Product Data Sheet

DOWEX MONOSPHERE™ 22 OH Ion Exchange Resin

Uniform Particle Size, Strong Base Anion Exchange Resin for Sweetener Applications

Description

DOWEX MONOSPHERE™ 22 Strong Base Anion (SBA) Exchange Resin is specifically designed for pairing with DOWEX MONOSPHERE 88 Strong Acid Cation Exchange Resin in sweetener mixed bed applications. The use of mixed beds in polishing applications offers a clean finished product stream by minimizing the impurities that can reduce syrup shelf life. This uniform particle size (UPS) resin pair can provide lower pressure drop and/or higher production throughput than the non-UPS grades.

DOWEX MONOSPHERE 22 OH exchange resin has a macroporous matrix, which can provide excellent mechanical strength and good operating capacity.

Typical Physical and Chemical Properties

Matrix	Styrene-divinylbenzene, macroporous
Type	Strong base anion, Type II
Functional Groups	Quaternary amine, dimethylethanol amine
Ionic Form as Shipped	OH^-
Total Exchange Capacity (Cl^- form) [a]	≥ 1.1 eq/L
Water Content (Cl^- form) [a]	49 – 57%
Bead Size Distribution	
Volume Median Diameter [b]	650 ± 50 µm
Whole Beads	95 – 100%
Total Swelling	$Cl^- \rightarrow OH^-$: 12%
Particle Density	1.07 – 1.10 g/mL
Shipping Weight (backwashed and settled) [c]	665 g/L (42 lb/ft^3)

[a] Contractual value.
[b] For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775).
[c] As per the backwashed and settled density of the resin, determined by ASTM D-2187.

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Suggested Operating Conditions

Maximum Operating Temperature (OH^- form)	46°C (115°F)	
pH Range	0 – 14	
Bed Depth, min.	91 cm (3 ft)	
Flowrates		
Service	3 – 5 BV*/h	
Backwash	See Figure 1	
Fast Rinse (if applicable)	2 – 10 BV/h	
Contact Time		
Regeneration	30 – 45 minutes	
Displacement Rinse	30 – 45 minutes	
Total Rinse Requirement	3 – 6 BV	
Regenerant	NaOH [a]	Na_2CO_3
Concentration	4%	7%
Level	64 – 80 kg/m³ (4 – 5 lb/ft³)	80 – 96 kg/m³ (5 – 6 lb/ft³)
Temperature, max.	46°C (115°F)	46°C (115°F)

[a] NaOH is recommended.
* 1 BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gal solution per ft³ resin

Hydraulic Characteristics

Bed expansion of DOWEX MONOSPHERE™ 22 OH Ion Exchange Resin as a function of backwash flowrate at 25°C (77°F) is shown in Figure 1. The flowrate necessary to achieve a desired bed expansion for other water temperatures can be calculated with the provided equations.

Pressure drop data for DOWEX MONOSPHERE 22 OH as a function of service flowrate and syrup viscosity at 20°C (68°F) is shown in Figure 2.

Figure 1: Backwash Expansion

Temperature = 25°C (77°F)

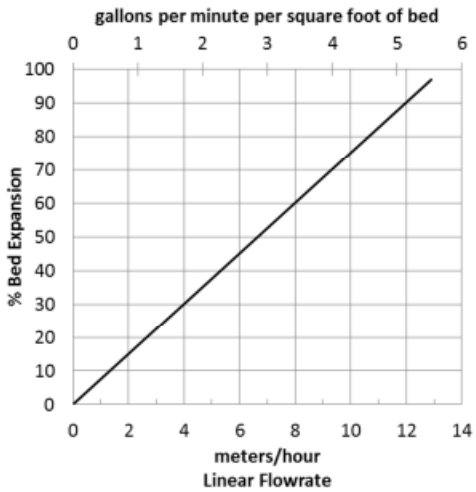
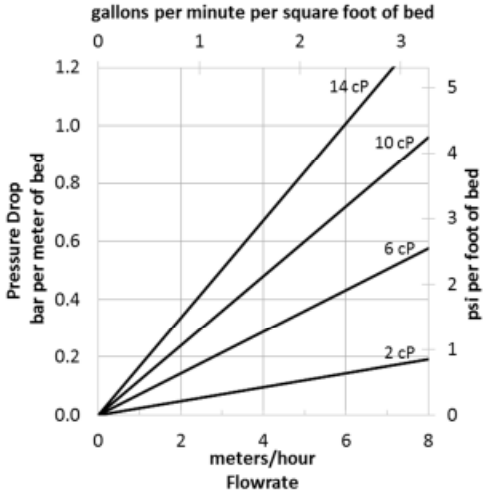


Figure 2: Pressure Drop

Using syrup @ 2 cP, 6 cP, 10 cP, 14 cP



For other temperatures use:

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

$F_T = F_{77°F}[1 + 0.008\ (T_{°F} - 77)]$, where F ≡ gpm/ft²

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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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