DOWEX™ MONOSPHERE™ 550A UPW (OH)

Uniform Particle Size Strong Base Anion Resin for Single or Mixed Bed Demineralization for Ultrapure Water Applications

Description

DOWEX™ MONOSPHERE™ 550A UPW (OH) is a high purity, uniform type 1 strong base anion exchange resin recommended for the roughing, intermediate and polishing ion exchange loops either in a 2-bed system followed by a mixed bed or in a mixed bed following reverse osmosis (RO). Low total organic carbon TOC levels in the ultra pure water UPW grade are achieved by deliberate functionalization and rinsing as shown in Figure 3. UPW grade is characterized by its light color, exceptional crush strength and high (>95%) conversion of exchange sites to the hydroxide (OH) form.

Typical Physical and Chemical Properties

Physical form		White to amber translucent spherical beads
Matrix		Styrene-DVB, gel
Functional group		Quaternary ammonium
Ionic form as shipped		OH^- form
Total volume capacity, min.	eq/L kgr/ft^3 as $CaCO_3$	1.0 21.9
Moisture retention capacity	%	55–65
Particle size		
Harmonic mean diameter	µm	590 ± 50
Uniformity coefficient, max.		1.1
Whole uncracked beads, min.	%	95
Friability		
Average, min.	g/bead	350
> 200 g/bead, min.	%	95
Particle density, approx.	g/mL	1.08
Shipping density,** approx.	g/L lbs/ft^3	657 41

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

Suggested Operating Conditions

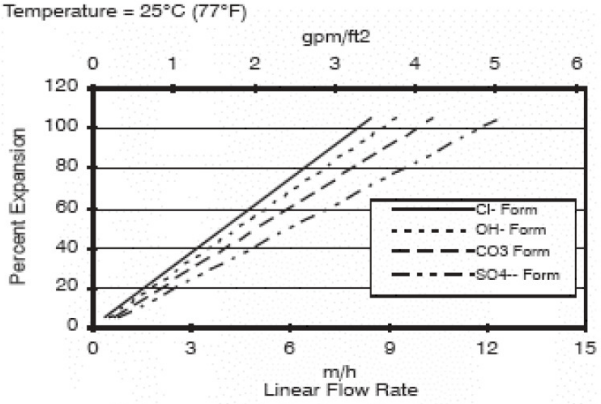
Maximum operating temperature:	
Single bed (OH^- form)	60ºC / 140ºF
Mixed bed (OH^- form)	60ºC / 140ºF
Resin bed depth, min:	
Single bed	800 mm (2.6 ft)
Mixed bed	450 mm (1.5 ft)
Flow rates:	
Service/fast rinse	10–60 m/h (4–24 gpm/ft^2)
Backwash	See Figure 1
Regeneration/displacement	4–10 m/h (1.6–4 gpm/ft^2)
Total rinse requirement	2–5 BV*
Regenerant	
Type	4–8% NaOH
Temperature	Ambient or up to 50ºC (122ºF) for silica removal
UPW Specific Properties	
Rinse characteristics:	
UPW grade resins are rinsed with +17.5 Megaohm.cm water to meet stringent ionic and organic residuals	
– Ionic conductivity rinse down, max. (as packaged)	1 µS/cm
– TOC rinse down to 4 ppb (+) (see Figure 3)	45 BV

*1 BV (Bed Volume) = 1 m^3 solution per m^3 resin or 7.5 gals per ft^3 resin

Hydraulic Characteristics

Figure 1 shows the bed expansion of DOWEX™ MONOSPHERE™ 550A UPW (OH) as a function of backwash flow rate and water temperature. Figure 2 shows the pressure drop data for DOWEX MONOSPHERE 550A UPW (OH) as a function of service flow rate and water temperature. Pressure drop data are valid at the start of the service run with clear water and a correctly classified bed. Figure 3 shows the conductivity and TOC rinse performance of the resin.

Figure 1. Backwash Expansion Data

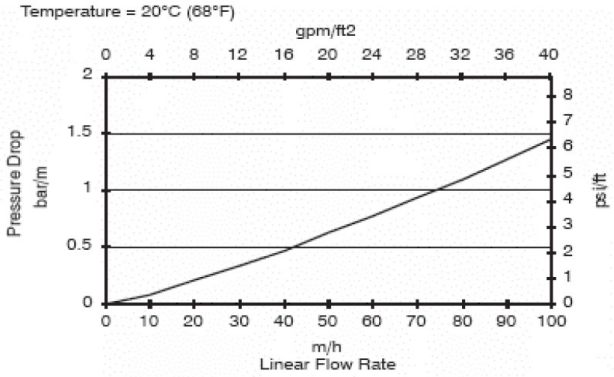


For other temperatures use:

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

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

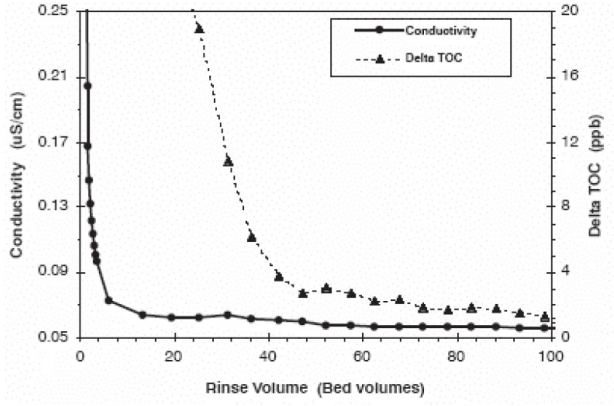
Figure 2. Pressure Drop Data



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

Figure 3. Conductivity and TOC Rinsedown Curves



Packaging

5 cubic foot fiber drum

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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.