

Magnetic Water Conditioners: *Fact, Fiction or Unknown?*

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From time to time, articles appear in publications which tend to discredit the benefits of magnetic water conditioners.

Without exception, they are articles lacking any factual information regarding real-time qualified documentary tests. They usually make some misleading statement like, "For the past 30 years, independent scientific data has failed to validate this technology" or "black box gadgets for water treatment surface again."

To help you understand the "truth," I offer you the following facts. Since 1981, AQUA-FLO, Inc., Baltimore, Maryland, has been building and selling magnetic water conditioning equipment, as well as other "alternative to chemical" equipment including ozone generators, filtration, electronic control devices, etc., to provide the water quality required under many different water-quality conditions from industrial waste discharge pretreatment to point-of-use drinking water equipment.

Our company has conducted more than 25 independent scientific studies that show the effectiveness of our magnetic water conditioners. These tests include an inexpensive method to keep RO membranes from high LSI scale fouling to substantially increasing water flow through old heavily-scaled pipes and heat exchangers.

There are two factions which have caused the "do they work?" controversy over the years. The first is a group of charlatans trying to make a fast buck on a product by selling it as a water softener. The second faction includes those in fear of the water softener industry being overcome by an inexpensive alternative to selling water softeners and lifetime requirements for service, maintenance and salt/chemical supply.

The fact of the matter is, magnetic water conditioners are descaling tools. This is their primary job in the water treatment industry. During the process, energy is induced to the minerals which pass through the magnetic water conditioner. As water flows through it, the hard water minerals take on a different crystalline structure form when precipitated. The water develops an increased solubility factor which helps it absorb more of whatever the water may be mixed with down stream.

Since these reactions are physical rather than chemical, the magnetic water conditioning industry is hard-pressed to satisfy the clamors from the chemical water treatment industry when they ask for proof that the equipment "works." In addition to visual results, physical tests are available to show the positive mechanical changes such as increased water flow and improved heat transfer efficiency in heavily-scaled plumbing systems.

The physical energy change factors are described as follows:

"Calcium carbonate (the major component of scale) exists in two crystal forms: aragonite and calcite. Aragonite has an orthorhombic structure (elongated prism), Brinell hardness of 3½-4, and density of 2.947. Calcite has a rhombohedral structure (all sides are equal rhombuses), Brinell hardness of 3, and density of 2.7102. Where the opportunity occurs, ions, atoms, or molecules arrange themselves in positions of least energy and more symmetrical and regular crystal forms. The transformation of aragonite to calcite is much more rapid when in contact with water containing dissolved calcium carbonate. One way to speed up this transformation is to induce a magnetic field which affects the intermolecular forces and, as a result, changes the crystalline structure of scale from aragonite to calcite, which has lower energy, hardness, and density, and has a higher solubility coefficient factor. This effect makes water more capable of dissolving the existing scale build-up

encrustations which, in the form of "lime sludge," can be easily rinsed away."

Due to the induced energy factors described above, when installed properly, magnetic water conditioners perform their functions very well. As more than 100,000 of these units have been sold worldwide, it may be interesting for your readers to note that this company has a policy that includes a 120-day money-back guarantee if the customer is dissatisfied with the results. During our company history we haven't recorded a "request for return" for more than 100 units out of over 100,000 sold. This is a product satisfaction "testimonial" for magnetic descaling tools.

We also realize that there are inferior magnetic designs and mis-applications as in any industry. I can only attest to our brand of magnetic water conditioners. Cheap clamp-on type magnets cannot work on any iron pipe. This can be verified by a simple test available through any university physics lab.

A bright spot for our friends in the water softening industry to consider is that independent, third party laboratory tests show a water softener efficiency increase of approximately 10 percent when pretreated with a properly-installed AQUA-FLO magnetic water conditioner. Rather than quibbling about the controversial aspects of the magnetic water conditioners, perhaps these may aid the industry in its pursuit for higher efficiency, and more ecologically-acceptable water softening equipment. •

About the Author:

Alden L. Coke, president of AQUA-FLO, Inc., Baltimore, Maryland, may be reached at 800-368-2513.

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