
**Workplace air — Analysis of
respirable crystalline silica by Fourier-
Transform Infrared spectroscopy**

*Air des lieux de travail — Mesure de la fraction alvéolaire de la silice
cristalline par spectrométrie infrarouge*

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO 19087:2018

<https://standards.iteh.ai/catalog/standards/iso/3d8879a2-e83e-4a4e-8336-5a4fadbddeac/iso-19087-2018>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO 19087:2018

<https://standards.iteh.ai/catalog/standards/iso/3d8879a2-e83e-4a4e-8336-5a4fadbddeac/iso-19087-2018>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative reference	1
3 Terms and definitions	1
4 Principle	2
5 Apparatus, equipment and reagents	3
6 Sampling	7
6.1 Sample collection	7
6.2 Transport	8
7 Preparation	9
7.1 Preparation of calibration samples	9
7.1.1 Preparation of direct-on-filter calibration samples	9
7.1.2 Preparation of redeposition calibration samples	10
7.1.3 Preparation of KBr pellet calibration samples	10
7.2 Preparation of the collection substrate for indirect analysis	11
7.2.1 PVC, MCE and polycarbonate filters	11
7.2.2 Cellulose nitrate filters	12
7.2.3 Polyurethane foams	12
7.3 Redeposition onto analysis filter	13
7.3.1 Crucibles from the furnace	13
7.3.2 Bottles or beakers from a plasma asher	13
7.4 Preparation of KBr pellets	14
8 Analytical procedure	14
8.1 Gravimetric analysis for respirable dust	14
8.2 Fourier-Transform Infrared analysis	15
8.2.1 Background correction	15
8.2.2 Measurement	15
8.3 Calibration	15
9 Evaluation of Fourier-Transform Infrared spectra	17
9.1 General aspects	17
9.2 RCS quantification using peak height	17
9.3 RCS quantification using peak integral	18
9.3.1 Determination of the absorption in the range of the analytical bands ^{[12][14]}	18
9.3.2 Subtraction of a reference spectrum ^[20]	18
9.3.3 Other evaluation methods	20
9.4 Interferences	20
10 Calculation of results	20
10.1 Concentration of RCS	20
11 Performance characteristics	21
11.1 Limit of detection	21
11.2 Limits of quantification	21
11.3 Uncertainty	21
11.4 Differences between samplers	21
12 Test report	22
Annex A (normative) Sample treatment strategies for the removal of interferences	23
Annex B (informative) Differences between samplers (cyclones and other types)	24
Annex C (informative)	26

Annex D (normative) Examples of dust collection substrates and analysis filters	28
Bibliography	29

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

ISO 19087:2018

<https://standards.itih.ai/catalog/standards/iso/3d8879a2-e83e-4a4e-8336-5a4fadbddeac/iso-19087-2018>

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 documents 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 2, *Workplace air*.

ISO 19087:2018

<https://standards.iteh.ai/catalog/standards/iso/3d8879a2-e83e-4a4e-8336-5a4fadbddeac/iso-19087-2018>