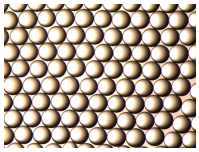
Product Data Sheet

DuPont™ AmberLite™ CR1360 Ca and Na Chromatographic Separation Resins

Separation Resin Primarily Used for Oligosaccharide and Polyols Purification

Description



DuPont™ AmberLite™ CR1360 Chromatographic Separation Resin is a strong acid cation resin manufactured in a process that produces an extremely uniform particle size. This resin was specifically developed for use in simulated moving bed (SMB) chromatographic systems for the recovery and purification of oligosaccharide sugars.

AmberLite™ CR1360 is specifically designed with the combination of particle size and rapid kinetics to improve performance and minimize product dilution. The extra performance helps to minimize water evaporation costs and is especially valuable in size- and affinity-based separations of oligosaccharides, fractionation of monosaccharides, disaccharides, trisaccharides, tetrasaccharides, and general purification of sweeteners.

AmberLite™ CR1360 Ca Chromatographic Separation Resin is used in affinity-based purification of sweeteners, polyols, and oligosaccharides in processes demanding an extremely high level of chromatographic separation performance.

AmberLite™ CR1360 Na Chromatographic Separation Resin is used to separate oligosaccharides by size, typically in the monosaccharide to tetrasaccharide size range.

Either ionic form can be used in other specialty separations, depending on the binary pair of constituents. ‡

Applications

- Oligosaccharide purification
- Oligosaccharide fractionation
- Polyols/sugar alcohols purification
- High performance or difficult sweetener separations
- Size-exclusion chromatography specialty separations ‡

‡ Refer to the DuPont Separability Advisor™ Bubble Chart (Form No. 45-D01069-en) as a guide regarding the feasibility to separate various binary combinations of sugars and sugar alcohols. Plus, lab testing is available through System Optimization Services℠ (SOS) to help identify the best product to meet your needs.

Form No. 45-D01072-en, Rev. 2
February 2023

Typical Properties

Physical Properties		
Copolymer	Styrene-divinylbenzene	
Matrix	Gel	
Type	Strong acid cation	
Functional Group	Sulfonic acid	
Physical Form	Amber, translucent, spherical beads	
Chemical Properties		
Ionic Form as Shipped	**Ca^{2+}**	**Na^{+}**
Total Exchange Capacity	≥ 1.2 eq/L (H^{+} form)	≥ 1.2 eq/L (H^{+} form)
Water Retention Capacity	63.5 – 68.0% (H^{+} form)	63.5 – 68.0% (H^{+} form)
Stability		
Whole Uncracked Beads	≥ 97%	≥ 97%
Density		
Particle Density	1.25 g/mL	1.20 g/mL
Shipping Weight	770 g/L (48 lb/ft^3)	770 g/L (48 lb/ft^3)

Typical Bead Size Distribution

(Light Obscuration Instrument Particle Size)

	Ca^{2+}		**Na^{+}**	
Particle Diameter §	355 ± 30 µm		360 ± 30 µm	
Uniformity Coefficient	≤ 1.1		≤ 1.1	
Broad Range	285 – 405 µm	≥ 80%	295 – 415 µm	≥ 80%
Narrow Range	330 – 375 µm	≥ 60%	335 – 390 µm	≥ 60%
Fine Beads	< 310 µm	≤ 8%	< 315 µm	≤ 8%
Coarse Beads	> 420 µm	≤ 8%	> 430 µm	≤ 8%

§ For additional particle size information, please refer to the Particle Size Distribution Cross Reference Chart (Form No. 45-D00954-en).

Suggested Operating Conditions

	Polyols (Ca^{2+} form)	**Oligosaccharides (Na+)**
Syrup Temperature	60 – 65°C (140 – 149°F)	Depends on the application
Syrup pH	5 – 7	Depends on the application
Dissolved Oxygen Concentration		
Recommended	< 0.1 ppm	< 0.1 ppm
Maximum	0.25 ppm	0.25 ppm
Simulated Moving Bed Operation	With optimized tuning (annually)	With optimized tuning (annually)

Note: It is strongly advised to remove oxygen from feed streams and elution water going into the chromatographic separation resin. Limiting the oxygen concentration to less than 0.1 ppm (0.25 ppm maximum) will help maximize resin life.

Hydraulic Characteristics

Estimated bed expansion of DuPont™ AmberLite™ CR1360 Chromatographic Separation 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.

Estimated pressure drop data for AmberLite™ CR1360 as a function of service flowrate and viscosity is shown in Figure 2.

Figure 1: Backwash Expansion

Temperature = 25°C (77°F)

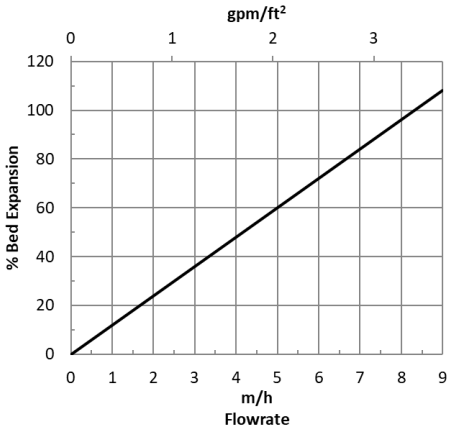
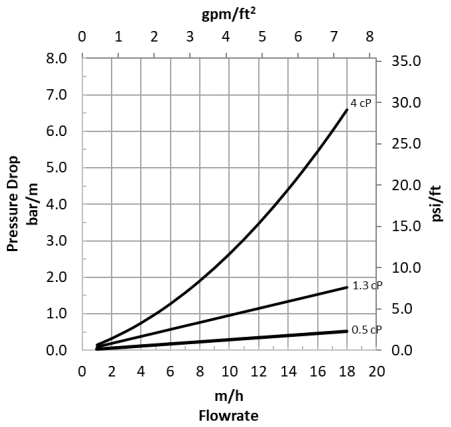


Figure 2: Pressure Drop

Viscosity = 0.5 – 4 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/ft^2

Product Stewardship

DuPont 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 DuPont products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

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

Please be aware of the following:

- **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.

Regulatory Note

This product may be used in applications that need to comply with relevant regulations. In support of these applications, a Regulatory Information Package is available upon request. Please address your request to your sales team or the contact details provided in this Product Data Sheet.

Form No. 45-D01072-en, Rev. 2
February 2023

Have a question? Contact us at:

www.dupont.com/water/contact-us

All information set forth herein is for informational purposes only. This information is general information and may differ from that based on actual conditions. Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where DuPont is represented. The claims made may not have been approved for use in all countries. Please note that physical properties may vary depending on certain conditions and while operating conditions stated in this document are intended to lengthen product lifespan and/or improve product performance, it will ultimately depend on actual circumstances and is in no event a guarantee of achieving any specific results. DuPont assumes no obligation or liability for the information in this document. References to "DuPont" or the "Company" mean the DuPont legal entity selling the products to Customer unless otherwise expressly noted. NO WARRANTIES ARE GIVEN; ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED. No freedom from infringement of any patent or trademark owned by DuPont or others is to be inferred.

© 2023 DuPont. DuPont™, the DuPont Oval Logo, and all trademarks and service marks denoted with ™, ℠ or ® are owned by affiliates of DuPont de Nemours Inc., unless otherwise noted.

Form No. 45-D01072-en, Rev. 2
February 2023