

# METHOD STATEMENT

**Determinand:**

Formaldehyde

**Matrix:**

Leachates, effluents and wastewaters

**Principle of Method:**

Formaldehyde reacts with acetylacetone, in the presence of an excess of ammonium salt, to form a yellow compound, 3, 5-diacetyl-1, 4-dihydrolutidine. The intensity of colour is proportional to the concentration of free formaldehyde present and is measured using a spectrophotometer set at wavelength 430nm.

**Sampling and Sample Preparation:**

There is no preservative required for formaldehyde analysis. Samples should be analysed as soon as possible after receipt. Samples should be allowed to reach room temperature prior to analysis. Samples are stable for 3 days (EPA 8315A) from sampling

**Interferences:**

Although the konelab corrects for colour and turbidity, excessively yellow/brown samples and excessively turbid samples may cause interference with the determination.

As the colour development conditions are mildly acidic, hexamine yields some formaldehyde within this period, which therefore reacts as free formaldehyde.

**Performance of Method:**

| Determinand  | Range of Application | Normal Reporting Level | LOD         |
|--------------|----------------------|------------------------|-------------|
| Formaldehyde | 0.029 to 2.0 mg/l    | 0.029 mg/l             | 0.0215 mg/l |

| Determinand  | Low standard |        | High standard |        |
|--------------|--------------|--------|---------------|--------|
|              | Tot. RSD %   | Bias % | Tot. RSD %    | Bias % |
| Formaldehyde | 3.52         | 1.01   | 2.47          | 0.76   |

| Determinand  |      | Finham FE | Ground Water | Trade  |
|--------------|------|-----------|--------------|--------|
|              |      | 80%       | 80%          | 80%    |
| Formaldehyde | %RSD | 2.61      | 2.96         | 2.96   |
|              | %Rec | 101.19    | 102.42       | 101.55 |

**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 (%) |
|--------------|--------------------------------|
| Formaldehyde | 8.371                          |

**References:**

Methods for the Examination of Waters and Associated Materials: Formaldehyde, Methanol and Related Compounds in Raw, Waste and Potable Waters 1982 (Tentative Methods). ISBN 0117516902