



# Fiberglass Vessels: Vacuum Cleaning and Resin Installation Guidelines

Learn tips to performing a vacuum out, parts replacement and resin installation in fiberglass vessels.



**Purolite**<sup>®</sup>



# Puro-lite®

## About Puro-lite

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

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



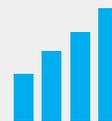
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The quality and consistency of our products are fundamental to our performance. Throughout all Puro-lite plants, production is carefully controlled to ensure that our products meet the most stringent criteria, regardless of where they are produced.



## RELIABLE SERVICE

We are technical experts and problem solvers. Reliable and well-trained, we understand the urgency required to keep businesses operating smoothly. Puro-lite 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.

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# Introduction

The Purolite team was tasked with performing a vacuum out, and installation of FerrIX™ A33E polystyrenic macroporous resins in fiberglass vessels.



Pictured is the original hub and lateral system located at the bottom of the fiberglass tank.

Broken lateral

## Vacuumping the Vessels

In this example, the system treated arsenic for drinking water with Ferrix A33E resin. Removing all of the resin is essential during a resin exchange so that no spent resin contaminates the effluent of the new resin. A standard vacuum nozzle is three inches (7.6 cm). In order to get between the laterals to remove all of the spent resin out of the vessel, an attachment was constructed to reduce the nozzle size to 3/4 inch (1.9 cm).

Collection systems which sit on the bottom of the tank are challenging because the laterals are fragile. During extraction of resin in this case, one lateral was broken as shown in Figure 1. Subsequently, the collection system needed to be replaced to prevent resin beads from escaping the vessel and getting into the city's distribution system.

# Hub and Lateral Replacement

A replacement hub and lateral was constructed from Schedule 80 pipe and fittings. The new laterals had 300-micron laser cut slots along its length.

## Advantages

- A stronger, more robust lateral system.
- Improved ability to access the bottom of the vessel with a standard vacuum nozzle as compared to the original configuration.
- Creation of additional space on the bottom of the vessel was taken advantage of to install a small sump pump to pump out the wash water and the last bit of resin.
- Provided a “safe” zone to aim the slurry hose while refilling the vessel instead of being as concerned about the fragile laterals in the previous configuration.

## Disadvantages

- Useful bed depth is lost, but the loss is minimal compared to the advantages of a stronger collection system.



Replacement hub and lateral.

Stainless steel laterals can be installed instead of the plastic ones for increased strength; however, the issue of complete removal remains if the laterals extend across the full bottom of the vessel.

## Installation of Resin

The vessel was filled with a water “cushion” to a level above the collector system prior to installing the new resin. The resin was mixed with water to form a slurry, then using an air operated diaphragm (AOD) pump, the resin was pumped into the treatment vessel. The open spaces between the crossed laterals provided a safe place to aim the incoming flow and prevent damage to the collection system.

The installation of resin is covered in detail on our website. To learn more, visit [Loading and Commissioning Ion Exchange Resins](#).



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



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