



## DOWEX™ HCR-S Resin High Capacity Cation Exchange Resin

For Industrial Softening and Demineralization Applications

### Description

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

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

### Typical Physical and Chemical Properties

Physical Form		Amber translucent spherical beads	
Matrix		Styrene-DVB, gel	
Functional group		Sulfonic acid	
Ionic form as shipped		<b>Na<sup>+</sup> form</b>	<b>H<sup>+</sup> form</b>
Total volume capacity, min.	eq/L kg/ft <sup>3</sup> as CaCO <sub>3</sub>	2.0 43.7	1.8 39.3
Particle size †			
300–1,200 µm, min. (50 mesh–16 mesh)	%	90	90
Acidity range	pH	7.0–10.5	—
Color throw, as packaged, max.	APHA	20	—
Moisture retention capacity	%	44–48	50–56
Whole uncracked beads	%	90–100	90–100
Total swelling (Na <sup>+</sup> → H <sup>+</sup> )	%	8	8
Particle density	g/mL	1.28	1.22
Shipping density**	g/L lbs/ft <sup>3</sup>	820 51	780 49

† 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	120°C (250°F)
pH range	0–14
Bed depth, min.	800 mm (2.6 ft)
Flow rates: Service/fast rinse Backwash Co-current regeneration/displacement rinse	5–50 m/h (2–20 gpm/ft <sup>2</sup> ) See figure 1 1–10 m/h (0.4–4 gpm/ft <sup>2</sup> )
Total rinse requirement	3–6 BV*
Regenerant	1–8% H <sub>2</sub> SO <sub>4</sub> , 4–8% HCl or 8–12% NaCl

\*1 BV (Bed Volume) = 1 m<sup>3</sup> solution per m<sup>3</sup> resin or 7.5 gals per ft<sup>3</sup> resin

**Packaging**

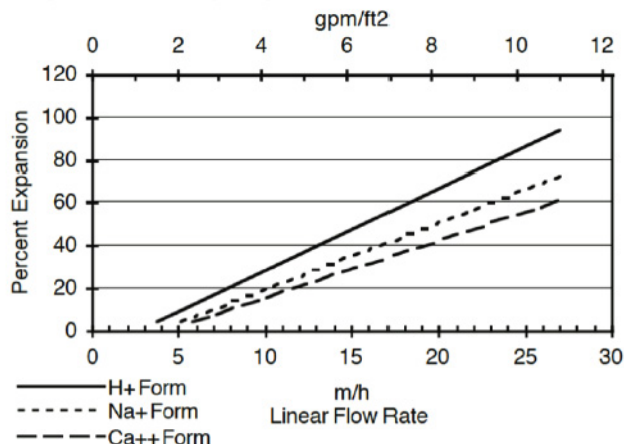
25 liter bags or 5 cubic feet fiber drums

**Hydraulic Characteristics**

Figure 1 shows the bed expansion of DOWEX™ HCR-S resin as a function of backwash flow rate and water temperature. Figure 2 shows the pressure drop data for DOWEX HCR-S 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 1. Backwash Expansion Data**

Temperature = 25° C (77° F)

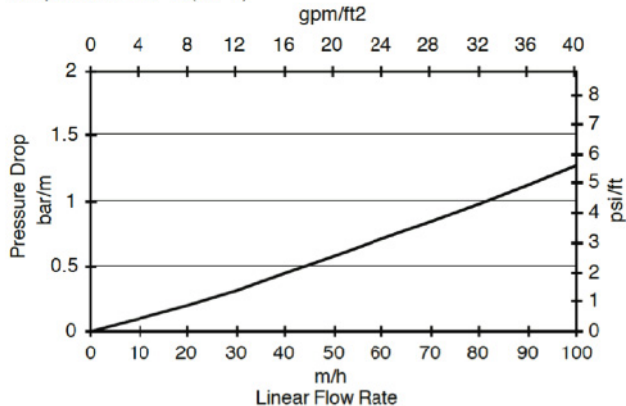


**For other temperatures use:**

$F_T = F_{77°F} [1 + 0.008 (T_F - 77)]$ , where  $F = \text{gpm/ft}^2$   
 $F_T = F_{25°C} [1 + 0.008 (1.8T_C - 45)]$ , where  $F = \text{m/h}$

**Figure 2. Pressure Drop Data**

Temperature = 20° C (68° F)



**For other temperatures use:**

$P_T = P_{20°C} / (0.026 T_C + 0.48)$ , where  $P = \text{bar/m}$   
 $P_T = P_{68°F} / (0.014 T_F + 0.05)$ , where  $P = \text{psi/ft}$

## **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.

## **Note**

These resins may be subject to drinking water application restrictions in some countries. Please check the application status before use and sale.

### **DOW™ Ion Exchange Resins** For more information about DOW™ resins, call the Dow Water & Process Solutions business:

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Japan: +813 5460 2100  
China: +86 21 2301 1000  
<http://www.dowwaterandprocess.com>

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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