

## Proficiency Testing Scheme

### Asbestos dispersed in water with SEM/EDX technique

#### 1 PURPOSE OF THE PROFICIENCY TESTING

This scheme allows laboratories to demonstrate their competence to determine the concentration of asbestos dispersed in water with the SEM/EDX technique.

Microanalitica organizes Proficiency Testing in accordance with the International Standard ISO/IEC 17043.

#### 2 DESCRIPTION OF THE PROFICIENCY TESTING

The set of test samples consists of polycarbonate filters with a diameter of 25 mm with a porosity of 0,2  $\mu\text{m}$  from a simultaneous sampling of water contaminated with asbestos fibers.

The particulate matter of a water sample taken from a river / water source contaminated by natural asbestos is deposited on the the filters.

Upon delivery of the samples, participants will be provided with the following information:

effective filter diameter;

filtered volume.

The participating laboratory can use the method normally used in its own laboratory, but must comply with the operating procedures described below:

the operating conditions of the SEM must allow the observation and EDX microanalysis of asbestos fibers with a diameter of 0.1  $\mu\text{m}$ ;

magnifications (on screen): 4000x;

acceleration voltage: from 15 to 30 kV;

examine at least 1  $\text{mm}^2$ , but it is possible to finish the count even when the count of 60 asbestos fibers is reached;

all asbestos fibers with length > 5  $\mu\text{m}$  and with length / diameter ratio > 3: 1 must be counted;

asbestos fibers or bundles of asbestos with a diameter > 3  $\mu\text{m}$  must also be counted;

bundles of asbestos fibers must be counted as 1 asbestos fiber;

randomly oriented asbestos fibers in clusters, if sufficiently distinguishable, must be counted as single asbestos fibers;

the asbestos fibers in contact with particles > 3  $\mu\text{m}$  must also be counted.

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The homogeneity test is carried out according to the procedures illustrated in ISO 13528: 2015 point 6.1.

Each laboratory receives a filter from the filter set whose homogeneity has been verified.

The laboratory, for the analysis, can use the method normally used in its laboratory with the SEM / EDX technique.

The result must be expressed in asbestos fibers/mm<sup>2</sup>.

It is also necessary to indicate, in case of asbestos presence, the type of asbestos found.

### 3 FINAL REPORT OF THE PROFICIENCY TESTING EVALUATION

To assign the value of airborne asbestos expressed in asbestos fibers/mm<sup>2</sup>, Microanalitica Srl follows the instructions illustrated in point 5.3.1.2 of the ISO 13528: 2015 standard where the robust average value of the results of the  $x_{pt}$  participants is taken into account.

In the absence in ISO 13528: 2015 of a performance evaluation method for tests with asymmetrical trend of distribution of values, Microanalitica Srl adopts its own evaluation of the performance of laboratories adapted to the Poisson distribution.

This performance evaluation has been defined with the symbol  $z_p$ .

The  $z_p$  score number can be both positive and negative, a negative  $z_p$  indicates that the participant's result is lower than the assigned value; conversely, a positive  $z_p$  indicates that the result is greater than the assigned value.

Interpretation of the  $z_p$  score:

$|z_p| \leq 2,0$  indicates "satisfactory" performance and does not generate any signal

$2,0 < |z_p| \leq 3,0$  indicates "questionable" performance (warning sign - W)

$|z_p| > 3,0$  indicates "unsatisfactory" performance (allarm signal - A)

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#### **4 CONFIDENTIALITY**

In order to ensure the confidentiality of the results, the laboratory that participates in Proficiency Testing will be assigned of a number that uniquely identifies it in the PT Final Report.

The identification number is communicated to the email address indicated on Proficiency Testing application form.

Microanalitica Srl guarantees the confidentiality of all the informations acquired by the participants.