



Eagle®sorb ES3 Anti-Scale FAQ's

1. Why was this state-of-the art catalytic media for scale control developed?

Eagle®sorb ES3 Anti-Scale media was initially developed 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 companies were faced with expensive discharge fees, government permits and needed a cost effective alternative. Another reason for the development of the Eagle®sorb ES3 Anti-Scale media was to address the heightened concern by 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 Eagle®sorb ES3 Anti-Scale media addresses both of these concerns and is a major environmental 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.

2. How does the Eagle®sorb ES3 Anti-Scale media prevent scale build up on pipes and equipment?

By accelerating the transformation of the calcium and magnesium minerals into harmless "nano" particles, the Eagle®sorb media prevents scaling. When the inlet water goes into the water conditioner tank, the up flow pulls the water through the fluidized Eagle®sorb media, which then acts as a catalyst, and pulls the hardness minerals of calcium and magnesium out of the solution transforming 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 on to pipes, fixtures, valves, or heating elements. Several years of testing has shown that the calcium and magnesium bonds cannot attach to any kind of surface resulting in 99% scale prevention.

3. How does the Eagle®sorb ES3 Anti-Scale process work?

As the inlet water flows through the Eagle®sorb ES3 Anti-Scale water conditioner tank, the up flow pulls the water through the fluidized Eagle®sorb media. When the calcium and magnesium ions make contact with the Eagle®sorb, the media has a ball-bearing like design that pulls the hardness minerals of calcium and magnesium out of the water and then transforms these minerals into inactive nano crystal particles. These nano crystal particles flow through the plumbing systems without attaching on to pipes, fixtures, valves, or heating elements; resulting in 99% scale prevention. A secondary benefit is that Eagle®sorb media process has a descaling effect on the existing scale already present in pipes, hardware, and equipment and also prevents corrosion by adding a 3 to 5 micron protective layer to the surface of the pipes and hardware. The overall process of Eagle®sorb ES3 Anti-Scale is virtually maintenance free and does not require backwashing, salt, or electricity.

4. What are the effects of calcium?

Negative Effect: The negative effect of calcium is that it creates scale on pipes, hardware, and surfaces. This leads to high energy costs for heaters and expensive repairs for ice machines, coffee machines, and other appliances. The scale also may breed bacteria. *Positive Effect:* Calcium enriched water is a health benefit and an important nutrient needed to help prevent or minimize diseases such as heart disease. According to medical experts, consumable water should contain adequate amounts of calcium and magnesium, which are both found in hard water. By using an anti-scale system the calcium and magnesium are transformed and left in the water in a form that is easier for our bodies to process and reap the positive effects of the minerals.

5. Why is Eagle@sorb ES3 Anti-Scale an up-flow configuration?

The Eagle@sorb is not a traditional down-flow filter system because it does not exchange anything for the hardness like a traditional water softener. Instead, the Eagle@sorb is catalytic media that requires maximum up flow fluidization of the media in order to have enhanced catalytic performance.

6. Can I replace a traditional water softener system with a SP3 Anti-scale water conditioner and what difference in performance should I see between the two systems?

Yes, you can replace a traditional water softener system with a SP3 water conditioner. With a traditional water softener you are using ion exchange where calcium and magnesium are exchanged with sodium. While softeners work well to remove hardness, there are times when a softener is not the best option. Today, many cities do not allow sodium discharge into the waste water systems, preventing the use of traditional water softeners. Secondly, many consumers are also concerned over the added sodium in their drinking water and the loss of calcium and magnesium when a softener is used. Thirdly, most apartments and condominiums do not like to use softeners because space restrictions and potential leaks from brine tanks. The best alternative to a traditional water softener is the Eagle@sorb ES3 Anti-Scale conditioner. Because the Eagle@sorb is a catalytic media, it converts calcium and magnesium into nano crystal particles without adding chemicals or salt.

7. Do microorganisms accumulate in the SP3 Anti-scale unit and must the material regularly be disinfected?

In normal conditions, no. Remember that when in service, the media is always in movement from the continuous up-flow of water and as result microorganisms are repressed because they do not like catalytic reaction and the movement of the media. In addition, the Eagle@sorb media beads are glass coated and nonporous, which does not allow for the formation of microorganisms. Disinfecting the SP3 media in most cases is not required. However, if there is any concern, for a short period, you can use up to 3 ppm of chlorine to clean the media.

8. What if the bed gets contaminated with bacteria?

While this should not occur, the media can be treated with chlorine up to a maximum of 2-3 ppm for short periods to kill any potential bacteria concerns.

9. Why does the Eagle@sorb ES3 Anti-Scale media not need to be backwashed? What keeps the media bed from getting fouled?

It is important to point out that there is no filtration or ion exchange effect with this media. Remember the media is in a constant up flow in order to enhance the

catalytic reaction. Because of the continuous up flow, there is no accumulation of anything in the fluidized bed of the media. The media works as a catalyst only and does not need to filter out particles.

10. *Is a central control valve necessary or does the system function without backwashing?*

Because the media is continually in up flow fluidization, no particles are held up in the media and no backwashing process is required. You might say the media is always in backwash during service because it is always suspended in the water in a fluidized state. A central control valve is, therefore, not used with an Eagle®sorb ES3 Anti-Scale water conditioning system. There is no need to backwash and the system uses an in and out valve made especially for up flow fluidization.

11. *What happens at night time when there is no water flow?*

When there is no water flow the filter bed is not suspended and therefore the filter bed will rest.

12. *What is the life time of the media?*

Under proper installation, we estimate the Eagle®sorb ES3 Anti-Scale media will last a minimum of 5 years but feel confident the media will last longer. This will vary on existing water conditions and water usage.

13. *Can the Eagle®sorb ES3 Anti-Scale treat hardness up to 100 grains hard?*

The Eagle®sorb ES3 Anti-Scale system has been used on and can treat up to 100 grains hardness. All Crystal Quest® systems calculations are made based on a hardness of 25 Grains or less. The reason for this is that 98% OF ALL INSTALLATIONS FALL INTO THIS CATEGORY WORLD WIDE. The Eagle®sorb media has been used on waters with hard water up to 100 grains hard. Crystal Quest® can provide calculations for over 25 grains hard if needed.

14. *What is the maximum operating temperature of the media?*

The Eagle®sorb media can tolerate incoming water up to 90°C/ 194° F; however the systems are designed to be used on cold water applications.

15. *What is the minimum operating temperature of the media?*

The media can tolerate incoming water as low as 4°C/ 39° F and should be kept from freezing.

16. *What is the pH range of the media? What is the low and high pH range?*

Eagle®sorb ES3 Anti-Scale media works optimally between the pH ranges of 6.5 to 9.

17. *How do I keep the media from washing out of the unit when I start it up for the first time and put it into service?*

We always recommend that you soak the media for 15 minutes before start up. You should also run water through the filter tank and media before installing in the piping system. This will assure that any possible fines from shipping in the tank and media will be washed out of the tank before hook up. By soaking the media it becomes saturated with water and will not accumulate at the top of the housing when filled with water during first time usage.

18. Will the media replace polyphosphates in controlling scale build up?

Yes, the media is a much better choice than traditional polyphosphates. The polyphosphate dissolves into the water and coats the iron, calcium and magnesium in it, making it difficult for these agents to precipitate out of the water and create the problems associated with hard water. Unfortunately, polyphosphate-type systems are only effective in cold water, low volume applications. Additionally, polyphosphates are considered a preferred food for bacteria and may cause other environmental problems. The SP3 anti-scale media is able to be used in hot and cold water applications, does not release any chemicals into the service line and due to its catalytic surface and constant up flow fluidized state, and does not breed bacteria growth. The Eagle@sorb ES3 Anti-Scale media is far more superior to the polyphosphate.

19. How fast is the conversion of the calcium and magnesium out of solution in the Eagle@sorb ES3 Anti-Scale system?

The Eagle@sorb ES3 systems are designed to have contact times as fast as 2 seconds. The catalytic reaction is immediate and the nano particles are formed immediately on the surface of the media. They then break off as nano particles and go to service. The systems are designed to convert 99% of the temporary hardness of calcium and magnesium based on flow rates and equipment design.

20. Has the media been tested for health effects?

The media has been tested and meet NSF 61 standards.

21. Will I experience an increase of calcium and magnesium particles?

Depending on the amount and type of scale deposits present in the plumbing of your home, you may see the following for approximately one to six weeks after the installation of the system. These effects will be temporary and will steadily stop once the appliances and plumbing have been de-scaled. The water going through the conditioner can initially increase the hardness in the water due to de-scaling of the plumbing system. You can especially see this on the hot water side of the plumbing and the water heater because scale builds up faster in hot water. You may see calcium particles in the aerators, showerheads, bathtub, and dishwasher. These conditions are temporary and only last during the de-scaling period. The water heater can also have excessive scale build up and may need to be cleaned out by opening the bottom drain valve on the hot water heater. Be sure to turn off the electrical or heat source! Flush out the loosened scale by attaching a hose to the drain valve. You may need to do this for several weeks until the plumbing and hot water heater has been de-scaled. The good news is that a clean water heater uses much less electricity or gas to keep the water hot. You can also speed up the de-scaling process by turning on all the hot water valves in the house once or twice a week until all the plumbing is de-scaled and the water runs clear.

22. If the water hardness is tested after the system is installed will the hardness level be different?

If the water is tested after the anti-scale system has been installed, the hardness level will remain the same and can even test slightly harder due to the existing scale being removed from the plumbing (This is usually seen more on the hot water side do to more hardness build up on in the water heater and pipes). After the existing scale is removed the hardness will go back to normal hardness level. As the anti-

scale system changes the structure of calcium and magnesium not removing them, the water will provide test results that will show these elements as still being present.

23. How can I test the media?

For a homeowner, the simplest way which yields convincing results is using two sauce pans. You put two saucepans on a heating element. One filled with the untreated water and the other with water treated by the water conditioner. As the water boils down the untreated water will build a hard calcium scum on the side and bottom of the sauce pan. The sauce pan with treated water will have no hardness calcium scum on the side and you will see a circulation of hardness crystals on the bottom of the pan just before the water is boiled out. (Note: be sure not to boil the water completely or the crystals will harden and burn on the bottom of the pan.) Another easier method may be to observe heating equipment and appliances already covered with scale. After installing the SP3 water conditioning system, over time the existing scale in the water system will dissolve and the white scale buildup will start to disappear. Customers have observed, upon using the SP3 water conditioning systems, their appliances and shower heads start to clean up after years of scale build up.

24. Will I feel any different when I shower?

After the existing scale is completely dissolved, many customers have said that they feel a silk like feeling and their hair much cleaner than before the anti-scale treatments.

25. Will I see any change in the laundry?

After the existing scale is completely dissolved, your laundry will come out cleaner, feel softer, and last longer.

26. What should I expect from my dishwasher or shower head after installing a SP3 Anti-Scale conditioner?

Dishwashers use water from the hot water side of plumbing and the water is extremely hot water and also extremely hot in the drying cycles when cleaning and drying the dishes. You may find unusual initial spotting because of the de-scaling taking place. You also may have existing excessive scale build inside the sidewalls and washing arms of the dishwasher. The best way to eliminate the existing scale in the dishwasher is to put a cup of white vinegar in the upper rack during the washing cycle for the first few weeks. You can also use citric acid instead of the white vinegar. This will help dissolve the existing scale in the washer arms and inside surface of the dishwasher. You may need to do this until all of the scale in the plumbing is dissolved. Harsh detergents can breakdown the crystals and then can cause spotting on the dishes. It will be important to reduce soap usage as much as 50%. And be sure to use Eco friendly dishwashing detergents. You may have to try several all natural dishwashing detergents to find the one that works best for your dishwasher. In bathrooms, over a few weeks you will see the existing scale slowly dissolve in the shower heads increasing water flow. Remember the calcium being treated is a nano size and will be flowing easier down the sides of the walls and glass doors in the shower. We recommend that you first clean the shower from existing scale with a cleaning product that dissolves old scale that has built up before

installation of the conditioner system. One suggestion to use a product called CLR. We then recommend that you coat the walls in the shower head with Rainx, a commercial product used for automobile windshields. The Rainx allows the majority of the nano particles to be easily washed to drain. The few nano particles that are left can be easily wiped down because they no longer can adhere to the sides of the shower. Note; Rainx can also be used on all fittings to include the chrome. You can find Rainx at Wal-Mart or automobile stores.

27. *How serious is it having too much chlorine in the water? How will too much chlorine affect the media?*

Having too much chlorine in the water will have a serious effect on all medias with a resin base. Excessive levels of chlorine in the water should always be a serious concern. Under normal conditions, good quality based medias like the Eagle®sorb, show no significant loss of performance at typical chlorine concentrations of 1-3 ppm. However, at elevated levels, chlorine can have a substantial negative effect on the structural integrity of the resin material in the media. High levels of chlorine sometimes occur when the water supplier has an extensive break in the water main, after a significant flooding event or when higher levels of bacteria are measured in the water source. The chlorine level can be low for several years, but do to unforeseen circumstances, the chlorine level is increased and the media in the water conditioner can degrade. The best examples were the hurricanes in Florida and Louisiana. Many traditional ion exchange water softeners with a resin media had to be replaced when local authorities super chlorinated water sources to levels over 3ppm because of bacteria concerns in the water supplies. The only way to GUARANTEE to protect your Eagle®sorb ES3 Anti-Scale system is to always have a whole house carbon filter installed as part of a municipal system. A carbon filter removes any excessive chlorine levels in the municipal water supplies before the water enters the conditioner.