

Fig 1: Settling regimes

DEMONSTRATION CAPABILITIES

- effect of initial concentration on sedimentation rates
- construction of settling rate curves from a single batch test
- effect of initial suspension height on sedimentation rates
- effect of particle size distribution
- use of flocculating additives.

DESCRIPTION

Sedimentation is a process used widely in the clarification of water and wastewater. Particles settle from suspension in different ways, depending on the concentration of the suspension and the characteristics of the particles. The simplest type of sedimentation is the settling of a dilute suspension of particles which have little or no tendency to flocculate. In these circumstances, the prediction of clarification rates and their scale-up to plant design is relatively straightforward.

For higher concentrations where inter-particle effects become significant and where agglomeration may take place, different regimes of settling rate occur, known as 'zone' settling (fig 1). Information from batch tests for such systems forms a vital part of the search for the optimum design and operation of industrial sedimentation tanks.

The Armfield Sedimentation Studies Apparatus allows demonstration of these different characteristics for any chosen sediment/water system.

The Armfield Sedimentation Studies Apparatus provides a facility for studying the basic physical processes involved in sedimentation.



DESCRIPTION – CONTINUED

Five equal sized glass cylinders are mounted vertically on a backboard incorporating measuring scales. Each of the cylinders may be removed from the board for washing, filling and mixing of the solid particles. Suspensions containing different sediments can be placed in the cylinders and the differences in sedimentation rate observed by measuring the changes in height of the various solid/liquid interfaces with respect to time (e.g. fig 2).

The equipment includes the following accessories necessary for a self-contained facility: stop clock, three plastic beakers of 2 litre capacity, specific gravity bottle. An accurate balance (not supplied) is required for weighing the solids. The whole apparatus is bench-mounted and provided with back lighting.

TECHNICAL DETAILS

Tube length: 1m
Tube internal diameter: 51mm

RECOMMENDED INSTRUMENTS

(not supplied by Armfield)

Balance for weighing sediments
Typical capacity: 300g
Typical sensitivity: 0.1g

REQUIREMENTS

Electrical supply:
W2-A: 220-240V/1ph/50Hz
W2-B: 120V/1ph/60Hz

OVERALL DIMENSIONS

Height: 1.14m
Width: 0.70m
Depth: 0.43m

SHIPPING SPECIFICATION

Volume: 0.8m³
Gross weight: 90kg

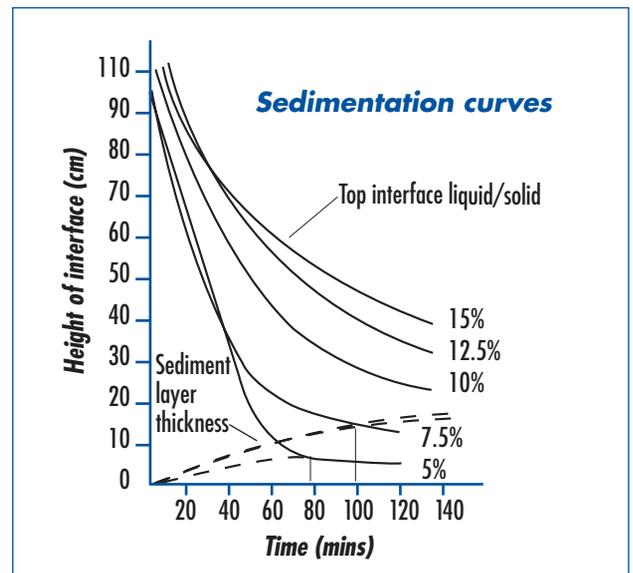


Fig 2: Typical sedimentation curves

ORDERING SPECIFICATION

- Five graduated, 1m long x 51mm bore glass cylinders mounted vertically on a backboard.
- Cylinders are illuminated from behind and removable for cleaning.
- Supply includes stop clock, three 2 litre capacity plastic beakers and a specific gravity bottle.
- Demonstration capabilities:
 - effect of initial concentration on sedimentation rates
 - construction of settling rate curves from a single batch test
 - effect of initial suspension height on sedimentation rates
 - effect of particle size distribution
 - use of flocculating additives



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