

PROCESS FOR REMOVAL OF TEMPORARY HARDNESS-PERMANENT HARDNESS

WITH
FILTERSORB SP3®
BY WATCH®

SOFTENING

NO REGENERATION

SOFT NO R
BY WATCH®

COMPLETE SYSTEM

Vortech Pressure Vessels
RiserTube
Filtersorb SP3
Watch Tankhead from
Inlet 1" to 3"
Up Flow



Applications

Homes
Hotels
Facility Management
Hospitals
Food & Beverage
Cofee & Tea
Softdrinks
Ice Machines
Vending
Steamers
Dishwashers
Commercial and
Industrial
Applications

Feel The Difference

FEATURES

NO



Sodium in water
Salt For Regeneration
Electricity
BackWash
Control Valve
Brine Discharge



WATCH FILTERSORB TECHNOLOGY

The Only Manufacturer of Filtersorb SP3®

FOR MORE INFORMATION WWW.WATCHWATER.DE

Water is the most important and the most strictly controlled foodstuff



The implementation of the European Council directive 98/83/EC in the national legislation of member states, is again invoking new or lower limit values for undesirable substances contained in the raw water, e. g. specific heavy metals or organic halogens. Also, water suppliers have to make sure that drinking water complies to these limit values up to the tap. This means that for example plumbosolvency in private household installations must be prevented by appropriately adjusted water chemistry. **SOFT NO R®** provide crucial contributions to technologies achieving this as a natural component of healthy drinking water, can be used as environmental friendly agent leaving no undesirable by products or contamination and improving economics in water treatment. This paper presents the most important applications of **SOFT NO R®** in drinking water processing.

Information

Many water supplies, municipal and well, contain hardness minerals (calcium and magnesium). These minerals form a scale and create problems in water heaters, washing machines, dishwashers, coffee makers, humidifiers and plumbing systems.

WATCH SOFT NO R® SYSTEMS are designed to eliminate these problems providing your family with a refreshing difference, saving you money now and in the years ahead. **WATCH SOFT NO R® SYSTEMS**, feature **FILTERSORB SP3®** Technology. This technology transforms the calcium and magnesium carbonate (temporary hardness) of the water into mechanically stable and heat resistant calcite crystals (nanometre size) which no longer cause lime deposits. **SOFT NO R®** the calcium and magnesium crystals are rinsed away.



pH control is crucial in water treatment



A good quality drinking water should be neither corrosive nor scaling. To this end, the pH-value of the water has to be in balance with the degree of hardness. Hardness is a natural property of water and is caused mainly by calcium and magnesium ions. While a certain degree of hardness is healthy and to some extent necessary for corrosion protection, a high calcium-hardness is inconvenient to all users.

Hard tap water requires e.g. frequent descaling of all warm water equipment and water heaters in household equipment and also increases the usage of soaps and surfactants in washing and cleaning. Therefore, water with a middle hardness level is generally regarded as ideally suited for drinking water.



Who manufactures Filtersorb SP3® media?

The research, development, and manufacture of the **FILTERSORB SP3®** conditioner systems was initiated by **WATCHWATER GMBH.** in 2004 as a means of creating a salt free alternative to traditional water softening equipment in Europe and around the globe. **WATCH** has been a leading supplier and manufacturer of specialty filtration systems in Germany since 2004, offering a wide variety of treatment options for clients desiring non-wasteful, environmentally friendly water solutions.

With assembly plants in Florida and Maine; and facilities in Europe to supply the rest of the world, **WATCHWATER** has positioned itself to supply **FILTERSORB SP3®** conditioner systems globally.

Why did WATCHWATER develop this state-of-the art catalytic media for scale control?

Our environmental safe **FILTERSORB SP3®** media is developed by Watch Water Germany to serve as an alternative to commercial softeners used for scale control. Because commercial softeners discharge sodium into waste water supplies during the regeneration process, many European companies were faced with expensive discharge government permits and subsequently needed a cost effective alternative. Another reason for the development of the **FILTERSORB SP3®** media was to address the heightened concern by European health and research agencies that through the usage of residential softeners in second and third world countries, calcium and magnesium were being removed from home water supplies and causing serious health problems due to the lack of these vital minerals and the excess of sodium in the drinking water. The **FILTERSORB SP3®** media systems developed by **WATCHWATER** addresses both of these concerns and is a major breakthrough in the anti-scaling water treatment market for both commercial and residential applications and has proven to be a successful alternative to commercial and residential softeners.

Why is the Filtersorb SP3® media years ahead of the competition?

The **FILTERSORB SP3®** media is manufactured in a clean room environment under NSF regulations and has a precise automated and controlled manufacturing cycle which goes through multiple automated manufacturing processes. **WATCHWATER** provides the only advanced perfectly round and sized catalytic media on the market today. The **FILTERSORB SP3®** media guarantees the largest surface area with highest conversion capacity in the market. While other manufactures are providing older technologies, **WATCHWATER** has advanced to the forefront with their ongoing commitment to this advanced technology.

Filtersorb SP 3® Media

The technologically advanced Filtersorb SP3 Media is the innovative solution that prevents all of the negative effects of calcium and magnesium, while allowing the positive health benefits to remain. The system is maintenance free, chemical free, salt free and does not require regeneration and backwashing.

Filtersorb SP3®

Alternatively, the **Filtersorb SP3®** media acts as a catalyst by accelerating the transformation of the calcium and magnesium minerals into harmless Nano particles. When the inlet water goes into the water conditioner tank, the **Filtersorb SP3®** media acts as a catalyst and pulls hardness minerals of calcium and magnesium out of the solution and then transforms these minerals of calcium and magnesium out of the solution and the transforms these minerals into inactive Nano crystal particles. Because the hardness minerals have been transformed into Nano particles, these Nanoscopic particles make their way through plumbing systems without attaching to pipes, fixtures, valves, or heating elements. The end result being conditioned water with minerals, not „soft water“ but water containing the same mineral content as the source.

The “classic” water softening unit operates on the basis of ion exchange; exchanging calcium and magnesium ions in the water for sodium ions. When a water softener is used, the result is not only soft water, but also increased sodium content in the water supply.

Additionally, softening units require water for backwashing and common brine water salt water for regeneration.

a) Calcium Hardness Formation

Much of our drinking water comes from ground water which originates from precipitation that falls in the form of rain or snow and seeps into the ground, filling the open spaces, or pore space,



within layers of sand or gravel (formations) beneath the land surface. As the rain or snow passes through the atmosphere, it becomes enriched with carbon dioxide (CO_2) and combines with the H_2O (water) to form a solvent of calcium known as carbonic acid (H_2CO_3). As the rain seeps into the ground, the carbonic acid extracts calcium from the calcium rich stone and forms hydrogen carbonate [$\text{Ca}(\text{HCO}_3)_2$]. When the extraction process ends, the water is saturated with calcium and the carbonic acid forming a carbonic acid/ calcium equilibrium. Depending on the ground quality, the amount of calcium and amount of carbonic acid determines whether more or less calcium is extracted into the water.

Calcium Scale is a hard thick coating or covering of calcium carbonate (CaCO_3) that forms on heating elements and on the pipes and hardware of plumbing systems. As the calcium rich water enters into the home, the carbonic acid/ calcium equilibrium becomes interrupted within the pipes. Because the hydrogen carbonate ($\text{Ca}(\text{HCO}_3)_2$) is a very weak chemical compound, temperature increases or movement cause the compound to breakdown and parts of the calcium (Ca_2), magnesium (Mg_2) and bicarbonate (HCO_3) are no longer dissolved and attach to the surfaces of pipes, heaters, and hardware. Over time, the scale compounds and is very difficult and costly to remove.

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b) Types of Hardness

Total Hardness (TH) Hardness caused by calcium ions and magnesium ions. Calcium and magnesium are normally the only significant minerals that cause hardness, so it is generally assumed that:

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d) Carobonate Hardness (CH)

Carbonate hardness is caused primarily by the bicarbonate salts of calcium and magnesium, which are calcium bicarbonate, $\text{Ca}(\text{HCO}_3)_2$ and magnesium bicarbonate $\text{Mg}(\text{HCO}_3)_2$ calcium and magnesium combined with carbonate (CO_3) also contribute to carbonate hardness.



e) Non-Carbonate Hardness (NCH)

Non-carbonate hardness is a measure of calcium and magnesium salts other than carbonate and bicarbonate salts. These salts are calcium sulfate (CaSO_4), calcium chloride (CaCl_2), magnesium sulfate (CaSO_4) and magnesium chloride (MgCl_2). Therefore, non-carbonate hardness is hardness exceeding carbonate hardness.

f) If the Total hardness (TH) is greater than alkalinity (ALK), then

carbonate Hardness (CH) = alkalinity (ALK)

Non-carbonate Hardness (NCH) = total hardness - carbonate (CH)

g) Hardness - Example

Problem

a sample of water has 210 mg /l alkalinity, 330 mg/total hardness and 290mg/l calcium hardness. Find out the following?

a) Magnesium b) Carbonate hardness c) Non-carbonate hardness

Solution

a) Mg hardness = TH - Ca hardness = $330 - 290 = 40$ mg/l Since the is greater TH is greater than Alk

b) Carbonate hardness = ALK = 210 mg/l

c) Non-Carbonate hardness = TH - CH = $330 - 210 = 120$ mg/l



COMPANY PRESENTATION

Since many years Watch GmbH is a leading supplier of high quality Products for domestic and industrial application in water treatment technology. As a pollution worldwide is being increased our company is going to present You a new concept of Green Chemical Technology with its special biodegradable 100% chemicals and filtration materials for drinking, process and waste water technologies



WATCH GREEN PRODUCT RANGE

NEW Watch Dosing Softener

Alternative technology to avoid scale, based on dosing of Biodegradable Watch Liquid Softener with specially made mechanical pumps

Benefits

- 100% Efficiency
- 100% Biodegradable
- 100% No harmful waste
- 100% Compatibility for drinking water processes

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