

Plastics hoses and hose assemblies - Textile-reinforced types for hydraulic applications - Specification (ISO 3949:2018)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 3949:2018 sisaldab Euroopa standardi EN ISO 3949:2018 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 3949:2018 consists of the English text of the European standard EN ISO 3949:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.07.2018.	Date of Availability of the European standard is 25.07.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 23.040.70, 23.100.40, 83.140.40

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

Plastics hoses and hose assemblies - Textile-reinforced
types for hydraulic applications - Specification (ISO
3949:2018)

Tuyaux et flexibles en plastique - Types hydrauliques
avec armature textile - Spécifications (ISO 3949:2018)

Kunststoffschläuche und -schlauchleitungen -
Textilverstärkte Typen für hydraulische Anwendungen
- Spezifikationen (ISO 3949:2018)

This European Standard was approved by CEN on 6 July 2018.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO 3949:2018) has been prepared by Technical Committee ISO/TC 45 “Rubber and rubber products” in collaboration with Technical Committee CEN/TC 218 “Rubber and plastics hoses and hose assemblies” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2019, and conflicting national standards shall be withdrawn at the latest by January 2019.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 3949:2014.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 3949:2018 has been approved by CEN as EN ISO 3949:2018 without any modification.

Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Classification	2
5 Materials and construction	2
5.1 Hoses	2
5.2 Hose assemblies	2
6 Dimensions and tolerances	2
6.1 Diameters	2
6.2 Concentricity	3
7 Physical properties	3
7.1 Hydrostatic requirements	3
7.2 Change in length	4
7.3 Minimum bend radius	4
7.4 Resistance to impulse	5
7.5 Leakage of hose assemblies	5
7.6 Cold flexibility	5
7.7 Ozone resistance	5
7.8 Electrical conductivity	5
7.9 Fluid resistance	6
7.9.1 Test pieces	6
7.9.2 Oil resistance	6
7.9.3 Water-based fluid resistance	6
7.9.4 Water resistance	6
7.10 Visual examination	6
8 Frequency of testing	6
9 Designation	6
10 Marking	7
10.1 Hoses	7
10.2 Hose assemblies	7
11 Recommendations for packing and storage	7
12 Recommendations for length of supplied hoses and tolerances on lengths of hose assemblies	7
13 Test certificate	7
Annex A (normative) Type and routine testing of hoses	8
Annex B (informative) Production testing	9
Annex C (informative) Recommendations for lengths of supplied hoses and tolerances on lengths of hose assemblies	10
Annex D (normative) Test method for electrical conductivity	11
Bibliography	12

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 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

This fifth edition cancels and replaces the fourth edition (ISO 3949:2009), which has been technically revised. The main changes compared to the previous edition are as follows:

- Clause 1 has been updated to be more precise;
- Requirements for type R8, hose nominal size 8 have been added in [Tables 1, 3, 4](#) and [5](#);
- Reference to method A1 of ISO 10619-1:2017, has been added in [7.3](#);
- Additional requirement for marking of hoses has been added in [10.1](#);
- Reference to ISO 17165-1 has been made in [10.2](#).

Plastics hoses and hose assemblies — Textile-reinforced types for hydraulic applications — Specification

1 Scope

This document specifies requirements for three types of textile-reinforced thermoplastics hose and hose assembly of nominal size from 3,2 to 25. Each type is divided into two classes dependent on electrical conductivity requirements.

They are suitable for use with:

- oil-based hydraulic fluids HH, HL, HM, HR and HV as defined in ISO 6743-4 at temperatures ranging from $-40\text{ }^{\circ}\text{C}$ to $+93\text{ }^{\circ}\text{C}$;
- water-based fluids HFC, HFAE, HFAS and HFB as defined in ISO 6743-4 at temperatures ranging from $0\text{ }^{\circ}\text{C}$ to $+60\text{ }^{\circ}\text{C}$
- water at temperatures ranging from $0\text{ }^{\circ}\text{C}$ to $+60\text{ }^{\circ}\text{C}$.

This document does not include requirements for end fittings. It is limited to the performance of hoses and hose assemblies.

NOTE It is the responsibility of the user, in consultation with the hose manufacturer, to establish the compatibility of the hose with the fluid to be used.

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 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 6743-4, *Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (Hydraulic systems)*

ISO 6803, *Rubber or plastics hoses and hose assemblies — Hydraulic-pressure impulse test without flexing*

ISO 7326:2016, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary*

ISO 10619-1:2017, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 1: Bending tests at ambient temperature*

ISO 10619-2:2017, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 2: Bending tests at sub-ambient temperatures*

ISO 17165-1, *Hydraulic fluid power — Hose assemblies — Part 1: Dimensions and requirements*