

# AmberLyst™ Polymeric Catalysts



| Application & Product Name                              | Type               | Matrix | Surface Area <sup>[1]</sup> | Avg. Pore Diameter <sup>[1]</sup> | Minimum Capacity |                        | Water Retention Capacity | Shipping Weight |          | Recommended Max. Op. Temperature |      |
|---|--------------------|--------|-----------------------------|-----------------------------------|------------------|------------------------|--------------------------|-----------------|----------|----------------------------------|------|
|   |                    |        | (m²/g)                      | (Å)                               | (eq/L)           | (eq/kg) <sup>[2]</sup> | (%)                      | (g/L)           | (lb/ft³) | (°C)                             | (°F) |
| Etherification (MTBE, ETBE, TAME)                       |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 15WET  | Strong acid        | Macro  | 53                          | 300                               | 1.80             | 4.70                   | 52 – 57                  | 770             | 48.1     | 120                              | 250  |
| AmberLyst™ 35WET  | Strong acid        | Macro  | 50                          | 300                               | 1.90             | 5.20                   | 51 – 57                  | 800             | 49.9     | 150                              | 300  |
| AmberLyst™ 17   | Strong acid        | Macro  | 30                          | 200                               | 1.85             | 4.90                   | 50 – 54                  | 760             | 47.4     | 120                              | 250  |
| Dimerization (Isooctane)                                |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 35WET  | Strong acid        | Macro  | 50                          | 300                               | 1.90             | 5.20                   | 51 – 57                  | 800             | 49.9     | 150                              | 300  |
| AmberLyst™ 36WET  | Strong acid        | Macro  | 33                          | 240                               | 1.95             | 5.40                   | 51 – 57                  | 800             | 49.9     | 150                              | 300  |
| Phenol Purification                                     |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 16WET  | Strong acid        | Macro  | 30                          | 250                               | 1.70             | 4.80                   | 52 – 58                  | 780             | 48.7     | 130                              | 265  |
| AmberLyst™ 36WET  | Strong acid        | Macro  | 33                          | 240                               | 1.95             | 5.40                   | 51 – 57                  | 800             | 49.9     | 150                              | 300  |
| Phenol Alkylation                                       |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 15DRY  | Strong acid        | Macro  | 53                          | 300                               | -                | 4.70                   | ≤ 1.6                    | 610             | 38.1     | 120                              | 250  |
| AmberLyst™ 35DRY  | Strong acid        | Macro  | 50                          | 300                               | -                | 5.00                   | ≤ 3.0                    | 560             | 35.0     | 150                              | 300  |
| AmberLyst™ 36DRY  | Strong acid        | Macro  | 33                          | 240                               | -                | 5.40                   | ≤ 1.65                   | 770             | 48.1     | 150                              | 300  |
| AmberLyst™ 17DRY  | Strong acid        | Macro  | 30                          | 200                               | -                | 4.70                   | ≤ 3.0                    | 590             | 36.8     | 120                              | 250  |
| Condensation (Bisphenol-A)                              |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 33   | Strong acid        | Gel    | -                           | -                                 | 1.35             | 5.00                   | 64 – 68                  | 732             | 45.7     | 130                              | 265  |
| AmberLyst™ 125  | Strong acid        | Gel    | -                           | -                                 | 0.70             | 4.80                   | 77 – 83                  | 730             | 45.6     | 130                              | 265  |
| Pre-promoted Catalysts                                  |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 125B   | Strong acid        | Gel    | -                           | -                                 | 0.70             | 4.80                   | 77 – 83                  | 714             | 44.6     | 130                              | 265  |
| AmberLyst™ 131B   | Strong acid        | Gel    | -                           | -                                 | 1.35             | 4.80                   | 62 – 68                  | 770             | 48.1     | 130                              | 265  |
| Hydrogenation (MIBK, TAME)                              |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ CH10   | Strong acid (Pd)   | Macro  | 33                          | 240                               | 1.60             | 4.80                   | 52 – 58                  | 790             | 49.3     | 130                              | 265  |
| AmberLyst™ CH28   | Strong acid (Pd)   | Macro  | 36                          | 260                               | 1.60             | 4.80                   | 52 – 58                  | 790             | 49.3     | 130                              | 265  |
| AmberLyst™ CH33   | Strong acid (Pd)   | Macro  | 36                          | 260                               | 1.60             | 4.80                   | 52 – 58                  | 790             | 49.3     | 130                              | 265  |
| Olefin Hydration (TBA, IPA, SBA)                        |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 15WET  | Strong acid        | Macro  | 53                          | 300                               | 1.80             | 4.70                   | 52 – 57                  | 770             | 48.1     | 120                              | 250  |
| AmberLyst™ 45   | Strong acid        | Macro  | 49                          | 190                               | 1.00             | 2.95                   | 51 – 55                  | 770             | 48.1     | 170                              | 340  |
| Esterification (Acetates, Acrylates, Fatty Acid Esters) |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ 15WET  | Strong acid        | Macro  | 53                          | 300                               | 1.80             | 4.70                   | 52 – 57                  | 770             | 48.1     | 120                              | 250  |
| AmberLyst™ 16WET  | Strong acid        | Macro  | 30                          | 250                               | 1.70             | 4.80                   | 52 – 58                  | 780             | 48.7     | 130                              | 265  |
| AmberLyst™ 36WET  | Strong acid        | Macro  | 33                          | 240                               | 1.95             | 5.40                   | 51 – 57                  | 800             | 49.9     | 150                              | 300  |
| AmberLyst™ 39WET  | Strong acid        | Macro  | 32                          | 230                               | 1.15             | 5.00                   | 60 – 66                  | 735             | 45.9     | 130                              | 265  |
| AmberLyst™ 46   | Strong acid        | Macro  | 75                          | 235                               | -                | 0.80                   | 26 – 36                  | 600             | 37.5     | 120                              | 250  |
| AmberLyst™ 45   | Strong acid        | Macro  | 49                          | 190                               | 1.00             | 2.95                   | 51 – 55                  | 770             | 48.1     | 170                              | 340  |
| AmberLyst™ 131WET                                       | Strong acid        | Gel    | -                           | -                                 | 1.35             | 4.80                   | 62 – 68                  | 740             | 46.2     | 130                              | 265  |
| AmberLyst™ 19   | Strong acid        | Gel    | -                           | -                                 | 1.80             | -                      | 48 – 54                  | 785             | 49.0     | 120                              | 250  |
| Base Catalyzed Reactions                                |                    |        |                             |                                   |                  |                        |                          |                 |          |                                  |      |
| AmberLyst™ A21  | Weak base          | Macro  | 35                          | 110                               | 1.30             | 4.60                   | 56 – 62                  | 660             | 41.2     | 100 <sup>[3]</sup>               | 210  |
| AmberLyst™ A26 OH                                       | Strong base Type I | Macro  | 30                          | 290                               | 0.80             | 4.20                   | 66 – 75                  | 675             | 42.1     | 60 <sup>[4]</sup>                | 140  |
| AmberLyst™ A21DRY                                       | Weak base          | Macro  | 35                          | 110                               | -                | 5.00                   | ≤ 0.3                    | 330             | 20.6     | 100 <sup>[3]</sup>               | 210  |
| AmberLyst™ A22  | Weak base          | Macro  | 55                          | 290                               | 1.70             | -                      | 40 – 50                  | 640             | 40.0     | 120 <sup>[3]</sup>               | 250  |

<sup>[1]</sup> Nitrogen BET    <sup>[2]</sup> Dry weight    <sup>[3]</sup> Free base form    <sup>[4]</sup> Hydroxide form

## Remarks

Etherification catalyst. Extremely resistant to breakdown by osmotic and mechanical shock.

Excellent etherification catalyst. Higher acid strength, better performance, and longer lifetime than conventional catalysts.

Uniform particle size catalyst offering reduced pressure drop and higher throughput for increased production.

Dimerization catalyst with high activity and high temperature stability.

Dimerization catalyst that combines high activity, high temperature stability, and good resistance to polymer fouling.

Condensation catalyst. A low degree of crosslinking provides a high resistance to polymer fouling.

Higher exchange capacity and improved thermal stability compared to conventional catalysts.

Alkylation catalyst. Excellent for use in non-aqueous systems where the presence of water has a negative effect on catalyst activity.

Alkylation catalyst with higher acidity and improved thermal stability compared to conventional catalysts.

Exceptional alkylation catalyst. In addition to high thermal stability, the low degree of crosslinking confers a high resistance to organic fouling.

Uniform particle size, dry catalyst offering reduced pressure drop and increased productivity.

Very low acid leachables, designed for high-purity BPA production.

Low crosslinked, uniform large bead size catalyst that offers excellent productivity with good resistance to polymer fouling.

Pre-promoted, uniform large bead size catalyst for reduced pressure drop. Promotion level: 17 – 23%.

Excellent pre-promoted catalyst with uniform particle size which confers enhanced hydraulic properties and reactivity compared to conventional catalysts. Promotion level: 22 – 28%.

Bifunctional catalyst with acid and metal functionality; contains 1.0 g/L Pd. Used primarily in TAME production to selectively hydrogenate diolefins.

Bifunctional catalyst with acid and metal functionality; contains 2.8 g/L Pd. Used primarily for MIBK production.

Bifunctional catalyst with acid and metal functionality; contains 3.3 g/L Pd. Used primarily for MIBK production.

Conventional hydration catalyst suitable for reactive olefins such as isobutylene.

High-temperature catalyst for the synthesis of SBA and IPA.

Catalyst for low molecular weight acetate esters.

Best suited catalyst for medium molecular weight esters. Used in industrial production of butyl acrylate and methyl methacrylate.

Highly active catalyst with high temperature stability. Well suited for fatty acid esterification.

Esterification catalyst for higher molecular weight compounds that diffuse slowly into conventional catalysts.

Patented esterification catalyst that minimizes by-product formation such as ethers or olefins.

High-temperature catalyst for the synthesis of high molecular weight esters and the esterification of diols and polyols.

Excellent catalyst for low molecular weight esters. Used for ethyl acrylate production.

Highly active esterification catalyst for the reaction of acrylic acid with methanol and ethanol to form the corresponding acrylates.

Macroporous, weak base anion catalyst.

Excellent choice for aldol condensation. High resistance to organic fouling.

Ready-to-use catalyst for silane disproportionation.

High-capacity, macroporous, weak base anion catalyst.



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