

METHOD STATEMENT



Determinand:

Turbidity

Matrix:

Treated and untreated sewage, trade effluent (to sewer and trade to controlled), surface water, ground water, and process water.

Principle of Method:

Turbidity is an expression of the property by which suspended or colloidal matter scatters light thereby imparting opacity to the sample.

Light from a tungsten source, scattered by suspended and /or colloidal matter in the sample is measured at right angles to the incident beam. The intensity of light scattered by the sample is compared with that measured for standard formazin suspensions and expressed as nephelometric turbidity units (NTU).

Standardisation of the instrument is accomplished with a set of secondary turbidity standards which simulate formazin suspensions and are labelled according to NTU values.

Sampling and Sample Preparation:

Samples should be stored at room temperature and analysed as soon as possible. If samples have been refrigerated, analysis must not be started until a stable room temperature is attained. Samples should not contain air bubbles.

A visual check must also be performed on the samples.

Samples are stable for 2 days (In-House Data) from sampling.

Interferences:

Air bubbles in the vial will cause interference with scattering of the light. The instrument is sensitive to fingerprints or dirt, so the vials are cleaned and oiled before each reading.

Performance of Method:

Range of Application: 1.4 - 4000 NTU

Limit of Detection: 1.3367 NTU

Normal Reporting Limit: 1.4 NTU

Determinand	Low standard		High standard	
	Tot. RSD %	Bias %	Tot. RSD %	Bias %
Turbidity	2.46	-4.35	1.08	-3.34

Determinand		Finham Treated sewage		Strensham Trade to controlled		Alveley Treated sewage	
		20%	80%	20%	80%	20%	80%
		% RSD	2.94	0.62	2.94	0.51	2.27
% Rec.	94.62	107.52	94.26	106.56	101.59	108	

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Determinand		Trade effluent (to sewer)	Untreated Sewage	Groundwater	Surface water
		80%	80%	80%	80%
Turbidity	% RSD	0.64	0.5	0.6	0.58
	% Rec.	107.2	104.71	106.52	108.04

Determinand		Clean process water	Dirty process water
		80%	80%
Turbidity	% RSD	0.89	0.59
	% Rec.	107.92	107.32

Uncertainty of Measurement:

The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

Determinand	Uncertainty of Measurement (%)
Turbidity	18.97

References:

Colour and turbidity of waters 1981. Method for the examination of waters and associated materials. HMSO. ISBN: 0117519553.

HACH Turbidimeter Model 2100AN Manual HACH Chemical Co 2000.