

Method Number: TM 304

Updated: 11/04/2024

Issue Number: 20

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**Method Summary****Asbestos Quantification in Soils****Scope and Range**

This method will be used to determine the amount of asbestos present in soils using gravimetric stages and a sedimentation stage followed by analysis by phase contrast microscopy (PCM or PCOM).

References

HSE Contract Research Report N° 83/1996; Development and validation of an analytical method to determine the amount of asbestos in soils and loose aggregates.

HSG 264: Asbestos: The survey guide (Second edition, published 2012).

HSG 248: Asbestos: The analysts' guide (Second edition, published 2021).

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Principle

Asbestos quantification is a three stage process carried out on a soil.

Stage 1 & 2 are a gravimetric measurement of the asbestos content and stage 3 uses sedimentation followed by examination and fibre counting of a slide using Phase Contrast Microscopy (PCM or PCOM)

Preparation.

For smaller sample volumes, the entire container will be dried.

For larger sample volumes (>500g), the sample will be homogenised and a sub sample removed so that a weight of approximately 500g of dried soil is obtained.

For Detailed Report quantification samples, sample does not require preparation and is analysed "as received".

Analysis

Stage 1 - Visual gravimetric analysis.

For ALS in house accredited method 500g of dried soil is used.

For Detailed Report quantification method the whole 1kg "as received" soil is used.

For the Detailed Report method the asbestos type is also determined in each found ACM.

Stage 2 - Microscopy gravimetric analysis of a subsample.

Stage 3 - A small portion of the soil is prepared using sedimentation method. Prepared slide is analysed using Phase Contrast Microscopy.

The amount of asbestos present in the soil is then calculated from the combined results of all stages and reported as a percentage.

ALS offers four types of Quantification analysis; Basic Asbestos Quantification, Full Asbestos Quantification, Detailed Gravimetric quantification, and Detailed Report Quantification.

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Basic Asbestos Quantification; If gravimetric analysis result reaches a value greater than 0.1%, the test will be stopped.

Detailed Gravimetric analysis; if gravimetric analysis result reaches a value greater than 0.001%, the test will be stopped. If it is lower than 0.001% then analysis continues to stage 3.

Full Asbestos & Detailed Report quantification; all 3 stages are performed.

For the Detailed Report method the following components are reported in addition to gravimetric assessment, PCOM assessment, and total result (as reported for other quantification analysis):

- Total dry mass of sample
- Asbestos type (from PLM analysis) in each ACM type, if required
- Total mass % of amphibole asbestos
- Total mass % of chrysotile asbestos
- Total gravimetric (ACM) % of each ACM type
- Total mass % (or fibres/g) of respirable fibres, if required
- Any anomalies or problems, e.g. clay or chrysotile clumping

The Reporting Limit of Quantification for the analysis is <0.001%.

Should any additional asbestos fibre types be found that weren't identified during the initial asbestos analysis of the soil, then the fibres type will be identified, using our in house asbestos identification method which is based on HSG 248.

Interferences

Some non-asbestos fibres, fine glass fibres in particular, can be mistakenly identified as asbestos during the PCM evaluation. This could lead to elevated levels of asbestos being reported. Should the analyst carrying out stage 1 & 2 of the evaluation find such fibres, then a comment will be reported stating this.