

# Industrial / Commercial Portable Deionization Tanks The Dual Bed System



## A HIGH OUTPUT, MEDIUM QUALITY WATER SYSTEM

Many applications require large quantities of spot-free water. This system removes more than 97% of all dissolved solids from tap water while providing more than three times the volume of regular dual beds. This system provides consistent water quality between 50,000 and 150,000 ohms/cm.

Model No.	Resin	Flow Rate	Tank Size
6244	2.5 Cu. Ft.	6 GPM	10" x 44" & 8" x 44"
6248	5.5 Cu. Ft.	15 GPM	14" x 47" & 12" x 48"

ADVANCED **WATER** SOLUTIONS SINCE 1939



430 Leo St, Dayton, Ohio 45404  
800-424-9250 • fax 937-461-0308  
[www.daytonwatersystems.com](http://www.daytonwatersystems.com)

# Dual Bed Deionizer Exchange Tanks

## Specifications

### Model 6244

Resin Quantity (Cu. Ft.):	1.5 Cation; 1 Anion
Resin Type:	Strong Acid Cation & Weak Base Anion
Capacity (Grains Removal):	45,000 Cation; 20,000 Strong Acid Anion
Mineral Tank Size (dia x height):	10" x 44" Cation; 8" x 44" Anion
Quality Deionized Water Product	20,000 – 200,000 ohms
Service Flow Rate (gpm)	up to 5 gpm
Inlet/Outlet Fittings:	3/4" Noryl

### Model 6248

Resin Quantity (Cu. Ft.):	3.3 Cation; 2.2 Anion
Resin Type:	Strong Acid Cation & Weak Base Anion
Capacity (Grains Removal):	99,000 Cation; 44,000 Strong Acid Anion
Mineral Tank Size (dia x height):	14" x 47" Cation; 12" x 48" Anion
Quality Deionized Water Product	20,000 – 200,000 ohms
Service Flow Rate (gpm)	up to 10 gpm
Inlet/Outlet Fittings:	1" Noryl

### **OPERATING REQUIREMENTS FOR ULTRAPURE DI:**

Operating Temperature Min./Max: 40°F/100°F  
Operating Pressure Min./Max: 25/120 psi  
Chlorine: 0 ppm  
Iron: less than 2 ppm  
Turbidity: 5 NTU Maximum  
Exchange Frequency: As required by quality indicating device or Bi-Annually

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# Dual Bed Deionizer Exchange Tanks

Dayton Water Systems' Dual Bed DI tanks are identified by model and batch numbers beginning with the number 6. These tanks are readily identifiable by green tops or the green tape at the top of the tank.

Dual Bed deionizers have 60% strong acid cation resin in the hydrogen form and 40% weak base anion resin in the hydroxyl form. This resin system produces a large quantity of deionized water suitable for spot-free rinse or low solids water. In the Dual Bed deionizers, the resins are not mixed, but placed in separate vessels.

The cation resin initially removes positively charged ions from the influent water supply. These ions are replaced with hydrogen ions and the water becomes acidic and is transferred to the anion tank. The weak base anion resin removes only "strong acids" from the water supply. Weak acids, make up primarily of bicarbonate and carbonate alkalinity, are not removed. Because these contaminants are not removed, water quality is not high. However, bicarbonate and carbonate contaminants are not part of the "dissolved solids" which so often cause problems in industrial applications.

Dual Bed resin can produce deionized water, up to 200,000ohm, depending upon certain conditions. These conditions include flow rate, feed water quality, the system set up, condition of the resin, and the amount of time the system sets idle. We guarantee Dual Bed resins will initially produce at least 50,000 ohm before exhaustion of the resin bed begins.

To understand the capacity of Dual Bed resin, it is necessary to understand in this system there is not equal amounts of resin and capacities. Cation resin has an exchange capacity of 30,000 grains per Cu. Ft. and anion resin has an exchange capacity of 20,000 grains per Cu. Ft. In the 6244 Dual Bed system, there is 1.5 Cu Ft. of cation resin or 45,000 grains of removal and 1 Cu. Ft. of anion resin or 20,000 grains of removal.

While the mix is 45 to 20, keep in mind that the weak base anion resin will not be "used up" with the negative ions bicarbonate and carbonate alkalinity. By measuring the alkalinity in the water supply and subtracting the alkalinity from the total grains, the amount of "strong acid" anions can be determined. In order to accurately calculate capacity of Dual Bed tanks, the following formula should be used. The lower capacity is what can be expected of the Dual Bed deionizer.

$$45,000 \div \text{Feed Water Quality (grains)} = \text{Cation Capacity (gals.)}$$

$$20,000 \div [\text{Feed Water Quality} - \text{Alkalinity}] = \text{Anion Capacity (gals.)}$$

Typically, we use the grains capacity of 45,000 grains for the 6244 because most water supplies have high levels of alkalinity. Because water quality indicate devices should be used.

Many other water treatment vendors utilized Dual Beds as pre-treatment to mixed bed exchange tanks. With Dayton Water Systems' unique use of weak base anion resin, it is not advantageous to use Mixed Bed tanks to polish Dual Bed tanks or to install Dual Beds in a worker/polisher format. To explain in further detail, the weak base anion resin will remove approximately 25% of the alkalinity from the water. The remaining 75% will be allowed to feed the polishing tank. The anion resin in the polishing tank will begin to immediately exhaust and the polishing tank will begin to immediately exhaust and the polishing tank will exhaust before the Dual Bed does.

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