



Product Data Sheet

AMBERLYST™ 35WET Polymeric Catalyst

Industrial-grade Strongly Acidic Catalyst

Description

AMBERLYST™ 35WET Polymeric Catalyst is a macroreticular, 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 novel 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.

Typical Physical and Chemical Properties**

Matrix	Styrene-divinylbenzene, macroporous
Type	Strong acid cation
Functional Group	Sulfonic acid
Physical Form	Black, spherical beads
Ionic Form as Shipped	H ⁺ Form
Concentration of Acid Sites ^d	≥ 5.40 eq/kg ≥ 2.1 eq/L
Water Retention Capacity	52 – 57%
Particle Size	
Particle Diameter ^b	700 – 850 μm
Uniformity Coefficient	≤ 1.5
< 425 μm	≤ 0.5%
> 1180 μm	≤ 2.0%
Nitrogen BET	
Surface Area	50 m ² /g
Pore Volume	0.35 cc/g
Pore Size, average	300 Å
Shrinkage	Water → Methanol : 4.5% Water → MTBE : 10.5% Water → Hexane : 21% Water → Dry : 40%
Bulk Density, as Shipped ^c	800 g/L

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

^c As per the backwashed and settled density of the resin, determined by ASTM D-2187.

^d Total Exchange Capacity (on a water-wet basis) ≥ 2.1 eq/L; Dry Weight Capacity ≥ 5.40 eq/kg.

Suggested Operating Conditions**

Maximum Operating Temperature	150°C (300°F)
Bed Depth, min.	100 cm (39 inches)
Operating Flowrate	1 – 5 BV*/h (LHSV)
Pressure Drop, max.	1 bar (15 psig) across the bed

* 1 BV (Bed Volume) = 1 m³ solution per m³ resin or 7.5 gal per ft³ resin

Hydraulic Characteristics

Bed expansion of AMBERLYST™ 35WET Polymeric Catalyst as a function of backwash flowrate and water temperature is shown in Figure 1.

Pressure drop data for AMBERLYST 35WET as a function of service flowrate and water temperature is shown in Figure 2.

Figure 1: Backwash Expansion

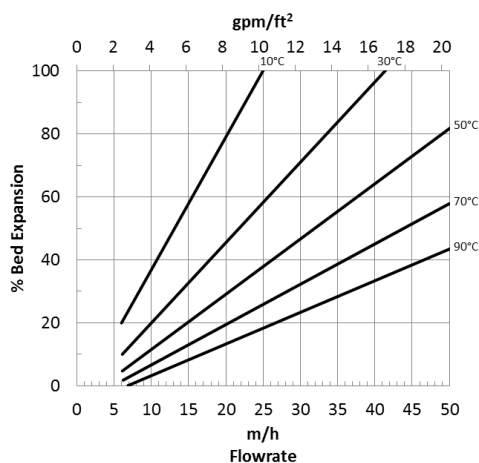
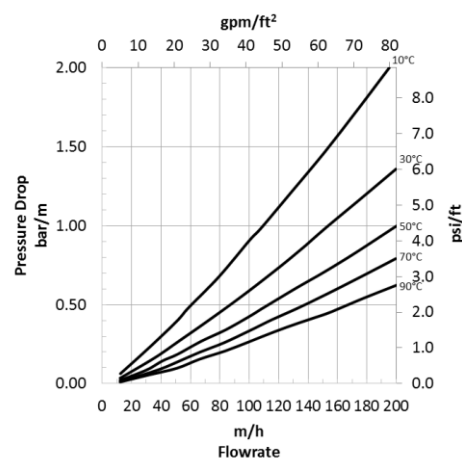


Figure 2: Pressure Drop



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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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