



DOWEX™ MONOSPHERE™ 77

Ion Exchange Resin for Sweetener Applications

Product	Type	Matrix	Functional group
DOWEX™ MONOSPHERE™ 77	Weak base anion	Styrene-DVB, macroporous	Tertiary amine

Typical Physical and Chemical Properties

Ionic form as produced			FB (free base)
Total exchange capacity, min.		eq/L	1.7
Weak base capacity, min.		eq/L	1.5
Water content		%	40 - 50
Bead size distribution			
Volume median diameter		μm	475 - 600
Total swelling (FB → HCl)		%	22
Whole uncracked beads, min.		%	95
Particle density		g/mL	1.04
Shipping weight**		g/L	640
		lbs/ft ³	40

Recommended Operating Conditions

- Maximum operating temperature (H⁺ form) 60°C (140°F)
- pH range 0 - 7
- Bed depth, min. 91 cm (3 ft)
- Flow rates:
 - Service 2 - 4 bed volumes/hour
 - Backwash See Figure 1
 - Regeneration time 30 - 45 min.
 - Displacement rinse 30 - 45 min.
 - Fast rinse (if applicable) 2 - 10 bed volumes /hour
- Total rinse requirement 3 - 5 bed volumes

Regenerants	NaOH [†]	Na ₂ CO ₃	NH ₄ OH
Concentration (%)	4	5	5
Level, 100% basis ^{††}			
lbs/ft ³	4 - 5	6 - 7	4 - 5
kg/m ³	64 - 80	96 - 112	64 - 80
Temperature, max.	60°C (140°F)	60°C (140°F)	60°C (140°F)

[†] Recommended

^{††} Regeneration level may be lower for counter-current regeneration systems.

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

Typical Properties and Applications

DOWEX™ MONOSPHERE™ 77 resin is the newest in the DOWEX line of weak base anion resins made using a Dow-patented process which produces beads with remarkable size uniformity. Chemically & physically optimized for syrup processing, DOWEX MONOSPHERE 77 provides an improved balance of high operating capacity, excellent physical strength, economical regeneration, long resin life and low operating costs.

Packaging

25 liter bags, 5 cubic feet fiber drums or 1 cubic meter super sacks.

Figure 1. Backwash Expansion Data

Temperature = 25° C (77° F)

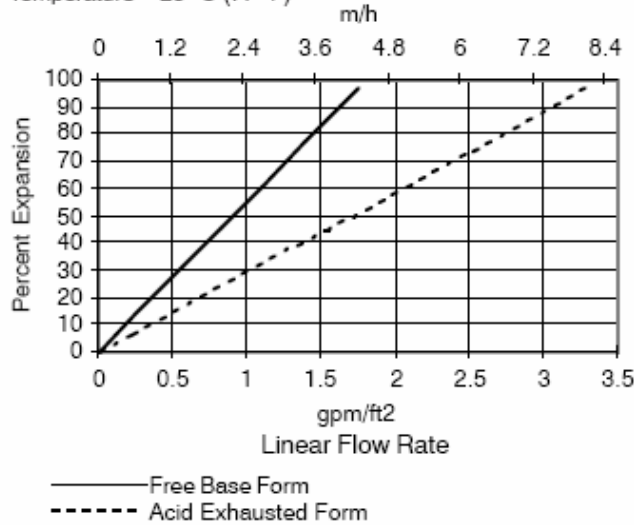
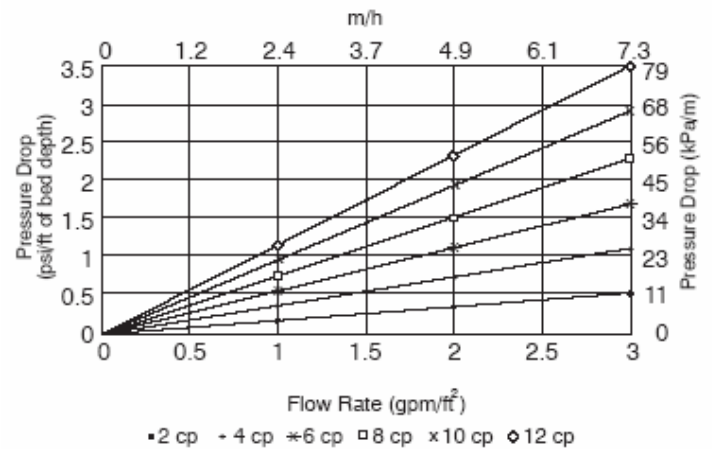


Figure 2. Pressure Drop Data

Temperature = 20° C (68° F)



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 Water Solutions business:

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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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