2 Stage Water Optimization with Watch Water® Filtersorb SP3 (S) and Filtersorb SPA (MGO) Filter Cartridges

Two different types of highly advanced Filtersorb SPA and Magnesium-oxide (MGO) beads for enhanced reduction of dissolved metals. Highly advanced SPA (MGO) which bonds dissolved metals internally and irreversibly in a matrix pore structure. The upward water flow increases the surface area and will stay as non-dissolved and will not cause any type of scale, corrosion and keeping all surfaces neat and clean.

Combinations of two different types of special media’s. The “Filtersorb SPA (MGO)” contained in an upper portion of outlet chamber is comprised of a special highly advanced surface for autoionization of Anion’s such as Silicates, Sulfates and Phosphates.

### Two Stage Water Filtration

1. Filtersorb SP3 (S)  
2. SPA (MGO) Beads adding Magnesium

Watch Water® Head for Quick Exchange System (QES) consists of five components as shown in Figure (1). Where Part-5 is available in various sizes (1/2”, 3/4”, 1”) and Part-2 represent as the original seal from Watch Water® when you buy a Filter Cartridges.
**Applications and Introduction**

**Big Advantages**

- Quick Exchange Systems
- Highly efficient scale prevention
- 2 – Stage treatment with
  - (A) Filtersorb SP3 (S)
  - (B) Filtersorb SPA (MGO)
- Best water for water dispensers, dish washers, combi-steamer and ovens, water for coffee machines and vending machines including all water heaters.

*Watch Water® ScaleTrapp* is a very special, practical and Quick Exchange Filtration System (QES) developed for the diverse requirements of food and water sector. *ScaleTrapp* provides superb quality water for drinking water, coffee water and water for all kinds of vending machines and produces scale free and perfect water for oven’s, combi-steamer, dish washers, washing machines and all kinds of home appliances. The new Two (Dual) Chamber technology provides even more effective water optimization results in a consistently high water quality for all kind of Hot and Cold drinks, Home Kitchen’s, Restaurants, Laundries, Bakeries and all food and beverage applications.

**Total Hardness**

**Carbonate Hardness + Non Carbonate Hardness**

Hardness in general describes the amount of dissolved cation’s and anions in water. Carbonate Hardness is made from CO₂ dissolved in water making carbonic acid

$$H_2O + CO_2 = H_2CO_3$$

In practice, this is the amount of

Magnesium and Calcium Ion’s = Mg + Ca = CaCO₃

Only Calcium makes lots of trouble and bonds with surfaces. Together with carbonate
Total Hardness (cont.)

hardness level, e.g. it causes formation of Lime scale. Magnesium is not easily bonding, so it causes no Lime scale formation. As Magnesium (MGO) has lots of oxygen it creates a great flavor and taste to water.

For the first time in water treatment Watch Water® has found a way to make mineral which can remove CO₂ from water. Changing the paring of Magnesium and Calcium along with Bicarbonates and Carbonic acid. This means ability to keep pH very stable, which does not necessarily mean neutral. As both of the formations are changed to carbonates \( \text{H}_2\text{CO}_3 \rightarrow \text{HCO}_3^- + \text{CO}_3^{2-} \) the boiling water cannot shift these crystals from water to the surfaces of the boiling equipment e.g. Hot Water boilers, Coffee machine boiler, Kettle and so on. As a result there will be no scaling.

Magnesium however is the king of all waters. If we forget about it, it will turn our life into a misery. Carbonates are in charge of acid buffer capacity and this is the reason to keep the pH stable. In case of low carbonate hardness all the Heaters, Boilers will get corrosion. Only Carbonate hardness (not bicarbonate) is referred to as Alkalinity. Which is the capacity of an aqueous solution to neutralize acids. Learn once again and keep in mind that Alkaline or Base both have to do nothing with Alkalinity and both alkaline and base are useless. Only Watch Water® have found a rapid way to producing Healthy MGO a healthy mineral which stores carbon dioxide (CO₂) and avoid any scale or corrosion on boiling heater and cooling machines.

In the chamber one of ScaleTrapp system, the temporary hardness treatment takes place. Scale is a major cause of this hardness.

Why? The CO₂ gas which is trapped temporarily in the water changes the complete water chemistry

\[ \text{H}_2\text{O} + \text{CO}_2 \rightarrow \text{H}_2\text{CO}_3 \]
H₂CO₃ is carbonic acid with less pH it dissolves calcium in water and become temporarily hard.

\[
\text{Calcium (Ca) + H}_2\text{CO}_3 \rightarrow \text{Ca (HCO}_3\text{)}_2
\]

and this is the reason this chemical change causes the permanent hardness to move to one side of the channel depending on their Electrical charge.

**Temporary Hardwater ➔ Permanent**

By taking advantage of this migration, Watch Water® ScaleTrapp can split the hardwater flow (stream) into as follows.

**Splits** \( \text{Ca(HCO}_3\text{)}_2 \) into harmless Calcium carbonate crystals in the first chamber.

\[ \text{Ca(HCO}_3\text{)}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O} + \text{CO}_2 \text{(Gas)} \]

As we know that carbon dioxide altar’s the water chemistry by making it slightly more acidic: the tart taste of carbonic acid causes unpleasant flavor of coffee and beverages. The acidity means that \( \text{CO}_2 \) dissolves in water it creates charged particles called **ion’s**.

This positively charged ion is hydrogen ion’s and it moves much more quickly through the water solution and causes corrosion. **MGO beads** trap these hydrogen ion’s and release **Magnesium** and **Oxygen Ion’s**. These ion’s movement through the water creates a subtle electric field; field draws particles in the water, which have either negative or positive charges of their own toward one side of the water flow.

**ScaleTrapp system** takes advantage of this electric sorting by drawing the temporary hardness in the **first chamber** and splitting the water into **second chamber**. One chamber with **Filtersorb SP3(S)** for temporary hardness and the second chamber with **Filtersorb SPA (MGO)** to treat permanent hardness with anionization process to make clean and healthy water because the system does not have any Ion- Exchange, membrane or mechanical filter, clogging/doing is not a problem. No chemicals are needed in this process. The system is without energy. To maintain enough electrical field the **first chamber** is filled 50% to keep the positive and negative ion’s moving through the **second chamber**.

“**Alarm**”

Salt,… sodium Chloride would not be used or useful for water purification because the sodium would remain in the water after softening. So, the **Watch Water®** thought to substitute carbon dioxide as it is anyhow present in hardwater. Not harmful for humans to inject and as easy to remove from water as opening a can of soda. **ScaleTrapp system** is very useful in the whole world home appliances it does not require any chemicals and creates no concentrates. Only requiring a Filtersorb SP3(S) source of carbon dioxide to use. **ScaleTrapp** is definitely able to provide many hundred liters per hour, which meets a practical standard of each household, restaurants and all commercial and public buildings. Watch Water® is now working on scale-prevention system for possible use in large water treatment plants to supply large communities.

**Disclaimer**: The information and recommendation in this publication are true and based on data we believe to be reliable. They are offered in good faith but do not imply any warranty, liability or performance guarantee. Specifications are subject to change without notice. Watch Water® will not be liable under any circumstance for consequential or incidental damages, including but not limited to, lost profits resulting from the use of our products.

**Watch Water®** GmbH
Fahrlachstraße 14
68165 Mannheim, Germany
Tel. +49 621 87951-0
Fax +49 621 87951-99
info@watchwater.de

www.watchwater.de