

# METHOD STATEMENT



## Determinand:

Manual determination of True and Apparent Colour.

## Matrix:

Sample Types: Raw, Potable, Surface and Ground waters.

## Principle of Method:

This method uses Camspec 108 spectrophotometer.

Colour may be divided into two categories - true and apparent.

Apparent colour is that colour seen in the presence of suspended matter. Apparent colour is measured directly using a spectrophotometer at a wavelength of 400nm with a path length of 40mm.

True colour is that colour due to dissolved matter in the liquid only. True colour is again a measurement at 400nm and 40mm path length but after the sample has been filtered through a 0.45µm cellulose acetate membrane.

Colour is measured spectrophotometrically at a wavelength of 400nm with units of mg/l Pt/Co.

## Sampling and Sample Preparation:

Samples are normally collected in 500 ml PET bottles. Other size PET or glass bottles are also suitable.

No special preservation is required

If analysis cannot be immediately undertaken, samples should be stored at a temperature of 3±2°C until the day of analysis. Samples should be warmed up to room temperature prior to analysis and analysed within 5 days of the sampling date.

## Interferences

Turbidity will interfere in the determination of true colour.

Filtering the sample through the 0.45µm filter disc will remove most of this interference, but it is possible that particulates smaller than 0.45 µm may still cause interference.

## Performance of Method:

### Range of Application:

LOQ -150 mg/l Pt/Co This range may be extended by sample dilution with deionised water.

COLOUR METER 2981 reporting limits: 2.91 mg/l Pt/Co

COLOUR METER 2982 reporting limits: 1.69 mg/l Pt/Co

COLOUR METER 2983 reporting limits: 2.11 mg/l Pt/Co

COLOUR METER 3038 reporting limits: 0.51 mg/l Pt/Co

All meters are of the same specification, therefore a reporting limit of 3.0 mg/l will be applied to all assets

### Limit of Quantification:

COLOUR METER 2981 - 2.9100 mg/l Pt/Co

COLOUR METER 2982 - 1.6900 mg/l Pt/Co

COLOUR METER 2983 - 2.1100 mg/l Pt/Co

COLOUR METER 3038 - 0.5136 mg/l Pt/Co

### Recoveries of Compounds and Uncertainty of measurement:

COLOUR METER 2981

Sample type	Mean sample result (mg/L)	Mean sample spike result (mg/L)	Spike recovery (%)	Bias (%)
Langsett	0.2481	20.07	99.10	-

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Sample type	Mean sample result (mg/L)	Mean sample spike result (mg/L)	Spike recovery (%)	Bias (%)
Wakefield Tap	0.7368	19.93	95.95	-
Castleford	0.2940	20.02	98.64	-
River Derwent at Elvington	5.2414	23.87	93.14	-
Ainderby steeple	0.0642	20.26	100.97	-
Millipore Elix	-0.1259	20.16	101.45	-
2.5 mg/L Pt/Co	2.5068	-	-	0.27
30 mg/L Pt/Co	30.28	-	-	0.93
120 mg/L Pt/Co	120.0	-	-	0.03

## COLOUR METER 2982

Sample type	Mean sample result (mg/L)	Mean sample spike result (mg/L)	Spike recovery (%)	Bias (%)
Langsett	0.4035	20.08	98.38	-
Wakefield Tap	0.9136	19.97	95.26	-
Castleford	0.4135	20.07	98.30	-
River Derwent at Elvington	5.0103	24.07	95.32	-
Ainderby steeple	0.1792	20.44	101.32	-
Millipore Elix	-0.0603	20.26	101.59	-
2.5 mg/L Pt/Co	2.5150	-	-	0.60
30 mg/L Pt/Co	30.18	-	-	0.61
120 mg/L Pt/Co	119.9	-	-	-0.09

## COLOUR METER 2983

Sample type	Mean sample result (mg/L)	Mean sample spike result (mg/L)	Spike recovery (%)	Bias (%)
Langsett	0.2179	20.03	99.05	-
Wakefield Tap	0.6733	20.09	97.08	-
Castleford	0.0990	20.17	100.34	-
River Derwent at Elvington	5.3274	24.33	95.02	-
Ainderby steeple	-0.1590	20.46	103.1	-
Millipore Elix	-0.3190	20.16	102.41	-
2.5 mg/L Pt/Co	2.3173	-	-	-7.31
30 mg/L Pt/Co	30.13	-	-	0.43
120 mg/L Pt/Co	119.8	-	-	-0.16

## COLOUR METER 3038

Sample type	Mean sample result (mg/L)	Mean sample spike result (mg/L)	Spike recovery (%)
Elvington Treated	2.48	20.80	91.63

### References:

Method is based on: Colour and Turbidity of Waters 1981 ISBN 0117519553.