LG QuantumPure™ IX Resins

Technical Service Bulletin 902

Ion Exchange Resins Long-term Storage

When ion exchange resins are stored for a long period of time, their physical and chemical performance may deteriorate if proper storage precautions are not taken. The factors that can affect the storage conditions of ion exchange resins and ways to minimize performance degradation are as follows.

1. Long-term Storage in Original Packaging

Refer to TSB 901 for handling and short-term storage of ion exchange resins in their original packaging.

Ion exchange resins are supplied in polyethylene bags with some moisture and fully hydrated. However, due to damaged sealing during storage, there is a possibility of drying of beads during long-term storage. Ion exchange resins should not be stored at temperatures above 50 °Celsius (122 °F) as there is a risk of drying of resin beads, and for anion exchange resins, performance deterioration may occur, so caution is required. When stored in a hot climate, ion exchange resins should be protected from direct sunlight and moisture should be checked manually every 2 weeks. Ion exchange resins should be protected from sudden freezing and thawing, but gradual temperature changes do not affect them. They should also be protected from physical shock and not stacked more than 12 bags on a pallet to prevent physical shock during transportation.

2. Expiry Period in Original Packaging

Typical expiration period for which ion exchange resins in original packing maintain their performance is as follows:

The period is valid from the Manufacturing Date.

Type	Ionic Form	For Water Treatment	For Ultra-Pure Water
Cation Resin	Na	4 Years	-
	H	4 Years	-
Anion Resin	Cl	2 Years	-
	OH	1 Years	-
Mixed Resin	H/OH	2 Years	0.5 Years

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3. Storage After System Startup

When the equipment is shut down during normal operation, there is a need to store new or used ion exchange resins in the resin column to prevent performance deterioration. It is important to maintain moisture during storage. To prevent freezing of the resin and damage to the resin column during winter storage, it is desirable to store the resin in a NaCl solution. Failure to adhere to proper preservation techniques can lead to several issues that may compromise system performance and resin longevity.

Intermittent usage or long-term equipment shutdown may result in resin contamination due to microbial growth. This contamination can be prevented by storing in a NaCl solution. However, caution should be taken as the combination of NaCl and H ions in cation exchange resins can produce HCl, which may cause problems with the equipment.

During the long-term storage for ion exchange resins without operation, as H, OH form, performance degradation may occur. Therefore, it should be stored as Na, Cl form after ion exchange. In order to convert anion exchange resins to Cl form, there are two methods: soaking in a 10% NaCl solution and converting to exhausted form after service cycle. Even if both cation and anion exchange resins are stored as Na, Cl form, there is a possibility of contamination due to microbial growth during long-term storage. Therefore, measures to prevent microbial growth should be taken during storage using the following methods:

1) The resin should be flushed with water of twice bed volume at a low flow rate at a frequency of once per day, and the water in the column should then be replaced with fresh feed water.
2) If it is not possible to flush, the resin column, it should be stored in a 10% NaCl solution.
3) If NaCl solution cannot be added, HCl should be added to prevent microbial growth, and the pH in the column should be maintained in an acidic pH during storage (Refer individual Resin Data Sheet for Allowable pH range).

DO NOT store resin, in the preserved state at freezing conditions or at temperatures in excess of 50ºC (122ºF).