DOWEX™ MARATHON™ 11

A Uniform Particle Size, Porous Gel, Strong Base Anion Exchange Resin Specifically Designed for Demineralization of High Organic Waters and as an Organic Scavenger

Product	Type	Matrix	Functional group
DOWEX™ MARATHON™ 11	Type I strong base anion	Styrene-DVB, gel	Quaternary amine

Guaranteed Sales Specifications		Cl^- form
Total exchange capacity, min.	eq/L	1.3
	kgr/ft³ as $CaCO_3$	28.4
Water content	%	48 - 58
Uniformity coefficient, max.		1.1

Typical Physical and Chemical Properties		Cl^- form
Whole uncracked beads	%	95 - 100
Mean particle size†	µm	550 ± 50
Total swelling ($Cl^- \rightarrow OH^-$)	%	20
Particle density	g/mL	1.08
Shipping weight**	g/L	670
	lbs/ft³	42

Recommended Operating Conditions

- Maximum operating temperature:
  - OH^- form: 60°C (140°F)
  - Cl^- form: 100°C (212°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/ft²)
  - Backwash: See figure 1
  - Co-current regeneration/displacement rinse: 1-10 m/h (0.4-4 gpm /ft²)
  - Counter-current regeneration/displacement rinse: 5-20 m/h (2-8 gpm /ft²)
- Total rinse requirement: 2 - 5 Bed volumes
- Regenerant:
  - Type: 2-5% NaOH
  - Type (organic screen): 10% NaCl / 1% NaOH mixture
  - Temperature: Ambient or up to 50°C (122°F) for silica removal
  - Temperature (organic screen): Ambient or up to 50°C (122°F)

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

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

Typical Properties and Applications

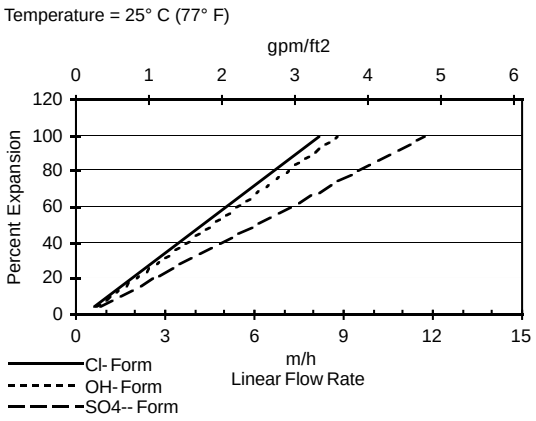
DOWEX™ MARATHON™ 11 strong base anion resin is a high capacity resin with excellent kinetics, very good regeneration efficiency and very good resistance to organic fouling. It also has excellent resistance to osmotic shock and good physical and chemical stability.

It's unique resistance to organic fouling enables this resin to be used in Cl form as an organic scavenger with great success. DOWEX MARATHON 11 anion exchange resin can be used to remove organics in both single bed and mixed bed units.

Packaging

25 liter bags or 5 cubic feet fiber drums

Figure 1. Backwash Expansion Data

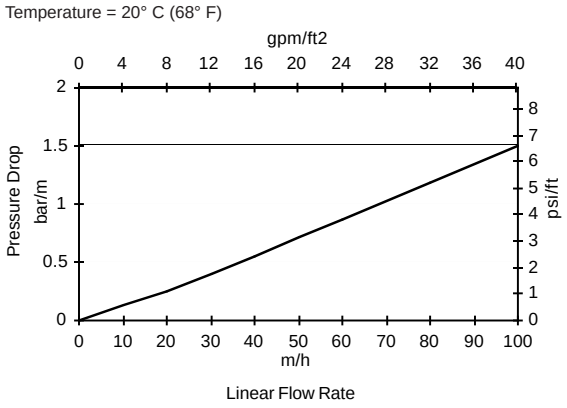


For other temperatures use:

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

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

Figure 2. Pressure Drop Data



For other temperatures use:

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

$P_T = P_{68°F}$ /(0.014 $T_{°F}$ + 0.05), where P ≡ 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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