



NITRATE REMOVAL AND WATER SOFTENING

NITRO - SOFT

TWO in ONE Systems

Contaminants: Nitrate/Hardness

In August 2019, **Watch Water[®]** was contacted by **European Union** to design, manufacture and start up a nitrate removal system and a softening system in a combined process.

The **Watch[®] NitroSoft** treatment system features a cabinet mounted **Nitrotrapp** media and units are sized for one family house, two family house and for a maximum design flow of 3 m³/h (13.2 gpm) for three family house. The models **NitroSoft** One, Two and Three uses **NitroSoft** media in a single fiber glass composite vessel. Each tank contains **Watch[®] NitroTrapp** and **HardnessTrapp** media in a ratio of **50:50**. Both medias are supplied in the chloride form as moist, tough as uniform spherical beads. The **Watch[®] Nitrate ad Hardness** removal system featured with a *mixing valve* that blends treated and untreated water to attain a blended nitrate concentration at set point less than 5 mg/liter. **NitroSoft** systems are equipped with a regeneration/brine well and brine valve system to regenerate the **Watch NitroSoft** systems.

WHOLE HOUSE SYSTEM

once every three days to maximize the efficiency for removal of nitrates and hardness. Regeneration of the **NitroSoft** systems is automated by the *Programmable LOGIC Controller*.

TWO in ONE

**NITRATE
 REMOVAL
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In addition to **Watch Water's** combined Nitrate and Hardness removal system, **Watch[®]** can also provide a softening cabinet system using **Watch's** **HardnessTrapp** softening media rated for maximum design flow of 3 m³/h. The cabinet models are **WatchSoft: One, Two and Three**. *See Brochure.*

"The Nitrate Removal Only"

NitroTrapp series built to remove high nitrates only. *See Brochure.*

Brochure: **NitroTrapp**



WHAT IS SOFTENING WITHOUT NITRO-SOFT

SOFTENING ALONE

The National list of allowed and prohibited substances identifies **Sodium-nitrate (NaNO₃)** as a prohibited substance.

How is Sodium Nitrate produced ?

Because softening resin is loaded with Sodium (Na⁺) all **Calcium nitrate, Magnesium nitrate and Iron nitrate** ions are exchanged as follows

Ca²⁺NO₃⁻ + Mg²⁺NO₃⁻ + Fe²⁺NO₃⁻ are exchanged into very toxic **Na⁺NO₃⁻** Sodium nitrate water is considered as irritant to the respiratory tract which cause shortness of breath and coughing. **Water softening** alone when presented with **high nitrates** are result in water pollution and contamination of drinking water sources.

Sodium nitrates is common at all Point Of Entry (POE) water softener systems and serious source water contaminant, particularly in agriculture areas and is regulated under the **Clean Water Act**. Calcium and Magnesium is quickly **ionized** into Sodium (Na⁺) and Nitrates (NO₃⁻) in softened water. In soft water, a high nitrate concentration could impose a low chronic level in aquatic system, and this is a huge concern. All softener systems must install **Nitrotrapp** systems.

NitroTrapp



Without **Nitrotrapp** soft water can be toxic to humans. Nitrate contamination of **freshwater streams and rivers** is also a concern. The impacts of sodium nitrates on human health are potentially significant. Following consumption, the human body reduces nitrate to nitrite, which has been linked to



Methemoglobinemia, a potentially fatal condition whereby nitrates interfere with oxygen uptake within the body.

Sodium Nitrates can be further reduced to nitrosamines, a class of compounds considered to be **carcinogen**. **Nitrosamines** have been found to induce **Cancer** in variety of organs in more than for forty animal species, including higher primates.

Sodium Nitrates is a salt that dissociates into sodium (Na⁺) and Nitrate (NO₃⁻) ions in drinking water. When Sodium nitrate dissolves in drinking water, they increase the sodium concentration of the body as well as the nitrate utilized by growing children. Sodium is relatively immobile in body and is likely to accumulate in body cells. Salinity stress is a major cause of hypertension, high blood pressure and diabetes. To avoid this stress of (Na⁺) it is very important to exchange **Sodium** against **Magnesium** and increase optimal pH of body by drinking high pH water between **8 and 9.5**.

Only the MGO beads can neutralize high sodium and increase pH



For more information on MGO,

Please See **Brochure**



TWO IN ONE NITRO-SOFT SYSTEMS

ONE Family house

2 – 6 person Household

System	Point of Entry
Flow Rate	SI: 1 m ³ /h US: 4.40 gpm
Pipe Size	1"
Dimension (DxWxH)	56 x 31 x 74 cm
Nitrossoft Media Required	10 L

TWO Family house

6 – 12 person Household

System	Point of Entry
Flow Rate	SI: 2 m ³ /h US: 8.80 gpm
Pipe Size	1"
Dimension (DxWxH)	56 x 31 x 120 cm
Nitrossoft Media Required	20 L

THREE Family house

12 – 18 person Household

System	Point of Entry
Flow Rate	SI: 3 m ³ /h US: 13.20 gpm
Pipe Size	1"
Dimension (DxWxH)	56 x 31 x 120 cm
Nitrossoft Media Required	30 L



NITROSOFT SYSTEMS



FACTS

- ✓ **Easy and user-friendly operation**
- ✓ **High-quality brand components**
- ✓ Available in **different sizes**
- ✓ **Suitable** for small, medium-sized and large household

NITROSOFT KIT DETAILS

High-quality stable mounting block with integrated shut-off valve

- ✓ Water temperature max.: 90 °C
- ✓ Max. Operating temperature: 90 °C
- ✓ Material: brass
- ✓ Pressure level: PN10
- ✓ Nominal diameter: DN 25

Stainless-steel flexible hoses

- ✓ Available in **different unit sizes**



HEALTH CONCERNS OF SODIUM NITRATE

How much Nitrates in WATER?

For those who own a **water Softener** must think about Nitrates in their softened water, You will wonder how much **Sodium Nitrate** is in **softened water**.






How much Sodium in SOFTENED WATER?

This will vary in each house hold. The amount of **sodium** in you water is directly related to your total **Calcium and Magnesium** ($Ca_2^+ + Mg_2^+$) in hard water.

Its so simple and easy math, lets figure it out together. For every degree (dH) of water hardness, or every grain of hardness there will be **30 mg** of **sodium in one liter of softened water**.

If you do not know Nitrates content in your water, contact your city administrator and they will be happy to provide you with this information and believe, its 100% false information. If you want the true results, you will have to test your water in a certified lab.

Your Water Softened and Nitrates not removed.

Your inlet Hard Water	Sodium Added per liter of Softwater	Sodium content at outlet Softwater
 x  = 		
20 dH / 20 grains	30 mg/L	600 mg of Na ⁺
Water Softeners; Too Bad and Its TRUE		

Health Concerns

Case studies have shown a link between increased level of **Sodium nitrates** and increased deaths from certain **diseases** including Alzheimer disease, diabetes mellitus, stomach cancer and parkinson's disease; possibly through the damaging effect of **Nitrosamines** on DNA. **Nitrosamines**, formed in soft water containing sodium and Nitrate including Nitrite, have been linked to gastric cancer and Esophageal cancer. **Sodium nitrate** and nitrite are associated with a higher risk of colorectal cancer. One of the reasons that hard water should be checked of its content of Nitrate from a certified lab.

A small amount of the nitrate added to water softener breaks down in Sodium nitrate. In addition, this water should not be used to cook food.

The **Sodium nitrate** than reacts with protein-rich-food to produce NOCs (nitroso compounds). NOCs can be formed either when food is cooked or in the body as food is digested

Watch Water[®] NIRO-SOFT

A Mixed **HARDNESSTRAPP** and **NITROTRAPP** Media System for the simultaneous removal of **N-Nitrosodimethylamine** and **Trihalomethanes** from **Dinking** and **Water for Food**