

**DOWEX™ MARATHON™ MSC**

A Uniform Particle Size, High Capacity Macroporous Cation Exchange Resin for Industrial Softening and Water Demineralization Applications

Product	Type	Matrix	Functional group
DOWEX™ MARATHON™ MSC	Strong acid cation	Styrene-DVB, macroporous	Sulfonic acid

Guaranteed Sales Specifications		Na ⁺ form	H ⁺ form
Total exchange capacity, min.	eq/L	1.7	1.6
	kg/ft ³ as CaCO ₃	37.1	35.0
Water content	%	44 - 50	50 - 56
Uniformity coefficient, max.		1.1	1.1

Typical Physical and Chemical Properties		Na ⁺ form	H ⁺ form
Mean particle size†	μm	550 ± 50	575 ± 50
Whole beads	%	95 - 100	95 - 100
Total swelling (Na ⁺ → H ⁺)	%	4	4
Particle density	g/mL	1.28	1.20
Shipping weight	g/L	800	760
	lbs/ft ³	50	47

Recommended Operating Conditions	• Maximum operating temperature	150°C (300°F)
	• pH range	0 - 14
	• Bed depth, min.	800 mm (2.6 ft)
	• Flow rates:	
	Service/fast rinse	5-50 m/h (2-20 gpm/ft ²)
	Backwash	see Figure 1
	Co-current regeneration/displacement rinse	1-10 m/h (0.4-4 gpm /ft ²)
	Counter-current regeneration/displacement rinse	5-20 m/h (2-8 gpm /ft ²)
	• Total rinse requirement	3 - 6 Bed volumes
	• Regenerant	1-10% H ₂ SO ₄ , 4-8% HCl or 8-12% NaCl

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

Typical Properties and Applications

DOWEX™ MARATHON™ MSC strong acid cation resin is a highly cross-linked resin with high porosity giving excellent osmotic shock resistance and chemical and thermal stability.

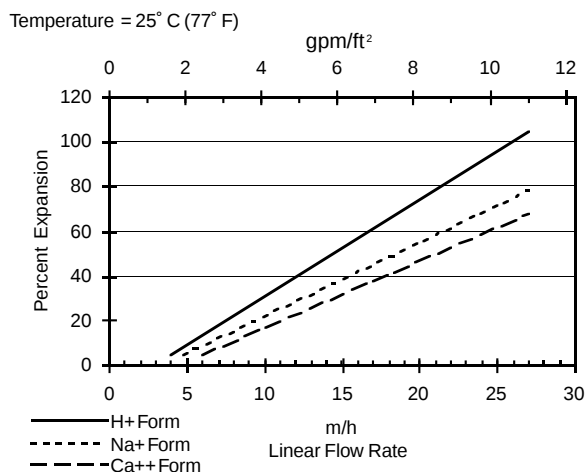
The resin has a variety of uses, such as:

- Hot process softening
- Demineralization
- Adsorbent
- Processes with oxidizing conditions
- Recovery of metals from plating baths

Packaging

25 liter bags or 5 cubic feet fiber drums

Figure 1. Backwash Expansion Data

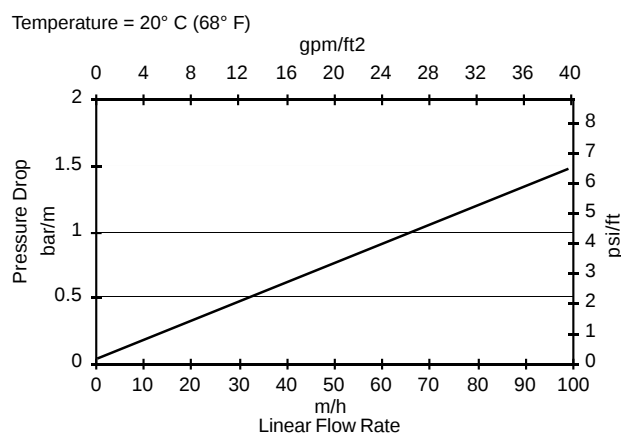


For other temperatures use:

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

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

Figure 2. Pressure Drop Data



For other temperatures use:

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

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

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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