
**Workplace atmospheres — Controlling
and characterizing errors in weighing
collected aerosols**

*Atmosphères des lieux de travail — Contrôle et caractérisation des
erreurs de pesée des aérosols collectés*



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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.

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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 15767 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 2, *Workplace atmospheres*.

Introduction

Assessment of airborne aerosol hazards in the occupational setting entails sampling onto a collection medium, followed by analysis of the collected material. The result is generally an estimated concentration of a hazardous material in the air. The accuracy of such estimates depends on several factors, one of which relates to the specific type of analysis employed.

This International Standard deals with a specific type of analysis which finds the most general application in the sampling of aerosols, namely the weighing of sampled material. Gravimetric analysis, though apparently simple, is subject to errors from instability in the mass of the sampling medium and other elements which must be weighed. An example is provided by aerosol samplers designed to collect particles so as to agree with the inhalable aerosol sampling convention. For some sampler types, filter and cassette are weighed together to make estimates. Therefore, if the cassette, for example, absorbs or loses water between the weighings required for a concentration estimation, then errors may arise. This International Standard describes such potential errors and provides solutions for their minimization.

Workplace atmospheres — Controlling and characterizing errors in weighing collected aerosols

1 Scope

This International Standard provides recommendations for controlling the analytical uncertainty associated with aerosol collection medium instability, where collection medium or substrate includes any article used to collect particles (e.g. filter or foam material) as well as those supporting elements which must be analysed by weighing.

This International Standard is applicable to results compiled both from the literature and, if necessary and feasible, through laboratory experiment. Expected errors associated with given aerosol capture methods are quantified where possible. Recommendations as to materials to be used are given. Means of controlling or correcting errors arising from instability are provided. Recommendations for the weighing procedure are given. A procedure for estimating weighing errors is described. Finally, recommendations are given for the reporting of measured masses.

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*

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

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

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

substrate

aerosol sampling filter, foam, etc., together with whatever mounting is weighed as a single item

NOTE As an example of the converse, the 25-mm or 37-mm plastic filter cassette often used for “total dust” sampling in either its closed-face or open-face version is *not* part of the substrate in the definition above, since it is not weighed.