Safety sheet / Product information:
SteamPro

- **Application:**

SteamPro is a fully multifunctional water treatment agent for treating low pressure steam boilers for ground steaming in greenhouse horticulture. SteamPro should preferably be used in situations where softened mains water or well filtered basin water with a hardness < 2ºdH is used as boiler feed water. Under such conditions, SteamPro prevents deposits and corrosion in the steam boiler and optimises the steam quality for effective ground disinfection.

- **Operation:**
  - SteamPro contains an oxygen scavenger and a metal passivator to prevent corrosion.
  - SteamPro contains dispersing ingredients to keep hardness salts in the solution if the softener is insufficiently effective or if the residual hardness is high, and to keep the corrosion products in the solution.
  - SteamPro contains anti-foaming agents to prevent boiling over and wet steam. The ground disinfection process can only work optimally using dry steam.

- **Physical characteristics:**

Appearance:	light, clear solution
pH (1% solution):	8
density:	1,150 kg/m^3

- **Dosage instructions:**

The SteamPro dosage depends on the residual hardness of the boiler feed water. The basic dosage for softened mains water with a residual hardness < 0.1ºdH is 200 ml/m^3 of boiler feed water. For every additional 0.2ºdH of hardness in the boiler feed water, an additional 100 ml/m^3 should be added to the basic dosage.
The correct SteamPro dosage can be determined by measuring the phosphate content (40-60 ppm) and the sulphite content (30-60 ppm) of the boiler water.

- **Preventive measures:**

Wear protective clothing, gloves and face protection! In the case of contact with the eyes or skin, rinse well with water. In the case of contact with the eyes, consult a doctor. For more information, we refer you to the Safety sheets.

- **Transport:** **Labelling**

ADR: ADR-free	Symbol: Xi, irritating
IMCO : -	R phrases : 31, 36/37
UN no. : -	S phrases : 26,37/39

- **Packaging:**

SteamPro is packed in 25 kg jerry cans.

Safety sheet/
Product information:
HeatPro

- **Application:**

HeatPro is a complete water treatment agent for treating closed heating systems, such as urban heating systems and heating systems in greenhouse horticulture. HeatPro is not suitable for use in systems that contain parts made of aluminium.
To complement optimum water treatment in a closed heating system, we also recommend softening the make-up water and carrying out side stream filtration of the recirculating heating water.

- **Operation:**

HeatPro stabilises the pH value of the heating water to a pH value between 9 and 10. Additionally, HeatPro stabilises any hardness present and has a dispersing, cleaning effect on contamination that is already present in the system. Contamination that has been dispersed by HeatPro is easy to remove from the system using side stream filtration.
A number of corrosion inhibitors, including the product OxPro, an organic oxygen scavenger, protect against corrosion using metal passivators and oxygen scavengers.

- **Physical characteristics:**

Appearance:	dark brown solution
pH (1% solution):	12
density:	1,100 kg/m3

- **Dosage instructions:**

The dosage of HeatPro depends on the degree of contamination in a system. The basic dosage for softened water is 500-1000 ml per m^3 of system volume; for each 1°dH in the heating system water, an additional 250 ml of HeatPro should be added to the basic dosage for each m^3 of system volume. HeatPro can be used undiluted if there is a lot of contamination in the system; in that case, additional doses are necessary later. The correct HeatPro dosage can be determined by measuring the pH (between 9 and 10) and the phosphate content (20-50 ppm) of the heating water. The guideline for the amount of oxygen scavenger in the heating water is 10-100 ppm. If a lot of oxygen scavenger has been used up, then additional doses of OxPro can be added later.

- **Preventive measures:**

Wear protective clothing, gloves and face protection! In the case of contact with the eyes or skin, rinse well with water. In the case of contact with the eyes, consult a doctor. For more information, we refer you to the Safety sheets.

- **Transport:**

ADR:	ADR class 8.47.C
IMCO :	-
UN no. :	3266

Labelling

Symbol:	--
R phrases :	36
S phrases :	26

- **Packaging:**

SteamPro is packed in 25 kg jerry cans or 200 litre drums.

Product information

Side stream filtration

APPLICATIONS:
Side stream filtration can be used in cooling and heating systems in greenhouse horticulture, industry and utility construction, in particular in systems where combined heat and power (CHP) with sensitive heat exchangers is used.

OPERATION:
Filters sludge from precipitated hardness salts and organic contamination from systems. NEODIUM magnets remove fine iron particles in the form of magnetite.

Very strong neodium magnets remove magnetite from heating systems

Side stream filter filters from heating and/or cooling systems up to 1 mu”

Specifications of type 90/30-1:
- capacity 30 m^3/hour

- number of magnets: 1 stainless steel
- 3” connection
- surface of filter bag: 0.25 m^2
- maximum pressure: 3 bar
- maximum pressure difference: 1.5 bar

Specifications of type 180/25-4:
- capacity: 25 m^3/hour or 40 m3/ hour.

- number of magnets: 4 stainless steel
- 2” or 3” connection
- surface of filter bag: 0.50 m^2
- maximum pressure: 10 bar
- maximum pressure difference: 2.5 bar

Specifications/guidelines for correct operation of a side stream filter

The main difference between the Hydropro filter and other suppliers is that it is fitted with Neodium magnets and a stainless steel interior basket.
The magnets are up to 4x stronger than conventionally used magnets.
The finely meshed stainless steel interior basket in particular contributes to very efficient filtering of sludge and other contamination, and is not susceptible to corrosion.
The magnetite located in the heating system can only be caught by very strong magnets; this contamination can be smaller than 1 Mu and therefore not caught by the PP filter bags.
The strong construction and good lid seal using butterfly nuts guarantee years of excellent operation. One of the aspects taken into account in the design was enabling easy and fast cleaning of the filter. It has been shown in practice that if the horticulturist needs to take too many steps to clean the filter, then he usually stops cleaning the filter after a while. Obviously, side stream filtration that is maintained in this poor manner does not contribute to a clean heating system. The lid construction has been constructed in such a way that when it is opened to clean the filter, the water level is a number of centimetres under the edge. Thanks to this design, water does not enter the vulnerable edge of the O ring. **An additional advantage is that the filter does not need to be completely empty during cleaning.** The filter is easy to remove using a handle attached to the interior basket.
The filter is excellent value for money compared to other filters. The standard Hydropro side stream filtration is delivered with 1 spare filter bag.

There are three types of hydropro side stream filter:

180/25–4*: 2”	**capacity: 25 m^3/hour**	**magnets: 4x Neodium**
180/40–4 stainless steel: 3”	**capacity: 40 m^3/hour**	**magnets: 4x Neodium (stainless steel model)**
90/30-1*: 3”	**capacity: 30 m^3/hour**	**magnets: 1x Neodium**

* Prices ex factory

Cleaning the side stream filter: types 180/25-4 , 180/40-4 and 90/30-1

The side stream filter must be cleaned if the pressure difference is 0.6 bar or greater.

Procedure for cleaning side stream filter:

1) Turn off the circulation pump of the side stream filter.
2) Close the taps **before** and **after** the side stream filter.
3) Loosen the 4 butterfly nuts on the lid of the side stream filter and remove it. (If the lid creates a vacuum, turn the de-aerator on the edge of the lid to Open).
4) **Slowly** remove the entire interior basket with magnets by holding the handle and place it in a bucket.
5) In **type 180**, remove the magnets from the spring fitting and then remove the spring fitting.
   In **type 90**, remove the magnet with spring fitting,
   and clean using a powerful jet of water and/or wipe clean with paper.
6) Remove the interior bag from the basket and clean it (or use a new bag).
7) Place the new or cleaned bag in the basket and push the basket with bag downwards until the adjusting ring of the filter bag is at the edge of the basket.
8) Replace the spring fitting and magnet on the basket.
9) Replace the entire basket in the side stream filtration holding it by the handle.
10) Place the lid on the side stream filtration and tighten the 4 butterfly nuts equally by hand.
11) **Slowly** open the tap **AFTER** the side stream filtration and then **slowly** open the tap **BEFORE** the side stream filtration.
12) Bleed the side stream filtration using the de-aerator in the edge of the lid.
13) Turn on the circulation pump and check for bleeding and/or leaks.
14) The difference on the pressure gauges should now be between 0.05 and 0.2 bar.

A few areas of attention for maintaining a closed heating system:

A good time to consider water treatment is during a conversion, or when adding warm water tanks and/or CHP. The water in current heating systems is of poor quality, in part due to water loss and the use of poor quality feed water. This is often manifested in leaking seals and packings of pumps and blockages in certain parts of the heating system. If there is no good heat distribution in the greenhouse heating system, this can even lead to the crop growing more slowly.

Deposits of calcium and corrosion products (magnetite) can result in a considerable loss of efficiency, particularly for heat transfer. As a horticulturist, you yourself are responsible for the choice of water in your heating system.
You will find guidelines for feed water and boiler water on the reverse of this information sheet.
Using drilled well water or surface water as filling water for a modern heating system with a large volume is not recommended; well filtered pure rainwater or decalcified tap water are preferable.

The difference between an 8 pass fire tube boiler and the modern heat exchanger with comparable heat transfer capacity is the ratio of heated surface, also shown as (HS). If in a heating boiler there is a deposit of 2 x 3 mm on the (HS) and the boiler capacity is more than sufficient, then little damage will be done in the boiler. However, the heat transfer reduction is approximately 20% and in time the fire tubes can separate from the tube plate, which can lead to expensive repairs. In heat exchangers with high power and thinner wall thicknesses, deposits as low as less than 0.5 mm can lead to serious consequences. In part because the exchangers are more sensitive to deposits of hardness salts and corrosion products such as magnetite, they will break sooner and have greater reduction in their heat transfer (these problems are characteristic of CHP systems).

To increase the life span of a closed heating system, it is important that it remains free from sludge, organic contamination and corrosion products caused by bacteriological activity, oxygen and acid (low variant pH).

Some general advice:

- Inspect the heating boiler on the water side and check whether large amounts of corrosion products and other contamination can be observed in the boiler. If the fire tubes are covered with black sludge, then check whether corrosion can be observed under that sludge. If round bullet-shaped holes can be observed on the fire tubes, then this could be caused by corrosion by bacteria, in addition to oxygen corrosion.
- Check carefully whether there are no deposits in the heating boiler (iron oxides with calcium-like appearance). A little deposit on the flame chamber will seriously inhibit the heat transfer and this flame chamber is already the hottest spot in the boiler. Naturally, this will rapidly lead to damage and leaks caused by loose fire tubes! If necessary, clean the heating boiler with a high pressure spray.
- We believe that inspection of the heating boiler is necessary for two reasons:
  - To determine the initial situation when commencing water treatment.
  - To evaluate the condition of the boiler water side.

In general, water treatment should be as follows:

1. It is necessary to carry out side stream filtration in order to remove any contamination present, such as sludge of corrosion products and organic material from the heating system. A closed system must be free of contamination and sludge.
2. Always top up using a fixed filling point, for example using a water meter and a small water softener.
3. Have the water analysed on a regular basis in order to monitor water quality critically.
4. Depending on the water quality, post-treatment with chemicals may be necessary, for example for oxygen binding, curbing bacteriological activity and buffering the pH.
   Normally, only one minimal water treatment is required for a heating system with few leaks.
5. If hot water storage is placed, it should be topped up with softened water.

In consultation with your installation specialist and supplier, a specialised company can carry out water inspection and a water side boiler inspection and also give expert advice. Taking measures on time can prevent many problems caused by deposits and corrosion damage in boilers and heat exchangers.

“Preventive maintenance of the heating system is also in your own interests.”

Guidelines for feed and heating system water in greenhouse horticulture

A	**FEED WATER**	
Parameter	**Unit**	**Standard**
pH	minimum value	8.0
Hardness (calcium)	minimum value (°dH)	0.1 (if hot water tanks are present), otherwise max. 1.0
Iron (total)	minimum value (ppm)	0.5
Copper	minimum value (ppm)	0.1
Ammonia	minimum value (ppm)	0.5
Oxygen	minimum value (ppm)	0.1 (*)
Organic matter (CZV)**	minimum value (ppm CZV)	25 (*)
Colour	visual	clear, filtered, no sludge and/or sand, no organic contamination
Odour		algae, no odour
B	**CIRCULATION WATER, systems made entirely of steel**	
Parameter	Unit	Standard
pH	minimum-maximum value	9.5-10.0 (in the presence of aluminium, max. 8.5)
conductivity	maximum value (µS/cm)	not higher than the value of feed water with a maximum of 1000
P number	minimum-maximum (mval/l)	1.0-3.0 for treatment with an alkalising agent
total hardness	maximum value°dH	0.1 for high water loss - < 1.0 for little water loss
chloride	maximum value (ppm)	max. 100 in the presence of stainless steel and max. 50 in the presence of aluminium (***)
sulphate	maximum value (ppm)	max. 100 in the presence of stainless steel and max. 50 in the presence of aluminium (***)
phosphate	minimum-maximum (ppm)	20-40 if water treatment is on the basis of orthophosphate
ammonia	maximum value (ppm CZV)	0.5 if there is no copper inhibitor
oxygen scavenger	maximum value (ppm)	depends on type of water treatment
corrosion inhibitor	maximum value	depends on type of water treatment
iron (total)	maximum value (ppm)	0.5 (if higher, then corrosion is taking place)
oxygen	maximum value	0.1 (*)
odour/colour	visual	Colourless, no sludge and/or corrosion products or other contamination no deviating odour and no traces of oil

* target value in ideal circumstances

** degree for amount of algae etc. in the water, is related to the chemical use of oxygen

*** if stainless steel is used in the system, a maximum chloride concentration of 10 ppm is recommended in contaminating conditions, depending on the type of stainless steel.