
**Workplace air — Guidance for the
measurement of respirable crystalline
silica**

*Air des lieux de travail — Lignes directrices pour le mesurage de la
fraction alvéolaire de la silice cristalline*



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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 24095 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 2, *Workplace atmospheres*.

Introduction

Respirable crystalline silica (RCS) is a hazard to the health of workers in many industries through exposure by inhalation. Industrial hygienists and other public health professionals need to determine the effectiveness of measures taken to control workers' exposure. Taking samples of air during a work activity and then measuring the amount of RCS present is often done to assess the exposure of an individual, the effectiveness of their respiratory protection or effectiveness of other controls. Studies have found significant problems can be encountered if procedures to ensure the quality of RCS measurements are not followed. In addition, there is interest in accurately measuring RCS at lower levels where the variability of measurements is poorer. If proper controls to limit bias and measurement variability are not employed, a reasonable measurement uncertainty cannot be achieved and usefulness of RCS measurements to make informed decisions to protect worker health is reduced. This International Standard is intended to be of benefit to those involved in the determination of RCS in the workplace, e.g. agencies concerned with health and safety at work; industrial hygienists; safety and health professionals; analytical laboratories; industrial users and their workers. Readers should be aware that in some countries there are legal requirements for the quality assurance of these measurements.

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Workplace air — Guidance for the measurement of respirable crystalline silica

1 Scope

This International Standard gives guidelines for the quality assurance of measurements of respirable crystalline silica in air using direct on-filter or indirect X-ray diffraction and infrared analysis methods. The scope of this International Standard includes the following crystalline silica polymorphs: quartz, cristobalite, and tridymite.

These guidelines are also relevant to the analysis of filters obtained from dustiness measurements in accordance with EN 15051^[6].

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 7708, *Air quality — Particle size fraction definitions for health-related sampling*

ISO 15767, *Workplace atmospheres — Controlling and characterizing uncertainty in weighing collected aerosols*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

EN 482:2006, *Workplace atmospheres — General requirements for the performance of procedures for the measurement of chemical agents*

EN 689, *Workplace atmospheres — Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy*

EN 1232:1997, *Workplace atmospheres — Pumps for personal sampling of chemical agents — Requirements and test methods*

EN 12919, *Workplace atmospheres — Pumps for the sampling of chemical agents with a volume flow rate over 5 l/min — Requirements and test methods*

EN 13205:2001, *Workplace atmospheres — Assessment of performance of instruments for measurement of airborne particle concentrations*

EN/TR 15230, *Workplace atmospheres — Guidance for sampling of inhalable, thoracic and respirable aerosol fractions*