

Second edition
2021-03

Protective clothing — Protection against liquid chemicals — Measurement of repellency, retention, and penetration of liquid pesticide formulations through protective clothing materials

*Vêtements de protection — Protection contre les produits chimiques
liquides — Mesurage de la répulsion, de la rétention et de la
pénétration des formulations de pesticides liquides à travers les
matériaux des vêtements de protection*



Reference number
ISO 22608:2021(E)

© ISO 2021



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

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
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

This is a preview of ISO 22608:2021. Click here to purchase the full version from the ANSI store.

| Contents | | Page |
|--|--|-----------|
| Foreword | | iv |
| Introduction | | v |
| 1 Scope | | 1 |
| 2 Normative references | | 1 |
| 3 Terms and definitions | | 1 |
| 4 Principle | | 3 |
| 5 Apparatus | | 3 |
| 5.1 Apparatus and materials for contamination of test specimen..... | | 3 |
| 5.2 Apparatus for analysis using Method A..... | | 4 |
| 5.3 Apparatus and materials for analysis using Method B..... | | 4 |
| 6 Test specimens | | 7 |
| 7 Selection of analytical technique | | 8 |
| 8 Preparation of test apparatus and materials | | 8 |
| 8.1 Calibration of the pipettor..... | | 8 |
| 8.1.1 Calibration with distilled water..... | | 8 |
| 8.1.2 Calibration with test liquid..... | | 8 |
| 8.2 Preparation of test assembly..... | | 9 |
| 8.3 Conditioning of test specimen..... | | 9 |
| 8.4 Testing temperature..... | | 9 |
| 9 Method A | | 9 |
| 9.1 Contamination of test specimen..... | | 9 |
| 9.2 Calculation..... | | 10 |
| 9.2.1 Determination of masses of test liquid in each layer..... | | 10 |
| 9.2.2 Mass balance..... | | 10 |
| 9.2.3 Calculation of repellency, retention, and penetration..... | | 10 |
| 10 Method B | | 10 |
| 10.1 Verification of the amount of active ingredient in the test liquid applied..... | | 10 |
| 10.2 Determination of extraction efficiency..... | | 11 |
| 10.3 Testing of blanks..... | | 11 |
| 10.4 Contamination of test specimen..... | | 11 |
| 10.5 Extraction of test liquids..... | | 11 |
| 10.6 Calculation..... | | 12 |
| 10.6.1 Determination of the masses of active ingredient in each layer..... | | 12 |
| 10.6.2 Calculation of extraction efficiency..... | | 12 |
| 10.6.3 Calculation of repellency, retention, and penetration..... | | 12 |
| 11 Repeatability and reliability | | 12 |
| 12 Test report | | 12 |
| Annex A (informative) Interlaboratory test data | | 14 |
| Bibliography | | 16 |

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 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 94, *Personal safety — Personal protective equipment*, Subcommittee SC 13, *Protective clothing*.

This second edition cancels and replaces the first edition (ISO 22608:2004), which has been technically revised. The main changes compared to the previous edition are as follows:

- thickness of the specimen holder;
- test condition;
- extraction procedure options and extraction efficiency requirement;
- inclusion of an [Annex A](#) for repeatability and reliability.

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.

This is a preview of ISO 22608:2021. [Click here to purchase the full version from the ANSI store.](#)

Introduction

The health and safety of workers involved in the mixing, loading and application of liquid pesticides can be affected by dermal exposure to liquid pesticide formulations. Use of protective clothing can assist in minimizing the danger of contact with potentially harmful pesticides

The movement of liquid pesticides through these materials is primarily due to penetration through spaces between fibres and interstices between yarns. As these materials provide protection either by repelling or retaining liquid pesticides, the measurement of these properties is also important. This test method is used to measure the repellency, retention, and penetration of liquid pesticides through protective clothing materials.

For repeatability and reliability, see [Annex A](#).