DuPont Ion Exchange Resins

Proper Storage Conditions for DuPont Ion Exchange Resins

In most cases, when stored under proper conditions and in their original packaging, unused ion exchange resins may be stored for longer than their recommended shelf life without experiencing a decline in their physical properties. Standard demineralizing and softening resins are expected to experience minimal change in chemical properties over the course of a five-year period. For more sensitive applications, alternate maximum storage time periods may be recommended, and exceptions are indicated in the specific product data sheets. The following table gives the general guidelines for the applications in the listed markets. For pharmaceutical ion exchange resins, please contact your DuPont representative for proper storage conditions.

Ion Exchange Resins application	Typical recommended storage time (max)
Industrial water	5 years
Power	3 years
Ultra Pure Water (semi-conductor)	3 years
Drinking water (Point of Use)	3 years (1 year)
Catalysis & chemical processing	3 years
Nutrition	3 years (OH form anion: 2 years)
Bioprocessing	3 - 5 years
Inert resins	8 years

Storage of New, Unused Resin

The manufacturing and re-test date are reported in the Certificates of Analysis and written on most of the packing labels. It is recommended to check the resin after the recommended shelf life for standard characteristics.

Resins should be stored in their original unopened packaging in a cool dry area. An indoor storage facility with temperatures between 2–40°C (36–105° F) should be used for the best results.

Storage temperatures above 40°C (105°F) can cause premature loss of capacity for anion resins, particularly those stored in the OH-form. While cation resins can withstand higher temperatures (up to 80°C/175°F), it is best to store all resins under similar conditions. Storage temperatures below 0°C (32°F) can cause resin freezing. Tests of DuPont resins under repeated freeze-thaw cycles show that bead damage can occur. Frozen resin should be thawed out completely under room temperature conditions before loading and use.

The resin packaging may also degrade in poor storage conditions. If stored in undesirable conditions (high or low temperature, high or low moisture, in direct sunlight, etc.), the resin packaging may become fragile. Also, dirt, dust, and other foreign matter accumulated on the packaging during storage may become a source of contamination of the resin when opening the containers for resin loading.

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Storage of Used Resins

As with new resins, used resins should be stored in an indoor storage facility with temperatures between 2 – 40°C (36 – 105°F), where feasible, to maximize the life of the resins.

Additionally, care should be taken that resins are not exposed to air because they will dry out and shrink. When rehydrated, these resins are susceptible to bead breakage due to rapid re-swelling of the resin beads. If resin beads are allowed to become dry, they should be hydrated with a 10% NaCl solution. The high osmotic pressure will minimize the rapid re-swelling. The salt can then be removed by successive dilutions to prevent rapid change in osmotic pressures and resulting bead breakage.

Biological growth problems can be caused by inactivity of the resin during extended storage. In order to minimize the potential for biofouling, inactive systems should be stored in a biostatic solution such as 10% NaCl. In addition to minimizing biogrowth, the concentrated brine solution will prevent freezing.

The recommended procedure for resins used for water demineralization is as follows:

- After exhaustion and a thorough backwash, the resin is ready for lay-up.
- Apply a 10% NaCl solution to the bed and fill the vessel so that no air is present.
- Upon reactivation of the vessel, the resin will need to be re-hydrated by successive washes of less concentrated salt to minimize osmotic shock.
- Prior to service, the beds must undergo a double or triple regeneration.

For mixed bed resins in condensate polishing and other ultrapure water applications, the resins should be left in a regenerated condition as follows:

- Separate the resins and carry out a double regeneration.
- Rinse out the regenerants and leave the resins in the rinse water.
- Flush the resins periodically down-flow (about once per week) to remove any TOC (Total Organic Carbon) leachate.

Prior to start-up, rinse and regenerate as normal.

Have a question? Contact us at:
www.dupont.com/water/contact-us

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