Pre-Use Directions for Purolite® Ion Exchange Resins

For potable water treatment and water for food processing.

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About Purolite

Purolite is a leading manufacturer of ion exchange, catalyst, adsorbent and specialty resins. With global headquarters in the United States of America, Purolite is the only company that focuses 100% of its resources on the development and production of resin technology.

Responding to our customers' needs, Purolite has the widest variety of products and the industry's largest technical sales force. Globally, we have strategically located research and development centers and application laboratories. Our ISO 9001 certified manufacturing facilities in the USA, United Kingdom, Romania and China combined with more than 40 sales offices in 30 countries ensure complete worldwide coverage.

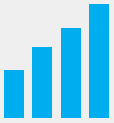
Purolite has been part of Ecolab since 2021. A trusted partner at nearly three million commercial customer locations, Ecolab (ECL) is the global leader in water, hygiene and infection prevention solutions and services. Ecolab delivers comprehensive solutions, data-driven insights and personalized service to advance food safety, maintain clean and safe environments, optimize water and energy use, and improve operational efficiencies and sustainability for customers in the food, healthcare, hospitality and industrial markets in more than 170 countries around the world.

PREMIER PRODUCTS

The quality and consistency of our products are fundamental to our performance. Throughout all Purolite plants, production is carefully controlled to ensure that our products meet the most stringent criteria, regardless of where they are produced.

RELIABLE SERVICE

We are technical experts and problem solvers. Reliable and well-trained, we understand the urgency required to keep businesses operating smoothly. Purolite employs the largest technical sales team in the industry.



INNOVATIVE SOLUTIONS

Our continued investment in research and development means we are always perfecting and discovering innovative uses for ion exchange resins and adsorbents. We strive to make the impossible possible.

Pre-Use Directions for Purolite Ion Exchange Resins

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How to Prepare Purolite Ion Exchange Resins for Potable Water Treatment and Food Processing

Careful pre-use preparation of processing equipment is critical in the potable water treatment and food processing industries. When Purolite ion exchange resins are to be used for potable water treatment or food processing, they should be subjected to a simple — yet very effective — pre-use treatment by the user. The treatment is intended to supplement normal manufacturing pre-treatments.

Below are critical steps for potable water treatment and food processing industries. Preparation should be repeated at least two times before the resins are ready for use. For food-grade resins, the following steps help to ensure the ion exchanger can comply with the organic extractives level required by the U.S. Code of Federal Regulations, Title 21, Part 173.25, Paragraph (c) (4) or Council of Europe Resolution AP(2004)3, formerly AP(97)1.

- **Clean Equipment:** Ensure the tank is clean and clear of debris or contaminants.
- **Store and Transport Resins Properly:** Resins should always be stored indoors and out of direct sunlight. The maximum recommended storage temperature of 104 °F (40 °C) must not be exceeded, and temperature extremes should be avoided. Please refer to the Purolite's "Storage & Transportation of Ion Exchange Resins" brochure for more details.
- **Prepare Resins:** Important to follow the below guidelines per Purolite product.
- **Test Produced Water:** Confirm the sample meets specifications before human consumption or the intended food treatment use.

Strong Acid Cation Exchange Resins

Hydrogen Cycle

Resins are usually delivered in the sodium form.

1. Exhaust the resin by passing 2 BV of 4% NaOH through a column of resin at a rate of 2 BV/h
2. Rinse with 5 BV of DI water at a rate of 2 BV/h
3. Regenerate the resin by passing 4 BV of HCl or H_2SO_4 through a column of resin at a flow rate of 2 BV/h

   5 BV 5% HCl = 5.5 eq/L
   5% H_2SO_4 = 4.1 eq/L
4. Rinse the resin with 5 BV of DI water at a flow rate of 2 BV/h
5. Repeat the above procedure at least once

BV refers to the volume of resin used. For example if using one liter of resin, then 1 BV (or 1 bed volume) equals one liter.

Sodium Cycle

1. Exhaust the resin with raw water by passing 6 BV of 2% $CaCl_2$ solution at a flow rate of 2 BV/h = 2.2 eq/L
2. Rinse with 5 BV of DI water at a rate of 2 BV/h
3. Regenerate the resin by passing 2 BV of 10% NaCl at a rate of 2 BV/h
4. Rinse with 5 BV of DI water at a rate of 2 BV/h
5. Repeat the above process at least once

Weak Acid Cation Exchange Resins

Hydrogen Cycle

Resins are usually delivered in the hydrogen form.

1. Exhaust the resin by passing 5 BV of 4% NaOH through a column of the resin at a rate of 2 BV/h (a dosage equivalent to 5 eq/L). There is potentially high volume change for weak acid cation (WAC) resins in changing from hydrogen to sodium form.

   Examples:
   C104Plus 60%
   C106 100%
   C115 100%

2. Rinse with 5 BV of DI water at a rate of 2 BV/h
3. Regenerate the resin by passing 5 BV of 5% HCl or 5% H_2SO_4 at a rate of 2 BV/h
4. Rinse with 5 BV of DI water at a rate of 2 BV/h
5. Repeat above procedure at least once

Note: 1 BV = 1 liter of water running through 1 liter of resin or 7.48 US gallons through 1 ft^3 of resin.

Strong Base Anion Exchange Resins

Resins are usually delivered in the salt (exhausted) form.

1. Regenerate the resin by passing 3 BV of 4% NaOH through a column of resin at a rate of 2 BV/h
2. Rinse with 5 BV DI water at a rate of 2 BV/h
3. Exhaust with 2 BV of 4% HCl or H_2SO_4 solution (Note: acid solution can be replaced with NaCl solution)
4. Rinse again

Weak Base Anion Exchange Resins

Resins are usually delivered in the free-base form.

1. Exhaust the resin by passing 2 BV of 5% HCl or 5% H_2SO_4 at a rate of 2 BV/h through a column of the resin
2. Rinse with 5 BV DI water at a rate of 2 BV/h
3. Regenerate the resin by passing 3 BV of 5% NaOH or 5% NH_4OH at a rate of 2 BV/h
4. Rinse with 5 BV of DI water at a rate of 2 BV/h
5. Repeat the above process at least twice

NSF/ANSI 44 & NSF/ANSI/CAN 61 Certified Resins

Please refer to the WQA website for pre-use directions.

It is strongly recommended that the product water is tested and confirmed to be fully in specification before it is used for direct human consumption or for the intended food treatment.

Note: Depending on storage time and conditions, additional pre-treatment may be required.

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Purolite, the leading manufacturer of quality ion exchange, catalyst, adsorbent and specialty high-performance resins, is the only company that focuses 100% of its resources on the development and production of resin technology.

We're ready to solve your process challenges. For further information on Purolite products and services, visit www.purolite.com or contact your nearest Technical Sales Office.

www.purolite.com

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