

Tankless Water Heaters

We have received multiple concerns from our neighbors regarding water pressure, and debris in the water lines, the issue has been attributed to scale build-up in the tankless water heaters of homes approximate 4 years old.

The City of Anna utilizes a combination of purchased drinking water from North Texas Municipal Water District and well water from local wells in the City. Both water sources contain naturally occurring minerals, including calcium and magnesium. These minerals are common to most drinking water sources in Texas and across the United States. The total hardness of water is measured in mg/l, and is determined based on the amount of calcium and magnesium in the water. The City public water supply hardness level normally fluctuates between 100 and 160 mg/l, but has been measured at residuals up to 210 mg/l which is considered hard, but is consistent with hardness levels commonly found in Texas.

The presence of calcium in particular can build up over time in water heaters, on faucet heads, and on shower heads. This is commonly seen as white/grey/light brown "scale."

The scale is formed when the heat energy inside a water heater separates calcium from water. Calcium deposits will accumulate on the heat exchangers over time and, left unchecked, lower your water heater's efficiency and reduce pressure in the hot water lines. This is more pronounced in tankless water heaters, where the heating elements work at a much higher temperature to provide instant heat to the water passing through. In addition, the lack of a tank means that this buildup will be more likely to impact your system if not addressed on a regular basis through proper maintenance.

Mineral buildup can congest the heating coil, obstruct the pipes, and reduce the flow rate of your tankless water heater. Sediment and buildup can accumulate to such a degree that it even blocks pipes, causing clogs, leaks and potential damage to your water heater. Essentially, the built-up scale makes heat transfer within the tankless unit more difficult. As a result, the unit has to work harder in order to heat the water to the set-point temperature. As with anything that is strained, an overworked water heater can potentially give out long before its time. Meanwhile, it will unnecessarily waste energy through its inefficient operation, and continue to push calcium deposits into the lines and screens, causing clogging or sediment deposits in sinks and bathtubs.

In order to prevent this from occurring, regular maintenance of all water heaters, but especially tankless water heaters, is recommended. The primary maintenance action needed is to de-scale the water heater. To descale a tankless water heater, kitchen-grade vinegar should be pumped through the system for about an hour. The vinegar will naturally dissolve the calcium and break it down so that it may be flushed out. It is recommended that neighbors hire a plumber to complete this work unless you have the knowledge and expertise to do it yourself. When you descale your tankless water heater, all of the calcium deposits will dissolve and you will once again have a fully operational and efficient unit.

FACTORS:

- High temperatures in a tankless water heater cause a separation of calcium from the water it is dissolved in, resulting in a faster buildup of the mineral
- Tankless heaters have small tanks, buildup of calcium, magnesium, etc. in this system has an impact far sooner vs. a giant tank water heater. On a larger tank, it would take many years before causing a problem; simply due to the availability of volume.
- Total Dissolved Solids (TDS) - tankless manuals typically call out for an allowable max 500mg/l. The City runs between 800-850mg/l.

