



## Product Data Sheet

### AMBERLYST™ 45 Polymeric Catalyst

High-temperature Strongly Acidic Catalyst

#### Description

AMBERLYST™ 45 Polymeric Catalyst is a macroporous, sulfonic acid, polymeric catalyst designed for use in high-temperature heterogeneous catalysis. It is particularly well-suited for processes such as olefin hydration, esterification, and aromatic alkylation.

In these applications, AMBERLYST™ 45 offers definite advantages over conventional resins:

- Higher thermal stability
- High catalytic activity

#### Applications

- High-temperature esterification (acetates, acrylates, fatty acid esters)
- High-temperature olefin hydration (IPA, SBA)
- High-temperature aromatic alkylation

#### Typical Properties

| Physical Properties                      |   |
|--|---|
| Copolymer                                | Styrene-divinylbenzene                  |
| Matrix                                   | Macroporous                             |
| Type                                     | Strong acid cation                      |
| Functional Group                         | Sulfonic acid                           |
| Physical Form                            | Brown to black, opaque, spherical beads |
| Nitrogen BET                             |   |
| Surface Area                             | 49 m <sup>2</sup> /g                    |
| Average Pore Diameter                    | 190 Å                                   |
| Chemical Properties                      |   |
| Ionic Form as Shipped                    | H <sup>+</sup>                          |
| Concentration of Acid Sites <sup>‡</sup> | ≥ 2.95 eq/kg<br>≥ 1.00 eq/L             |
| Water Retention Capacity                 | 51 – 55%                                |
| Particle Size <sup>§</sup>               |   |
| Uniformity Coefficient                   | ≤ 1.5                                   |
| < 355 µm                                 | ≤ 0.2%                                  |
| Density                                  |   |
| Shipping Weight                          | 770 g/L                                 |

<sup>‡</sup> Dry Weight Capacity ≥ 2.95 eq/kg; Total Exchange Capacity (on a water-wet basis) ≥ 1.00 eq/L

<sup>§</sup> 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       | 170°C (340°F)                  |
| Bed Depth, min.                     | 600 mm (2.0 ft)                |
| Pressure Drop, max.                 | 3 bar (45 psig) across the bed |
| Flowrates                           |                                |
| Linear Hourly Space Velocity (LHSV) | 0.5 – 5 h <sup>-1</sup>        |

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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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