

# 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.

### 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
- inside diameter: approx. 37mm
- cross-sectional area: approx. 11cm<sup>2</sup>
- tube material: DURAN glass

#### Filter medium, sintered filter SIKA 100

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

#### Measuring ranges

- flow rate: 40...360mL/min
- pressure: 2x 0...500mmWC
- temperature: -10...100°C
- measuring cups
  - ▶ 1x 1000mL, scale division: 10mL
  - ▶ 1x 100mL, scale division: 2mL

LxWxH: 450x410x1040mm  
Weight: approx. 30kg

### Required for operation

Drain recommended  
balance to register the filtrate quantity

### Scope of delivery

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

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Optional accessories

020.30009	WP 300.09	Laboratory trolley
083.11601	CE 116.01	Balance