

METHOD STATEMENT



Determinand:

Airborne concentration of countable fibres

Matrix:

Air

Principle of Method:

A measured volume of air is drawn through a membrane filter, which is subsequently mounted on a microscope slide and rendered transparent. Fibres on a measured area of filter are counted using phase contrast microscopy with Köhler illumination thus giving a number concentration of fibres per unit volume of air.

Sampling and Sample Preparation:

Filters should be handled, prepared and analysed in an area as free from fibre contamination as practicable.

Interferences:

Some types and batches of membrane filters can give high background counts on blank filters. This is addressed by the following

1. Performing blank filter checks of all new filter batches
2. Sampling organisations preparing field blanks for each job or each day of sampling.
3. Performing laboratory blanks with each batch of samples processed.

If too many particles are sampled on the filter, it will prevent or bias the fibre count.

In mining and quarrying, the relatively small aspect ratio used to define a fibre will allow many elongated mineral fragments to be counted.

Performance of Method:

The limit of detection (LOD) is 0.01f/ml if 480L of air (V) has passed through the filter and 200 fields have been counted (F). The LOD is increased as F or V are reduced by the following equation:-

$$\text{LOD} = \frac{96000}{V \times F} \times 0.01$$

The new LOD will be noted on the report.

References:

LAB 30 - Application of ISO/IEC 17025 for Asbestos Sampling and Testing.

Control of Asbestos Regulations 2012. ISBN 9780 111 521083.

HSG 248 – The Analysts Guide for Sampling, Analysis and Clearance Procedures.

