



DEMONSTRATION CAPABILITIES

- *basic principles of filter operation for student study*
- *preliminary assessment of pre-treatment processes and filter media*
- *calculation of filterability index number from measurements taken*

DESCRIPTION

The use of deep beds of porous granular media to filter liquids to improve their clarity is widespread in municipal and industrial practice. Examples are: the filtration of drinking water, industrial water and the filtration of sewage as a tertiary stage.

Other liquids are filtered through granular media in the processing of beverages and food products for example.

A simple measure of whether the liquid is filterable is useful to enable assessment of filtration as an appropriate process, if so what type of pre-treatment and filter media are required.

The Armfield Filterability Index Unit enables a water quality test to be made on a suspension to be filtered through sand or similar granular media. As well as being used for student teaching, it can also be used in routine control at waterworks, or at a sewage treatment works which employs tertiary filtration.



DESCRIPTION – CONTINUED

The W4 Filterability Index Unit utilises a bed of granular material, normally sand, which can be chosen by the investigator to suit his own purposes. The measurements taken with this apparatus enable a filterability number to be calculated which has significance in deep bed filter performance.

A particular application of the W4 Filterability Index Unit is in the process control of existing deep bed filter operation. The effects of changing pre-treatment dosing (for example poly-electrolyte dose) can be rapidly tested before making changes on the operating plant.

The unit can also be used to determine the changes in filterability of a flocculating suspension subject to different degrees of prior flocculation and to measure the improvement in tertiary sewage filtration when poly-electrolytes are added to fine suspensions from humus tanks. In conjunction with the well-known waterworks jar test, the settling characteristics and the filterability characteristics of flocs can be assessed.

The equipment comprises a filter unit which contains a small plug of sand about 40mm thick, through which the suspension flows downwards from a funnel containing the 1 litre sample under test.

Flow is controlled by a needle valve and observed on a variable area flowmeter. Head loss is measured directly by a water manometer. The filter unit can be readily demounted to change the sand. This unit and all tubing connections are transparent so that the operation can be observed and air bubbles avoided. Metal fittings are corrosion resistant.

TECHNICAL DETAILS

Test filter cell diameter:	38mm
Height of filter:	60mm maximum
Variable area meter range:	20-280m/min
Water manometer length:	0.5m

RECOMMENDED ACCESSORIES/INSTRUMENTS

(not supplied by Armfield)

1 litre beaker (to collect filtrate)
 Thermometer
 Stop clock

Sieves and sieve shaker for grading filter media (typically 0.6mm and 0.5mm)

Electronic balance with tare facility:
 capacity: 200/400g
 sensitivity: 1mg

REQUIREMENTS

Services:
 Laboratory drain or 1 litre receiving vessel

OVERALL DIMENSIONS

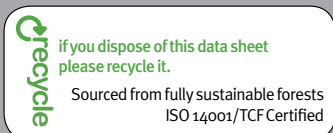
Height:	0.97m
Width:	0.45m
Depth:	0.25m

SHIPPING SPECIFICATION

Volume:	0.3m³
Gross weight:	40kg

ORDERING SPECIFICATION

- Equipment consists of a metal framework supporting a 1.5 litre vessel connected by transparent tubing to a 60mm high test filter cell
- A needle valve controls the flow which is observed on a variable area flowmeter. Flowmeter range: 20-280ml/min
- A 0.5m water manometer measures head loss across the filter
- Test filter cell diameter: 38mm



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