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DOWEX™ UPCORE™ MAC-3

A Weak Acid Cation Exchange Resin Specifically Designed for the UPCORE System

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

Guaranteed Sales Specifications		H^+ form
Total exchange capacity, min.	eq/L	3.8
	kgr/ft³ as $CaCO_3$	83.0
Water content	%	42 - 52
Bead size distribution†		
Range, 400 - 1,200 µm, min.	%	90
> 1,200 µm, max. (16 mesh)	%	1
< 350 µm, max. (45 mesh)	%	1
Whole beads, min.	%	95

Typical Physical and Chemical Properties		H^+ form
Total swelling ($H^+ \rightarrow Na^+$)	%	~70
Particle density	g/mL	1.18
Shipping weight**	g/L	750
	lbs/ft³	47

Recommended Operating Conditions

- Maximum operating temperature: 120°C (250°F)
- pH range: 5 - 14
- Bed depth, min.: 1,000 mm (3.3 ft)
- Pressure drop, design max.: 1.5 bar (22 psi)
- Pressure drop, max.: 2.5 bar (37 psi)
- Flow rates:
  - Service/fast rinse: 5 - 50 m/h (2 - 20 gpm/ft²)
  - Regeneration/displacement rinse: 5 - 50 m/h (2 - 20 gpm/ft²) for H_2SO_4; 6 - 12 m/h (2.4 - 4.8 gpm/ft²) for HCl
- Total rinse requirement: 3 - 6 Bed volumes
- Regenerant: 1 - 5% HCl, 0.5 - 0.8% H_2SO_4

† 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

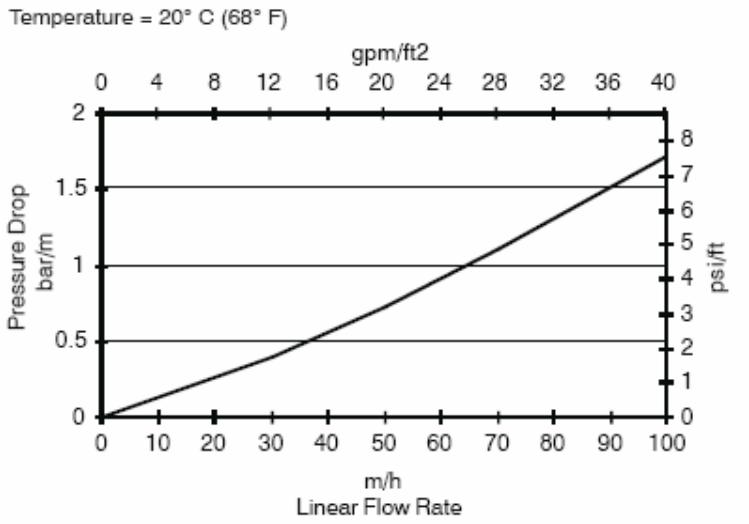
DOWEX™ UPCORE™ MAC-3 macroporous weak acid cation exchange resins contain carboxylic acid functional groups attached to a polyacrylic-divinylbenzene matrix. The particle size is specially chosen for use in the UPCORE packed bed counter-current regeneration system.

DOWEX UPCORE MAC-3 resin efficiently removes hardness associated with alkalinity. When used in combination with DOWEX UPCORE Mono C-600 resin, DOWEX UPCORE MAC-3 resin can be regenerated with effluent acid from the strong acid cation regeneration. This results in highly efficient regeneration of the cation resin pair.

Packaging

25 liter bags or 5 cubic feet fiber drums

Figure 1. 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

DOWEX™ Ion Exchange Resins

For more information about DOWEX resins, call the Dow Water Solutions business:

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