



## Product Data Sheet

### **AMBERLYST™ 35WET Polymeric Catalyst**

Industrial-grade, Strongly Acidic Catalyst

#### **Description**

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)

## Typical Properties

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### Physical Properties

Copolymer	Styrene-divinylbenzene
Matrix	Macroporous
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Black, opaque, spherical beads

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### Nitrogen BET

Surface Area	50 m <sup>2</sup> /g
Total Pore Volume	0.35 cc/g
Average Pore Diameter	300 Å

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### Chemical Properties

Ionic Form as Shipped	H <sup>+</sup>
Concentration of Acid Sites †	≥ 5.20 eq/kg ≥ 1.90 eq/L
Water Retention Capacity	51 – 57%

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### Particle Size §

Particle Diameter	700 – 950 µm
Uniformity Coefficient	≤ 1.70
< 425 µm	≤ 1.0%
> 1180 µm	≤ 4.0%

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### Shrinkage (in solvent)

Methanol	4.5%
MTBE	10.5%
Hexane	21%
Dry	40%

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### Density

Shipping Weight	800 g/L
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† 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. 177-01775).

## 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 <sup>-1</sup>
Backwash	See Figure 1

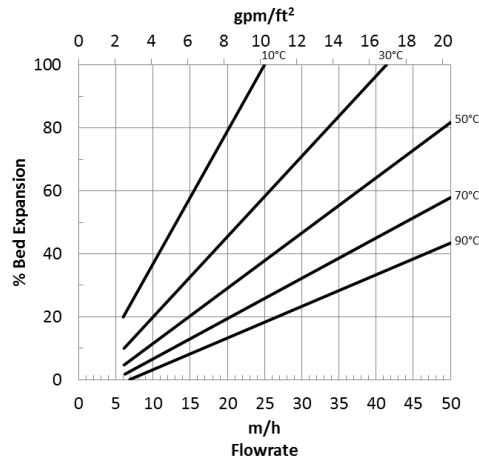
## Hydraulic Characteristics

Estimated bed expansion of 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.

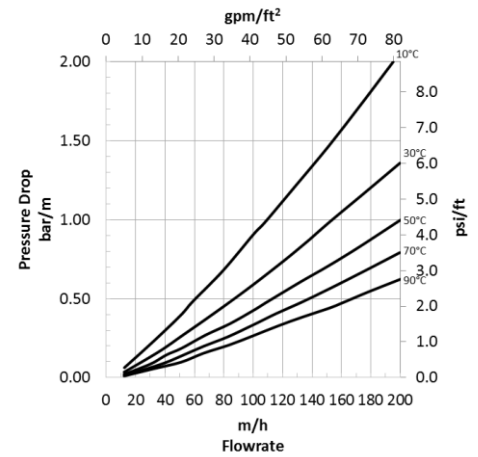
**Figure 1: Backwash Expansion**

Temperature = 10 – 90°C (50 – 194°F)



**Figure 2: Pressure Drop**

Temperature = 10 – 90°C (50 – 194°F)



## Product Stewardship

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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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