



BREWING THE PERFECT CUP

Optimizing Water Quality for
Specialty Coffee Operations



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COFFEE IS 98.5% WATER

A few years ago, only the most dedicated barista paid attention to the acidity, the body, and balance of the coffee they brewed. But as the specialty coffee industry has grown and customers have learned more about what makes "the perfect cup," expectations have risen dramatically.

To provide specialty coffee, retailers with the best water treatment solutions possible, know it's important to understand how critical water quality should be when it comes to coffee and espresso. It's a crucial ingredient in the finished product and has a major impact on equipment performance.



Coffee Quality

How a cup of coffee tastes depends as much on the quality of the water as it does on the beans. The right water treatment system lets specialty coffee brewers keep water chemistry consistent across locations and dial in the ideal mix of minerals for brewing.



Equipment Performance

In addition to reducing energy efficiency, scale buildup from unfiltered water can cause significant damage to coffee and espresso brewing equipment. Because of this, the warranties for this equipment often require a certain water quality standard. The right water treatment system protects this expensive equipment and by extension, a retailer's bottom line.



WATER TESTING AND WHAT IT REVEALS

WATER'S CHARACTERISTICS AND ITS COMMON CONTAMINANTS

Coffee may be 98.5% water, but water isn't just H₂O. Water is a natural solvent, carrying away particles of whatever it encounters along its way. It's these particulates, chemicals, and contaminants that impact coffee quality and equipment performance.



Total Dissolved Solids (TDS)

A combined measure of all organic and inorganic substances dissolved in the water, including minerals, salts, metals and other particulates.



Particulates

Fine sediment, rust and other particles that provide a catalyst for scale buildup and wear on equipment.



Hard Minerals

The primary water-related problem for coffee brewers and espresso machines is limescale caused by dissolved calcium and magnesium ions. This rock-like buildup leads to reduced performance and increased downtime for maintenance.



Chlorine

While added chlorine makes water safe to drink, it also contributes to corrosion in coffee equipment and can give water an offensive taste and odor.



Alkalinity

Alkalinity is water's capacity to neutralize acid. Some alkalinity is desirable to react with acids during the coffee extraction process, but too much has a negative effect on taste and contributes to scale buildup.



pH

Water's balance of acid and alkaline substances can be an indication of whether it will be scale-forming or corrosive.

The first step in finding the right water treatment solution for your customers is conducting a comprehensive on-site water analysis to determine the specific level of particulates, chemicals, and contaminants in their water.

A water analysis is a "snapshot" of water characteristics at the time and place the sample was drawn. Although municipal water reports have value by measuring general safety and potability, they commonly combine samples from multiple sources and may not take seasonal changes into account. Therefore, municipal water reports alone may not provide an accurate picture of the water at a specific location.

GIVE YOUR CUSTOMERS THE RIGHT ANSWERS BY ASKING THEM THE RIGHT QUESTIONS

- How important is beverage quality and consistency to your business?
- How frequently does your equipment require service, and at what cost?
- Are water-related problems covered under the equipment warranty?
- Are you looking for consistent water quality across multiple locations?
- Do you need specific water mineral content for brewing?
- Is scale buildup affecting the performance of your water-using equipment?



RECOMMENDING THE RIGHT SOLUTION

OPTIMAL WATER QUALITY FOR COFFEE AND ESPRESSO

Without question, the chemical and physical properties of water have a significant impact on achieving the right body, balance, flavor, and finish of coffee and espresso.

- Low TDS water causes too many coffee oils to be released, resulting in a bitter, oily flavor.
- High TDS water causes too few coffee solids and tea flavonoids to be released, resulting in weak flavor.
- Calcium carbonate and alkalinity play an important role in coffee extraction during the brewing process.
- High chloride and sulfate levels are detrimental to coffee balance and flavor and can be corrosive, even to stainless steel equipment.

The Statistics & Standards Committee of the Specialty Coffee Association has determined the following standards for the water used to brew specialty coffee. For a superior quality extraction of coffee solids, the brewing water should have these characteristics:[†]



Calcium Hardness
50-175 ppm CaCO₃



pH
6-8



Alkalinity
40-70 ppm CaCO₃



Sodium
~10 mg/liter



Chlorine
None



TDS
75-250 mg/liter



Odor
Clean/Fresh/Odor Free

[†]These are only general guidelines. For recommendations and requirements specific to your equipment, reference the equipment manual provided by the manufacturer.

FINDING THE RIGHT TREATMENT

Filtration



Recommend filtration technologies to help your customers trap and hold particulates. Different filtration media excel at removing different contaminants, and the finer the filter, the more particulates are removed.

Softening



Customers concerned about limescale buildup on valuable steam equipment like espresso machines can benefit from a softening system to remove the calcium and magnesium ions that cause scale. Softening does not lower TDS or remove other types of minerals such as chlorides or sulfates, but it is strongly recommended for high-efficiency reverse osmosis (RO) systems in order to keep those systems working better and lasting longer, and as a pre-treatment for filtration and other RO systems.

Reverse Osmosis (RO)



This process forces water through a semipermeable membrane, separating pure water from any substances dissolved within it for full-spectrum protection. RO is ideal for foodservice because it can reduce virtually all impurities and toxins; it is especially good for coffee and espresso because blending valves allow your customers to manage TDS and mineral content.



SELECTING THE RIGHT SYSTEM

UNDERSTANDING SPECIALTY COFFEE OPERATIONS

Once a water quality analysis has been done and the right water treatment technology has been determined, the next step is to determine what size system will meet a particular operation's usage requirements. You'll need to consider:

- Type of equipment used
- Size of connection
- Operational capacity/flow rate required
- Mineral balance desired

UNDERSTANDING SPECIALTY COFFEE OPERATIONS



Drip/Pour-Over Equipment

Pentair Everpure water filtration systems reduce abrasion, clogging and scale buildup in drip and pour-over coffee brewers, and prevent off-tastes and odors in the finished product. Our proprietary Micro-Pure® II filtration media effectively inhibits the growth of bacteria that can decrease filter life. All Pentair Everpure systems filter out particulates as small as 0.5 micron in size – that’s about 180 times smaller than the thickness of a human hair.

What size filtration system your customers need should be based on their operation’s flow rate and water use.

Filtration System Needed		
Brewer Type	Flow Rate Demand (gallons per minute)	6-Month Filter Capacity (1/2-gallon pots)
0.5 gpm and under	0.5 gpm	3,000 pots
0.5 to 1.0 gpm	0.5 gpm	6,000 pots
1.0 to 1.67 gpm	1.0 gpm	18,000 pots
1.67 gpm and above	1.0 gpm	–



Espresso Equipment

Everpure ESO® and Claris® filtration systems designed for espresso brewing feature saltless ion exchange softening, integrated carbon filtration, and either a fixed or adjustable blending of softened and tap water.

With an Everpure Conserv® RO system your specialty coffee customers can take even more control, dialing in the mineral content needed for the perfect shot while also protecting expensive espresso machines from limescale buildup. The size of RO system needed depends on an operation’s water hardness and product volume.

RO System Needed			
	Low Volume	Medium Volume	High Volume
Espresso Shots (per day)	150 shots	150 to 300 shots	300 to 500 shots
Flow Rate	Up to 0.5 gpm	Up to 1.0 gpm	Up to 1.5 gpm

DON'T FORGET THE FILTER

Perhaps the most important and most overlooked component when considering a water treatment system is replacing filter cartridges on a routine basis.

You've helped your customers take their water from ordinary to extraordinary, so help them keep it that way. Stick with Pentair Everpure Replacement Filter Cartridges.

WHY PENTAIR® EVERPURE®?

Pentair has set the standard for foodservice water quality for over 85 years. Today, that standard is the Pentair Everpure line of water filtration and RO systems. Customers across the globe trust Pentair Everpure for:

- Easy, sanitary quick-change filter replacement.
- A single-source supplier of specialty coffee and espresso water treatment systems, with the breadth of product to provide right-sized solutions for any size operation.
- High-efficiency RO systems that provide significant water savings over conventional RO systems.
- Compact, configurable RO systems with capacities from 50 to 880 gallons per day, featuring controlled remineralization or blending valves to achieve the right mineral balance.
- Comprehensive water testing services to ensure recommendation of the right system.
- Total Water Management to help specialty coffee retailers take their water from ordinary to extraordinary and keep it that way.

Visit [foodservice.pentair.com](https://www.foodservice.pentair.com) or call 800.942.1153 for all the support and assistance you need finding the right water treatment system for any specialty coffee operation.