

**DOWEX™ Ion Exchange Resins**

Proper Storage Conditions for DOWEX Ion Exchange Resins

**Storage of New,
Unused Resin**

Unused resins, in their original packaging, can be stored under proper conditions for longer than their recommended shelf life without experiencing a decline in their physical properties, in most cases. Standard demineralizing and softening resins experience minimal change in chemical properties over a two-year shelf life. For more sensitive applications, shorter storage times are recommended as shown in the following table. It is recommended to check the resin after the recommended shelf life for standards characteristics.

Resin	Ionic Form	Softening	Application		
			Demineralization	Nuclear	Ultrapure Water
Cation	Na	2 years	2 years		
Cation	H		2 years	2 years	1 year
Cation	NH ₄			1 year	
Anion types 1/2	Cl		2 years		
Anion type 1	OH		2 years	1 year	1 year
Ready to use mixed bed	H/OH		1 year	1 year	1 year

Resins should be stored in their original unopened packaging in a cool dry area. An indoor storage facility with climate control between 0-30° C (32-90° F) should be used for the best results.

Storage temperatures above 30° C (90° 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 50° C (120° F)), it is best to store all resins under similar conditions. Storage temperatures below 0° C (32° F) can cause resin freezing. Tests of DOWEX™ resins under repeated freeze-thaw cycles show that bead damage can occur, so frozen resin must be thawed before safe loading can take place. Frozen resin should be thawed out completely under room temperature conditions before loading and use.

**Storage of Used
Resins**

As with new resins, used resins should be stored under climate controlled conditions, where feasible, to maximize the life of the resins.

Additionally, care should be taken that resins are not exposed to air, as they will dry out and shrink. When re-hydrated, these resins are susceptible to bead breakage due to 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 concentrated 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 15-25% 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.

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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