

---

---

**Rubber hoses for agricultural spraying**

*Tuyaux en caoutchouc pour pulvérisation agricole*

Sample Document

get full document from [standards.iteh.ai](https://standards.iteh.ai)



Reference number  
ISO 1401:2016(E)

© ISO 2016

# Sample Document

get full document from [standards.iteh.ai](https://standards.iteh.ai)



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2016, Published in Switzerland

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 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  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
[copyright@iso.org](mailto:copyright@iso.org)  
[www.iso.org](http://www.iso.org)

# Contents

	Page
Foreword .....	iv
<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 Classification</b> .....	<b>1</b>
<b>5 Construction and materials</b> .....	<b>2</b>
<b>6 Dimensions and tolerances</b> .....	<b>2</b>
6.1 Nominal bore and inside diameter .....	2
6.2 Length .....	2
6.3 Minimum thickness of lining and cover .....	2
6.3.1 Types A and B .....	2
6.3.2 Type C .....	2
<b>7 Physical requirements on samples taken from the hose or from moulded sheets of equivalent vulcanization</b> .....	<b>2</b>
7.1 Tensile strength and elongation at break of rubber lining and cover .....	2
7.2 Requirements after immersion in fluid .....	3
7.3 Accelerated ageing .....	3
<b>8 Physical requirements on finished hoses</b> .....	<b>3</b>
8.1 Change in dimensions .....	3
8.2 Hydrostatic requirements .....	3
8.2.1 Hydrostatic pressure .....	3
8.2.2 Hydrostatic testing after ageing in liquid .....	4
8.3 Bending test requirements .....	4
8.4 Adhesion .....	4
8.5 Resistance to ozone .....	4
<b>9 Frequency of testing</b> .....	<b>4</b>
<b>10 Type testing</b> .....	<b>4</b>
<b>11 Test report or certificate</b> .....	<b>4</b>
<b>12 Marking</b> .....	<b>4</b>
<b>Annex A (normative) Type tests and routine tests</b> .....	<b>6</b>
<b>Annex B (informative) Productions acceptance tests</b> .....	<b>7</b>
<b>Bibliography</b> .....	<b>8</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 on 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](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

This third edition cancels and replaces the second edition (ISO 1401:1999), which has been technically revised.

The main changes are the following:

- the word “agropharmaceutical” has been replaced with “agricultural chemicals”;
- [Clause 2](#) has been updated: ISO 471 and ISO 1746 have been deleted and replaced by ISO 23529 and ISO 10619-1;
- [7.2](#) has been amended to update the test requirements;
- [Clauses 9](#) and [10](#), describing frequency of testing, routine tests, type tests and production acceptance tests, have been added;
- Clause 8 has been renumbered as [Clause 12](#): Marking b) and e) has been amended;
- [Annexes A](#) and [B](#) have been introduced in accordance with ISO/TC 45/SC 1 guide 976-rev. 7:2013;
- [Clause 11](#), describing a test report or certificate supplied on request of purchaser, has been added.

# Rubber hoses for agricultural spraying

## 1 Scope

This document specifies requirements for three types of flexible rubber hose for pressure spraying of agricultural chemicals and/or fertilizer products within a temperature range of  $-10\text{ °C}$  to  $+60\text{ °C}$ .

## 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 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 1307, *Rubber and plastics hoses — Hose sizes, minimum and maximum inside diameters, and tolerances on cut-to-length hoses*

ISO 1402, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing*

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 4671, *Rubber and plastics hoses and hose assemblies — Methods of measurement of the dimensions of hoses and the lengths of hose assemblies*

ISO 7326:2006, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8033, *Rubber and plastics hoses — Determination of adhesion between components*

ISO 10619-1, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 1: Bending tests at ambient temperature*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8330 apply.

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

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

## 4 Classification

Three types of hose are specified as follows:

- **Type A:** Maximum working pressure of 1,0 MPa (10 bar);
- **Type B:** Maximum working pressure of 4,0 MPa (40 bar);
- **Type C:** Maximum working pressure of 6,0 MPa (60 bar).