

Certificate

The testing laboratory

ANALITICA S.a.s di Francesco Dellisanti & C

(Lab code: IMA-QW-055)

successfully analysed the reference sample of IMA Europe. The individual results are listed in the appendix of this certificate.

Evaluation of the performance of laboratories for the determination of the size weighted fine fraction (SWFF)

A method has been developed in the industrial minerals industry for the purpose of determining the “size weighted relevant fine fraction” within the bulk material. It has been used in the industry and by institutes previously under the acronym SWeRF. The method only measures a fraction of the hazardous substance (e.g. crystalline silica) present in the material. Further processing (intentional or otherwise) might change the size distribution and the proportion of the fine fraction of e.g., crystalline silica that is aerosolized.

The method is now accepted as an European standard (EN 17289:2020 “Characterization of bulk materials – Determination of size-weighted fine fraction and crystalline silica content”).

A detailed overview of the method is given in Pensis, Luetzenkirchen & Friede („SWeRF—A Method for Estimating the Relevant Fine Particle Fraction in Bulk Materials for Classification and Labelling Purposes, *Ann. Occup. Hyg.*, 2013, 1–11).

In the laboratory evaluation by IMA Europe the characteristic value of the size weighted fine fraction (SWFF) in a reference sample of IMA Europe must be determined according to EN 17289-1: 2020.

The reference sample is a pure quartz flour. In this case the SWFF is equal to the size weighted fine fraction of crystalline silica (SWFF_{cs}).

The analyses must be done by the calculation method (EN 17289-2: 2020) based on the particle size distribution analysed by laser diffraction and/or Sedigraph analysis and/or by sedimentation method (EN 17289-3: 2020).

Organisation and execution on behalf of IMA Europe Metrology Working Group

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Frechen, 30.08.2022

Appendix to the certificate for the participation in the round robin for the Evaluation of the performance of laboratories for the determination of the size weighted fine fraction for the laboratory

ANALITICA S.a.s di Francesco Dellisanti & C

Method	Assigned value X_{ref}	Assigned standard deviation σ_{ref}	Laboratory value X_{Lab}	Z-Score z	Rating
Sedimentation	39.8 mass-%	2.45 mass-%	39.3 mass-% [#]	0.19	passed
Laser diffraction (Fraunhofer)	38.3 mass-%	3.62 mass-%			
Laser diffraction (Mie)	38.1 mass-%	3.77 mass-%			
Sedigraph	39.0 mass-%	2.46 mass-%			
All methods	38.7 mass-%	3.24 mass-%			

[#]The analysis was carried out in 05/2015

The assigned values were determined in 2011/11 in a “Round Robin Test to Establish a SWeRF Reference Sample”, organized by the IMA Europe Metrology Working Group.

The evaluation (rating) based on the z score which is calculated by

$$Z = (X_{Lab} - X_{ref}) / \sigma$$

according to DIN EN ISO/IEC 1743 “Conformity assessment – General requirements for proficiency testing” annex B.3.