



Some residents, businesses and industries are concerned about the hardness of the Newcomerstown tap water.

1 What causes hardness?

The hardness of water comes from dissolved minerals, most predominately calcium and magnesium. As water moves through soil and rock in the watershed, it dissolves these minerals.

2 Does hardness make the water unsafe?

From a health standpoint, the minerals in water that causes hardness have no adverse effects, and are, in fact, essential daily nutrients. Both calcium and magnesium are essential minerals and beneficial to human health in several respects. It is minerals that give water refreshing flavor that many people find desirable. Water without minerals, such as distilled water, can taste “flat”.

The Environmental Protection Agency (EPA) has not established a standard for water hardness.

3. What is the level of hardness in Newcomerstown tap water?

Newcomerstown water is considered very hard. Newcomerstown water has a hardness ranging from about 280 to 290 milligrams per liter (mg/L), also called parts per million (ppm). Another common unit of measure for hardness is “grains per gallon” or “GPG” for short. One “GPG” is equal to about 17 mg/L. So, Newcomerstown water hardness measured in grains per gallon is greater than 10.5GPG.

The level of hardness in water is classified according to the following chart.

Classification	Parts per million (ppm) or Milligrams per liter (mg/L)	Grains per Gallon (GPG)	Effects
Soft	Less than 17	Less than 1.0	Hardness below 120ppm will probably not cause major scaling or soapy film
Slightly hard	17 to 60	1.0 to 3.5	
Moderately hard	60 to 120	3.5 to 7.0	
Hard	120 to 180	7.0 to 10.5	Softening is generally recommended when the hardness level exceeds 150ppm
Very hard	Greater than 180	Greater than 10.5	

4 What are the effects of hardness?

The calcium and magnesium minerals in hard water can build up on a contact surfaces, possibly plug pipes and clog water heaters, and decrease the effectiveness of soaps and detergents. Hard water can make it difficult to produce a lather (suds) when washing. Hard water often produces a noticeable deposit on plumbing fixtures such as faucets and showerheads, leaves a film on glasses, and cause “bathtub ring”. These minerals can also deposit as a scale in heated water applications, and coat the surfaces and reduce the efficiency of water tanks and heat exchangers.

5 How can hardness be reduced?

The Newcomerstown tap water is very hard and will cause major scaling or laundering issues. However, if you feel that you would benefit from lower hardness levels, you can install a water softener on your water supply line.

For most households in Newcomerstown, the decision to install a water softening unit is a matter of personal preference and not necessity.

The most common type of water softener used in homes is an ion exchange unit. The water passes through a bed of “beads” that are supersaturated with sodium. The water becomes softened when the sodium from the beads “exchanges” with the calcium and magnesium in the water. The calcium and magnesium attach to the beads, while the sodium from the beads is released into the water. Eventually, the beads will become clogged and saturated with calcium and magnesium, and they must be regenerated. Regeneration is done through a process called “backwashing” using a solution.

While the Village of Newcomerstown cannot make recommendations as to the type or brand of softener, we do suggest that if you are interested in purchasing a softening system that you look for equipment that carries the seal from the Water Quality Association (WQA), National Sanitation Foundation (NSF), or Underwriters Laboratories, Inc.(UL). A seal from any of these organizations indicates that the equipment has been independently tested to industry performance standards. These organizations also have an on-line database of the equipment that has been tested and certified. For example the NSF listings can be obtained here:<http://www.nsf.org/consumer-resources/what-is-nsf-certification/water-filters-treatment-certification/selecting-a-water-treatment-system>

6 Are there options to address hardness besides installing a water softener?

All incoming water may be softened and you may wish to soften only the water supplied to your hot water tank or heat exchanger. Softening water using an ion exchange unit will increase the sodium level of the water and may be present a concern for people on low sodium diets.

Softened water can also increase the corrosiveness of the water and the potential for metal leaching from pipes, solder, and plumbing fixtures.

About 50 gallons of water will be used (wasted) each time the softening unit is regenerated.

All water softeners need to be properly operated and maintained. Regular maintenance includes replenishing the brine solution, periodic cleaning and disinfecting to eliminate the growth of bacteria, and possibly needing to unclog the bed of “beads”.

7 Are there options to address hardness besides installing a water softener?

If you feel that hardness in your water is a concern, the following practices can be beneficial:

- Keep hot water temperature less than 140 degrees Fahrenheit(F)
- Periodically inspect, clean and flush hot water tanks. Please see Section 8.4 for more information
- Use a laundry additive such as Borax or Washing Soda, or purchase A laundry detergent that comes with a water softener agent added (e.g., Calgon)
- Use a dishwasher rinse aid
- Use white vinegar on tiles, glass and faucets to help remove mineral Deposits

8 For more information...

The section below provide more information specific to each category of water use in Newcomerstown.

8.1 Homeowners and Residents

If you are considering purchasing a home treatment system, the first step is to identify a unit that will address your specific water quality concern. Water treatment systems are certified by three organizations, all who are accredited by the American National Standards Institute (ANSI).

Organization	Overview	Contact
NSF International	The NSF Water Treatment Device Certification Program requires extensive product testing and unannounced audits of production facilities. The goal of the program is to provide assurance to consumers that the water treatment devices they are purchasing meet the design, material, and performance requirements of national standards.	NSF International PO Box 130140 Ann Arbor, MI 48113-0140 877-8-NSF-HELP (877) 867 3435 www.nsf.org info@nsf.org
Underwriters Laboratories	Underwriters Laboratories, Inc., is an independent, accredited testing and certification organization that certifies home water treatment units which meet or exceed EPA and ANSI/NSF drinking water standards of contaminant reduction, aesthetic concerns, structural integrity, and materials safety.	Underwriter's Laboratories, Inc. 333 Pfingsten Road Northbrook, IN 60062-2096 (877) 854-3577 www.UL.Com/water mail to water@us.ul.com
Water Quality Association	The Water Quality Association is a trade organization that tests water treatment equipment, and awards its Gold Seal to systems that meet or exceed ANSI/NSF standards for contaminant reduction performance, structural integrity, and materials safety	Water Quality Association 4151 Naperville Road Lisle, IL 60632-3696 (630) 505-0160 www.wqa.org info@mail.wqa.org

The certification of home water treatment systems involves several aspects:

- Verifying the contaminant reduction performance claim made by the manufacturer
- Evaluation of the unit including its materials and structural integrity
- Review of the product labels and sales literature

The three organizations can assist in selecting a system/unit that meets your needs.

There are drinking water standards for health concerns (such as removal of specific contaminants) and for aesthetic Concerns (such as improving taste or appearance of water). Certification from these organizations will be tied to one or both drinking water standards.

8.2 Building Managers

Each building or facility has specific requirements that should be evaluated by a qualified licensed professional engineer with experience in design of boiler systems, including any requirements for water conditioning.

One place to start is to look for a member of the American Society of heating, Refrigeration and Air Conditioning Engineers (ASHRAE) or <https://www.ashrae.org/home> . You can also check a professional engineering or The Massachusetts Board of Registration of Professional Engineers licenses engineers to practice in the state by specific discipline (<http://www.mass.gov/ocabr/licensee/dpl-boards/en/>).

Helpful Tips For Periodically Inspecting, Cleaning and Flushing Hot Water Tanks

Have the Sacrificial Anode Inspected

One of the most important factors in how long a water heater will last is the condition of the sacrificial anode, which protects the tank from corrosion. A sacrificial anode is a rod that is screwed into the top of the tank. This rod is made of either aluminum or magnesium formed around a steel core wire.

The life of the sacrificial anode depends on the quality of the water, how much use the tank gets, the water temperature, and how well the tank is constructed. Have your plumber periodically inspect the sacrificial anode, and they can advise you if it should be replaced when it has become partially deteriorated. If you wait until it is fully deteriorated, replacing it may be too late.

Annual Tank Flushing and Cleaning

Good practice is to have your plumber flush and clean out your water heater tank annually. The links below can give you an idea what is involved so you can know what to expect and what questions to ask your plumber to make sure that the work is thorough.

Water heater maintenance tips can be found at:

<https://www.houselogic.com/organize-maintain/home-maintenance-tips/water-heater-maintenance/>

<http://www.waterheaterrescue.com/Longevity/water-heater-basics.html>