

Datasheet Small Lysimeter

Overview

- Diameter: 0.3 m (0.07 m² surface)
- Depth: 0.3 or 0.6 m
- 1 lysimeter per field box
- weighable
- tension controlled lower boundary condition (bidirectional flow)
- undisturbed excavation of soil columns
- customized sensor equipment (in different depths)
 - Tensiometer
 - Matrix potential sensors
 - Water content sensors



Specification

Lysimeter cylinder

- Lysimeter cylinder made of stainless steel 1.4301.
- Dimensions: diameter 0.3m (0.07m²), standard height 0.6m (optional 0.3m height), wall thickness 2mm.
- Bottom plate 2mm thickness made of stainless steel quality 1.4301
- Watertight bottom sealing
- 7 sensor ports D=37mm including watertight special flanges and complete mounting set for probe installation
- Lysimeter collar made of fiberglass reinforced plastic

Suction rake, lower boundary control system

per Lysimeter (with standard dimensions)

- Suction rake with 3 suction cups SK48/80 (air entry point -1,000 hPa) including installation
- 1 pc. METER TEROS32 reference tensiometer
- LBC (Lower Boundary Controller) for control of the matric potential at the bottom of the lysimeter. The LBC contains a brushless bidirectional pump with pumphead for lysimeter lifetime, a controller and a virtual tensiometer to measure the suction directly in the suction cups. The applied suction can either be freely defined as constant or variable (or optionally taken from measurements in the undisturbed field anywhere). The LBC-pump is also able to pump water into the lysimeter (e.g. to mimic groundwater intrusion).
- Weighable leachate tank 8L made of plastic
- Automatic system for aliquot sample taking of leachate water
- High accuracy platform balance with integrated weighing indicator (IP67 protected, tolerance 0.03%) → conforms to the lysimeter data evaluation method AWAT according to Peters et al. 2014: Separating precipitation and evapotranspiration from noise – a new filter routine for high-resolution lysimeter data. Hydrology and Earth System Sciences 18, 1189-1198.

High precision weighing system

per Lysimeter (with standard dimensions)

- High accuracy platform balance PL100 with integrated weighing indicator (IP67 protected, tolerance 0,03%)
- Overall accuracy ± 14g
- Recording interval of lysimeter weight measurements 1 minute
- incl. weighing transducer

Sensor equipment lysimeter (recommendation)

per Lysimeter

- 1 pcs. METER TEROS32 tensiometer and soil temperature measurement (incl. Baro-Module for measuring the reference atmospheric pressure)
 - Technical specifications matrix potential
 - Range: +50 to -85 kPa
 - Accuracy: ± 0.15 kPa
 - Resolution: 0.0012 kPa
 - Technical specifications temperature
 - Range: -30 to 60 °C
 - Accuracy: ± 0.1 K between -20 to 40 °C (± 1 K outside of this range)
 - Resolution: 0.01 K
- 3 pcs. SMT100 for measuring water content and soil temperature measurement
 - Technical specifications water content
 - Range: 0 to 60% volumetric water content
up to 100% volumetric water content with reduced accuracy
 - Accuracy: ± 3% (with standard calibration)
± 1% (with soil specific calibration)
 - Resolution: 0.1%
 - Technical specifications temperature
 - Range: -40 to 80 °C
 - Accuracy: ± 0.2 K
 - Resolution: 0.01 K
- 3 pcs. METER TEROS21 matrix potential-sensors for dry end measurement (-90 to -20,000 hPa)



TEROS 32
(METER)



SMT100
(Truebner)



TEROS 21
(METER)

Measurement technique, complete

per Facility (for up to 6 lysimeter)

- 1 pc. main enclosure
- 1 pc. data logger
- 1 pc. COM-Server (for remote control and remote support)
- incl. 12/24V power supply for sensors and measurement (110/220V required)
- incl. all other necessary electronic components
- incl. setup and test run in Graz (Austria)
- incl. programming of the data logger and control of the lysimeter system
- incl. documentation of the wiring
- incl. remote connection
- incl. complete installation, wiring and test run on site

Fieldbox

per Lysimeter

- 1 pcs. field box (L=100cm, B=50cm, H=50cm) made of aluminum, water tight, containing the LBC-pump, seepage water tank and balance, sensor distribution box)
- Connection pipes to lysimeter

Sourcing of monolithically soil cores

per Facility

- Monolithic undisturbed excavation of the soil columns (lysimeter cutting)
 - at the location where the lysimeter is installed
 - optional: excavation at different location and transfer of lysimeter
 - Soil must be sandy, loamy or silty with adequate water content for lysimeter cutting

Installation

per Facility

- Installation of the sensors in the lysimeter
- Installation of the lysimeter into the lysimeter-well
- Installation of the measuring cabinet, control units, etc.
- Wiring and connection of all probes to the data logger
- Setup the data logger
- Setup of the ethernet and remote connection. Ethernet connection with bidirectional access required. Optional: wireless data transfer (e.g., modem, WIFI etc.)
- Test run, data check and training for the customer

Examples



Lysimeter site INRAE (Clermont-Ferrand, France)

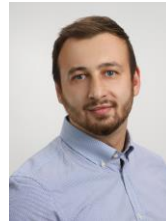
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