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Commonly Asked Questions & Answers Regarding Deionizing Resin Tank Systems

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What volume of water can the resin treat before exhaustion?

Resin inherently possesses a limited capacity, meaning it can only remove a specific amount of impurities. The effectiveness is influenced by the concentration of these impurities in water and the volume of water processed by the DI system. Our factory virgin mixed bed deionizing resin, 1 cubic foot of media, typically treats around 100,000 ppm, providing a general guideline.

Utilize our capacity calculator below to estimate the number of gallons that can be treated before the resin exhausts.

wecofilters.com/di_resin_capacity_calculator

Can I enhance the lifespan of the DI resin through water pre-treatment?

Certainly. There are various methods to pre-treat water, prolonging the life of the DI unit. Commonly used technologies include nanofiltration or reverse osmosis to reduce bulk ions before water reaches the DI system. Upon understanding your environment and requirements, we can assist in sizing the appropriate pre-treatment system.

Due to the heightened sensitivity of membrane-based systems to premature clogging, it may be necessary to inject antiscalant and/or incorporate additional treatment systems upstream to prolong the life of the membranes.

Oversizing membrane systems may be necessary to accommodate capacity reductions due to temperature decreases during winter months.

Water pressure can also play a role, and the addition of a higher-pressure pump may be considered to reject more TDS.

It's important to note that both RO and nanofiltration produce waste water.

We will typically ask for information below.

- Service Flow Rate
- Water Temperature
- Line Pressure
- Line Voltage
- pH
- Conductivity
- Total Dissolved Solids (TDS)
- Total Organic Carbon (TOC)
- Microbiological Content
- Total Suspended Solids (TSS)
- Hardness
- Alkalinity
- Silica (SiO_2)
- Iron
- Manganese
- Estimated Gallons Per Day (GPD) Usage

Can this unit meet my specifications?

We offer a range of resins, commonly known as Standard or Nuclear Grade (NG), SC, LTOC, Ultra, and Nano grade resins, depending on the specifications you aim to achieve. The purity and cost increase as the resin progresses to higher grades. As you advance through the grades, the levels of TOC (total organic carbon) expelled by the resins decrease. The Standard grade is specified to achieve a resistance of 16 Meg Ohms. Resins of SC grades and above undergo testing by the manufacturer to ensure compliance with the high purity water standard of 18 Meg Ohms.

All equipment is subject to limitations, underscoring the significance of a deep understanding of water chemistry. Depending on your needs, additional specialized equipment such as UV for TOC reduction, reverse osmosis (RO) and pre-treatment may be necessary. It's recommended to contact us with your specific requirements for a consultation with a product expert before making a purchase. This ensures that the product aligns with your needs and specifications.

Is it possible to reuse the exhausted resin?

Regenerating the resin requires specialized equipment, which can be challenging and entails a significant investment. Additionally, there are considerations such as the need to invest in chemicals, manage chemical storage, handle the collection, treatment and discharge of waste, obtain permits, and more. This process is not always straightforward and may not yield a substantial return on investment.

Can this system be utilized for purifying drinking water?

These DI systems or resin media lack ANSI/NSF 61 certification, which is essential for compliance with the American National Standard establishing minimum health-effects requirements for chemical contaminants and impurities in products used in drinking water systems. DI systems do not enhance the taste of water and can produce a distinctive smell associated with the organic amines present in the DI resin, resembling the odor of dead fish.

Elevated pH levels may contribute to unpleasant odors. Additionally, the deionizing process removes most minerals, resulting in an undesirable taste. Bottled water manufacturers typically use reverse osmosis (RO) water, adding small amounts of alkalinity, silica, and hardness to improve taste.

Due to these taste and odor concerns, DI is not recommended as a water filter for optimal drinking water quality.

What is the pH of my DI water?

pH is a measure of the concentration of H^+ ions in water, where $[H^+]$ represents the molar concentration of hydrogen ions.

$$\mathbf{pH = -\log [H^+]}$$

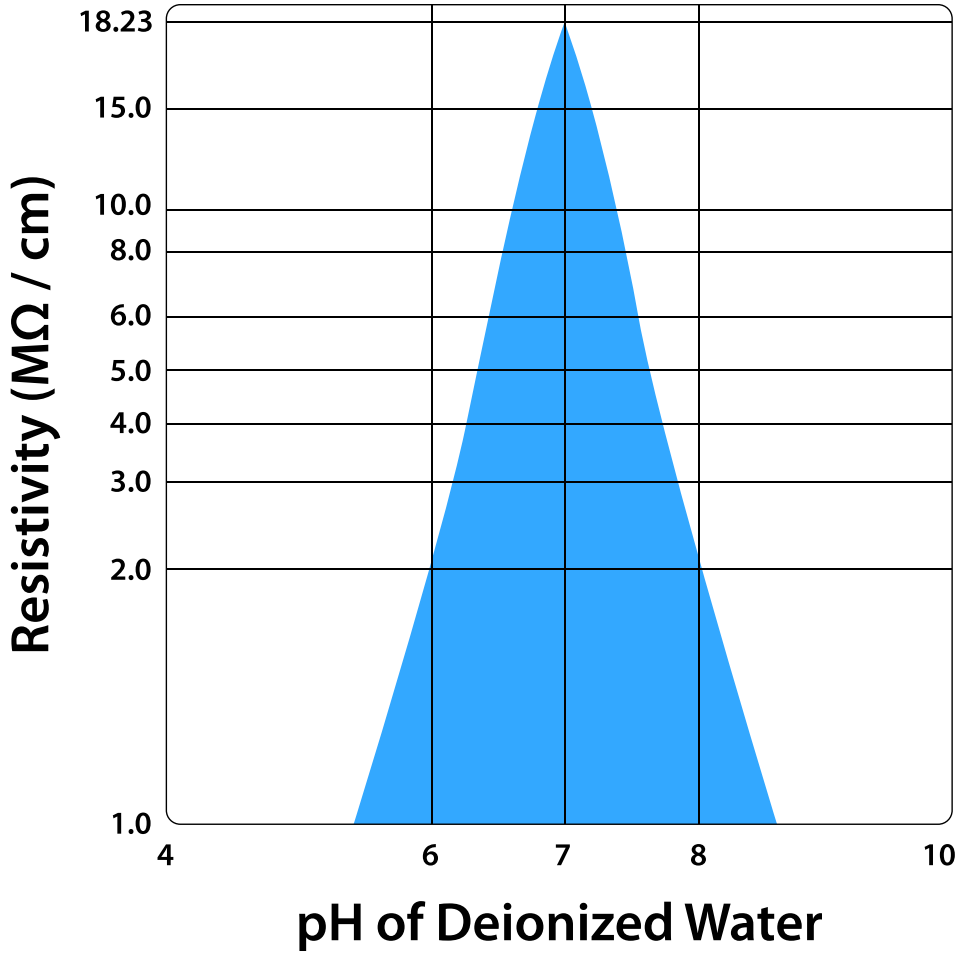
The pH scale typically ranges from 0 to 14. A pH of 7 is considered neutral, pH values less than 7 are considered acidic, and pH values greater than 7 are considered basic.

Following deionization treatment, the pH of deionized (DI) water should be near neutral, unless it comes into contact with the atmosphere. Waters with higher resistivity levels tend to exhibit a pH closer to 7 on the pH scale.

We have received numerous calls from customers attempting to produce 17-18 MΩ (Mega Ohm) resistivity water, claiming their DI water has a pH of 4.5 or 5. Upon investigation of their setup, we often discover that they have exposed the water to the atmosphere, leading to the dissolving of CO_2 from the air and the formation of Carbonic acid, thus reducing the pH.

Additionally, DI water's low conductance can introduce instability in most pH meters. Many pH probes require a KCl buffer to

function correctly. However, in very high-purity water, KCl or background TDS necessary for pH calculation is absent. This is one reason why very high-purity water, especially electronics-grade water like E1 or E11 often does not specify pH in its requirements since it cannot be measured without specialized equipment. Nevertheless, specialized pH equipment can be installed inline to draw a water sample, buffer it, and measure it while keeping DI water away from the atmosphere. If the resistivity meter provides a reading near 18 meg, it suggests the pH is likely close to neutral. The chart below illustrates the pH as the water's resistivity increases from 1 to 18 meg.



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