

# TOPAS S 10-40



Certified according to  
EN 12566-3



## SUITABLE FOR

Family houses, recreational facilities, guest houses, small biowaste production facilities.



## STANDARD EQUIPMENT

Control unit, equalizing tank, bioreactor, sludge tank, blower, equipment for decanting of treated water (decanter).



## PATENT PROTECTION

Decanting equipment (EP-2552838B1)  
Sand filter (EP-2554230)  
Method of wastewater treatment (PV2012-227)



## TREATED WATER UTILISATION

Infiltration into the subsoil or watering, discharge into a watercourse or sewer, household water reuse.



## ADDITIONAL EQUIPMENT

Chemical dosing, sand filter, UV lamp, GSM module.



## MATERIAL STRUCTURE

PANELTIM - copolymer construction boards.  
The panels have a sandwich character with a thickness of 51 mm. The internal structure of the chambers with a size of 50/50 mm guarantees the massive character of the product.

## INFLUENCE OF TEMPERATURE ON HANDLING AND FUNCTION OF TOPAS TREATMENT PLANTS

**Manipulation:** TOPAS treatment plants are made of plastic, polypropylene (PP). The installation and manipulation with treatment plants should take place at temperatures above 0 °C. It is recommended to handle the treatment plant at temperatures below 0 °C only exceptionally and with increased caution due to the fact that PP loses flexibility and becomes brittle.

**Function:** In general, the biological activity of activated sludge (bacteria) slows down as the water temperature decreases. First, when falling below 11 °C, nitrification is stopped (removal of N) and when falling below 4 °C, the removal of organic pollution is stopped. TOPAS treatment plants are usually installed underground and have an insulated lid on the surface for operating the treatment plant. We have operational experience from Sweden, Norway and Russia that even with a long-term interruption of the wastewater supply and at temperatures below -30 °C, there was no mechanical damage by freezing the water in the treatment plant. However the treatment plants were always energized and operated in a "maintenance mode" which ensures limited internal water circulation to maintain biological life in the treatment plant even in the event of a long-term interruption of the wastewater supply. TOPAS WWTPs of similar construction normally work in tropical areas with temperatures above +30 °C.

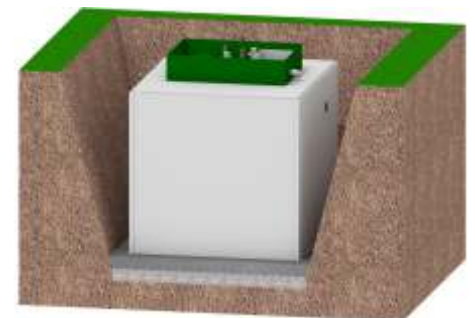
## TOPAS TREATMENT PLANT INSTALLATION

### 1. Basic information

The TOPAS S 10 - 40 consists of a self-supporting plastic tank with external dimensions according to individual types. The treatment plant is installed in the excavation so that the treatment plant cover is min. 100 mm above the prepared terrain. Just below the lid is the blower ventilation which must always be safe above the ground and secured against the flooding of rainwater. The treatment plant is equipped from the factory with a drain pipe DN 110 mm. The inflow is set up on site when the treatment plant is installed or to order when the treatment plant is taken. The inflow is fed into the accumulation which also has the function of a pumping station. It is therefore possible to install the inflow at different depths below the ground as needed in the range of 1.0-1.7m above the bottom of the accumulation.

### 2. Installation procedure

The circular hole in the treatment plant casing is usually cut with a punch on a drill at the height of the inlet pipe. The hole is sealed with a rubber ring or the pipe is welded to the wall. It is true that the lower the inflow, the smaller the buffer volume of accumulation. It is therefore more advantageous for the operation of the treatment plant to have the inflow higher. Accumulation is pumped up to a depth of 0.6 m above the bottom of the treatment plant (approx. 1.6 m below the ground). The level in the accumulation may temporarily rise above the inflow level. After the water is pumped into the bioreactor, the level drops again. The maximum level in the accumulation is set according to the specific inflow depth and the possibility of swelling by shortening the overflow pipe. The minimum depth is given by the construction of the drain pipe 0,7m below the ground.



WWTP TOPAS S 15 installation

### 3. WWTP filling and backfill

Subsequently, the treatment plant is filled with water to a depth of about 1.0 m and then sprinkled with sand or original soil, if similar characteristics as sand, does not contain stones (mainly with sharp edges) of dimensions larger than about 10 mm, which could damage the plastic shell.

**The backfill under the connection and drain pipes must always be made of compacted gravel (preferably stabilized cement) in order to prevent later settling of the backfill, which could damage the stability of the pipe.**

### 4. WWTP commissioning

After connection to the inlet and outlet pipes, the treatment plant is filled with water. Accumulation at 1.2 m. Bioreactor at 1.8 m. Then the fixation of the decanter and blower is released and the connection to the el. energy. The clean water tank of the decanter is filled with clean water (approx. 3 l) until the arm drops so that only the inner arc of the knee at the end of the decanter remains above the surface. After connecting the electricity and connecting the sewage, the treatment plant will start working normally. If the bioreactor is not inoculated with activated sludge from another treatment plant, the installation of the treatment plant takes about 1 month. The first fine sludge, mostly light brown in color, appears after about 10 days of operation and after this time the improvement of the quality of the water in the drain is already known. In the next period, the sludge in the reactor thickens and usually darkens to a dark brown shade. Furthermore, the cleaning efficiency and the quality of the drain water are improved. With a well-integrated treatment plant, the water in the drain is completely clear and odorless. Until a sufficiently dense sludge is formed in the activation tank (14-30 days), the bioreactor can foam considerably. The reason is the use of detergents in the household. The foam then gradually disappears with increasing sludge concentration in the activation tank.

Biological wastewater treatment using activated sludge (SBR technology)

### ADVANTAGES OF TECHNOLOGY

- + Built-in separate sludge tank with aerobic sludge stabilization
- + Equalizing and pumping tank
- + The technology allows the capture of wet wipes
- + Automatic sludge removal from the bioreactor
- + Guaranteed efficiency up to 6 months without inflow
- + Stable self-supporting plastic tank
- + The construction is also suitable for installation below the groundwater level
- + Control unit with special software with WiFi connection and with preparation for connection to a smart home
- + Suitable for continuous monitoring, connected to the central dispatching for control and management of the obtained data



### TECHNICAL SPECIFICATIONS

Type	TOPAS 10	TOPAS 15	TOPAS 20	TOPAS 30	TOPAS 40
Number of inhabitant	3-10	5-15	5-20	10-30	15-40
Flow [m <sup>3</sup> /day]	1,50	2,25	3,00	4,5	6,0
Load BOD <sub>5</sub> [kg/day]	0,6	0,9	1,2	1,8	2,4
Power consumption energy at 100% load [kWh/day]	2,4	4,8	4,8	9,6	9,6
Weight (without sand)[kg]	310	400	450	650	750
Dimensions (width × length × height)[m]	1,2 × 2,2 × 2,4	1,6 × 2,2 × 2,4	2,1 × 2,2 × 2,4	2,4 × 3,0 × 2,4	2,4 × 4,0 × 2,4

### EFFICIENCY ACHIEVED WITH CE CERTIFICATION

Parameter	COD <sub>Cr</sub>	BOD <sub>5</sub>	SS	P <sub>tot</sub>	N <sub>tot</sub>	N <sub>NH<sub>4</sub></sub>
Efficiency [%]	96 %	99 %	97 %	76% (99%)*	81 %	85% (98%)*

\*) value reached only for the variant TOPAS Plus

### MAXIMUM GUARANTEED PARAMETERS\*:

Parameter	COD <sub>Cr</sub>	BOD <sub>5</sub>	SS	P <sub>tot</sub>	N <sub>tot</sub>	N <sub>NH<sub>4</sub></sub>
Value [mg/l]	130	30	30	8	20	20

\*) applies to all types of TOPAS WWTPs which are loaded to the designed capacity and operated in accordance with the operating rules

### AVERAGE ACHIEVED PARAMETERS OF WWTP TOPAS Plus<sup>†</sup>:

Parameter	COD <sub>Cr</sub>	BOD <sub>5</sub>	SS	P <sub>tot</sub>	N <sub>tot</sub>	N <sub>NH<sub>4</sub></sub>
Value [mg/l]	30	8	8	0,2	-	0,5

\*) TOPAS Plus is a comfortable variant of the treatment plant which is equipped with a sand filter and dosing of chemicals