



TURBIDITY
TUBE
PT 514

TURBIDITY AND SUSPENDED SOLIDS

The Turbidity Test is designed to give a measure of the suspended solids content of the final effluent. It is also useful in following the day to day variation in the quality of sewage and effluent.

The Palintest Turbidity Test uses a specially calibrated plastic tube. This provides the simplest possible method of performing this important test. Test kit SP 304 includes a tube graduated at 30 to 500 turbidity units. A double length tube with additional graduations from 5 to 25 turbidity units is optionally available. The Palintest Turbidity Tubes were calibrated by the Department of Public Health Engineering, University of Newcastle upon Tyne.

Equipment

Palintest Turbidity Tube, 13" (PT 514) or
Palintest Turbidity Tube, 26" (PT 513)

Test Procedure

- 1 Hold the tube vertically over a white surface and view downwards.
- 2 Gradually pour in the effluent sample until the black cross is just no longer visible.
- 3 Read off the graduation corresponding to the height of the sample in the tube. This represents the turbidity of the effluent in Jackson Turbidity units (JTU). For sewage effluents the graduations may also be taken as being approximately equivalent to the Suspended Solids Content as milligrams per litre.

The Royal Commission Standards for Effluents recommend that the suspended solids content of sewage effluent should not be more than 30 mg/l.

The tube should be rinsed after use. Any staining may be removed by the use of a household detergent.

BOD, COD AND TOC

It is possible to derive an indication of the Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD) and Total Organic Carbon (TOC) from the result of the Permanganate Value test. This is based on the relationship between these measures of organic pollution obtained experimentally for domestic sewage and effluents. (Notes on Water Research, Number 14, Tests for Assessing the Oxygen Demand of effluents, Steven-age Laboratory, Water Research Centre, February 1978.

To convert the Permanganate Value (PV) for domestic sewage and effluent to probable BOD, COD and TOC values multiply by the following factors.

	<i>Sewage</i>	<i>Effluent</i>
Probable BOD	PV x 5	PV x 1.5
Probable COD	PV x 10	PV x 7
Probable TOC	PV x 3	PV x 2

There is generally a close relationship between turbidity and the BOD value of settled sewage and effluent. The probable BOD can be calculated from the result of the turbidity test using the following formula :-

$$\text{Probable BOD} = \frac{\text{Turbidity}}{2} + 5$$

This probable BOD value can be used as a cross check on the probable BOD value obtained from the relationship with the Permanganate Value test.

The Royal Commission Standard for Effluents recommends a BOD value of not more than 20 mg/l.