

# Synergy Wastewater Treatment Products.

## Installation Guidelines for Cylindrical tanks including granular backfill guidelines

These guidelines represent best practice for the installation of Synergy cylindrical tanks. Many years of specialist experience has led to the successful installation of thousands of units. It must be noted, however, that these guidelines are necessarily of a general nature. It is the responsibility of others to verify that they are appropriate for the specific ground conditions and in-service loads of each installation. Similarly, a qualified specialist (e.g. civil engineering consultant or certified installer) must verify any information or advice given by employees or agents of Synergy regarding the design of an installation.

### BEFORE INSTALLING YOUR TANK

- Ensure Building Regulation approval.
- Ensure ground porosity is suitable.
- Inspect tank for damage before installation. Our tanks have been fully tested before despatch from our factory. Once the tank has been installed, we cannot accept claims for damage.
- Check that you have the correct invert drain depth (neck height) of tank. A label indicates the maximum permissible depth.
- Check orientation and heights of inlet and outlets.

### DO:

- Use the correct backfill material.
- Fit the correct cover & frame (pedestrian duty) LOCKABLE.
- Consider drainage falls, generally 1 in 60/70 between house and tank and max. 1 in 200 for irrigation system.
- Lift the tank using adequate ropes or slings through both of the lugs fitted either side of the neck.

### DO NOT:

- Subject the tank to impact or contact with sharp edges.
- Add neck extensions to the tank, nor, build a brick manhole above the tank neck (as this increases burial depth of the tank). We do not recommend extending the neck of the tank under any circumstances.
- Install tank deeper than the depth that the fitted neck will allow.
- Install in trafficked areas without a suitable load bearing slab.
- Site the tank so that it is subjected to excess ground pressure (e.g. sloping sites) or applied loads such as may be generated by the proximity of vehicular traffic.
- Lift using only one of the lugs.
- Fill an unsupported tank.

### INSTALLATION

Where ground water lies below base of tank at all times throughout the year and ground is free draining.

- 1) Excavate a hole at least 300mm wider and 150mm deeper than the tank, with additional allowance for any necessary shuttering.
- 2) The tank must be bedded on concrete. Lay a bed of concrete (minimum 150mm thick) at the base of the excavation.
- 3) Lower the tank onto the concrete bed, ensuring that the inlet and outlet are in the correct position.
- 4) Ensure the tank is upright, then ballast it with water, to a maximum of 500mm deep.
- 5) Haunch up the concrete bed all round the base, ensuring that all voids in the concrete are eliminated and at least 150mm of concrete is left below the tank base.
- 6) Backfill to invert depth with pea-shingle or similar non angular, non cohesive and non compressible, rounded, free-flowing material. Ensure that the water level inside the tank is maintained approx. 250-500mm above the backfill level. Backfill evenly all round the tank. **DO NOT USE SAND OR SITE SPOIL AS A BACKFILL MATERIAL.**
- 7) Align and connect pipework.
- 8) Continue backfilling to ground level. Care must be taken to avoid distortion of the neck when backfilling this area. Use either a temporary brace to support neck from inside or use a suitable frame.
- 9) Trim the tank neck to ground level using suitable and safe equipment. Do not cut the neck to less than 350mm above the inlet invert. 450mm is the recommended minimum invert depth for frost protection of pipes.
- 10) Fit access cover and frame (pedestrian duty only). Apply surface finish e.g. turf.

**NOTE: If the water table does rise above the base of the tank at any time during the year please use the following guidelines**

- 1) Excavate a hole to appropriate depth allowing at least 300mm for concrete and hard-core base. Allow for tank width plus at least 400mm with additional allowance for any necessary shuttering. De-water the excavation using suitable pumping equipment.  
  
Ensure that the pump discharge does not saturate the ground in the immediate vicinity. De-watering is to continue until you are satisfied that the concrete has cured.
- 2) Lay at least 150mm of hard-core in the base of the excavation. Line the complete excavation with polythene sheeting.
- 3) Lay a bed of concrete (minimum 200mm thick) on top of the polythene at the base of the excavation.
- 4) Lower the tank onto the concrete bed, ensuring that the inlet and outlet are in the correct position.
- 5) Ensure the tank is upright, then ballast it with water to a maximum of 500mm depth.
- 6) Haunch up the concrete bed at least 450mm all round the tank base, ensuring that all voids in the concrete are eliminated and at least 200mm of concrete is left below the tank base.
- 7) Backfill to the invert depth with concrete. Ensure that the water level inside the tank is maintained no more than approx. 250-300mm above concrete level. Concrete evenly all round the tank, consolidating in layers. The concrete should start before the base has hardened and be a single continuous operation so that the tank has a full jacket without joins.
- 8) DO NOT use vibrating rammers to consolidate. DO NOT discharge concrete directly on to tank.
- 9) Align and connect pipework.
- 10) Build up a shell around neck of tank to 150-200mm thickness before completing the backfill with a suitable material. Care must be taken to avoid distortion of the neck during this operation. Support the neck with a temporary internal brace or frame.
- 11) Trim the tank neck to ground level using a fine toothed saw. 450mm is the recommended minimum invert depth for frost protection of pipes. Do not cut the neck to less than 350mm above the inlet invert.
- 12) Fit cover and frame.
- 13) Do not empty tank until the backfill has settled.

**MATERIAL SPECIFICATIONS**

**Pea Shingle -**

6mm-10mm rounded pea-shingle offering low point loading characteristics is the most suitable material for backfilling tanks. **Polythene Sheet-** Building Quality 500 gauge.

**SITING CONSIDERATIONS**

Synergy tanks are not designed to accept any traffic loads. A minimum traffic clearance must be provided. If this is not possible the tank must be protected from superimposed loads, e.g. by a reinforced concrete surround and provided with an appropriate cover, which must not bear on the structure of the tank. Please contact a consultant civil engineer.

For frost protection a minimum invert depth of 450mm is recommended.

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