Product Data Sheet

# AMBERLYST™ A21

Industrial Grade Weakly Basic Polymeric Resin

## Description

AMBERLYST™ A21 is a bead form, weak base anion exchange resin developed for the removal of acidic materials from product streams. AMBERLYST A21 is supplied in the water-moist free base form. After proper solvent conditioning, it can be used directly to remove acidic materials from organic solvents and to remove phenol from benzene and inhibitors from monomers : hydroquinone (HQ), hydroquinone mono-ethyl ether (MEHQ), tertiary butyl catechol (TBC).

AMBERLYST A21 is also used in adsorption of $SO_2$ from gas streams.

## Typical Physical and Chemical Properties

| | |
|---|---|
| Physical Form | Opaque spherical beads |
| Ionic Form as Shipped | Free Base (FB) |
| Concentration of Active Sites | ≥ 4.6 eq/kg |
| | ≥ 1.30 eq/L |
| Water Retention Capacity | 56 – 62% (FB form) |
| Shipping Weight | 660 g/L (41.2 lbs/ft$^3$) |
| Particle Size | |
| Harmonic Mean Size | 490 – 690 µm |
| Uniformity Coefficient, max | ≤ 1.80 |
| Fine Contents | < 0.300 mm : 1% max |
| Nitrogen BET | |
| Surface Area | 35 m$^2$/g |
| Average Pore Diameter | 110 Å |
| Total Pore Volume | 0.10 cc/g |
| Swelling | Water to phenol : 77% |

These are typical properties, not to be construed as specifications.
Test methods are available on request.

## Suggested Operating Conditions

| | | | | |
|---|---|---|---|---|
| Maximum Operating Temperature | | 100ºC (212ºF) | | |
| Minimum Bed Depth | | 60 cm (24 inches) | | |
| Service Flow Rate | | 1 – 5 BV*/h (LHSV)** | | |
| Pressure Drop Limitation | | 1 bar (15 psig) across the bed | | |
| Regenerants | | NaOH | $NH_4OH$ | $Na_2CO_3$ |
| Flow Rate | (BV*/h) | 4 – 8 | 4 – 8 | 4 – 8 |
| | (gpm/ft$^3$) | 0.5 – 1.0 | 0.5 – 1.0 | 0.5 – 1.0 |
| Concentration | (%) | 2 – 4 | 2 – 4 | 4 – 8 |
| Level | | 120% of ionic load | | |
| Minimum Contact Time | | 30 minutes | | |
| Slow Rinse | | 2 BV (15 gal/ft$^3$) at regeneration flow rate | | |
| Fast Rinse | | 2 to 4 BV* (15 – 30 gal/ft$^3$ ) at service flow rate | | |

*1 BV (Bed Volume) = 1 m3 solution per m3 resin or 7.5 gals per ft3 resin
**LHSV (Liquid Hourly Space Velocity)



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## Hydraulic Characteristics

Figure 1 shows the bed expansion of AMBERLYST A21 as a function of backwash flow rate and water temperature.

Figure 2 shows the pressure drop data for AMBERLYST A21 as a function of service flow rate and water temperature.

**Figure 1: Bed Expansion**

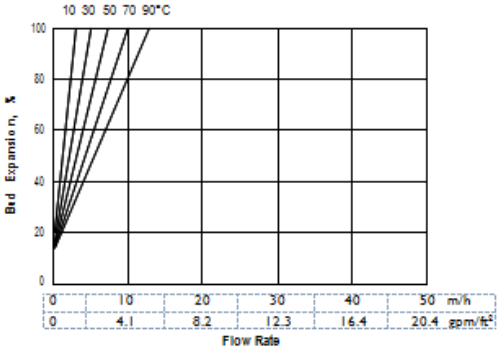
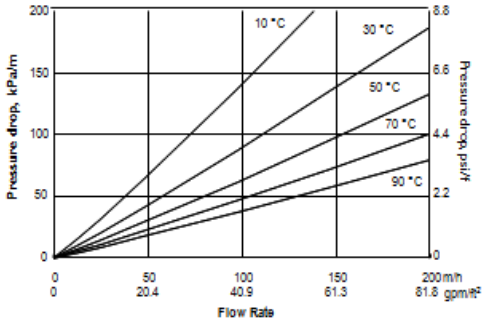



**Figure 2: Pressure Drop**




## Handling Precautions

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

## Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

## Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.


**AMBERLYST™ Ion Exchange Resins**

**Contact Dow Water & Process Solutions:**

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|---|---|
| North America: | 1-800-447-4369 |
| Latin America: | (+55) 11-5188-9222 |
| Europe: | +800-3-694-6367 |
| Pacific: | +800 7776 7776 |
| China: | +400 889-0789 |

www.dowwaterandprocess.com


**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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