

# CE 284

## Nutsche vacuum filter



### Description

#### ■ cake filtration with a Nutsche vacuum filter

Nutsche filters are used for discontinuous cake filtration of suspensions with high solid concentrations. The suspension production unit CE 285 produces a suspension of diatomite and water and delivers it from above into the Nutsche filter. A filter bag is inserted in the Nutsche filter. A growing filter cake accumulates in the filter bag made from the separated solid material. The vacuum in the bottom section of the Nutsche filter draws filtrate through the filter cake and the filter bag.

It is collected in the bottom section. After filtering, the filter cake obtained is washed with a washing liquid (water) and is dried by the applied vacuum before being removed.

### Learning objectives/experiments

- basic principle and method of operation of a Nutsche vacuum filter
- fundamentals of cake filtration: Darcy's equation
- mass and thickness of filter cake dependent on filtrate quantity

### Specification

- [1] Nutsche vacuum filter for discontinuous cake filtration
- [2] open 2-part vessel with flange and recessed sieve base
- [3] bottom section to draw in and collect filtrate
- [4] top section with inserted filter bag to form filter cake
- [5] polyester filter bag
- [6] manometer to indicate negative pressure in bottom section
- [7] 2 sight glasses to observe level in bottom section
- [8] production and transport of suspension with suspension production unit CE 285

### Technical data

#### Vessel

- inner diameter: approx. 300mm
- capacity: approx. 55L
- permissible pressure: -1 bar
- material: stainless steel

#### Manometer

- Ø 160mm

#### Measuring ranges

- pressure: -1...0bar

LxWxH: 600x900x1900mm

Weight: approx. 100kg

### Required for operation

water connection, drain; vacuum connection (200L/min, 200mbar abs.)

### Scope of delivery

- 1 trainer
- 1 set of accessories
- 1 set of instructional material

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Required accessories

CE 285                    Suspension production unit