

Report on the structural behaviour test according to EN 12566-1

Kunststoffspeicher ET-2000-2

Intewa GmbH

Test report No. PIA2022-ST-PIT-2204-1026

Germany, Aachen, 29 September 2023



Daniela Schmitz, M.Sc.

Head of department Urban Drainage



Christopher Abel, M.Sc.

Testing Engineer





Table of Contents

1	Introduction	3
2	Summary	4
3	Test requirements	5
4	Description of test object	6
5	Test procedure	7
6	Test results	9
7	Annex	I

1 Introduction

The company

Intewa GmbH
Auf der Hüls 182
52068 Aachen
Germany

assigned the

Prüfinstitut für Abwassertechnik (PIA GmbH)
Hergenrather Weg 30
52074 Aachen
Germany

to test the structural behaviour of the small wastewater treatment tank “ET-2000-2”. The test was performed according to EN 12566-1, Annex D.6. Within the scope of the proof of conformity and its fitness for use according to the construction products regulation, a small sewage treatment tank has to undergo a safety inspection according to EN 12566.

In the standard EN 12566-3, Annex C, the various procedures are listed to determine the structural behaviour, depending upon the material of the tank. For tanks made of plastics, the structural behaviour can be determined according to EN 12566-3 Annex C.6 using the pit test.

PIA GmbH has a certified quality management system according to EN ISO 9001:2015 for the field “testing of wastewater equipment”. PIA GmbH is accredited as testing laboratory based on EN ISO/IEC 17025:2018 and is approved by the European Commission as a testing laboratory “Notified Body” (NB 1739) according to the Construction Products Regulation (CPR) for small wastewater treatment systems for up to 50 PT according to EN 12566 Part 1, 3, 4, 6 and 7.

The test results contained in this report relate only to the items tested. The report comprises 9 pages and an annex of 2 page and shall not be reproduced in part without written approval of PIA GmbH.

2 Summary

The polyethylene tank „Kunststoffspeicher ET-2000-2“ from Intewa GmbH passed* the test of the structural behaviour according to EN 12566-1 D.6 (test in testing pit). There was a variation of volume of max. -3.39% and no loss of watertightness detectable.

This report contains the test for wet ground conditions. The manufacturer and the installer on site have to make sure that all actions are taken into consideration to avoid buoyancy.

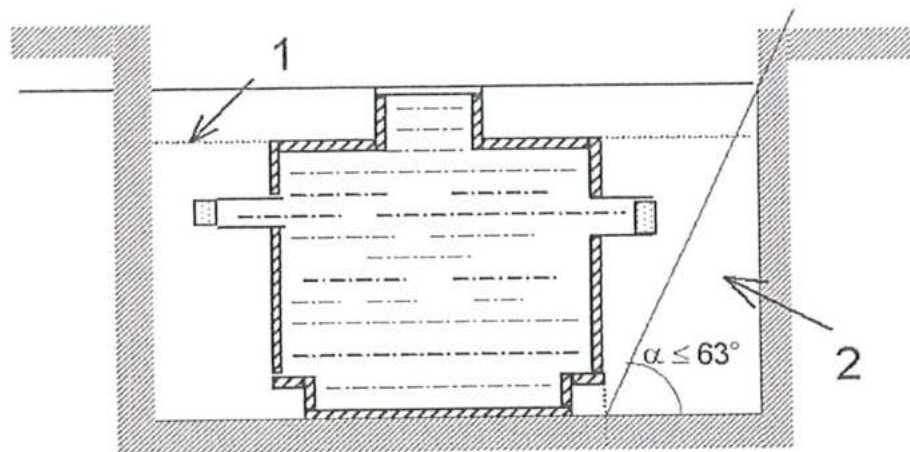
* Statements on conformity according to EN 12566 are made without considering the measurement uncertainty.



3 Test requirements

EN 12566-1:2000 + A1:2003 „ Small wastewater treatment systems for up to 50 PT, Part 1: Prefabricated septic tanks”. The test takes place according to the “Pit Test”, as described in Annex D.6.

The test of the structural behaviour was conducted on the premises of PIA GmbH in Aachen, Germany. The tank has to be placed into the watertight test excavation (pit). The pit has to be filled with backfill (gravel 3 mm – 8 mm) up to the top of the tank. To test in wet ground conditions, the pit has to be filled with water additionally. The test conditions have to be maintained for 3 weeks. During this time the plant may not collapse and has to remain watertight.



Key

- 1 water table level
- 2 backfill

Figure 1: Schematics of the principle for the pit test (Figure D.5 EN 12566-1)

4 Description of test object

One tank of Intewa GmbH

Name of the tank: Kunststoffspeicher ET-2000-2

Material: Polyethylene

Length = 2.350 m, width = 1.208 m, height up to shoulder = 1.150 m

Height without extension shaft = 1.150 m, height with extension shaft = 2.550 m

Maximum installation depth: 2.550 m from bottom of the tank

Technical drawings of the tank can be found in the Annex.

5 Test procedure

The test of the structural behaviour started on May 12th 2022. The empty tank was measured (length, width, height) beforehand and these values were compared with the manufacturer's specifications. The device under test corresponded to the manufacturer's specifications in all points. The empty tank was placed into the pit and fixed to avoid lifting. The inlets and outlets were closed tightly.



Figure 2: Tank placed in pit

Subsequently the pit was filled with gravel up to a height of 1.60 m backfill on the tanks shoulder. Simultaneously the tank was filled with water and the volume was measured with a magnetic inductive flow meter. After determining the volume, the tank was depleted.

- First determination of the volume of the tank on May 12th 2022: 1,977 l

After determining the volume, the pit was flooded with water up to a defined marking (shoulder of the tank).

On May 13th 2022 the volume of the tank was determined again.

- Second determination of the volume of the tank on months day year: 1,922 l

The test conditions had to be maintained for a minimum of 3 weeks.

On June 2nd, 2022, PIA checked the tank concerning watertightness and structural integrity.



Figure 3: Tank buried out after 3 weeks of testing

There was only slight indication of deformation. The tank was watertight.

The volume of the tank was measured again.

- Third determination of the volume of the tank on June 2nd 2022: 1,910 l

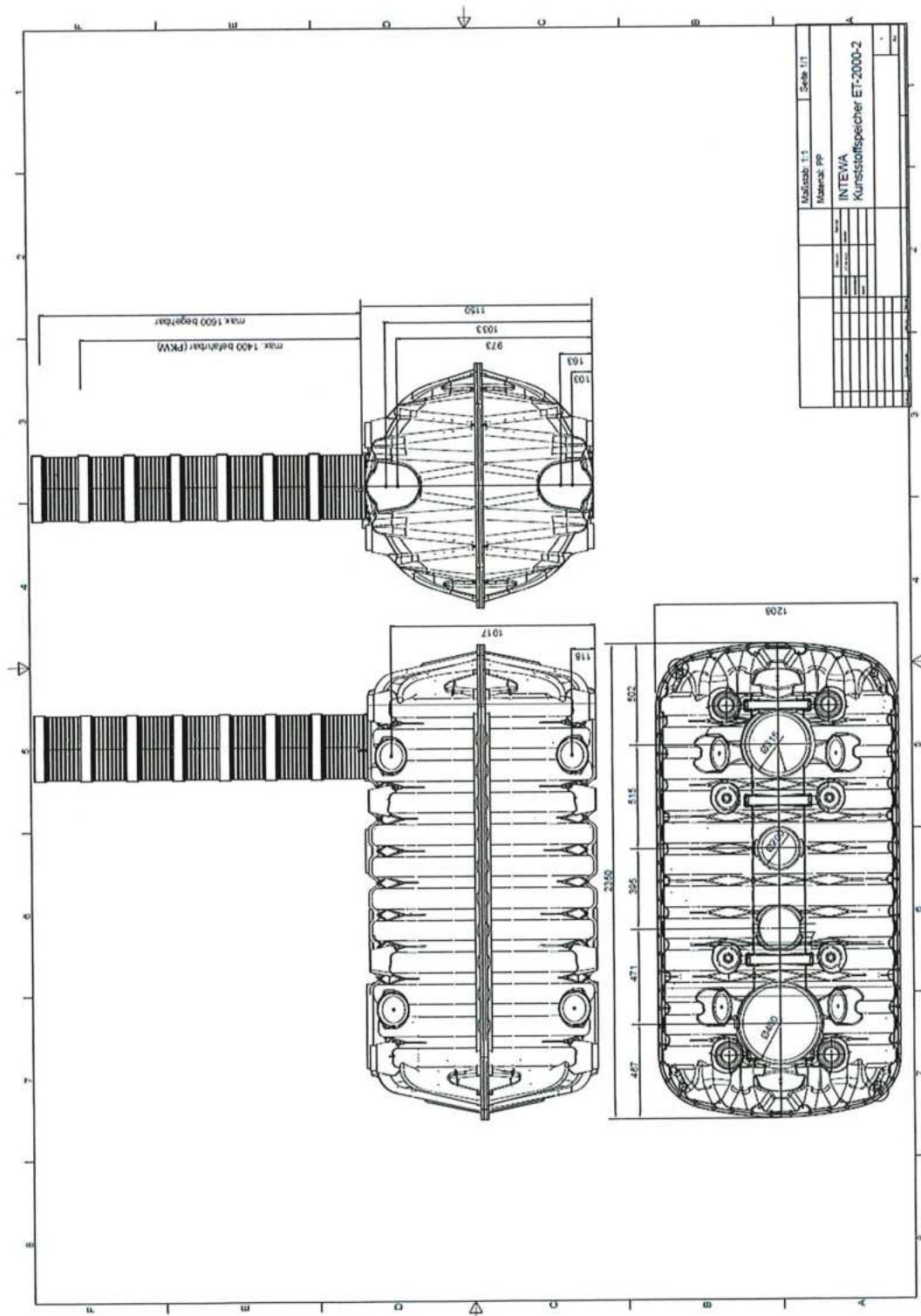
6 Test results

Date	Test / Activity	Results / Remarks
May 12 th 2022	Determining the initial raw body dimensions and weight of the tank	
May 12 th 2022	Placing and covering tank in test pit	Uplift safety guaranteed
May 12 th 2022	Initial determination of volume	1,977 l
May 12 th 2022	Bury the tank completely, flood pit with water, filling additional soil to simulate traffic load	
May 13 th 2022	Second determination of volume	1,922 l
May 13 th 2022	Checking watertightness and structural integrity	No loss of watertightness, no severe deformations
June 2 nd 2022	Discharge water from the pit	
June 2 nd 2022	Third determination of volume	1,910 l Δ volume day 1 to day 2 = -55 l = -2.78 % Δ volume day 1 to day 21 = -67 l = -3.39 % Δ volume day 2 to day 21 = -12 l = -0.62 % <u>PASS</u>

End of report

7 Annex

Technical drawing





Additional information

The manufacturer defines the scope of application as follows:

Walkable: minimal backfill height: 0,22 m
 maximal backfill height: 1,60 m

Trafficable (car max. 3,5 t): minimal backfill height: 0,80 m
 maximal backfill height: 1,40 m

End of annex.