

METHOD STATEMENT



Determinand:

Polyoxyethylene non-ionic detergents

Matrix:

Final effluents, Trade to Sewer and Land Leachate.

Principle of Method:

When iodine reagent is added to solutions containing Polyoxyethylene non-ionic detergents, a brown coloured colloid is formed, the intensity of which varies according to the concentration of non-ionic detergent contained in the solution. The absorbance of the brown coloured solution is then measured by spectrophotometer at a wavelength of 480 nm. Concentrations of detergent can be calculated by comparing the absorbance of unknowns with the absorbance values obtained from known concentrations of Triton X100. Measurements are corrected for sample colour and turbidity.

Sampling and Sample Preparation:

Non-Ionic Detergents (NIDs) consist of a range of different chemicals that are degraded by bacterial activity at varying rates. Consequently, NIDs should be analysed as soon as possible to minimise losses.

As detergents are water soluble, all samples should be centrifuged, prior to analysis to separate particulate matter.

Upon shaking, if sample appears to be foamy then analysis should be run on a x10 dilution straight away.

Any samples that are coloured should be manually diluted on x10.

Interferences:

Colour and turbidity within the samples may give a false indication of detergents without correction.

Turbidity interference is removed by centrifuging all samples prior to analysis.

Any sample after dilution, which is still visibly coloured, will be unsuitable for analysis by this method.

Iodine also produces a deep blue colour when it forms a complex with starch solution.

Performance of Method:

Range of Application: 1 - 25mg/l

Limit of Detection: 0.98 mg/l

Normal Reporting Level: 1 mg/l

Determinand	Low Standard			High Standard		
	Conc mg/l	RSD %	Bias%	Conc mg/l	RSD %	Bias%
NIDS	5	5.28%	+2.64%	20	6.24%	-1.27%

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Determinand	Final Effluent		Trade to Sewer		Land leachate	
	RSD %	Rec. %	RSD %	Rec. %	RSD %	Rec. %
NIDS	6.07	109.67	5.96	100.57	4.78	102.37

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 (%)
NIDS	18.34

References:

In house method based upon Iodophor formation