

**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.

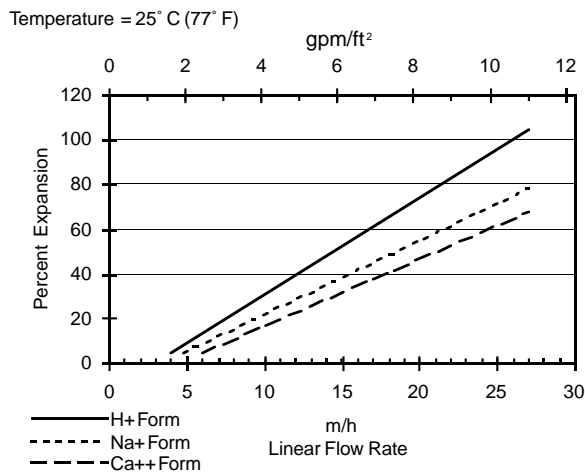
The resin has a variety of uses, such as:

- 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

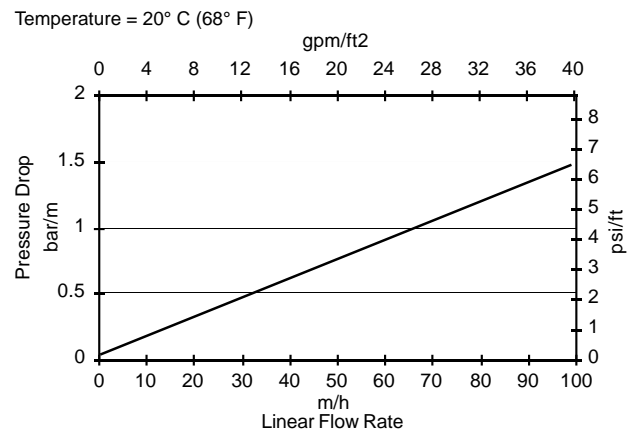


For other temperatures use:

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

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

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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