

# SILIPHOS<sup>®</sup>

The economical way to protect  
water systems against scale and corrosion

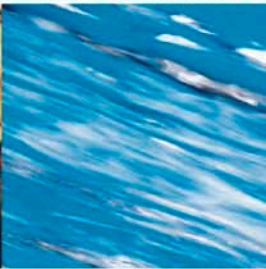
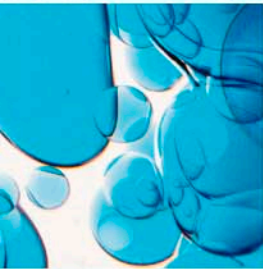
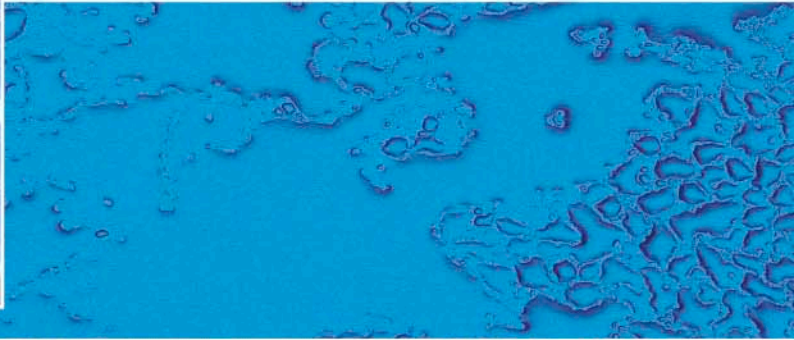
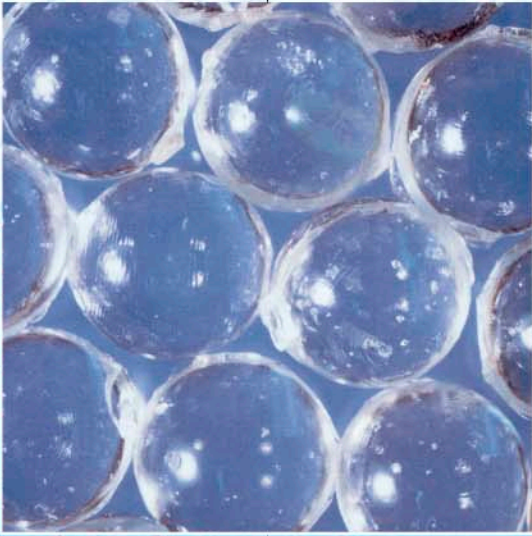
Business Unit  
APW





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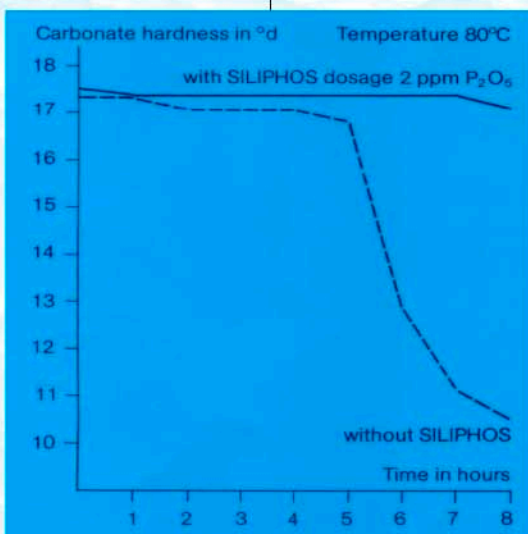
## SILIPHOS

- protects water systems in hotels, public buildings, private households and industry against scale formation and corrosion
- prevents “brown” water and clogged pipes
- saves expensive repairs or even replacement of water pipes, boilers, heaters, cooling systems etc.
- saves energy and money
- extends the life of water installations

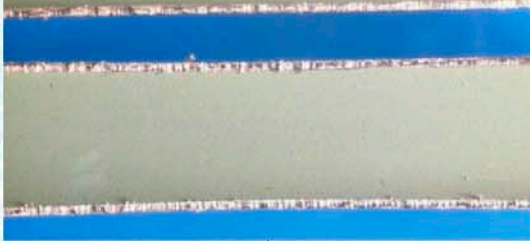
## What is SILIPHOS?

SILIPHOS is an economic and reliable water treatment system for potable and industrial water. It is a glassy polyphosphate containing silicate. The application is done by dispensers of variable size.

SILIPHOS dispensers can be installed in almost every water system. They require no electric installation and hardly any maintenance. They only have to be refilled with spheres as consumed. Refilling is very easy.





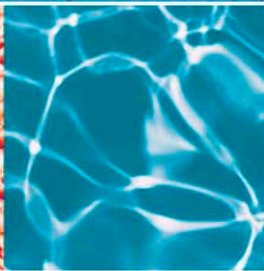
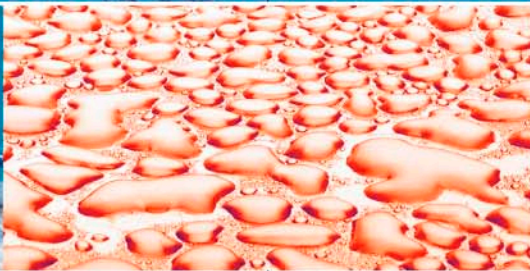


## What can SILIPHOS do for you?

Mostly natural waters cause damages in pipes, boilers and other installations. Some contain dissolved minerals, mainly calcium and magnesium salts. These types of water are called hard.



**Hard water** forms scale and corrosion in water systems. This leads to disadvantages and higher energy demand. Clogged pipes may have to be replaced. Heating coils may overheat and fail.



**Soft water** is aggressive on metals and causes corrosion. Consequently the tap water turns brown. Leaks and burst pipes may be the result.

SILIPHOS prevents scale and stops corrosion. It utilizes the phenomenon that very low concentrations of polyphosphates are sufficient to inhibit the deposition of scale onto metallic surfaces. Because of its phosphate and silicate content SILIPHOS also inhibits corrosion by forming a thin protective layer on the metal surface. A SILIPHOS concentration of 2-3 ppm is sufficient to achieve both of these effects.



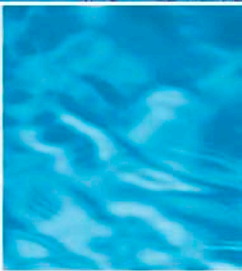
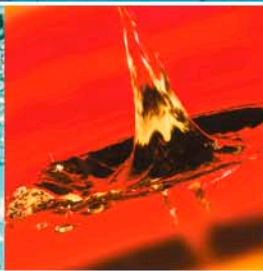
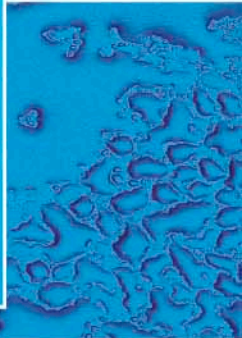
SILIPHOS will also slowly remove existing scale in old pipes, even iron oxide and  $\text{CaCO}_3$  layers to some extent. Experience shows that scale and corrosion is not only found in galvanized but also in copper pipes. Even in plastic pipes one can find scale and deposits.

As a rule of thumb one can say that 1 mm scale on the heating coils of a boiler increases the energy cost by 15%.



SILIPHOS consists of 100% active substance. The use in tap water and other types of fresh water at the prescribed dosage is inoffensive. The recommended dosages are within the limits of the German drinking-water regulations (TrinkwV dated 21.05.2001).

The purity of SILIPHOS and SILIPHOS II for treatment of potable water is in accordance with the existing EC-Standard (EN 1208) as well as the requirements of the "FAO/WHO



Expert Committee on Food Additives" (7th and 19th Report). SILIPHOS II is also NSF listed since 1991 as "Drinking Water Treatment Chemical".

### The SILIPHOS System:

#### 1. SILIPHOS spheres:

A sparingly soluble glass – like polyphosphate-silicate combination of highest purity.

#### 2. SILIPHOS dispensers:

The dispensers are installed in the water system and filled with the SILIPHOS spheres. The tap water flows through the dispensers and dissolves very low quantities of polyphosphates. SILIPHOS dispensers do not cause a critical pressure drop in the water pipes.

SILIPHOS dispensers are manufactured from a highly resistant plastic material. The cap is reinforced fibre glass. Sizes are available from 0,5 kg up to a capacity of 5 kg. Bigger dispensers up to a capacity of 200 kg SILIPHOS are made of welded steel. All manufactured dispensers must be approved by BK Giulini.

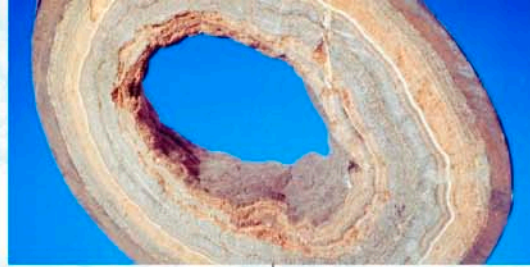




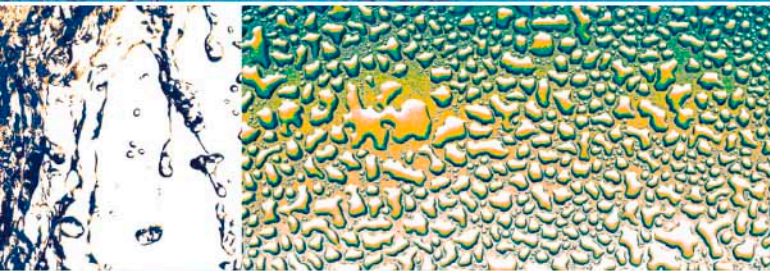
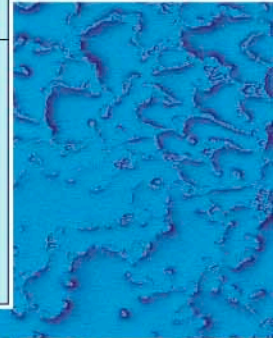
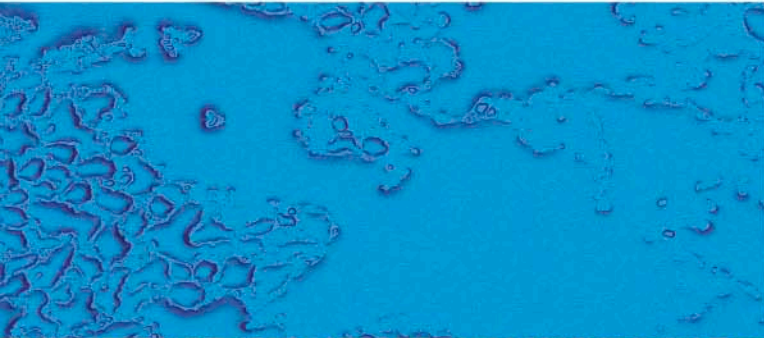
## Correct Dosing

The size of the dispenser depends on the average water consumption per hour. The following range of dispenser sizes is available to cater for the widely varying needs of our customers.

The recommendations result from practical experience and refer to cases of intermittent water consumption as is the case with most users of potable water e.g. hotels, hospitals and private homes. It is important to calculate



Size No.	Recommended for hourly water consumption of	Contents of dispenser		Type of manufacture
		kgs	lbs	
1a	below 0.1 m <sup>3</sup>	0.5	1	Transparent plastic for easy inspection, female threaded inlet and outlet.
1b	0.1 - 0.3 m <sup>3</sup>	1	2	
2	0.2 - 0.3 m <sup>3</sup>	2	4	
3	0.3 - 0.4 m <sup>3</sup>	3	7	
4	0.5 - 0.6 m <sup>3</sup>	5	11	
5	0.8 - 2.0 m <sup>3</sup>	10	22	Welded steel fitted with sight glass and hammer finish paintwork, dimensioned drawings can be supplied on request.
6	2.0 - 3.0 m <sup>3</sup>	20	44	
7	3.0 - 4.0 m <sup>3</sup>	30	66	
8	4.0 - 7.0 m <sup>3</sup>	50	110	
9	7.0 - 10.0 m <sup>3</sup>	80	176	
10	10.0 - 13.0 m <sup>3</sup>	100	220	
11	13.0 - 18.0 m <sup>3</sup>	150	330	
12	18.0 - 30.0 m <sup>3</sup>	200	442	



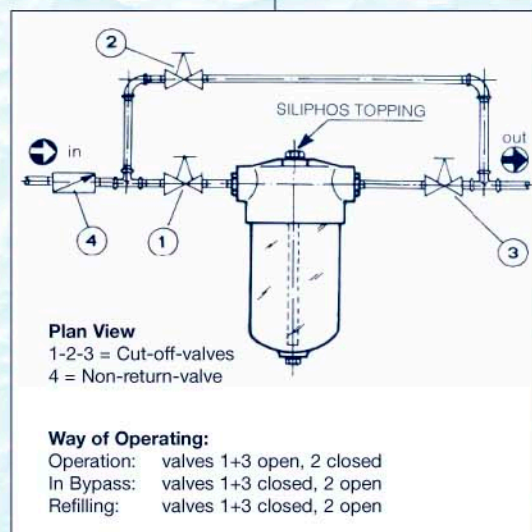
the sizes of the dispensers to the average water consumption – not to the peak demands.

SILIPHOS dispensers should be refilled when 1/3 of the content is used up, normally only after appr. 3-6 months. This depends on the individual installation.

SILIPHOS systems have been installed with great success in private houses, hotels, office buildings, schools and hospitals for the treatment of potable water. They are also applied in small and medium sized industrial estates for the treatment of cooling systems, autoclaves, machine cooling etc.

## How to install the dispenser

The opposite picture shows a 3 kg installed dispenser with a bypass. The solubility of the SILIPHOS spheres is designed for cold water (5-30°C). The dispenser has to be installed in a cool place (e.g. basement) after the water meter and filter, away from heat sources that could warm it up when no water is flowing. It is also advisable to fit the dispenser with a bypass line for maintenance or to be drained for refill. The operating pressure of the plastic dispensers should not exceed 8 bar.



### Remark:

We suggest to install the dispenser always with a non-return-valve 4, to avoid back-flow of warm water into the SILIPHOS dispenser.



### Advice on Water Treatment

The above is based upon practical experience and reflects the state of the art. The uniform quality of the materials we deliver is included in our guarantee.

The product described has a definite spectrum of activity. The water composition or technical factors of manufacturing circumstances can produce conditions, which do not lie within this spectrum. If you explain your problems to us, we can certainly offer you a solution. It could be that your conditions make it advisable to use a product of quite different type.

We also recommend the use of SILIPHOS together with water softeners after blending with raw water because softened water will cause corrosion.

SILIPHOS dispensers should be drained in case of long stagnation periods (3 months).

SILIPHOS is allowed up to 5 ppm  $P_2O_5$  or 6.7 ppm  $PO_4$  in potable water in most countries of the world. SILIPHOS can be determined by normal  $P_2O_5/PO_4$  colorimetric analyses of phosphorus.

### The SILIPHOS users

Hotels/Motels	Barracks
Private Houses	Air Conditioners
Hospitals	Cooling Towers
Office Buildings	Air Washing Systems
Restaurants	Welder Cooling Systems
Schools/Colleges	Hot Water Heaters
Railway Stations	and countless other
Airports	water facilities
Sport Stadiums	



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