DOWEX™ MARATHON™ MSA

Uniform Particle Size, High Capacity, Macroporous Strong Base Anion Exchange Resin for
Water Demineralization Applications

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

Guaranteed Sales Specifications		Cl^- form
Total exchange capacity, min.	eq/L	1.1
	kgr/ft^3 as $CaCO_3$	24.0
Water content	%	56 - 66
Uniformity coefficient, max.		1.1

Typical Physical and Chemical Properties		Cl^- form
Mean particle size†	μm	640 ± 50
Whole beads	%	95 - 100
Total swelling ($Cl^- \rightarrow OH^-$)	%	15
Particle density	g/mL	1.06
Shipping weight	g/L	670
	lbs/ft^3	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/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 — 5 - 7 Bed volumes

- Regenerant:
  - Type — 4 - 8% NaOH
  - Temperature — Ambient or up to 50°C (122°F) for silica removal

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

Typical Properties and Applications

DOWEX™ MARATHON™ MSA resin is a uniform particle size macroporous strong base anion resin which has exceptional physical stability, excellent resistance to osmotic shock, and very good organic fouling resistance. It is well suited for use in demineralization of high organic waters, catalysis, and the extraction of heavy metals in the form of complex anions.

Packaging

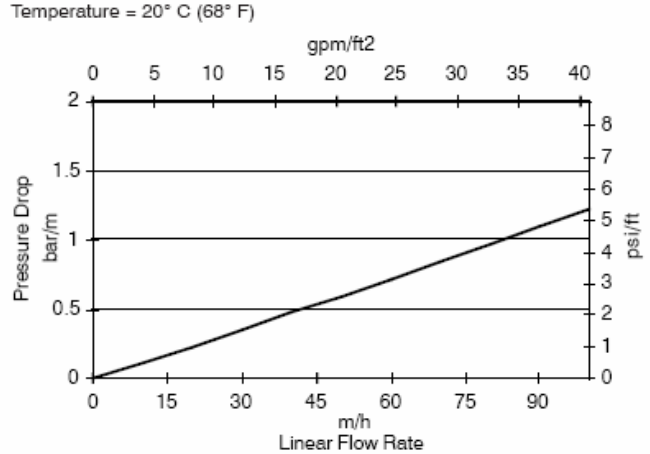25 liter bags or 5 cubic foot fiber drums

Figure 1. Backwash Expansion Data

Temperature = 25° C (77° F)

— Cl- Form
••••• OH- Form
– – – SO4-- Form
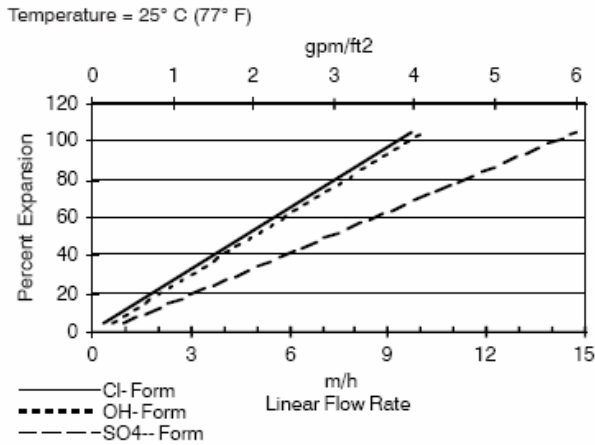
For other temperatures use:

$F_T = F_{77°F} [1 + 0.008 (T_{°F} - 77)]$, where $F \equiv gpm/ft^2$
$F_T = F_{25°C} [1 + 0.008 (1.8T_{°C} - 45)]$, where $F \equiv m/h$

Figure 2. Pressure Drop Data

Temperature = 20° C (68° F)

For other temperatures use:

$P_T = P_{20°C} / (0.026 T_{°C} + 0.48)$, where $P \equiv bar/m$
$P_T = P_{68°F} / (0.014 T_{°F} + 0.05)$, where $P \equiv psi/ft$