



Product Data Sheet

AMBERLYST™ 48 Polymeric Catalyst

Industrial-grade, Strongly Acidic Catalyst

Description

AMBERLYST™ 48 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 extremely resistant to breakdown by osmotic, mechanical, and thermal shocks. The special particle size distribution and high acid site density of AMBERLYST™ 48 provide high production rates and reliable long-term operation in the acid-catalyzed reactions such as etherification and esterification.

Applications

- Etherification (MTBE, ETBE, TAME)
- Esterification (acetates, acrylates, fatty acid esters)
- 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	44 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 [‡]	≥ 1.80 eq/L
Water Retention Capacity	49 – 56%
Particle Size [§]	
< 600 µm	≤ 5.0%
> 1180 µm	≤ 10.0%
Shrinkage (in solvent)	
Methanol	5%
Dry	39%
Density	
Shipping Weight	820 g/L

[‡] Total Exchange Capacity (on a water-wet basis) ≥ 1.80 eq/L

[§] For additional particle size information, please refer to the [Particle Size Distribution Cross Reference Chart](#) (Form No. 177-01775).

Suggested Operating Conditions

Maximum Operating Temperature	140°C (285°F)
Pressure Drop, max.	1 bar (15 psig) across the bed
Flowrates	
Linear Hourly Space Velocity (LHSV)	0.5 – 5 h ⁻¹

Hydraulic Characteristics

Estimated bed expansion of AMBERLYST™ 48 Polymeric Catalyst as a function of backwash flowrate and temperature is shown in Figure 1.

Estimated pressure drop for AMBERLYST™ 48 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)

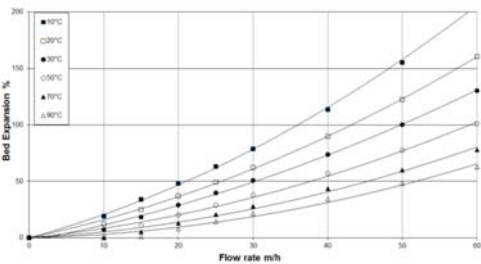
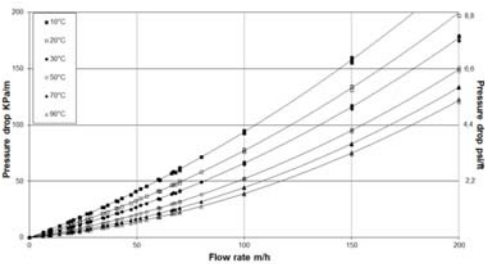


Figure 2: Pressure Drop
Temperature = 10 – 90°C (50 – 194°F)



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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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