

Demineralised heating water
is perfect for every system

PUROTAP disposable cartridge

Fulfills the new
SWKI BT 102-01



Optional meter
turns the cartridge into
the fill-up device



reliable

clean

easy

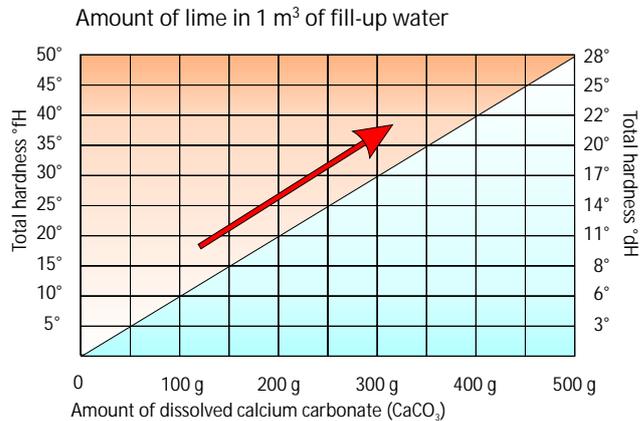
Combat lime precipitation in the boiler and heat exchanger

Lime precipitation in the boiler



Completely desalinated water no longer contains any substances that can damage or settle in boilers and heat exchangers.

The following table shows the amount of lime that accumulates as a result of filling the heating system once with untreated water.



According to many manufacturer specifications and technical guidelines, fill-up water must normally be desalinated (demineralised) for heating systems. Practice has shown that modern devices such as wall-mounted gas boilers, heat pumps and solar systems are damaged by lime precipitation even at lower water hardness levels.

The larger the system capacity (e.g. storage tanks), the more lime is introduced with the fill-up water.

With a hardness of 17 °dH (and/or 30 °fH), 300g of lime accumulates per m³ of water. This is still approx. 100 g for a single family dwelling with 350 l of system water content. This amount is more than enough to damage a modern high-capacity heat exchanger.

Fully desalinated = demineralised

Better than softened water

By replacing the calcium and magnesium ions with sodium ions during softening, the hardness components are removed from the water but the salt content remains high and unchanged. This is a disadvantage for modern systems with different metals in the system.

If guidelines recommend water softening, then this can be interpreted in such a way that more weight is attributed to the prevention of lime scale at a specific hardness than to the prevention of corrosion. This compromise is accepted because softened water is probably available locally in regions with critically high water hardness, whereas a complete desalination system is not.

There are no compromises with use of desalinated (demineralised) water when it comes to combating mineral deposits.

Combat corrosion

Since corrosion processes in closed heating systems mainly involve electrochemical reactions, the electrical conductivity of the water plays a direct role in the rate of these reactions.

The salt content of the water determines the electrical conductivity. According to VDI guideline 2035, increasing amounts of oxygen are tolerated with reducing water salt content.

When ions are present that can take over the transporting of electrical currents in the water, the formation of galvanised elements that can lead to local corrosion (corrosion elements) is practically impossible.

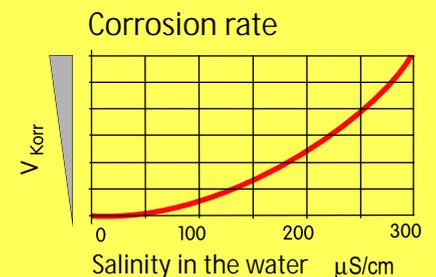
Desalination also removes all neutral salts such as chloride, sulfate and nitrate that are known for causing corrosion above a certain concentration and in a specific interaction.



Localised corrosion for high levels of salt

According to current standards

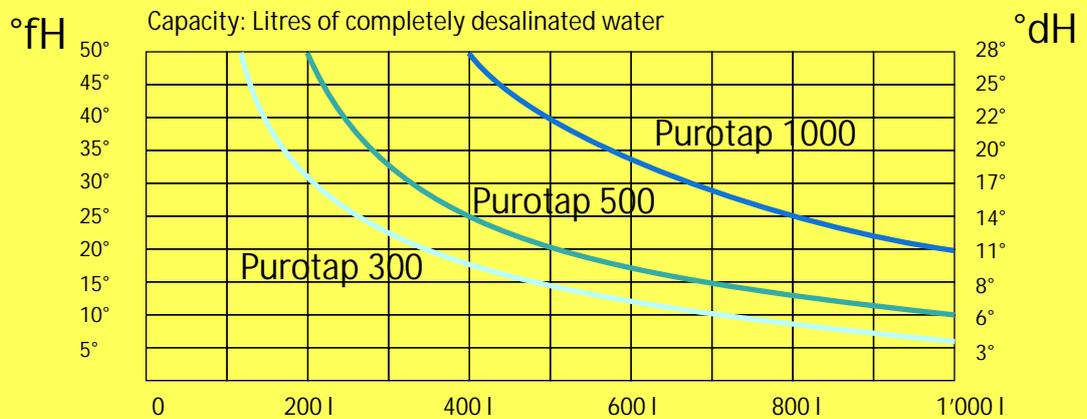
Authority: VDI (German Associations of Engineers)	Guideline/Standard: 2035, Prevention of damage in water heating installations, corrosion in the water system.	Citation: [Sheet 2, Para. 8.5.] "Increasing amounts of oxygen are tolerated with reducing water salt content. When ions are present that can take over the transporting of electrical currents in the water, the formation of galvanised elements that can lead to local corrosion (corrosion elements) is practically impossible." [Sheet 2, Para. 8.5.] When filling up larger warm water heating systems for the first time, it is recommended that desalinated water is used [...]
DIN German Institute for Standardisation	DIN 50930 Corrosion of metallic materials under corrosion load by water inside of tubes, tanks and apparatus	[Part 3, Para. 7.2] Chloride and sulfate ions stimulate the anodic partial reaction of metal corrosion. The corrosion probability for local corrosion can be reduced through selective anion exchange.
SWKI Swiss Society of Heating and Air Conditioning Engineers	BT102-01, Water quality for building services engineering systems	[Para. 4 ff] "Fill-up water and make-up water must be desalinated." [d] "Demineralisation (complete desalination) is the best technical solution for water with high chloride or sulfate content."



It has always been clear among experts that completely desalinated water is perfectly suitable for the fill-up water in heating systems and thus, the service life of all components is extended. Today this technology is very user-friendly and affordable with PUROTAP that it is ideal for practical application.

Application: The heating system is filled-up with the filling hose using the cartridge. In doing so the water is demineralised. It is also possible to allow the system water content of a system that is already filled and purged to circulate using an auxiliary pump through the cartridge and subsequently demineralise it. Purotap thus provides a great advantage. Neither meters nor special knowledge are required for water treatment. No costs for rental cartridges, regenerations and logistics.

Capacity: The capacity of the completely desalinated cartridge depending on the total hardness of the fill-up water is shown in the table below. Example: With a hardness of 25°fH/14°dH, Purotap 500 provides 400 litres of completely desalinated water and Purotap 1000 provides 800 litres.



Use:

Fill with untreated water:

System water content	Recommended running time
250 l	➔ 30 min (Purotap 300)
500 l	➔ 60 min (Purotap 500)
1'000 l	➔ 150 min (Purotap 1000)

In the low pressure area between 3 - 4.5 bar, the volume flow through the cartridge is approx. 10l/min. Purotap is designed and constructed in such a way that normally a recommended running time for the cartridge results from the system water content. These running times only apply to filling via PUROTAP with untreated water. In order to monitor the effective performance more closely, use of a meter is optional.

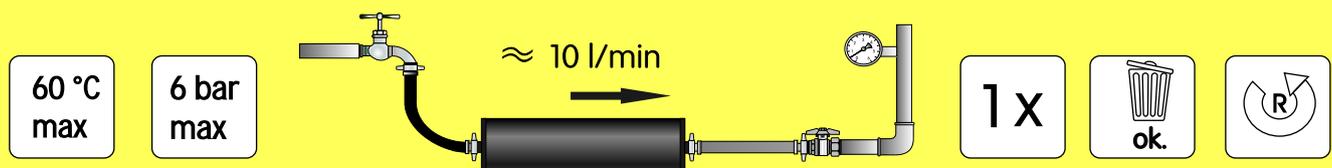
Cleaning the system via PUROTAP In the case of cleaning the system water via the cartridge, demineralisation must be monitored with a meter. We recommend the optional meter

Disposal: The Purotap can be disposed of with the household waste. If you return the cartridges to us, we will forward them to an environmentally-friendly recycling process.

Protective measures: The ion exchange resin in the cartridge must not enter the heating system. Check the fine sieves in both cartridge connections.

The cartridge may be loaded with a maximum 6 bar and 60 °C.

Completely desalinated water contains free oxygen and is slightly acidic (pH value 5-6). Purotap should only be used for partial replacement of the system water after filling up with untreated water. In order to expel the dissolved gases from the system water, it is advantageous to run the system at operating temperature for a short period. After approx. one month of operation, we recommend that the system water quality and/or at least the pH value are checked.



5 good reasons

- no reduced performance due to lime in the heat exchanger
- no lime precipitation in the boiler
- long-term, noticeably less corrosion
- easy to use