



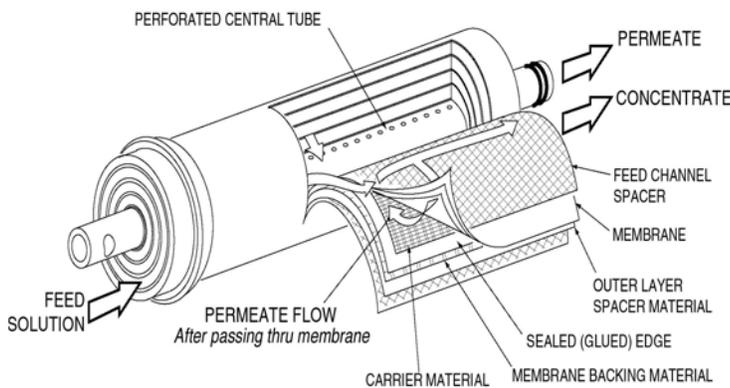
# RO Rejection Rates

## APPROXIMATE RO REJECTION RATES OF VARIOUS IMPURITIES\*

Aluminum	up to 98%	Manganese	up to 98%	Barium	up to 92%	Mercury	up to 97%
Bicarbonate	up to 98%	Nitrate	up to 95%	Bromide	up to 96%	Organic Pesticides	up to 98%
Cadmium	up to 98%	Phosphate	up to 98%	Calcium	up to 98%	Polyphosphate	up to 98%
Chloride	up to 98%	Potassium	up to 98%	Magnesium	up to 97%	Copper	up to 98%
Radium	up to 98%	Cyanide	up to 96%	Silica	up to 98%	Detergents	up to 98%
Silicate	up to 98%	Fluoride	up to 98%	Sodium	up to 96%	Iron	up to 98%
Sulfate	up to 98%	Radioactivity	up to 97%	Orthophosphate	up to 98%	Boron	up to 70%
Ammonium	up to 90%	Nickel	up to 98%	Strontium	up to 97%	Silver	up to 96%
Chromium	up to 96%	Chromate	up to 95%	Sulphite	up to 96%	Thiosulfate	up to 98%
Ferrocyanide	up to 98%	Borate	up to 50%	Selenium	up to 95%	Lead	up to 98%
Zinc	up to 98%	Arsenic	up to 95%				

\* Operational, maintenance, and replacement requirements are essential for the product to perform as advertised. Rejection rates may vary slightly between CTA & TFC membranes. Rates based on the following test feed water: Temperature: 77°F (25°C) TDS: 500 ppm. Pressure: 60 PSI. Membranes meet or comply with NSF Standard 58.

*This is partial list or sample of impurities. New items are added based on developing protocols and standards.*



**CTA (Cellulose Triacetate):** CTA membrane may be used for chlorinated and non-chlorinated water supplies. Product water produced = 5 - 20 gallons per day.

**TFC (Thin Film Composite):** TFC membrane is a long-life membrane for non-chlorinated water supplies. A carbon filter must precede the RO element if used on chlorinated feedwater. Product water produced = 10 - 50 gallons per day.

### Performance Parameters

	TFC	CTA
Daily Production Rate (To Atmosphere at 4.25 Kg/Sq. cm: 60 PSI: 25° C/ 77° F: 500 mg/l. TDS	up to 35 GPD	up to 18 GPD
Average TDS Rejection	94-98%	94-98%
<b>Feed Water Chlorine Tolerance</b>	<b>No</b> unless carbon prefilter	<b>Yes</b>
Feed Water Temperature	5-30° C/40-90° F	5-30° C/40-90° F
Feed Water pH	3.0 - 11.0	4.0- 9.0
Feed Water Pressure*	3-6 Kg/Sq cm/40-75 PSI	3-6 Kg/Sq cm/40-75 PSI
Maximum TDS	2000 mg./l	1500 mg./l
Maximum Hardness**	350 mg./l	350 mg./l
Maximum Iron Feed Water	0.1 mg./l	0.1 mg./l
Maximum Manganese Feed Water	0.05 mg./l	0.05 mg./l
Free Chlorine Feed Water	< 1.5 mg./l	< 1.5 mg./l
System Recovery Rate	20% @ 4.25 Kg./Sq. cm.	20% @ 4.25 Kg./Sq. cm.

Notes: \*see Booster Pump option, \*\*20.5 grains per gallon

### See the next pages:

- Determine whether reverse osmosis is right for your needs or application.
- Learn why we provide the finest quality reverse osmosis systems with our RSR Control Valve
- Determine what reverse osmosis system you need for your application
- Determine whether or not you may need a booster pump option (RU500T35 series only)



## RO Information

### REVERSE OSMOSIS - Is it right for you?

Reverse Osmosis or "RO" has become a term that has slipped into our common language. When you need a tissue and ask for a "Kleenex", its not the brand you need, it's the tissue. It's the same with RO. You may ask for the device, be told you need one, or be considering buying one without understanding what you're asking for. Unlike the tissue however, this decision can be impactful.

#### How does an RO work?

Water is forced by pressure through a semi-permeable membrane while dissolved solids and particulate matters are left behind. The residual contaminants are flushed to the drain. The resulting product water is a cleaner, safer water. These residential units are point of use or sink applications. Asking to do the whole house does not take into account; storing the production water and other drawbacks to the installation and operation of an RO system. Commercial or industrial RO systems can be very complicated, expensive and are designed for specific needs and applications.

#### Any drawbacks to an RO unit?

The drawbacks are why EWS Agua provides the consumer a selection of product and why we include this information to help you decide what product is right for you. Here are only a few things to consider.

- RO's can waste up to 20 gallons of water for one produced (our ratio is a low 3-6 gallons per 1).
- RO's produce very aggressive water. You can not plumb the filtered water in copper (the water will eat away or leach the copper) and, if cross-connected to other sources such as an ice-maker, it may provide warranty or service issues. When bottled water is produced, one of the methods to produce that water is reverse osmosis, however essential minerals are added back "for a pure, fresh taste" as quoted on any label of Dasani, a bottled water produced throughout the USA by Coca Cola. Please note - all spring waters, bottled at the source, have natural minerals and total dissolved solids of varying degrees, which provide the consumer a choice based on taste. (see Evian, Panna, Pellegrino, etc...)
- If an RO system is working correctly, the water can taste flat (like distilled) or metallic. The water produced may be wet, however your plants may not like it. The water is aggressive, it flushes, and does not allow for assimilation starving the plant which may be a drawback for you as well.

#### When is an RO appropriate to use?

See the page on rejection rates and all those scary things. If you're on municipal water, call your utility and request a recent report. Those items on that list are highly regulated. They are either not in your water or municipally treated, and therefore RO can be redundant and unnecessary. If you're on well water, have your water completely and independently tested. Do not trust a local salesman. He's the guy who's usually pushing RO along with the softener, so the RO can take the salt out of the water that the softener put in!

#### An interesting note:

RO will not remove chlorine and other volatile organic contaminants without the carbon filter(s) in one or more of the stages. If your on municipally-treated water without issues applicable for an RO unit, select a drinking water system or whole home appliance to compliment your utilities' water for taste, odor, clarity, chlorine, VOC's, lead, cysts and microorganisms.

#### Are you looking for better tasting water?

This may be the best place to start and finish. The RO unit would not take out taste and odor, the Chlorine and VOC's if not for the Carbon (GAC) filter. Maybe you simply need a basic drinking water system (FUGAC200) or to upgrade to Lead and Cysts removal, the RO is fine, but so is a 1-micron carbon block cartridge found in our FUGAC250. Bacterial safeguard? Add our UV option to your RO unit or see the complete UU250 as an alternative.

- Removal of fluoride?    Yes, remove                      you'll need an RO or weigh your options;  
   No, do not remove                      use any of the drinking water system options, as mentioned above.

#### ■ The Bottom Line

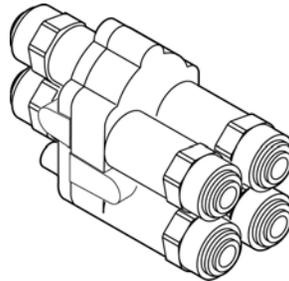
RO's have become popular without good information. Door-to-door salesmen sell the system to remove the salt from the water that the softener they want to sell you, puts in. Most RO's sold in big box programs, that have a attractive cheap price, are poor systems and provide questionable filtration (especially, if you need an RO) and varied maintenance issues. Drinking water systems take up less room (RO's have the storage bottle), make as much water as you like (RO's have limited production) are easier to install and maintain, can be cross-connected without issues, have less hassles, and are less costly (RO's have drain connections, need an air gap by some codes, and make noise during production). However, if an RO is required based on your taste, needs, concerns and/or local water conditions at least you made an informed decision and have been provided a complete selection of RO product for proper application.



### All our Reverse Osmosis Systems contain our RSR Control Valve The “All in One” Control Valve

The RSR Valve includes the Flow Restrictor, Check Valve and Automatic Shut-Off Valve for optimum performance. The RSR-100 (CTA membrane) and RSR-150 (TFC membrane) are unique because they utilize a calibrated, stainless steel orifice to regulate the waste flow. The jet-stream force of the water going through the orifice will not allow scale to form. Therefore, the flow rate across the membrane is constant, enabling it to function at its optimum level. As a result, the life of the membrane will be extended as well.

Better performance, less maintenance, less wasted water, and a product not subject to the typical leaking of the other manufacturers' units.



### The Needed Option and Correct Application of Booster Pumps

Booster pumps are critical to the effective performance of reverse osmosis membranes in low water pressure situations (feedwater below 40 PSI and/or high TDS). Along with mechanical and electro-mechanical options, booster pumps enhance RO systems in the following ways:

- Monitoring performance
- Improving membrane efficiency
- Conserving water
- Conserving power
- Shutting down the pump when continuous product water is not necessary

Booster pumps P6000 are recommended in reverse osmosis applications where feedwater pressure is less than 40 PSI. Feedwater high in Total Dissolved Solids (TDS) may need a boost, in order to perform within rejection parameters.

#### **FACT:**

Over 500 mg/l or ppm TDS, the PSI will be reduced by 1 PSI for every 100 TDS.

#### **Example:**

Feedwater that is 2,000 mg/l of TDS will reduce PSI by 15. A booster pump will compensate to allow for proper application. On well-water, know your water pressure (PSI) and your TDS (total dissolved solids).