Product Data Sheet

DuPont™ AmberLyst™ 47 Polymeric Catalyst

Industrial-grade, Strongly Acidic Catalyst

Description

DuPont™ AmberLyst™ 47 Polymeric Catalyst is a macroporous, sulfonic acid polymeric catalyst specifically produced for use in pressure drop-sensitive reactors like tubular reactors or in structured packings for reactive distillation columns.

Its continuous open pore structure makes it an excellent heterogeneous acid catalyst for a wide variety of organic reactions. AmberLyst™ 47 is extremely resistant to breakdown by osmotic, mechanical, and thermal shocks.

Applications

- Etherification reactions (MTBE, ETBE, TAME)
- Pressure drop-sensitive reactors

Typical Properties

Physical Properties	
Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Amber, opaque, spherical beads
Nitrogen BET	
Surface Area	50 m^2/g
Total Pore Volume	0.40 cc/g
Average Pore Diameter	240 Å
Chemical Properties	
Ionic Form as Shipped	H^+
Concentration of Acid Sites ‡	≥ 1.65 eq/L
Water Retention Capacity	50 – 57%
Particle Size §	
Particle Diameter	825 – 1000 µm
Uniformity Coefficient	≤ 1.40
< 600 µm	≤ 2.0%
> 1180 µm	≤ 15.0%
Shrinkage (in solvent)	
Methanol	4%
Dry	37%
Density	
Shipping Weight	770 g/L

‡ Total Exchange Capacity (on a water-wet basis) ≥ 1.65 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	120°C (248°F)
Pressure Drop, max.	1 bar (15 psig) across the bed
Flowrates	
Linear Hourly Space Velocity (LHSV)	0.5 – 5 h^{-1}

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Hydraulic Characteristics

Estimated bed expansion of DuPont™ AmberLyst™ 47 Polymeric Catalyst as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AmberLyst™ 47 as a function of service flowrate and temperature is shown in . 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)

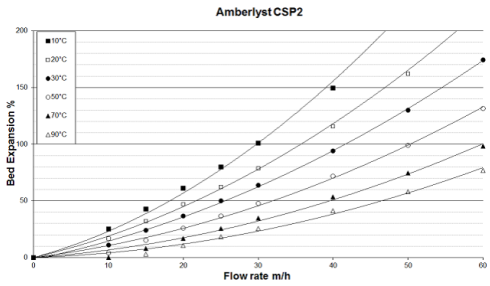
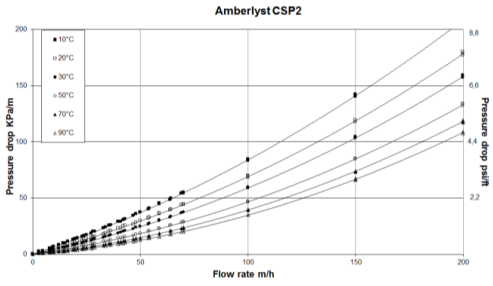


Figure 2: Pressure Drop

Temperature = 10 – 90°C (50 – 194°F)



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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:

www.dupont.com/water/contact-us

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