

**DOWEX MARATHON™ 8300 Ion Exchange Resin**

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

Description

DOWEX MARATHON™ 8300 Ion Exchange Resin is designed for water utility operators and power plant chemists who are concerned with achieving better water and chemical efficiency. The chemical properties and particle size of the resin have been designed to help yield excellent operating capacity and rinse characteristics, reducing chemical regenerant and rinse water usage while maintaining an exceptional physical stability that users of DOWEX MARATHON™ Resins have come to know through more than 25 years of successful operation. Operating capacity improvements of 15% have been demonstrated under good operating conditions versus other weak acid cation resins currently available. This allows users to simultaneously minimize operating costs and environmental impacts while also preserving precious raw water resources.

While the benefits of DOWEX MARATHON 8300 can be realized in standard co-flow regenerated systems, it is ideal when used in packed bed and layered bed systems such as the AMBERPACK™ and UPCORE™ Ion Exchange Systems. DOWEX MARATHON 8300 and DOWEX MARATHON 1300 H have been specifically designed to work together in new and retrofitted layered bed systems for improved water and chemical efficiency.

Typical Physical and Chemical Properties**

Matrix	Polyacrylic, macroporous
Type	Weak acid cation
Functional Group	Carboxylic acid
Physical Form	Off-white, opaque, spherical beads
Ionic Form as Shipped	H ⁺ Form
Total Exchange Capacity	≥ 4.6 eq/L
Water Retention Capacity	40 – 50%
Particle Size	
Particle Diameter ^b	500 ± 100 µm
Uniformity Coefficient	≤ 1.4
< 300 µm	≤ 0.1%
> 630 µm	≤ 7%
Swelling	H ⁺ → Na ⁺ : 60%
Bulk Density, as shipped ^c	760 g/L

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

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

Suggested Operating Conditions**

Maximum Operating Temperature	100°C (212°F)	
pH Range	0 – 14	
Bed Depth, min.	700 mm (2.3 ft.)	
Flowrates		
Service	5 – 50 BV*/h (1 – 6 gpm/ft ³)	
Backwash	See Figure 1	
Regeneration		
Chemical Injection †	2 – 4 BV/h (0.25 – 0.5 gpm/ft ³)	
Displacement Rinse	1 – 2 BV at 2 – 4 BV/h (0.25 – 0.5 gpm/ft ³)	
Fast Rinse	2 – 4 BV at 5 – 50 BV/h (1 – 6 gpm/ft ³)	
Total Rinse Requirement	3 – 6 BV*	
Regenerant		
	HCl	H ₂ SO ₄
Concentration	2 – 4%	0.5 – 0.7%
Dose (100% basis)	105% of ionic load	105% of ionic load

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

† H₂SO₄ regeneration should be completed at a rate of 6 – 40 BV/h with displacement rinse adjusted accordingly.

Hydraulic Characteristics

Bed expansion of DOWEX MARATHON™ 8300 Ion Exchange Resin as a function of backwash flowrate and temperature is shown in Figure 1.

Pressure drop data for DOWEX MARATHON 8300 as a function of service flowrate and temperature is shown in Figure 2. Pressure drop data are valid at the start of the service run with clean water.

Figure 1: Backwash Expansion

Temperature = 10 – 60°C (50 – 140°F)

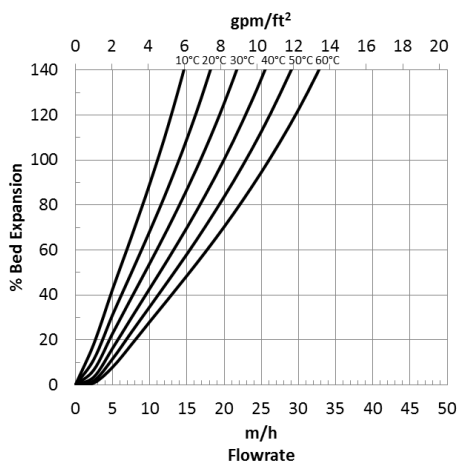
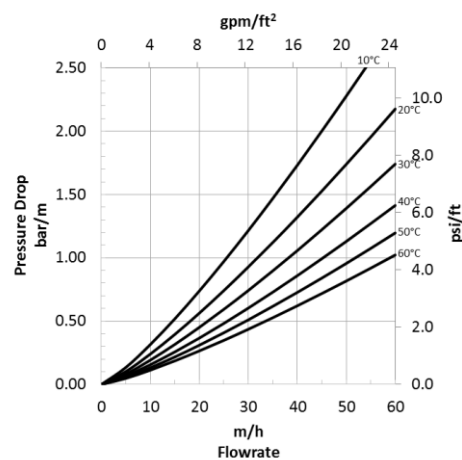


Figure 2: Pressure Drop

Temperature = 10 – 60°C (50 – 140°F)



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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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