



# HOW AND WHY? **WATER MANAGEMENT FOR COFFEE**

An integrated approach to commercial Point of Use (POU) Foodservice water management.

# TOTAL WATER MANAGEMENT

Our drinking water may be of the highest quality, but nature and the distribution network can sometimes create quality issues requiring a targeted “Point of Use” water treatment solution to provide protection for your equipment and also to maximise the quality of the food and drinks that you can proudly serve to your customers.

AS A COFFEE ROASTER YOU SELECT AND ROAST THE BEST COFFEE BEANS AVAILABLE.

AS A SERVICE PARTNER YOU DELIVER AND MAINTAIN THE BEST COFFEE EQUIPMENT.

AS A COFFEE SHOP OWNER YOU INVEST TO DELIVER A COFFEE TO BE PROUD TO SERVE.

WHY WOULD YOU ALLOW WATER TO SPOIL YOUR FOCUS AND BUSINESS?

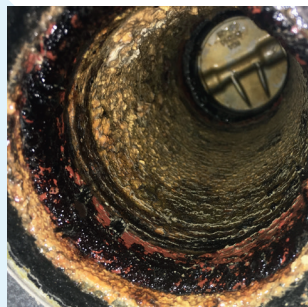
## WHAT NEEDS TO BE MANAGED ?

**PARTICULATES:** (dirt, sediment, rust) there is a lot in water that can cause added wear on parts. Fine silt, dirt, rust and other debris can provide a base for scale build-up. “Brown water” from the tap, we’ve all experienced it ... you don’t want that in your drink.

**TASTE & ODOUR (CHLORINE & CHLORAMINE (US/UK))** While the disinfectant Chlorine is used to make our water safe to drink, it contributes to corrosion in steam equipment and gives an offensive taste and odour.

**HARDNESS (scale or lime-scale).** The common and expensive water related problem on any equipment is the formation and accumulation of scale. However at the same time, we need these same scale minerals for a better coffee extraction. With a total hardness > 15 ° dH you can build up around 200 g of scale for a 1000 litres of water consumption.

**TOTAL DISSOLVED SOLIDS.** Water is more than H<sub>2</sub>O and scale; it can contain a wide variety of dissolved minerals. Higher Chloride and Sulphate concentrations in the water often cause serious problems. Mineral salts can attack the metals. The intense damage to the inside of the equipment can remain unnoticed until leaks occur.



## TECHNICAL

**Traditional water filters mainly manage one problem: scale while ignoring underlying complications with the water composition. In fact, with a wrong filter the problems become even more intense.**

**DECARBONIZATION** has become a standard since many years when it comes to softening - equipment scale protection. While the technology (in its basic form) ensures no scaling occurs in the equipment, it reduces alkalinity & minerals in the water and lowers the pH (more acidic - often pH < 6.5). This combination will often encourage an increased rate of equipment corrosion.

Metal corrosion is increasingly identified as a problem that seriously damages equipment and may have an impact on the taste of the finished beverage.

A correctly managed water treatment is part of the investment for the business. Often noted as a “cost”, it will save a lot of money in reality and support at best your focus for quality.

A properly managed water treatment programme is an essential investment for every business.

## TASTE

In addition to equipment protection there is also a direct impact on the quality of the drinks you make.

Some general basic guidelines - expectations: \*

### IDEALS

FILTER COFFEE: ..... +/- 60 mg/l or ppm

ESPRESSO: ..... +/- 100 mg/l or ppm

TEA: ..... +/- 50 mg/l or ppm

**WATER WITH A TDS (Mineral Concentration) < 40 mg/l (or ppm)**  
ex. Bottled: Spa Reine, Mont Recourt, etc.

FILTER COFFEE: Clear, pure coffee with the finest aromas and flavours - limited body structure

ESPRESSO: Lack of body, structure, and especially acids can dominate.

TEA: Pure, clear and light tea brews.

**WATER WITH A TDS 50 – 100 mg/l**

FILTER COFFEE: Clear, pure, more balanced coffee with the finest aromas and flavours

ESPRESSO: More hardness minerals will bring more intense body structure and balance to the drinks. The fine aromas and flavours in the coffee emerge - more stability

TEA: Clear tea brews with more intense structure development.

**WATER WITH A TDS 100 – 200 mg/l > 120 ppm**

**Equipment scaling**

FILTER COFFEE: Richer coffee flavour, more intense and balanced structure. The subtle flavours and aromas are less developed - less expressed.

ESPRESSO: More hardness minerals will bring more intense body structure and balance to the drinks. The subtle flavours and aromas are less developed - less expressed.

TEA: Less optimal, more intensively structured drinks will develop.

**WATER WITH A TDS > 200 mg/l**

**Equipment scaling!**

FILTER COFFEE: Intense coffee and body structure.

ESPRESSO: Intense coffee and body structure.

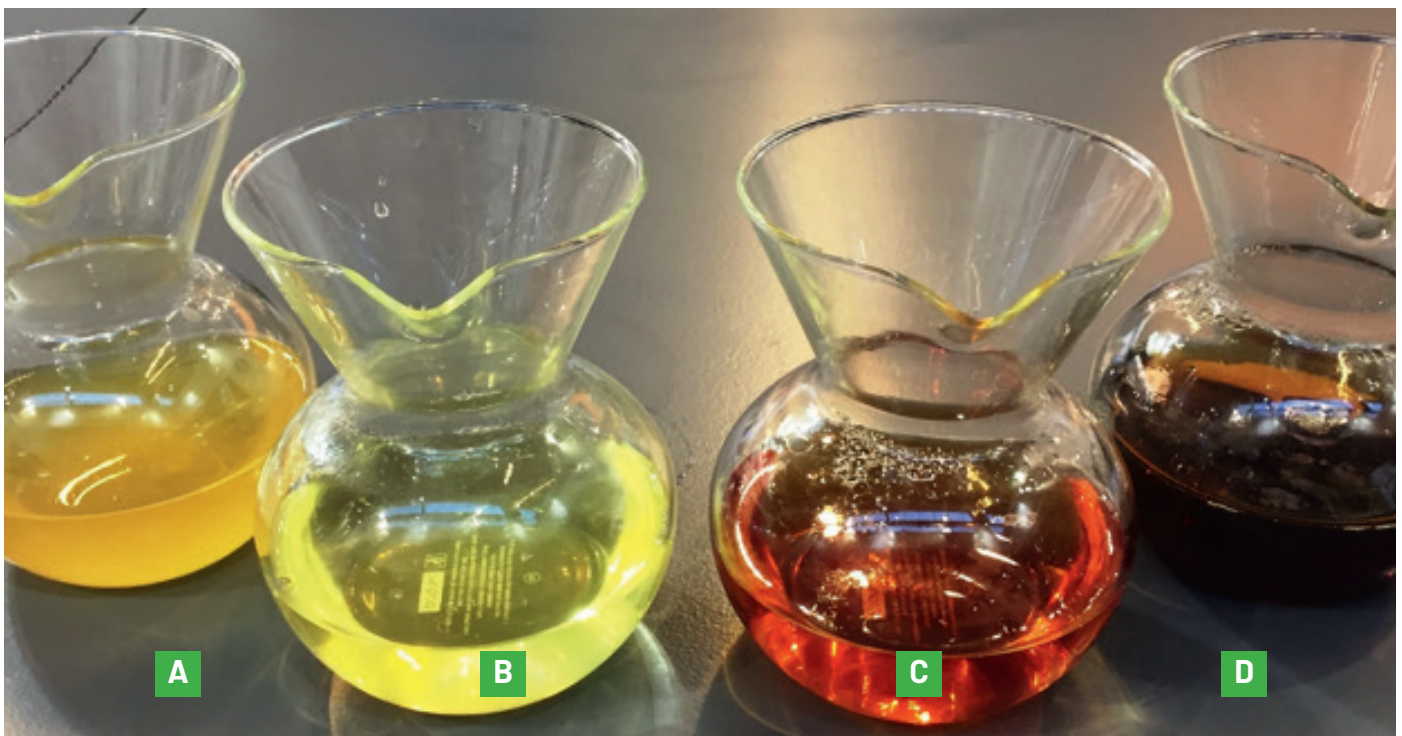
TEA: Intense, bitter, flat.

**A. Green Sencha Tea ..... TDS - Water 250 mg/l**

**B. Green Sencha Tea ..... TDS - Water 90 mg/l**

**C. Earl Grey Tea ..... TDS - Water 90 mg/l**

**D. Earl Grey Tea ..... TDS - Water 250 mg/l**



## LOW TO MODERATE TDS-WATER

Up to < 200 ppm (mg/ l)

TDS = total dissolved minerals

Thanks to the efforts of the water companies, or in some area naturally we can have “fairly soft” water from the tap with an average total hardness (\*) of +/- 6 to 10 ° dH and a carbonate hardness (\*) of +/- 5 to 8 ° kH.

As a result, it is often no longer necessary to soften the water and it is possible to opt for more cost effective alternatives.

### Sediment & Carbon filtration + Scale inhibitor (“scale control”)

The active carbon filters reduce unpleasant odours, taste, chlorine and fine sediments.

The limescale dosing system ensures a significant reduction in limescale deposits.

“Low cost high capacity” solutions based on phosphorus bonds (phosphorus, an essential mineral in the human body, also massive present in our daily food). When having a total hardness > 130 ppm (7-8 ° dH), this technology may just not be enough for the more sensitive equipment.

Some deposit, “a little bit of scale”, it is often immediately noticed as a problem, where it is the best natural protection against corrosion - metal attack.



COMBINED with **EVERPURE QL FILTER HEADS**

- EV925617** ..... QL1 Filter Head with 3/8” JG Fittings
- EV925620** ..... QL1 Head with 1/4” JG (24)
- 4312-12** ..... QL3 Filter Head 3/8” BSP
- 4312-13** ..... QL3B Filter Head 3/8” BSP



### EVERPURE PRE-COAT FILTERS 0.2 MICRON - TYPE S<sup>2</sup> / H<sup>2</sup>

MicroPure II with AgION technology and a 99,999 % filtration of particles > 0,2 micron

**EV961807 - OCS<sup>2</sup>**: 5.600 L @ 1.9 L/min

**EV961251 - BH<sup>2</sup>**: 11.300 L @ 1.9 L/min

**EV961326 - MH<sup>2</sup>**: 34.000 L @ 6.3 L/min

LOG-5 BACTERIA REDUCTION 99,999 %



### EVERPURE 5 MICRON CARBON BLOCK CB-5S

**EV961722 - 2CB5-S**: 11.000 L @ 3,8 L / min

**EV961726 - 4CB5-S**: 22.710 L @ 6,3 L / min

**EV961826 - 7CB5-S**: 37.854 L @ 6,3 L / min



### EVERPURE FIBERDYNE 0.2 MICRON WITH SCALE INHIBITOR

99,999 % filtration of particles > 0,2 micron

**EV969176 - 2FC-S**: 22,712 L @ 5.6 L/min

**EV969231 - 4FC-S**: 56,781 L @ 9.5 L/min

**EV969271 - 7FC-S**: 94,635 L @ 9.5 L/min

LOG-5 BACTERIA REDUCTION 99,999 %

(\*) Total hardness = all scale minerals in the water (Magnesium + Calcium)

(\*) Carbonate hardness = the concentrations of carbonate and bicarbonate ions

You need scale minerals + carbonate ions for the formation of hard scale deposits

## MODERATE TO HIGH TDS

> 200 ppm (mg/ l)

TDS = total dissolved minerals

### Sodium softener – systems handling Total Hardness (°dH)

A low-cost technical solution against scale, but only focused on scale; they have no sediment, taste or odour filtration.

These softeners require regular service (The resin has limited capacity / litre).

To prevent calcification, the system must remove all Ca & Mg elements from the water. Meanwhile, we know that these are very important elements for optimum coffee extraction. Carbonates (“buffer”) are not managed. They remain in a high concentration and thereby block the release of the finest flavours and aromas.

Automatic systems can make management easier.

If SCALE is the only objective: a low-cost technical solution with limitations.

If COFFEE quality in the cup is also the objective... not such an ideal solution.

### EVERPURE RIVERSOFT 4 AUTOMATIC SODIUM SOFTENER

- Volumetric regeneration
- Possibility to set day override

Water Softening products are the first line of defence against scaling (calcium and magnesium build-up). Whether at Point of Use or Point of Entry, they are designed and built for durability to provide you with many years of trouble-free operation.



### CLARIS GEN2 FILTER HEADS

THE BASIC FOR EVERPURE CLARIS SYSTEMS

Single head – full option

3/8” screw thread connections

8mm Quick Connect

3/8” Quick Connect

SERVICE SHUT OFF VALVE - Water IN and OUT closed automatically with ¼ turn of the filter cartridge

Total bypass settings: 7 Factory bypass preset: position 5



## MODERATE TO HIGH TDS

> 200 ppm (mg/ l)

**Decarbonization softener – systems handling the Carbonate Hardness (°kH).**

These cartridge systems are a technical solution against scale and come with filtration. Using an acidic resin, the hardness minerals are exchanged for H+. Carbonates (buffer) element are dissolved, thereby also creating CO<sub>2</sub>. The technical scaling issues are handled. However, to reach such a performance, the “classical” decarbonization must perform up to a level whereby in average it can create more corrosive – aggressive filtered water. Combined with higher levels of chlorides (> 30 ppm) in the water such can be very destructive for your equipment.

If SCALE and delicious coffee are the goal: strong technical solution with side effects.

If HEALTHY equipment is also the focus... not always such an ideal solution.

**The reference technology for lime management for decades.**

All known manufacturers offer this technical solution.

Decarbonization softening is a good technology, but more increasingly the side effects are also recognized as part of many other / new technical problems (especially corrosion) in the equipment.



**The composition of our drinking water is no longer like it was ten years ago...** Although the quality meets the strict drinking water standards, the composition is more often more problematic for the equipment and the historically strong water treatment systems are not always that optimal anymore.



Depending on the composition of the incoming water, this technique (in basic version) may or may not be a designated technical solution.

The equipment, too, has seen strong developments, with new concepts more often becoming more sensitive to (new) water-related problems.

## MODERATE TO HIGH TDS

> 200 ppm (mg/ l)

**Partial decarbonization + mineral control “sequestering” (Claris Ultra)**

Classic hydrogen softening has to go intense to prevent limescale deposits and this is often “too much”, delivering a quite corrosive filtered water. Limescale control function is often just not enough by itself.

This hybrid water treatment manages the lime scale problems and avoids the aggressiveness of the standard carbonate softening. The concept also ensures the development of a protective layer in the equipment “a natural protection against corrosion”. The filtered water has a higher TDS (mineral concentration) with more calcium and magnesium, within a natural balance that supports more intense coffee developments and healthy equipment.

If SCALE and HEALTHY equipment has the objective: good economical & technical solution.

If COFFEE quality in the cup is also the objective ... more body - stability.

**Scale in water is a problem which overall can be managed. But what about the side effects of the applied technology?**

Introduced to the market in 2012 - for Coffee equipment, hot water boilers, ... Claris ULTRA technology continuously confirms more than ever its absolute technological added value: Control & Manage the water related issues within a balanced environment.

*Some deposit, “a little bit of scale”, it is often immediately noticed as a problem, where it is the best natural protection against corrosion - metal attack.*

**4339-85 Claris ULTRA Cartridge 170** HEIGHT = 245mm  
Capacity @ 10°kH (carbonate hardness) VENDING - 1.700 L ESPRESSO - 1.500 L

**4339-80 Claris ULTRA Cartridge 250** HEIGHT = 315mm  
Capacity @ 10°kH (carbonate hardness) VENDING - 2.500 L ESPRESSO - 2.250 L

**4339-81 Claris ULTRA Cartridge 500** HEIGHT = 425mm  
Capacity @ 10°kH (carbonate hardness) VENDING - 4.200 L ESPRESSO - 3.750 L

**4339-82 Claris ULTRA Cartridge 1000** HEIGHT = 360mm  
Capacity @ 10°kH (carbonate hardness) VENDING - 8.500 L ESPRESSO - 7.000 L

**4339-83 Claris ULTRA Cartridge 1500** HEIGHT = 475mm  
Capacity @ 10°kH (carbonate hardness) VENDING - 12.100 L ESPRESSO - 10.000 L

**4339-84 Claris ULTRA Cartridge 2000** HEIGHT = 475mm  
Capacity @ 10°kH (carbonate hardness) VENDING - 20.000 L ESPRESSO - 16.500 L



## WHAT IF YOU EXPECT MORE FROM YOUR WATER MANAGEMENT?

A TOTAL MINERAL MANAGEMENT: You are the manager, you decide, you manage... in addition to scale, you may also experience problems with other mineral salts.

Deionization by ion exchange (Claris PRIME) filter cartridge with flexible bypass blend.

**Reverse osmosis** removes about 95% of all minerals from the water.

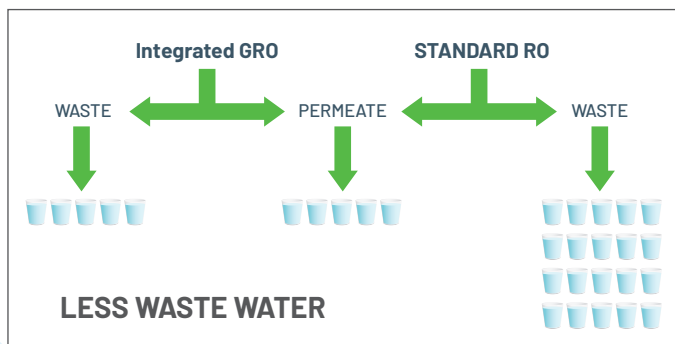
Pure osmosis water is deficient in minerals for optimum coffee extraction and is rather corrosive to the equipment (metals). Our tap water is healthy but has often an excessive mineral concentration. By adding a little of this filtered high TDS water in a controlled way, you can have maximum control on an optimal mineral concentration in the water. Nothing is perfect, but today these are the most efficient concepts with which you can determine how much the mineral concentration in the water will be. This makes it possible to manage scale and other problem minerals while it allows to build up a similar (YOURS) coffee experience almost everywhere.

**YOU are the manager; YOU** decide how low or how intense your reduced mineral content water will be to produce these great coffees, teas, ... or simply to drink.

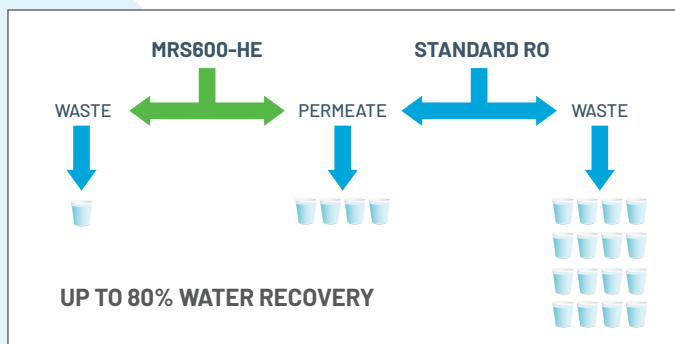
**ATTENTION:** Reverse osmosis systems are usually large water users with up to 80% or more water to the drain. Water consumption is one of the heaviest invoices in the hospitality.

CLASSIC REVERSE OSMOSIS

**100L Osmosis water = in reality 500 litres effectively used.**



PENTAIR GRO-75EN HIGH EFFICIENCY integrated GRO MEMBRANE : 50% recovery  
**100L Osmosis water = 200 litre effectively used**



EVERPURE MRS600-HE HIGH EFFICIENCY MEMBRANES  
**100L Osmosis water = 125 litre effectively used**

Alternatively, the mineral concentration in the water can be increased again with mineral cartridges. However, there is no stability in the concept yet. Dissolving minerals depends on flow, temperature, water composition, pH, etc. many factors that are difficult to manage.

## WHAT IF YOU EXPECT MORE PERFECTION FROM YOUR WATER MANAGEMENT?

AS A COFFEE ROASTER YOU SELECT AND ROAST THE BEST COFFEE BEANS AVAILABLE.

AS A SERVICE PARTNER YOU DELIVER AND MAINTAIN THE BEST COFFEE EQUIPMENT.

AS A COFFEE SHOP OWNER YOU INVEST TO DELIVER A COFFEE TO BE PROUD TO SERVE.

WHY WOULD YOU ALLOW WATER TO SPOIL YOUR BUSINESS?

### MRS PLATE MOUNT BL WALL MOUNTED SYSTEMS

The MRS BL Osmosis version allows to adjust the mineral concentration in the osmosis water (increase) by blending Osmose & treated hard water.

**One platform, multiple combination possibilities.**

- Silent 24V engine with a longer lifetime
- Minimal incoming pressure required – stable blending results
- Pressure gauge on booster pump and water production
- Features a blending valve for optimal TDS water
- Automatic ON - OFF switch
- Production from 400 to 1.300 litre / day
- Up to 95% mineral reduction
- 3.5 Bar pressure going out

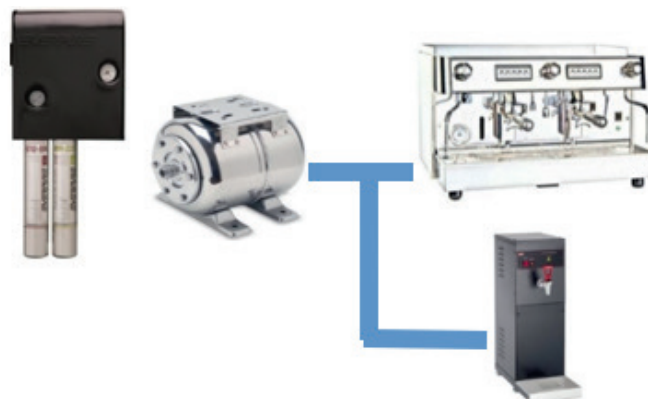


Combination variations are possible as long as the water peak demand, the buffer stock and maximum production capacity of the system together can handle it.

Upgrade from MRS100 to MRS225 or MRS350 is easily possible as they use the same base (only a membrane change)

Measurements (mm) / RO water production

EV997077 .....	MRS Plate mount 225 BL
	765 x 380 x 200 - 0,6 L / min
EV997035 .....	MRS Plate mount 350 BL
	965 x 380 x 200 - 1,0 L / min





### EVERPURE CONSERV-75E RO WITH TDS MANAGEMENT

This Conserv High Efficiency Reverse Osmosis System has a special focus on premium water quality for espresso machines and more. The system delivers the right balance of minerals for optimal scale and corrosion prevention.

#### EV9976-00 .....Everpure CONSERV-75E RO with TDS management

- Compact, super quiet, simple, plug & play, ...
- Forget the lime scale problems
- Chlorides and other problematic minerals / salts... gone the problems
- Forget the litre capacity of the resin bottle ...
- Determine - adjust - easily manage the TDS (mineral) concentration
- 50% water recovery
- 3.5 Bar pressure going out

The system has limitations but can handle a lot: It has a production capacity of +/- 12 Litre / hour (+/- 250 litre / day) and +/- 3,5 litre RO water on board. (+ extra volume blend water). On busy locations it may be advisable to plan an additional storage tank for peak times.

**Example of intensive test in "coffee lab":**  
(Average > 4 drinks / minute non-stop)

#### Running RO + blend in 38 min

= 170 drinks with average 82 ml volume

#### Running RO + blend + Nocchi 22L in 79 min

= 300 drinks with average 120 ml volume

Exhausted" after xx min. = Not enough flow & pressure to answer the demand. The system only needed a few minutes to provide enough flow for more coffees.

### REVERSE OSMOSIS WATER MANAGEMENT CAN BE MORE ECOLOGICAL USING EVERPURE® MRS-600HE SYSTEMS

Reverse osmosis has become the most preferred method for reducing TDS content in the catering business. It consumes little or no electricity and doesn't require hazardous chemicals. Reverse osmosis systems are usually large water users with up to 80% or more water to the drain.



The MRS600-HE systems have succeeded in reversing this with up to 80% water recovery. These systems are economic and ecological solutions for the HoReCa - Coffee business.

Imagine, one central system that can handle multiple catering equipment in the business.

- Coffee & tea equipment
- Dishwasher - window cleaner
- Combi Steamer
- Ice equipment

#### EXAMPLE MRS600-HE: NOMINAL PRODUCTION CAPACITY

- Up to 2.400 Litre / day
- +/- 90 litre / hour ..... +/- 1,5 litre / minute (storage tank 24L has +/- 12-litre RO water on board)

#### UP TO 80 % WATER RECOVERY!

EV997047 .....MRS-600 HE R.O. System 230VAC CE

EV997048 .....MRS-600 HE II R.O. System 230V CE (5.0 µm)

### CLARIS PRIME

"Total TDS (mineral) management out of a bottle"

The Claris PRIME filter addresses ALL MINERALS present in water (incl. Chlorides, sulphates, ...).

- NO water wastes
- NO power requirements
- Very flexible - adjust your TDS at any time
- Plug & Play.

#### 4339-86 Claris PRIME Cartridge

YOU are the manager; YOU decide how low or how intense your reduced mineral content water will be to produce these great coffees, teas, ...

Nature brings us calcium, magnesium, chlorides, sulfate, carbonates ... Thanks to in-depth studies we learn more about their activity and impact on your daily work and the equipment.

With the Claris PRIME filter it is possible to adjust the (TDS) mineral concentration as a percentage using the 7 levels on the bypass key, which is part of the Claris filter head.

#### Specialty Coffee, Tea & drinking water.

Balanced low mineral water ... at the same time "problem solving" (Scale - Chlorides - corrosion).



### Capacity estimates based on an average tap water having total hardness +/- 80% of total TDS and alkalinity +/- 65% total TDS\*

\* measured test results are no guarantee for local results as they can change, depending on varying TDS, mineral mixture, hardness and alkalinity

tap water incoming			water filtered									
			Bypass 0		Bypass 1		Bypass 2		Bypass 3		Bypass 4	
TDS (ppm)	TH (ppm)	KH (ppm)	TDS (ppm)	Capacity (l)	TDS (ppm)	Capacity (l)	TDS (ppm)	Capacity (l)	TDS (ppm)	Capacity (l)	TDS (ppm)	Capacity (l)
200	160	130	31	3222	51	3791	69	4296	86	4957	103	5858
250	200	163	39	2578	64	3033	86	3437	107	3966	129	4687
300	240	195	47	2121	77	2495	103	2828	129	3263	154	3856
350	280	228	55	1841	90	2166	120	2455	150	2833	180	3348
400	320	260	63	1611	103	1895	137	2148	171	2479	206	2929
450	360	293	71	1432	116	1685	154	1909	193	2203	231	2604
500	400	325	79	1289	129	1516	171	1718	214	1983	257	2343

# EVERPURE. WORLD CLASS SOLUTIONS FOR TOTAL WATER MANAGEMENT

## DRINKING WATER AND FOUNTAIN BEVERAGE

Today consumers are more concerned than ever about the quality of water. We improve drinking water by:

- Reducing chlorine, chloramines and other chemicals that can affect the taste and odour of water
- Reducing harmful cysts and other contaminants
- Improve carbonation
- Reducing particulates that cause cloudy water
- Help give your beverages "right out of the bottle" taste and appeal.



## COFFEE AND ESPRESSO

Good coffee can be a real draw for customers. But if the water's taste and odour isn't right... it won't matter what premium coffee bean you use. If you have scaling or corrosion issues your brewing equipment Coffee & Espresso will require more maintenance, or over time may fail altogether. The best water means the best

coffee, and more efficient brewing equipment. Everpure water treatment systems provide 'Total Water Management'.

## STEAM

It's crucial for steam equipment to have clean water. Chlorine and minerals can cause serious problems, including abrasion, clogging and corrosion. All of these can cause higher energy and maintenance costs, and equipment breakdown. Everpure's water management systems reduce the need for regular de-liming, provide improved efficiency and may help extend the life of your steam equipment.



## SOFTENING

Everpure's Water Softening products are the first line of defence against scaling (calcium and magnesium build-up). Whether at Point of Use or Point of Entry, they are designed and built for durability to provide you with many years of trouble-free operation.

## GLOBAL AUTHORISED DEALER NETWORK

*Pentair Everpure are innovative problem-solvers who believe water is the key for life. We deliver a comprehensive range of smart, sustainable water solutions to homes, business and industry around the world. All of these critical water environments are managed and maintained by our experienced service partners.*



**Experienced turnkey project management**

**Independent local installation and service network**

**Global distribution**

**Comprehensive aftersales customer support**

## REVERSE OSMOSIS

Our Reverse Osmosis systems are specially engineered for rigorous foodservice applications. They're designed for situations with especially severe water conditions such as high Total Dissolved Solids (TDS).

- Reduce high TDS levels that can impart an objectionable taste
- Inhibit limescale build-up that can ruin your equipment
- Reduce contaminants such as arsenic, lead, copper and nitrate/nitrite
- Reduce Chlorine and other off-tastes, and odours
- Reduce health threatening cysts such as cryptosporidium.



## SPECIALITY: WAREWASHING

Scaling is not just damaging to warewashing equipment, it also wastes energy and produces unsightly spotting on glasses, dishes and utensils. Our systems inhibit or eliminate limescale build-up, reduce corrosion and allow for easy deliming. The result is equipment that runs more smoothly.



## ICE

Good quality ice has a sparkle to it. When you serve a glass of ice water, you want it to look clean and crystal clear. Everpure products remove particulates that can cause cloudy ice, and improve both taste and odour. In addition, our products control the build-up of scale in the machine. Fine filtered water keeps your ice-making machine operating at peak efficiency.



Industriepark Wolfstee | Toekomstlaan 30 | B-2200 Herentals | Belgium | +32 142 83504 | sales@everpure-europe.com | pentairfoodservice.eu

DISCLAIMER: While every reasonable effort is made to ensure that the information provided in this booklet is accurate, Pentair, its employees and agents will not be held responsible for any damage to equipment, however arising, from the use of, or reliance upon this information.

ISSUE: January 2020

© 2020 Pentair. All Right Reserved.