



DOWEX HCR-S

A High Capacity Cation Exchange Resin for Softening & Demineralization Applications

Product	Type	Matrix	Functional group
DOWEX* HCR-S	Strong acid cation	Styrene-DVB, gel	Sulfonic acid

Guaranteed Sales Specifications		Na ⁺ form	H ⁺ form
Total exchange capacity, min.	eq/l	2.0	1.8
	kgr/ft ³ as CaCO ₃	43.7	39.3
Bead size distribution range [†] 0.3 mm - 1.2 mm, min. (50 mesh - 16 mesh)	%	90	90
Acidity Range	pH	7.0 - 9.5	-
Color Throw, as packaged, max.	APHA	20	-

Typical Physical and Chemical Properties		Na ⁺ form	H ⁺ form
Water content	%	44 - 48	50 - 56
Whole uncracked beads	%	90 - 100	90 - 100
Total swelling (Na ⁺ → H ⁺)	%	8	8
Particle density	g/ml	1.28	1.22
Shipping weight	g/l	820	780
	lbs/ft ³	51	49

Recommended Operating Conditions	
Maximum operating temperature	120°C (250°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)
Total rinse requirement	3-6 Bed volumes
Regenerant	1-8% H ₂ SO ₄ , 4-8% HCl or 8-12% NaCl

[†]For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 177-01775/CH 171-476-E).

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DOWEX Ion Exchange Resins

For more information about DOWEX resins,
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<http://www.dow.com/liquidseps>

Typical properties and applications:

DOWEX* HCR-S cation exchange resin is a high capacity resin with excellent kinetics and good physical, chemical, and thermal stability.

DOWEX HCR-S cation exchange resin is well suited for industrial water softening and demineralization in the co-current mode of regeneration.

Packaging

25 liter bags or 5 cubic feet fiber drums.

Figure 1. Backwash Expansion Data

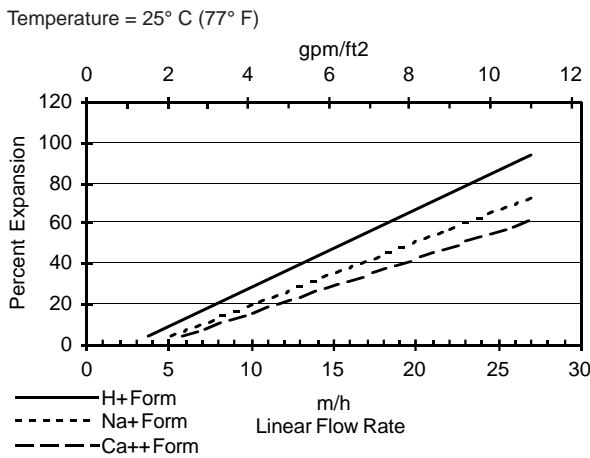
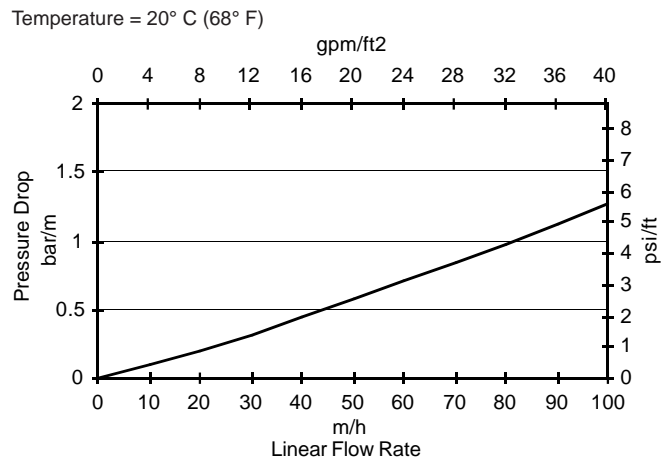


Figure 2. Pressure Drop Data



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:

$$P_T = P_{20°C} / (0.026 T_C + 0.48), \text{ where } P \equiv \text{bar/m}$$

$$P_T = P_{68°F} / (0.014 T_F + 0.05), \text{ where } P \equiv \text{psi/ft}$$

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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