



International
Standard

ISO 22262-2

Air quality — Bulk materials —

Part 2:

**Quantitative determination of
asbestos by gravimetric and
microscopical methods**

Qualité de l'air — Matériaux solides —

*Partie 2: Dosage quantitatif de l'amiante en utilisant les
méthodes gravimétrique et microscopique*

**Second edition
2026-01**

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 3, *Ambient atmospheres*.

This second edition cancels and replaces the first edition (ISO 22262-2:2014), which has been technically revised.

The main changes are as follows:

- procedures for determination of asbestos mass fraction and numerical fibre concentration in talc and other mineral powders have been added;
- an alternate procedure, following gravimetric matrix reduction, for determination of the asbestos mass fraction on filters that exhibit only trace levels of fibres has been added.

A list of all parts in the ISO 22262 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

In the past, asbestos was used in a wide range of products. Materials containing high proportions of asbestos were used in buildings and in industry for fireproofing, thermal insulation and acoustic insulation. Asbestos was also used to reinforce materials, to improve fracture and bending characteristics. A large proportion of the asbestos produced was used in asbestos-cement products. These include flat sheets, tiles and corrugated sheets for roofing, pipes and open troughs for collecting rainwater, and pressure pipes for supplying potable water. Asbestos was also incorporated into products such as decorative coatings and plasters, glues, sealants and resins, floor tiles, gaskets and road paving. In some products asbestos was incorporated to modify rheological properties, for example in the manufacture of ceiling tile panels and oil drilling muds.

Three varieties of asbestos found extensive commercial application. Chrysotile accounted for approximately 95 % of consumption, and therefore this is the variety that is encountered most frequently during analysis of samples. Amosite and crocidolite accounted for almost all of the balance, with a very small contribution from anthophyllite. Amosite was generally used as fireproofing or in thermal insulation products. Crocidolite was also used as fireproofing and thermal insulation products, but because it is highly resistant to acids, it also found application as a reinforcing fibre in acid containers such as those used for lead-acid batteries, and in some gaskets. Materials containing commercial anthophyllite are relatively rare, but it also has been used as a filler and reinforcing fibre in composite materials, and as a filtration medium. Tremolite asbestos and actinolite asbestos were not extensively used commercially, but they sometimes occur as contamination of other commercial minerals. Richterite asbestos and Winchite asbestos occur at mass fractions between 0,01 % and 6 % in vermiculite formerly mined at Libby, Montana, USA. Vermiculite from this source was widely distributed and is often found as loose fill insulation and as a constituent in a range of construction materials and fireproofing.

While the asbestos mass fraction in some products can be very high and in some cases approach 100 %, in other products the mass fractions of asbestos used were significantly lower and often between 1 % and 15 %. In some ceiling tile panels, the mass fraction of asbestos used was close to 1 %. There are only a few known materials in which the asbestos mass fraction used was less than 1 %. Some adhesives, sealing compounds and fillers were manufactured in which asbestos mass fractions were lower than 1 %. There are no known commercially manufactured materials in which any one of the common asbestos varieties (chrysotile, amosite, crocidolite or anthophyllite) was intentionally added at mass fractions lower than 0,1 %.

ISO 22262-1 specifies procedures for collection of samples and qualitative analysis of commercial bulk materials for the presence of asbestos. A visual estimate of the asbestos mass fraction can also be made. While it is recognized that the accuracy and reproducibility of such estimates is very limited, for many of the types of materials being analysed these estimates are sufficient to establish that the mass fraction of asbestos in a manufactured product is, without doubt, well above any of the regulatory limits.

Given the wide range of matrix materials into which asbestos was incorporated, microscopy alone cannot provide reliable analyses of all types of asbestos-containing materials in untreated samples. This document extends the applicability and limit of detection of microscopical analysis by the use of simple procedures such as ashing, acid treatment, sedimentation and heavy liquid density separation prior to microscopical examination. These procedures should be used when the asbestos concentration has been estimated to be very low, by using ISO 22262-1.

This document also specifies procedures for determination of the numerical concentration of mineral fibres in mineral powders such as talc, wollastonite, sepiolite, attapulgite (palygorskite), calcite or dolomite, and commercial products containing these minerals.

A prerequisite for use of this document and subsequent parts of the ISO 22262 series is that the sample first be examined according to ISO 22262-1 by knowledgeable analysts who are familiar with the specified analytical procedures.^{[7][8][9][10]}

Air quality — Bulk materials —

Part 2:

Quantitative determination of asbestos by gravimetric and microscopical methods

1 Scope

This document specifies procedures for quantification of asbestos mass fractions below approximately 5 %, and for quantitative determination of asbestos in vermiculite, other industrial minerals and commercial products that incorporate these minerals.

This document is applicable to the quantitative analysis of:

- a) any material for which the estimate of asbestos mass fraction obtained using ISO 22262-1 is deemed to be of insufficient precision to reliably classify the regulatory status of the material (i.e. whether the material is subject to asbestos regulations in the particular jurisdiction) or for which it is considered necessary to obtain further evidence to demonstrate the absence of asbestos;
- b) resilient floor tiles, asphaltic materials, roofing felts and any other materials in which asbestos is embedded in an organic matrix;
- c) wall and ceiling plasters, with or without aggregate;
- d) vermiculite and commercial products containing vermiculite;
- e) mineral powders such as talc, wollastonite, sepiolite, attapulgite (palygorskite), calcite or dolomite, and commercial products containing these minerals.

This document primarily applies to samples in which asbestos has been identified at estimated mass fractions lower than approximately 5 % by sample mass. This document is also applicable to samples that can contain asbestos at low mass fractions incorporated into matrix material such that microscopical examination of the untreated sample is either not possible or unreliable.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 13794:2019, *Ambient air — Determination of asbestos fibres — Indirect-transfer transmission electron microscopy method*

ISO 14887, *Sample preparation — Dispersing procedures for powders in liquids*

ISO 22262-1, *Air quality — Bulk materials — Part 1: Sampling and qualitative determination of asbestos in commercial bulk materials*

3 Terms and definitions

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