

## Drainage and Seepage Tank – S1

Practical demonstration and visualisation are essential elements of fluid flow study.

The S1 Drainage and Seepage Tank has been designed to allow students to make an experimental study of flow through permeable media.

**FACILITATES A DETAILED STUDY OF THE MOVEMENT OF WATER THROUGH PERMEABLE MEDIA**



S1 Piezometer accessory

S1: Seepage under a sheet pile wall



### Experimental Content

- ▶ Verification of Darcy's law
- ▶ Flow net construction, flow lines and equipotential lines
- ▶ Determining seepage rates
- ▶ Boundary conditions
- ▶ Flow line visualisation
- ▶ Comparison of experimental results with analytical solutions
- ▶ Demonstrating seepage underneath a sheet pile wall
- ▶ Demonstrating seepage through an earth dam
- ▶ Demonstrating draining effect of a tile line
- ▶ Demonstrating draining effect of an open trench
- ▶ Demonstrating uplift pressure on foundation of structures
- ▶ Demonstrating changing uplift pressure by changing length of flow lines
- ▶ Demonstrating reduction of uplift pressure by draining
- ▶ Demonstrating reduction of lateral thrust on a retaining wall by draining
- ▶ Demonstrating quicksand
- ▶ Demonstrating stability of an earth dam
- ▶ Demonstrating well draining

## Description

The bed of the tank is made from painted mild steel while the sides of the tank are supported and sealed by a well proven method which allows free access to the interior and results in minimum sight obstruction. One side is of toughened glass to give good scratch-free visibility over a long period of use while the other is made of aluminium which permits the insertion of pressure tapping points as required. The ends of the tank are made of steel plate.

Adjustable overflows are provided close to each end of the tank so that constant water levels may be maintained in each half of the tank. These may be lowered to a position close to the bed of the tank for some experiments to provide subsoil drainage. The equipment is self-contained, requiring only an initial fill with cold water and connection to the electricity supply. The sump tank can be emptied to a laboratory drain.

### Typical student experiments include:

- ▶ Seepage underneath a sheet pile wall
- ▶ Seepage through an earth dam
- ▶ Control of seepage through permeable soils by subsoil drainage
- ▶ Distribution of uplift pressure on hydraulic structures
- ▶ Reducing uplift pressure and lateral thrust by drainage
- ▶ Formation and behaviour of 'quicksand'
- ▶ Stability of an earth dam
- ▶ Draining an excavation site using wells

### Note that the tank is supplied without sand.

(0.1m<sup>3</sup> is required of washed, narrow range sand (coarse) with no fraction finer than 0.5mm)

## Requirements

## Scale

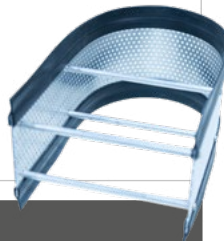


### Electricity supply:

- S1-A: 220-240V/1ph/50Hz, 1A
- S1-B: 120V/1ph/60Hz, 2A
- S1-G: 220-240V/1ph/60Hz, 1A

## Basic accessories

- ▶ Foundation pressure plate
- ▶ Straight permeable membrane
- ▶ Curved permeable membrane
- ▶ Lateral pressure plate
- ▶ Tile drain



## Overall dimensions

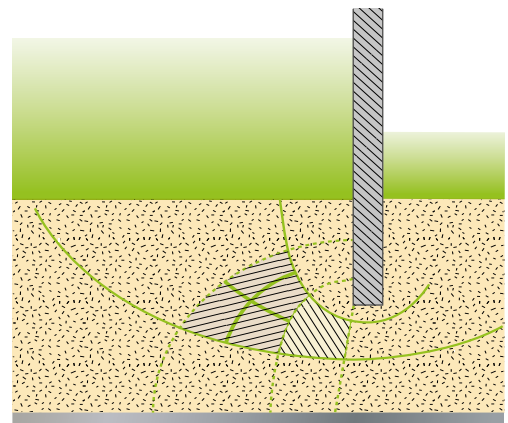
Length	1.60m
Width	0.60m
Height	1.45m

## Packed and crated shipping specifications

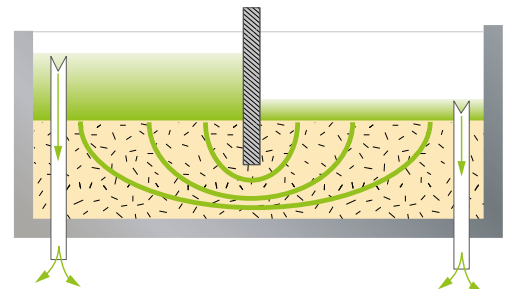
Volume	2.4m <sup>3</sup>
Gross weight	270Kg

## Benefits

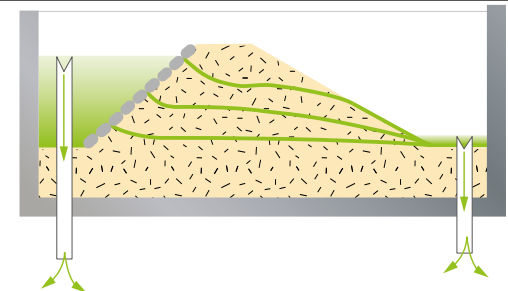
- ▶ A self-contained facility for study of flow through permeable media
- ▶ The tank has a toughened glass front and aluminium back to permit the insertion of pressure tappings as required. Six tapping points are provided
- ▶ The design of the side supports allows free access to the interior with minimum sight obstruction
- ▶ Supply includes sump tank, pump, starter and control valve. As well as a dye injection system and a selection of models
- ▶ Comprehensive instruction manual with data sheets and student experiments
- ▶ Working section 1500mm x 100mm x 600mm



Determination of flow nets



Seepage under a sheet pile wall



Seepage through an earth dam

## Ordering codes

- ▶ S1-A
- ▶ S1-B
- ▶ S1-G

Armfield standard warranty applies with this product

## Knowledge base

- > 28 years expertise in research & development technology
- > 50 years providing engaging engineering teaching equipment

Benefit from our experience, just call or email to discuss your laboratory needs, latest project or application.

An ISO 9001:2015 Company



armfield.co.uk

## Aftercare

Installation  
Commissioning  
Training  
Service and maintenance  
Support: [armfieldassist.com](http://armfieldassist.com)