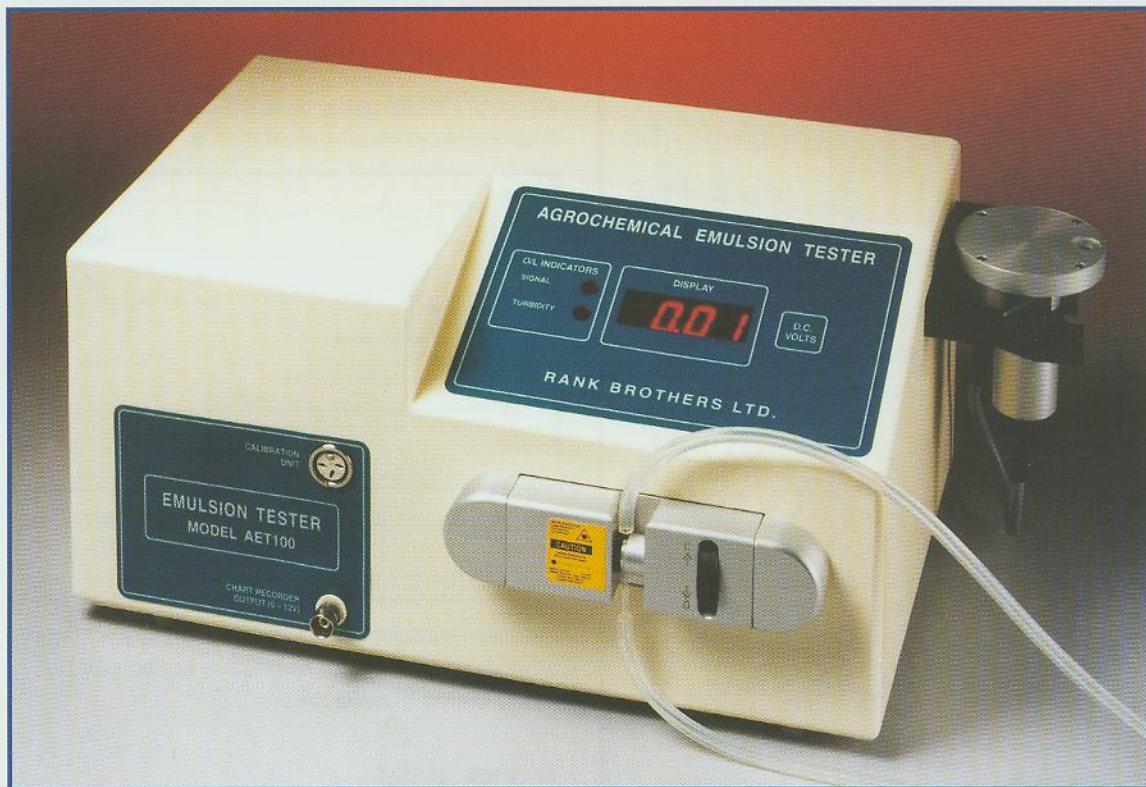


Model AET100 Emulsion Tester



The Model AET100 is a simple, rugged instrument designed to test the stability of water-based agrochemical emulsions which are widely used in pest control. Easily surpassing the performance of earlier methods, the turbidity fluctuation analysis technique can quickly and precisely characterise emulsions to bring significant benefits to testing in the development of new formulations and the quality of manufactured emulsifiable concentrate products.

- Rapid, objective measurements
- Extremely simple to operate
- Highly sensitive to droplet size change
- Convenient flow-through system
- Compact and lightweight

The Model AET 100 has been developed in collaboration with Zeneca Agrochemicals and has successfully completed UK trials involving major manufacturers.

Testing emulsions

Good stable emulsions are characterised by very small droplets and by a fairly narrow distribution of droplet sizes, although the actual values will vary between different formulations. These properties should not change over periods of many hours or even longer.

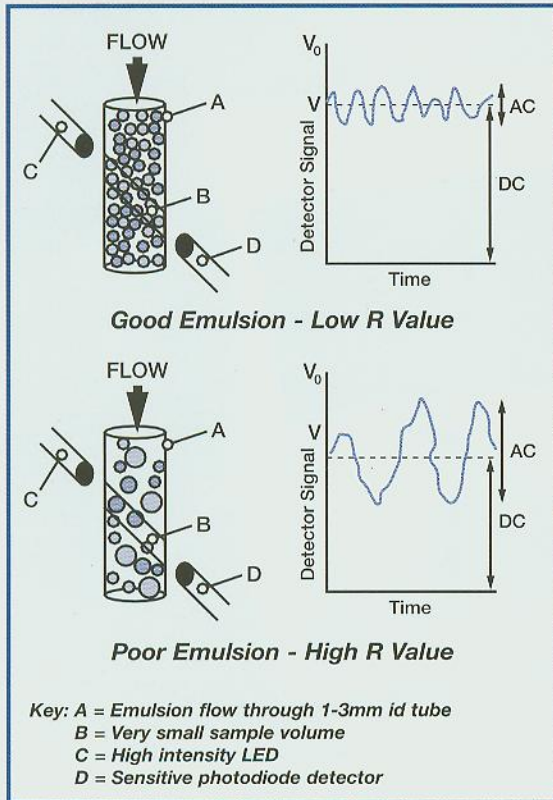
The Model AET 100 is designed to detect the size of droplets in oil-water emulsions using a simple procedure. A prepared emulsion sample is siphoned through a capillary sample tube mounted in a flow cell on the front of the instrument. After 1-2 minutes a reading related to the stability (R) is displayed: further tests can be conducted after flushing the sample tube clean.

Results achieved show good correlation with the traditional CIPAC test, but with significantly greater sensitivity and taking only a few minutes.

An optional validation unit is available to confirm the instrument's test performance and for compliance with ISO9000 quality assurance procedures.

Operating principle

The Model AET100 uses an optical system developed at University College, London which responds to the changes in the size of emulsion droplets flowing through the measurement cell, as indicated in the diagram. A laser light beam



illuminates the flowing emulsion and the transmitted light is monitored by a sensitive detector, which produces a signal comprising two components:

- an average (DC) value related to the turbidity of the emulsion, and
- a smaller, fluctuating (AC) component arising from random variations in the number and size of the droplets in the laser beam.

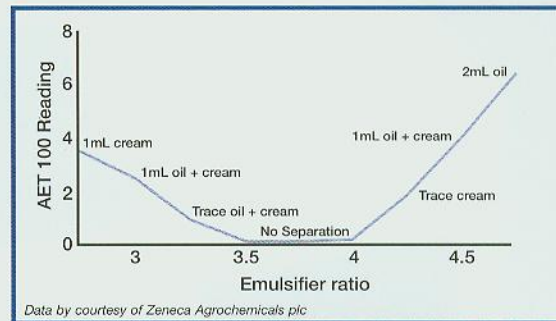
In an unstable emulsion, droplets become larger in size and smaller in number, which leads to an increase in the AC component. A measure of the emulsion stability is derived from the ratio of the AC and DC components, which is displayed as a reading R. The higher this reading, the larger the droplets and the lower the emulsion stability. Conversely, a small R value indicates a stable emulsion.

Applications

The stability of emulsions must be tested to ensure their efficient use and proper application. A rapid assessment of the stability using the AET100 will help to prevent breakdown of emulsions and the formation of 'oils' and 'creams'.

In developing a formulation

A plot of results using different emulsifier ratios enable the optimum formulation to be selected.



Optimising emulsifier ratio for a formulation

For routine quality monitoring

Frequent measurements quickly identify potential stability problems and corrective action can be taken during manufacture.

Technical data

The Model AET100 is supplied with 6 capillary sample tubes, 2m silicone tubing, Hoffman clip to adjust flow rate, 250mL beaker tubing clamp assembly, and a suitable power lead.

Light source:	Laser, 670nm, output 0.95mW
Sample flow rate:	10mL/min \pm 10%
Measurement accuracy:	\pm 5%
Display:	Readings (R) and DC volts
Overload indicators:	Large particles and turbidity
Power supply:	220/240 or 110/120 V AC, 50/60Hz
Size (mm):	320(w) x 200(d) x 165(h)
Weight (kgm):	4.0
CE marked	

How to order

AET 001A	Model AET100 Emulsion Tester
AET 003A	Validation Unit for Model AET100
AET 170A	Glass Sample Tube
AET 172A	Silicone Tubing, 2mm id, 1.75mm wall
AET 176A	Tubing Clamp assembly for 250mL beaker

Rank Brothers Ltd reserve the right to change specifications in the light of continuing developments.

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