.

### Typical Physical and Chemical Properties\*\*

Matrix	Styrene-divinylbenzene, gel	
Type	Strong acid cation	
Functional Group	Sulfonic acid	
Physical Form	Dark brown, translucent, spherical beads	
Ionic Form as Shipped	<b>H<sup>+</sup> Form</b>	<b>Na<sup>+</sup> Form</b>
Total Exchange Capacity	≥ 1.8 eq/L	≥ 2.0 eq/L
Water Retention Capacity	50 – 56%	43 – 50%
Particle Size		
Particle Diameter <sup>b</sup>	600 ± 50 µm	585 ± 50 µm
Uniformity Coefficient	≤ 1.1	≤ 1.1
< 300 µm	≤ 0.1%	≤ 0.1%
Whole Uncracked Beads	≥ 95%	≥ 95%
Swelling	Na <sup>+</sup> → H <sup>+</sup> : 8%	Na <sup>+</sup> → H <sup>+</sup> : 8%
Bulk Density, as Shipped <sup>c</sup>	785 g/L	820 g/L

<sup>b</sup> For additional particle size information, please refer to the [Particle Size Distribution Cross Reference Chart](#) (Form No. 177-01775).

<sup>c</sup> As per the backwashed and settled density of the resin, determined by ASTM D-2187.

## Suggested Operating Conditions\*\*

Maximum Operating Temperature	120°C (248°F)		
pH Range	0 – 14		
Bed Depth, min.	800 mm (2.6 ft.)		
Flowrates			
Service	5 – 50 BV*/h (1 – 6 gpm/ft <sup>3</sup> )		
Backwash	See Figure 1		
Regeneration			
Chemical Injection			
HCl	2 – 5 BV/h (0.5 – 1 gpm/ft <sup>3</sup> )		
H <sub>2</sub> SO <sub>4</sub>	2 – 20 BV/h (0.5 – 4 gpm/ft <sup>3</sup> )		
Displacement Rinse	2 – 5 BV/h (0.5 – 1 gpm/ft <sup>3</sup> )		
Fast Rinse	5 – 50 BV/h (1 – 6 gpm/ft <sup>3</sup> )		
Total Rinse Requirement	2 – 5 BV		
Regenerant	H <sub>2</sub> SO <sub>4</sub>	HCl	NaCl
Concentration	1 – 8%	4 – 8%	8 – 12%

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

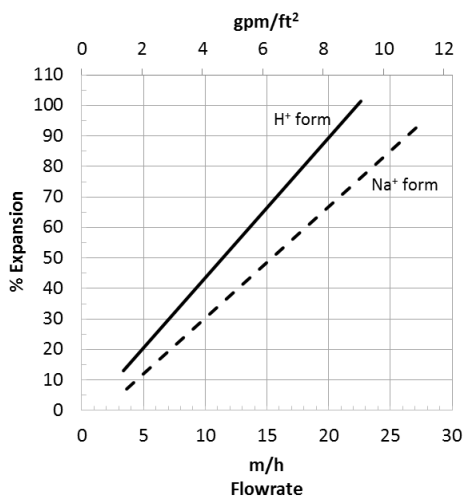
## Hydraulic Characteristics

Bed expansion of DOWEX MARATHON™ 1200 Ion Exchange Resin as a function of backwash flowrate at 25°C (77°F) is shown in Figure 1. The flowrate necessary to achieve a desired bed expansion for other water temperatures can be calculated with the provided equations.

Pressure drop data for DOWEX MARATHON 1200 as a function of service flowrate at 20°C (68°F) is shown in Figure 2. The pressure drop for other water temperatures can be calculated with the provided equations. Pressure drop data are valid at the start of the service run with clean water.

**Figure 1: Backwash Expansion**

Temperature = 25°C (77°F)



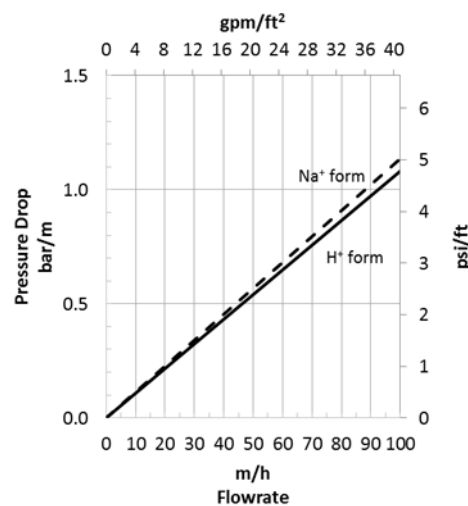
**For other temperatures use:**

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

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

**Figure 2: Pressure Drop**

Temperature = 20°C (68°F)



**For other temperatures use:**

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

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

## 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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**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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