Product Data Sheet

DuPont™ AmberLyst™ 35WET Polymeric Catalyst

Industrial-grade, Strongly Acidic Catalyst

Description

DuPont™ AmberLyst™ 35WET Polymeric Catalyst is a macroporous, strongly acidic, cationic, polymeric catalyst. Its open continuous pore structure makes it an excellent heterogeneous catalyst for a wide variety of organic reactions. This catalyst possesses a specific acid functionality which gives it higher thermal stability than standard polymeric catalysts. Its polymeric structure is resistant to oxidants and breakdown caused by mechanical and osmotic shock.

AmberLyst™ 35WET is a next-generation catalyst for the production of MTBE and TAME. It significantly outperforms conventional catalysts. AmberLyst™ 35WET has increased activity which means throughput can be increased by 20 – 40% compared to AmberLyst™ 15WET, while maintaining high olefin conversion. Selectivity to MTBE or TAME remains high.

Another important feature of AmberLyst™ 35WET is that it increases the equilibrium constant of isobutylene and methanol to MTBE compared to conventional catalysts. This feature can lead to significant increases in MTBE productivity. Longer catalyst lifetimes may result from the increased concentration of acid sites and enhanced thermal stability.

Applications

- Etherification (MTBE, ETBE, TAME)
- Dimerization (isooctane)

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Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Black, opaque, spherical beads
Nitrogen BET	
Surface Area	50 m^2/g
Total Pore Volume	0.35 cc/g
Average Pore Diameter	300 Å
Chemical Properties	
Ionic Form as Shipped	H^+
Concentration of Acid Sites ‡	≥ 5.20 eq/kg ≥ 1.90 eq/L
Water Retention Capacity	51 – 57%
Particle Size §	
Particle Diameter	700 – 950 µm
Uniformity Coefficient	≤ 1.70
< 425 µm	≤ 1.0%
> 1180 µm	≤ 4.0%
Shrinkage (in solvent)	
Methanol	4.5%
MTBE	10.5%
Hexane	21%
Dry	40%
Density	
Shipping Weight	800 g/L

‡ Dry Weight Capacity ≥ 5.20 eq/kg; Total Exchange Capacity (on a water-wet basis) ≥ 1.90 eq/L

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

Suggested Operating Conditions

Maximum Operating Temperature	150°C (300°F)
Bed Depth, min.	1000 mm (3.3 ft)
Pressure Drop, max.	1 bar (15 psig) across the bed
Flowrates	
Linear Hourly Space Velocity (LHSV)	0.5 – 5 h^{-1}
Backwash	See Figure 1

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Hydraulic Characteristics

Estimated bed expansion of DuPont™ AmberLyst™ 35WET Polymeric Catalyst as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLyst™ 35WET as a function of service flowrate and temperature is shown in Figure 2. These pressure drop expectations are valid at the start of the service run with clean water and a well-classified bed.

Figure 1: Backwash Expansion

Temperature = 10 – 90°C (50 – 194°F)

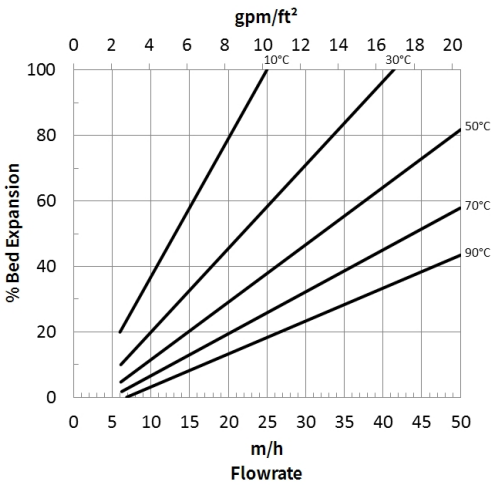
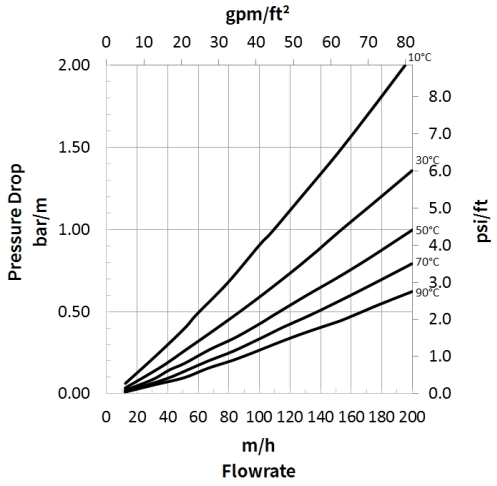


Figure 2: Pressure Drop

Temperature = 10 – 90°C (50 – 194°F)



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.

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Have a question? Contact us at:

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