

MAURITIAN  
STANDARD

MS ISO  
22608:2021

First edition  
2023-04-21

---

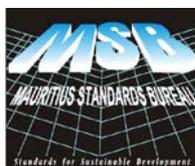
---

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

ICS 13.340.10

---

---



**Mauritius Standards Bureau  
Moka**

## National foreword

This Mauritian Standard is identical with the International Standard **ISO 22608:2021**, *Protective clothing — Protection against liquid chemicals — Measurement of repellency, retention, and penetration of liquid pesticide formulations through protective clothing materials*.

It was adopted by the Mauritius Standards Bureau on the recommendation of the **Personal Protective Equipment Standards Committee**. The standard was approved by the **Standards Council** on 31 March 2023 and notified in the Government Gazette on **21 April 2023\***.

**\*General notice No. 529 of 2023**



**COPYRIGHT PROTECTED DOCUMENT**

© MSB 2023

All rights reserved. Unless otherwise specified, 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 permission in writing from Mauritius Standards Bureau at the address below

*Mauritius Standards Bureau  
Villa Road  
Moka  
Mauritius*

*Telephone + (230) 433 3648  
Fax + (230) 433 5051/ 433 5150  
E-mail msb@intnet.mu*

# Contents

Page

Foreword	iv
Introduction	v
<b>1 Scope</b>	<b>1</b>
<b>2 Normative references</b>	<b>1</b>
<b>3 Terms and definitions</b>	<b>1</b>
<b>4 Principle</b>	<b>3</b>
<b>5 Apparatus</b>	<b>3</b>
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
<b>6 Test specimens</b>	<b>7</b>
<b>7 Selection of analytical technique</b>	<b>8</b>
<b>8 Preparation of test apparatus and materials</b>	<b>8</b>
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
<b>9 Method A</b>	<b>9</b>
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
<b>10 Method B</b>	<b>10</b>
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
<b>11 Repeatability and reliability</b>	<b>12</b>
<b>12 Test report</b>	<b>12</b>
<b>Annex A (informative) Interlaboratory test data</b>	<b>14</b>
<b>Bibliography</b>	<b>16</b>

## 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](http://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](http://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](http://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](http://www.iso.org/members.html).

## 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](#).

PREVIEW

PREVIEW

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

## 1 Scope

This document specifies a test method to measure the repellency, retention and penetration of a known volume of liquid pesticide when applied to a protective clothing material. No external hydrostatic or mechanical pressure is applied to the test specimen during or after the application of the liquid pesticide.

The degree of contamination depends on numerous factors such as the type of exposure, application technique, and pesticide formulation. As the level of exposure can vary considerably, this method is designed to rate the relative performance of personal protective equipment (PPE) materials at two levels of contamination. Low level of contamination is achieved by applying 0,1 ml of liquid formulation and high level by applying 0,2 ml.

This test method does not measure the resistance to permeation or degradation.

This test method is suitable for field strength and concentrated pesticide formulations. This method may not be suitable for testing protective clothing materials against volatile pesticide formulations.

This document is applicable to the evaluation of materials that are new or those that have undergone treatment such as laundering or simulated abrasion. Details of the treatment shall be reported. This test method can also be used to determine the resistance provided by protective clothing materials against penetration of new pesticide formulations.

## 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 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

## 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>