

MODEL SEDIMENTATION TANK – W7MKII

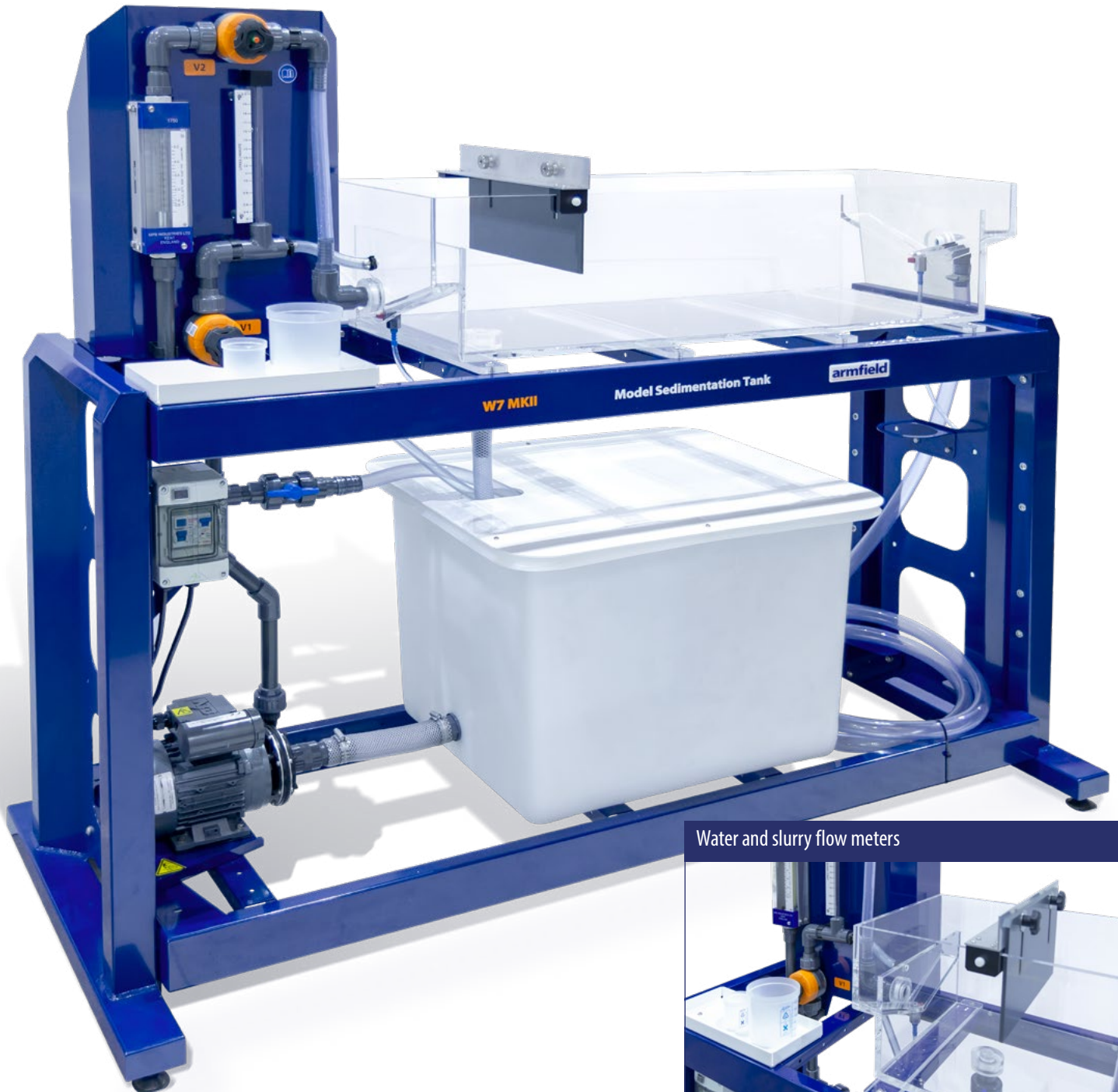
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SERIES

Sedimentation is the separation of a suspension into a clarified fluid and a more concentrated suspension (sludge).

The Armfield W7MKII is designed to demonstrate the hydraulic characteristics and settling efficiencies of a model settling basin.

Relevant deductions can be made as to how non-uniform flows occur, and how these interact with the settling characteristics of suspensions.

METAL FRAMEWORK WITH CLEAR SEDIMENTATION TANK
FLOW SPARGE DEVICE IN THE TANK TO KEEP SLURRY IN SUSPENSION
OPERATIONAL MANUAL WITH TEACHING EXERCISES



Water and slurry flow meters



Description

Water is taken from the laboratory mains supply and is fed to the settling tank via a flow meter. For studies of sedimentation, slurry is prepared in a sump tank and pumped via a specially designed flow meter to join the fresh water stream just before entry to the settling tank.

Well-mixed slurry of known concentration and flow enters the tank uniformly under the inlet weir. This may be comparatively analysed by using Armfield sedimentation studies apparatus (W2-MKII) or the Imhoff cone technique.

The sump tank is continually agitated by a flow sparging device to prevent settling of solids during an experiment.

For hydraulic tracer and visualisation studies, an accurate dye injection system is provided. A known volume of dye solution is injected just before the entry to the settling tank.

Learning objectives

- ▶ Measuring flow short circuiting and dead space using a tracer
- ▶ Comparison of real flow regimes with idealised flow models
- ▶ Effect of flowrate and baffle position on dispersion
- ▶ Measuring sediment removal efficiencies and relating these to hydraulic characteristics
- ▶ Effect of solid concentration on separation efficiency
- ▶ Use of the Imhoff cones for analysis

Requirements

Scale



Electrical supply:

W7MKII A: 220-240V / 1 ph / 50Hz

W7MKII G: 220V / 1ph / 60Hz

- ▶ Calorimeter covering Wavelengths 450nm to 700nm (not supplied) or handheld turbidity meter

- ▶ Water supply: 5L/min @ 1 bar

Technical details

Filter column (clear acrylic)	100mm ID x 1350 mm long
Acrylic settling tank	1.05m x 0.35m x 0.2m
Feed tank capacity	120L
Sediment flowmeter range	0 – 2 L/min
Water flowmeter range	0.5 – 5 L/min
Pump flow rate	60 L/min @ 15m head

Overall dimensions

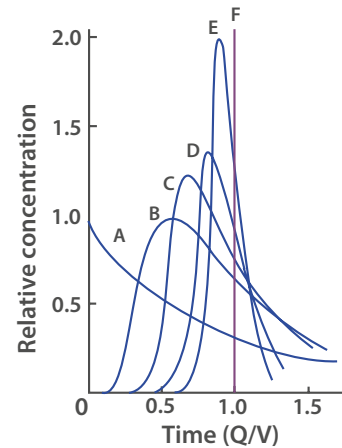
Length	2.13m
Width	0.76m
Height	1.63m

Packed and crated shipping specifications

Volume	2.9m ³
Gross weight	120Kg

Features / benefits

- ▶ Metal framework with clear sedimentation tank
- ▶ Flow sparge device in the tank to keep slurry in suspension
- ▶ Operational manual with teaching exercises



Total headloss variation with time

Optional accessories

- ▶ Handheld turbidity meter (ordering code: INST 060)
- ▶ Triple beam balance with 0.1g sensitivity (ordering code: INST 059)

Ordering specification

- ▶ Sedimentation tank of 97L capacity
- ▶ 120L sump tank via a centrifugal pump.
- ▶ A flow sparge device in the sump tank keeps the slurry in suspension
- ▶ Both supplies are fitted with a flow meters. Mains water flow meter range is 0.5-5.0 L/min; slurry flow meter range is 0-2 L/min
- ▶ 1 X Burette mount
- ▶ 3 X 1L Imhoff cones
- ▶ 1 X Imhoff cones rack
- ▶ 1 X 600ml sample vessel
- ▶ 1 X 100ml sample vessel
- ▶ 2 X stiffener bar
- ▶ 1 X adjustable inlet weir
- ▶ 1 X 1L bottle, Armfield blue dye with COSHH sheet
- ▶ 25Kg precipitated Calcium Carbonate & safety data sheet
- ▶ Operational manual with teaching exercises

Ordering codes

- ▶ W7-MKII-A
- ▶ W7-MKII-G
- ▶ INST 059 (optional)
- ▶ INST 060 (optional)

Warranty

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

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Training
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Support: armfieldassist.com