



DOWEX MAC-3

A Macroporous Weak Acid Cation Exchange Resin used for Water Softening, Dealkalization and Demineralization Applications

Product	Type	Matrix	Functional group
DOWEX™ MAC-3	Weak acid cation	Polyacrylic, macroporous	Carboxylic acid

Guaranteed Sales Specifications		H ⁺ form
Total exchange capacity, min.	eq/l kgr/ft ³ as CaCO ₃	3.8 83.0
Bead size distribution range [†] 0.3 mm - 1.2 mm, min. (50 mesh - 16 mesh)	%	90

Typical Physical and Chemical Properties		H ⁺ form
Water content	%	44 - 50
Whole beads	%	95 - 100
Total swelling (H ⁺ → Na ⁺)	%	~70
Particle density	g/ml	1.18
Shipping weight	g/l lbs/ft ³	750 47

Recommended Operating Conditions

- Maximum operating temperature 120°C (250°F)
- pH range 5 - 14
- Bed depth, min. 800 mm (2.6 ft)
- Flow rates:
 - Service/fast rinse 5-50 m/h (2-20 gpm/ft²)
 - Backwash See figure 1
 - Regeneration/displacement rinse 1-10 m/h HCl (0.4-4 gpm /ft²),
5-20 m/h H₂SO₄ (2-8 gpm /ft²)
 - Rinse 5-20 m/h (2-8 gpm /ft²)
- Total rinse requirement 3 - 6 Bed volumes
- Regenerant 1 - 5% HCl or 0.5 - 0.8% H₂SO₄

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

Typical properties and applications

DOWEX MAC-3 weak acid cation resin has high exchange capacity, excellent regeneration efficiency, very good resistance to osmotic shock, plus good chemical and physical stability.

DOWEX MAC-3 resin is effective in removal of temporary hardness (hardness associated with alkalinity) and dealkalization. It is also used for recovery of metals. DOWEX MAC-3 resin can be supplied on request for use in food and potable water applications in accordance to the TOC (Total Organic Carbon) requirements of the major European legislations. In such cases, a recommendation is given for resin conditioning before use.

Packaging

25 liter bags or 5 cubic feet fiber drums

Figure 1. Backwash Expansion Data

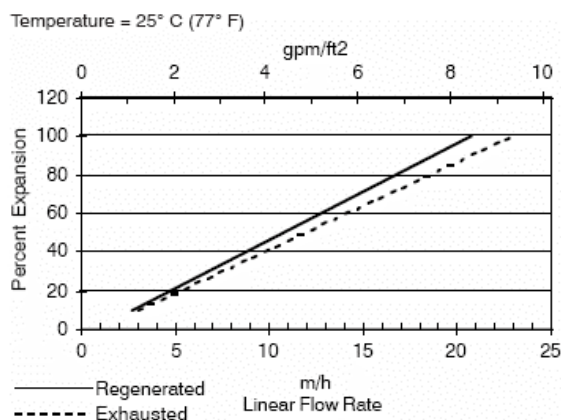
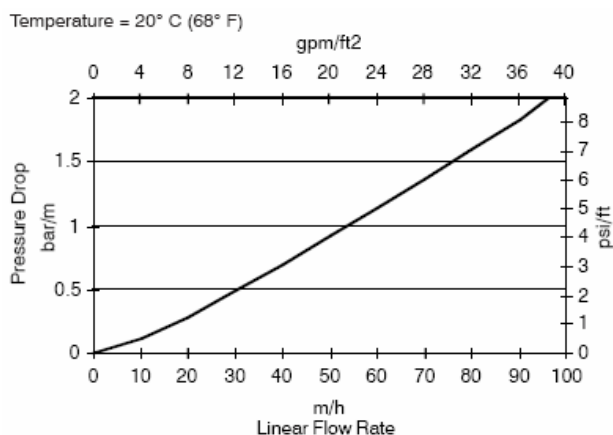


Figure 2. Pressure Drop Data



For other temperatures use:

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

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

For other temperatures use:

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

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

DOWEX Ion Exchange Resins
For more information about DOWEX resins, call the Dow Liquid Separations business:

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Europe: (+32) 3-450-2240
Pacific: +60 3 7958 3392
Japan: +813 5460 2100
China: +86 21 2301 9000
<http://www.dowex.com>

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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