



DOWEX™ MARATHON™ 650C (H)

A Uniform Particle Size Strong Acid Cation Exchange Resin for Mixed Bed Demineralization and Condensate Polishing Applications

Product	Type	Matrix	Functional group
DOWEX™ MARATHON™ 650C (H)	Strong acid cation	Styrene-DVB, gel	Sulfonic acid

Guaranteed Sales Specifications

	H ⁺ form
Total exchange capacity, min.	2.0 eq/L kg/ft ³ as CaCO ₃ 43.7
Water content	46 - 51 %
Bead size distribution [†]	
Mean particle size	650 ± 50 µm
Uniformity coefficient, max.	1.1
Ionic conversion, min. *	99.5 %

Typical Physical and Chemical Properties

	H ⁺ form
Total swelling (Na ⁺ → H ⁺)	7 %
Whole uncracked beads, min.	95 %
Particle density	1.22 g/mL
Shipping weight	785 g/L 49 lbs/ft ³
Crush strength	
Average, min.	500 g/bead
> 200 g/bead, min.	95 %

Recommended Operating Conditions

- Maximum operating temperature 130° C (265° F)
- pH range 0 - 14
- Bed depth, min. 450 mm (1.5 ft)
- Flow rates:
 - Service/fast rinse 5 - 60 m/h (2 - 24 gpm/ft²)
 - Service/condensate polishing 40 - 150 m/h (16 - 60 gpm/ft²)
 - Backwash See Figure 1
 - Co-current regeneration/displacement rinse 1 - 10 m/h (0.4 - 4 gpm /ft²)
- Total rinse requirement 3 - 6 Bed volumes
- Regenerant 1 - 10% H₂SO₄ or 4 - 8% HCl

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

* Certified Conformance

Typical Properties and Applications

DOWEX™ MARATHON™ 650C (H) cation exchange resin is a premium quality gel resin with uniform particle size designed specifically for use in mixed beds. It is ideally suited to the high flow rate demands of condensate polishing applications. The bead size uniformity is tailored to complement the smaller, less dense DOWEX MARATHON 550A (OH) anion resin. Together, these resins offer near perfect separation in mixed beds.

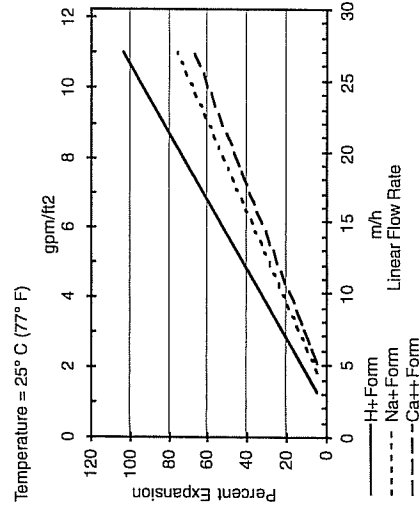
The color distinction between the two resins allows easy visual confirmation of separation following backwash. DOWEX MARATHON 650C resin has outstanding mechanical strength and very good stability to oxidation.

For mixed bed applications with internal regeneration distributors, DOWEX MONOSPHERE™ 600BB inert resin is recommended to maintain a wider separation zone, allowing the regenerant off-take distributor to maintain its location between the cation and anion resin, even with the swelling that occurs during regeneration.

Packaging

25 liter bags or 5 cubic feet fiber drums

Figure 1. Backwash Expansion Data

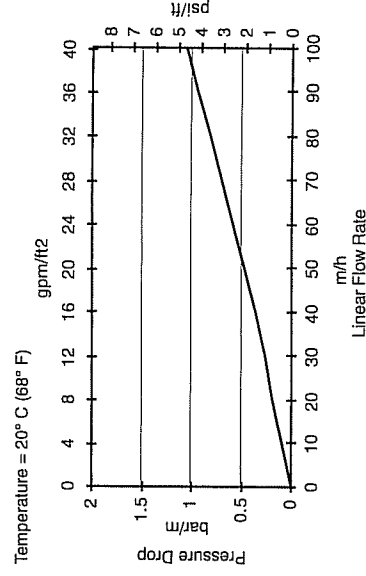


For other temperatures use:

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

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

Figure 2. Pressure Drop Data



For other temperatures use:

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

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

DOWEX Ion Exchange Resins

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

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 Pacific: +813 5460 2100
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 China: <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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