

# Water Quality Requirement Guide

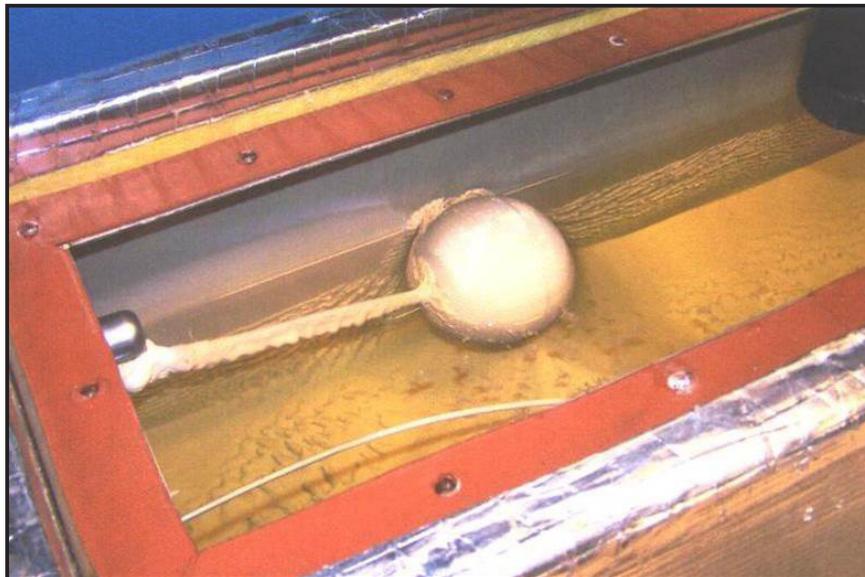
Utilizing the humidity feature of an environmental test chamber helps determine how a product performs in high humidity environments. The quality of water used is the most overlooked component of a humidity system. Have you ever considered the water used in your humidity chamber?

You may think it doesn't matter where water comes from; however, that is far from the truth. Tap water, for example, contains many impurities such as:

- Calcium
- Potassium
- Iron
- Magnesium
- Chloride
- Copper
- Sodium
- Nitrates

These impurities dissolve in water, but when they run through an environmental test chamber's humidity system there can be devastating effects:

- Heater Failure
- Excess Scale & Mineral Deposits in Vapor Generator
- Poor Humidity Control or Possible Nuisance Trips



*Excess Scale & Mineral Deposits in Vapor Generator*

It is extremely important to use water with the appropriate purity levels to reduce required maintenance. Through water purification methods, one can avoid damaging water purity levels to the humidity chamber components or other equipment. Depending on the water piped into a facility, water purification options can be appropriate and/or necessary.

- Distillation
- Deionization
- UV Sterilization
- Reverse Osmosis
- Mechanical Filtration

If you plan on using any of these techniques to purify the water that feeds into the humidity chamber, it is recommended that the water follows Thermotron's humidity water requirements of:

- Resistivity – Between .05MΩ-cm to 3MΩ-cm (SM chambers require .05MΩ-cm to 1MΩ-cm)
- Turbidity – Less than 5 NTU
- Free Chlorine – Less than .2 parts per million
- Color – Less than 5 TCU
- Total Iron & Manganese – Less than .3 parts per million
- Organics – Less than 1 part per million
- Acidity – 6.8 to 7.2 pH



*Humidity System Corrosion*

Caution must also be taken with purified water. Too pure of water can have damaging effects on a chamber ranging from mineral leaching of the chamber or product, to corrosion of the humidity system. Therefore, it is important to ensure that your water is in the correct purity range.

Many Thermotron humidity chambers come conveniently equipped with a Water Purification System, which takes standard tap water and processes it for safe use in the environmental test chamber. Though, depending on incoming water quality, this Water Purification System may be inadequate, and another filtration system may be necessary for incoming water.

Thermotron's Water Purification System contains both a filter, which removes non-dissolved solids, and a deionizer which chemically removes ions from the water. Dissolved ions replace hydrogen (H+) and hydroxyl (OH-) as contaminated water passes through the mixed bed of the deionizer. Then, the released hydrogen (H+) and hydroxyl (OH-) combine to form water molecules. Each deionizer has a specific capacity for ions, and the useful life of the deionizer cartridge is subject to the water quality used and the frequency of its use. Depending on the type of humidity chamber, the deionization cartridge will either change color or a red light will turn on to indicate the cartridge is spent, signaling when the cartridge needs to be replaced.

Water purity is an important aspect of using your environmental test chamber's humidity system. Following Thermotron's water purity requirements will increase the humidity system's efficiency and decrease humidity-related service calls to your facility and test chamber, saving you time and money.



*Standard Cartridge*



*Custom Cartridge*

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