

CE 116

Cake and depth filtration



Description

■ cake and depth filtration with different suspensions and filter medium layers

With CE 116 the processes in depth filtration and cake filtration can be observed and investigated. The suspension (water and diatomite as the solid) flows from the hopper into the top of the filter element, where the solids are separated off.

The filtrate flows through a flow meter into the drain. The filter element has a porous filter medium at the bottom. In cake filtration, the filter medium provides the foundation for build-up of the filter cake. In depth filtration, the filter medium supports the bulk solids (filter medium layer; gravel). Twin tube manometers measure the pressure loss over the filter element.

To register the filtrate quantity, the balance CE 116.01 is recommended.

Learning objectives/experiments

- fundamentals of filtration: Darcy's equation
- depth filtration with different bulk solids and suspensions
- cake filtration with different suspensions
- identification of characteristic filtration values

Specification

- [1] fundamentals of cake and depth filtration
- [2] filter element with sintered filter medium on its bottom to capture the particles
- [3] pressure loss measurement with twin tube manometers
- [4] height-adjustable filler hopper made of DURAN glass
- [5] flow meter with needle valve for adjustment

Technical data

Filter element

- filter chamber height: 85mm
- Ø inner: approx. 37mm
- cross-sectional area: approx. 11cm²
- tube material: DURAN glass

Filter medium, sintered filter SIKA 100

- pore size: 100µm
- thickness: 2mm
- material: sintered metal

Measuring ranges

- flow rate: 1...10L/h
- pressure: 2x 0...500mmWC
- temperature: -10...100°C
- measuring cup
 - ▶ 1x 1000mL, graduation: 10mL
 - ▶ 1x 100mL, graduation: 2mL

LxWxH: 450x410x1040mm
Weight: approx. 13kg

Required for operation

drain

Scope of delivery

- 1 experimental unit
- 2 measuring cups
- 1 stopwatch
- 1 thermometer
- 1 sand (1kg; 1...2mm)
- 1 packing unit of diatomite (2kg)
- 1 set of instructional material

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Optional accessories

WP 300.09	Laboratory trolley
CE 116.01	Balance