

# Starplast

Mod. LUM02 - Rev. 03 del 01/12/2023



## USE AND MAINTENANCE MANUAL

# RAINWATER treatment plants

Consult and keep this booklet.

For a proper use, please strictly adhere to the instructions inside.

Starplast plants are made of polyethylene by means of rotational moulding and comply with national and European regulations, relating to the CE marking of the product, with reference to specific types of operation.

### **RULES FOR THE PROPER FUNCTIONING OF A PLANT**

- Correct sizing
- Correct installation
- Regular periodic maintenance

### **ALLOW TO**

- Reduce pollutant emissions into the environment as much as possible
- Reduce the frequency of extraordinary maintenance operations
- Increase the useful life of the plant
- Comply with regulatory and authorisation requirements

Given that every operation must be carried out by specialised and authorised personnel, with this booklet STARPLAST provides the minimum indications for correct management and installation of the system.

For any technical-commercial information, please contact our Technical Office, which will be at your complete disposal for

**consultancy, installation, start-up, system management and indications regarding the Starplast Point nearest to you.**

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# TYPES OF PLANT

## CIVIL AND ACTIVITIES

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SAND TRAPS **DIS** 

STATIC OIL SEPARATOR **DEO** 

COALESCENCE OIL SEPARATOR **DEC** 

UNDERGROUND CAR WASH PLANT **IAL I** 

OVERGROUND CAR WASH PLANT **IALE** 

# RUNOFF WATER

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FIRST RAINWATER **IPPA AS** 

FIRST RAINWATER **IPPA AB** 

FIRST RAINWATER **IPPA NR** 

FIRST RAINWATER WITH MOTORISED VALVE **IPPA VF** 

FIRST RAINWATER IN ACC. FOR DISCHARGE ON SOIL **IPPA T4** 

OVERGROUND FIRST RAINWATER **IPPE** 

CONTINUOUS TREATMENT **IPC** 

CONTINUOUS TREATMENT WITH INCORPORATED BY-PASS **DEC CB / MB** 

## FUNCTION AND USE

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### **CIVIL AND ACTIVITIES**

The products included in this section are used for the separation of sedimentable suspended solids (sand trap) and light liquids (oils) present in effluents from residential garages, car workshops, etc..

The above-mentioned separation is carried out exclusively by mechanical means through the use of specific product volumes that allow sufficient hydraulic residence time for the separation of the pollutants. In some particular cases, special coalescing filters are used, which allow for more effective treatment and separation of light liquids.

The products in this section are manufactured in compliance with UNI 858 1-2.

### **RUNOFF WATER**

During the dry season, countless pollutants (organic substances, heavy metals, oils and greases, etc.) are deposited on road surfaces, which, during the rain event, are carried away by water through the phenomenon known as surface runoff.

Countless studies have shown that runoff water from impermeable surfaces has high pollutant loads; there is therefore a need to purify this water before it can be discharged into the receiving body.

First rain accumulation plants have the function of treating the 'first rain' (first 5 millimetres of precipitation evenly distributed over the draining surface), so that regularly purified water is sent to the receiving water body.

In this case, the first rainfall enters inside a first tank, designed to retain it and eliminate sedimentable material; once the maximum useful capacity of the structure has been reached (defined according to the surface area of the yard to be treated), a float connected to a non-return valve (clapet) prevents further water from entering the tank.

This additional rainwater, which is less polluted than the previous one and therefore no longer classifiable as 'first rain', does not require specific treatment, and is therefore bypassed by the treatment plant with the aid of a drainage sump

located at the head of the plant.

The first rain, purified of sedimentable material and contained within the tank, is then sent by means of a pump to a coalescence oil separator whose function is to eliminate floating material (oils, greases).










Continuous treatment plants are used where treatment of the total runoff flow rate is planned or prescribed.

It generally consists of a draining sump and coalescence-type sandblasting and oil separation sections.

## STANDARDS, CERTIFICATIONS AND FINAL DELIVERY OF THE DISCHARGE














The table below shows the main certifications and purification efficiencies that characterise the various types of stormwater treatment plants.

### TYPES OF TREATMENT

	PRODUCT		STANDARDS	PURIFICATION YIELDS		FINAL DELIVERY OF THE DISCHARGE	
				SST % rid.	MINERAL OILS mg/l		
<b>CIVIL AND ACTIVITIES</b>	▪ SAND TRAP	<b>DIS</b>	/	90%	5	 T3	public sewer
	▪ STATIL OIL SEPARATOR	<b>DEO</b>	UNI EN 858 1-2	90%	5	 T3	public sewer
	▪ COALESCENCE OIL SEPARATOR	<b>DEC</b>	☉ UNI EN 858 1-2	90%	5	 T3	surface waters
	▪ OVERGROUND CAR WASH PLANT	<b>IAL E</b>	UNI EN 858 1-2 UNI EN 12566 - 3			 T3  T4  T4	public sewer soil reuse
	▪ UNDERGROUND CAR WASH PLANT	<b>IAL I</b>	UNI EN 858 1-2 UNI EN 12566 - 3			 T3  T4  T4	public sewer soil reuse



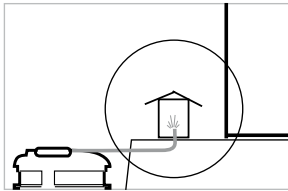
# RUNOFF WATER

<ul style="list-style-type: none"> <li>▪ FIRST RAINWATER IN ACCUMULATION</li> </ul>	<b>IPP A AS</b>	 UNI EN 858 1-2	90%	5	 T3 surface waters
<ul style="list-style-type: none"> <li>▪ FIRST RAINWATER IN ACCUMULATION ABRUZZO REGION</li> </ul>	<b>IPP A AB</b>	 UNI EN 858 1-2	90%	5	 T3 surface waters
<ul style="list-style-type: none"> <li>▪ FIRST RAINWATER IN ACCUMULATION EMILIA ROMAGNA REGION</li> </ul>	<b>IPP A NR</b>	 UNI EN 858 1-2	90%	5	 T3 surface waters
<ul style="list-style-type: none"> <li>▪ FIRST RAINWATER IN ACCUMULATION WITH MOTORISED VALVE</li> </ul>	<b>IPP A VF</b>	 UNI EN 858 1-2	-90%	5	 T3 surface waters
<ul style="list-style-type: none"> <li>▪ FIRST RAINWATER IN ACCUMULATION DISCHARGE ON SOIL</li> </ul>	<b>IPP A T4</b>	 UNI EN 858 1-2	95%	-	 T4 soil
<ul style="list-style-type: none"> <li>▪ OVERGROUND FIRST RAINWATER IN ACCUMULATION</li> </ul>	<b>IPP E</b>	 UNI EN 858 1-2			 T3 surface waters
<ul style="list-style-type: none"> <li>▪ CONTINUOUS TREATMENT</li> </ul>	<b>IPC</b>	 UNI EN 858 1-2	90%	5	 T3 surface waters
<ul style="list-style-type: none"> <li>▪ OIL SEPARATOR WITH INCORPORATED BY-PASS</li> </ul>	<b>DEC CB/ MB</b>	 UNI EN 858 1-2	90%	5	 T3 surface waters

## PRELIMINARY CHECKS AND INSTALLATION

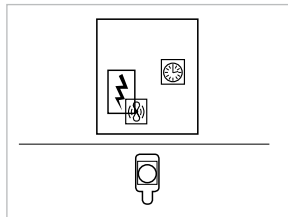
STARPLAST tanks are specially sized and manufactured for underground use; therefore, except in special cases by means of the use of special support saddles, they should never be used for outdoor use. For details of the installation methods, please refer to the attached document “underground/laying methods”.

**In any case, it is essential to comply with the following instructions:**



Always connect the tank vent to a ventilation pipe if one is present. If no ventilation pipe is present, a PVC pipe must be connected to the system’s safety vent and sent to a level above the maximum liquid level in the tank. This pipe must always be fitted with an anti-clogging device (protection grids) and must be periodically checked to avoid clogging. After positioning the tank and making the water supply and drainage hydraulic connections as specified in the installation manual and technical drawings enclosed with the supply, for systems equipped with electromechanical equipment, proceed as described below:

### FIRST RAIN - IPPA AND IPPA VF



Position the electrical control panel for the equipment supplied (electric pumps, motorised valve, etc.) in a technical room or cabinet near the tank, and carry out the electrical connection according to the diagram supplied. Set up a 230 Volt single-phase power supply line with general thermal protection if necessary.

Always check that the power supply to the cabinet is compatible with the equipment installed in the system, as in some cases electric pumps or servomotors may be installed with three-phase power supply (400 Volt) if required when ordering the plant.

When using a rain sensor, position the instrument close to the system and connect it to the supplied electric panel.

## **START-UP**

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### **ALL ARTIFACTS**

In order to start the purification process of the artifacts in the stormwater treatment systems, no special operation is required as these are mechanical removal processes.

It is sufficient, therefore, to fill the tanks with water as prescribed by the installation methods.

### **FIRST RAINWATER TREATMENT PLANTS - IPPA**

Start up all electrical equipment and check their proper functioning with particular regard to setting the start delay timer of the transfer pump at the oil-separating stage.

### **CAR WASH PLANTS**

For start-up and running operations, please refer to the special booklet supplied separately.

## MAINTENANCE

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### GENERAL WARNINGS:

In order to maintain the efficiency of rainwater treatment plants, it is necessary that maintenance and running operations are carried out accurately and regularly (removal of floating material and material deposited on the bottom of tanks). If this is not done, there is a reduction in efficiency that can be reflected in the downstream units of the system due to the consequent entrainment of the floating material with the effluent; in addition, the emission of unpleasant odours can occur.

Check that the vent pipe is clear and if it is clogged, clean it.

Periodically check the integrity of the pipes, seals and fittings to which they are connected.

Check and remove coarse materials that must not obstruct the sewage inlet and outlet pipes and the vent. It is advisable to keep special records of all maintenance operations.

### Periodic checks:

System maintenance must be carried out at least every six months by qualified personnel. It is therefore necessary to:

1. Check that the installation has been carried out as prescribed in the Starplast sheet.
2. Periodically check that no coarse bodies obstruct the sewage inlet or the outlet of the purified water through the upper openings fitted with screw covers.
3. Periodically check that the level of decanted sand at the bottom of the tank does not exceed the bottom of the sedimentation tank by at least 80% of the dedicated volume by opening the inspection plug located on the outlet of the purified water.
4. Check the functioning of the automatic closure device.
5. Check the permeability of the coalescing filter by checking the levels upstream and downstream of it. The two levels must not show a significant variation. Below is some information for the cleaning of the coalescence systems provided:

### Cleaning of the coalescing polyurethane sponge filter

Cartridge filter (DEC C, DEC CB and IPC C models)

- Turn the cartridge anti-clockwise using the handle provided
- Remove the automatic closing device

- Clean the filter with a high-pressure water jet (high-pressure cleaner), ensuring that the resulting liquid is appropriately sent to an accumulation tank for subsequent disposal by a specialised company.
- Check that the polyurethane sponge is well cleaned; if not, remove the sponge and replace it with a new one
- Insert the automatic closing device back into the cartridge
- Screw the cartridge back onto the cone seat with threaded ring nut until fully tightened.

### **Cleaning of the coalescing filter with reed packs**

Filter with reed packs (IPC M, DEC MB models)

- Empty the tank
  - Clean the filter with a high-pressure water jet (high-pressure cleaner), ensuring that the suctioned liquid is appropriately sent to an accumulation tank for subsequent disposal by a specialised company to an authorised landfill or plant.
6. Clean the drainage channel
  7. Periodically check that oil hydrocarbons and floating material have not filled the entire volume of the sedimentation section.
  8. Remove oil and floating hydrocarbons from the sedimentation tank periodically, i.e. in cases where the situation described in point 7 has occurred, by contacting specialised companies.
  9. Remove periodically, or in cases where the situation referred to in point 3 has arisen, the sands settled at the bottom of the tank by contacting specialised companies.
  10. Every 5 years empty the plant and subject it to a general inspection including:
    - a. Tightness of the plant
    - b. Structural condition
    - c. Condition of integrated parts
    - d. Check and adjustment of the automatic closing device

**All maintenance operations must be carried out after disconnection of the Electricity. The cadences and control activities described above are prescribed by Standard UNI EN 858-2:2004 and are therefore mandatory. However, they remain compulsory with the cadences foreseen by the Standard, and can be customised by Starplast Point service centres, based on the characteristics of the influent effluent (leaching of particularly polluting surfaces, etc.) and specific customer requirements.**

## SHEET TO BE PHOTOCOPIED AND KEPT FOR VERIFICATION AND MAINTENANCE PURPOSES

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PLANT TYPE .....

CHECK DATE .....

CHECK AND CLEAN VENT PIPE

GASKETS CHECK

SAND LEVEL CHECK

OIL LEVEL CHECK

COALESCENCE FILTER PERMEABILITY CHECK

COARSE MATERIAL REMOVAL

REMOVAL OF FLOATING MATERIAL

COALESCENCE FILTER CLEANING

AUTOMATIC CLOSING DEVICE CONTROL

DRAIN CLEANING

UMP OPERATION CHECK

THERMAL AND FUSE CHECK

PUMP ABSORPTION CHECK

ABSORPTION (A) .....

RAIN SENSOR CHECK

OTHER MAINTENANCE OPERATIONS

CHECK CARRIED OUT BY

.....



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