

SLOVENSKI STANDARD oSIST prEN ISO 7840:2020

01-junij-2020

Mala plovila - Proti ognju odporne cevi za gorivo (ISO/DIS 7840:2020)

Small craft - Fire-resistant fuel hoses (ISO/DIS 7840:2020)

Kleine Wasserfahrzeuge - Feuerwiderstandsfähige Kraftstoffschläuche (ISO/DIS 7840:2020)

Petits navires - Tuyaux souples pour carburant résistants au feu (ISO/DIS 7840:2020) (standards.iteh.ai)

Ta slovenski standard je istoveten z: prEN ISO 7840

kSIST FprEN ISO 7840:2020

https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1-

6e372654fd81/ksist-fbren-iso-7840-2020

ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
47.020.30	Sistemi cevi	Piping systems
47.080	Čolni	Small craft

oSIST prEN ISO 7840:2020 en,fr,de

oSIST prEN ISO 7840:2020

iTeh STANDARD PREVIEW (standards.iteh.ai)

kSIST FprEN ISO 7840:2020 https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1-6e372654fd81/ksist-fpren-iso-7840-2020

DRAFT INTERNATIONAL STANDARD ISO/DIS 7840

ISO/TC **188** Secretariat: **SIS**

Voting begins on: Voting terminates on:

2020-03-10 2020-06-02

Small craft — Fire-resistant fuel hoses

Petits navires — Tuyaux souples pour carburant résistants au feu

ICS: 47.080

iTeh STANDARD PREVIEW (standards.iteh.ai)

kSIST FprEN ISO 7840:2020 https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1-6e372654fd81/ksist-fpren-iso-7840-2020

THIS DOCUMENT IS A DRAFT CIRCULATED FOR COMMENT AND APPROVAL. IT IS THEREFORE SUBJECT TO CHANGE AND MAY NOT BE REFERRED TO AS AN INTERNATIONAL STANDARD UNTIL PUBLISHED AS SUCH.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

This document is circulated as received from the committee secretariat.

ISO/CEN PARALLEL PROCESSING



Reference number ISO/DIS 7840:2020(E)

iTeh STANDARD PREVIEW (standards.iteh.ai)

<u>kSIST FprEN ISO 7840:2020</u> https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1-6e372654fd81/ksist-fpren-iso-7840-2020



COPYRIGHT PROTECTED DOCUMENT

© ISO 2020

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

Scope	Coı	Contents		
2 Normative references 1 3 Terms and definitions 1 4 General requirements 2 5 Hose inner diameter 2 6 Physical tests on finished hose 2 6.1 General 2 6.2 Test liquids 2 6.3 Bursting pressure 3 6.4 Vacuum-collapse test 3 6.5 Volume change in test liquids 3 6.6 Mass reduction of test hose 3 6.7 Fire resistance 3 6.8 Effect of ozone 4 6.10 Cold-flex test 4 6.11 Abrasion test 4 6.12 Dry heat resistance 4 6.13 Oil resistance test ANDARD PREVIEW 5 6.14 Adhesion test 5 6.14 Adhesion test 5 7 Marking 5 Annex A (normative) Fire test kSIST FPFEN ISO 78402020 https://standards.ich.ai/catalog/standards/sist/609bebed-3941-4ddf-beel- Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10	Fore	word		iv
3 Terms and definitions 1 4 General requirements 2 5 Hose inner diameter 2 6 Physical tests on finished hose 2 6.1 General 2 6.2 Test liquids 2 6.3 Bursting pressure 3 6.4 Vacuum-collapse test 3 6.5 Volume change in test liquids 3 6.6 Mass reduction of test hose 3 6.7 Fire resistance 3 6.8 Effect of ozone 4 6.9 Fuel permeation 4 6.10 Cold-flex test 4 6.11 Abrasion test 4 6.12 Dry heat resistance ATADARD PREVIEW 6.13 Oil resistance test ATADARD PREVIEW 6.14 Adhesion test 5 6.14 Adhesion test 5 6.14 Adhesion test 5 6.14 Adhesion test 5 6.10 Comparison test 5 6.14 Adhesion test	1	Scope	е	1
4 General requirements 2 5 Hose inner diameter 2 6 Physical tests on finished hose 2 6.1 General 2 6.2 Test liquids 2 6.3 Bursting pressure 3 6.4 Vacuum-collapse test 3 6.5 Volume change in test liquids 3 6.6 Mass reduction of test hose 3 6.7 Fire resistance 3 6.8 Effect of ozone 4 6.9 Fuel permeation 4 6.10 Cold-flex test 4 6.11 Abrasion test 4 6.12 Dry heat resistance TANDARD PREVIEW 5 6.14 Adhesion test (standards.iteh.ai) 5 7 Marking 5 Annex A (normative) Fire test kSIST Fortel ISO 78402020 6 https://standards.iteh.ai/catalog/standards/sist/c69be0ed-3941-4ddf-beel- 6 Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of	2	Norm	native references	1
4 General requirements 2 5 Hose inner diameter 2 6 Physical tests on finished hose 2 6.1 General 2 6.2 Test liquids 2 6.3 Bursting pressure 3 6.4 Vacuum-collapse test 3 6.5 Volume change in test liquids 3 6.6 Mass reduction of test hose 3 6.7 Fire resistance 3 6.8 Effect of ozone 4 6.9 Fuel permeation 4 6.10 Cold-flex test 4 6.11 Abrasion test 4 6.12 Dry heat resistance TANDARD PREVIEW 5 6.14 Adhesion test (standards.iteh.ai) 5 7 Marking 5 Annex A (normative) Fire test kSIST Fortel ISO 78402020 6 https://standards.iteh.ai/catalog/standards/sist/c69be0ed-3941-4ddf-beel- 6 Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of	3	Term	s and definitions	1
5 Hose inner diameter 2 6 Physical tests on finished hose 2 6.1 General 2 6.2 Test liquids 2 6.3 Bursting pressure 3 6.4 Vacuum-collapse test 3 6.5 Volume change in test liquids 3 6.6 Mass reduction of test hose 3 6.7 Fire resistance 3 6.8 Effect of ozone 4 6.9 Fuel permeation 4 6.10 Cold-flex test 4 6.11 Abrasion test 4 6.12 Dry heat resistance TANDARD PREVIEW 5 6.14 Adhesion test (standards.iteh.ai/catalog.standards.iteh.ai/catalog.standards.iteh.ai/catalog.standards/sist/e69be0ed-3941-4ddFbeel- Annex B (normative) Fire test kSIST EprEN ISO 7840:2020 6 https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddFbeel- 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10				
6.1 General 2 6.2 Test liquids 2 6.3 Bursting pressure 3 6.4 Vacuum-collapse test 3 6.5 Volume change in test liquids 3 6.6 Mass reduction of test hose 3 6.7 Fire resistance 3 6.8 Effect of ozone 4 6.9 Fuel permeation 4 6.10 Cold-flex test 4 6.11 Abrasion test 4 6.12 Dry heat resistance TANDARD PREVIEW 4 6.13 Oil resistance test 5 6.14 Adhesion test (standards itch aix 7 Marking 5 Annex A (normative) Fire test kSIST FprEN ISO 7840-2020 6 https://standards.itch.ai/catalog/standards/sist/e9becled-3941-4ddf-beel- 8 Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10	_		-	
6.2 Test liquids 2 6.3 Bursting pressure 3 6.4 Vacuum-collapse test 3 6.5 Volume change in test liquids 3 6.6 Mass reduction of test hose 3 6.7 Fire resistance 3 6.8 Effect of ozone 4 6.9 Fuel permeation 4 6.10 Cold-flex test 4 6.11 Abrasion test — 4 6.12 Dry heat resistance 7 AND ARD PREVIEW 5 6.14 Adhesion test (Standards.iteh.ai) 5 7 Marking 5 Annex A (normative) Fire test kSIST FpreN ISO 7840:2020 https://standards.iteh.ai/catalog/standards/sist/col/pequivalent_test_method) 8 Annex B (normative) Fuel permeation_test_(or_equivalent_test_method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10	6			
6.3 Bursting pressure 6.4 Vacuum-collapse test 6.5 Volume change in test liquids 6.6 Mass reduction of test hose 6.7 Fire resistance 6.8 Effect of ozone 6.9 Fuel permeation 6.10 Cold-flex test 6.11 Abrasion test 6.12 Dry heat resistance TANDARD PREVIEW 6.13 Oil resistance test 6.14 Adhesion test 6.14 Adhesion test 7 Marking 5 Annex A (normative) Fire test https://standards.itch.ai/catalog/standards/sist/e6/9be0ed-3941-4ddFbee1- Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10				
6.4 Vacuum-collapse test 6.5 Volume change in test liquids 6.6 Mass reduction of test hose 6.7 Fire resistance 6.8 Effect of ozone 6.9 Fuel permeation 6.10 Cold-flex test 6.11 Abrasion test — 6.12 Dry heat resistance TANDARD PREVIEW 6.13 Oil resistance test 6.14 Adhesion test 6.14 Adhesion test 6.15 Standards iteh aicatalog/standards/sist/e69be0ed-3941-4ddf-beel- Annex A (normative) Fire test 6.15 KSIST FprEN ISO 78402020 6.16 Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered		_		
6.6 Mass reduction of test hose 6.7 Fire resistance 6.8 Effect of ozone 6.9 Fuel permeation 6.10 Cold-flex test 6.11 Abrasion test 6.12 Dry heat resistance resistance resistance resistance resistance test 6.13 Oil resistance test 6.14 Adhesion test 7 Marking Annex A (normative) Fire test https://standards.itch.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1- Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		6.4		
6.6 Mass reduction of test hose 6.7 Fire resistance 6.8 Effect of ozone 6.9 Fuel permeation 6.10 Cold-flex test 6.11 Abrasion test 6.12 Dry heat resistance resistance resistance resistance resistance test 6.13 Oil resistance test 6.14 Adhesion test 7 Marking Annex A (normative) Fire test https://standards.itch.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1- Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		6.5	Volume change in test liquids	3
6.8 Effect of ozone 6.9 Fuel permeation 6.10 Cold-flex test 6.11 Abrasion test — 6.12 Dry heat resistance FANDARD PREVIEW 6.13 Oil resistance test 6.14 Adhesion test (Standards.iteh.ai) 7 Marking 5 Annex A (normative) Fire test https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1- Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		6.6	Mass reduction of test hose	3
6.9 Fuel permeation 4 6.10 Cold-flex test 4 6.11 Abrasion test — 4 6.12 Dry heat resistance (ANDARD PREVIEW) 5 6.13 Oil resistance test 5 6.14 Adhesion test (Standards.item.ai) 5 7 Marking 5 Annex A (normative) Fire test kSIST FprEN ISO 7840:2020 https://standards.item.ai/catalog/standards/sist/e69be0ed-3941-4ddf-beel-Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		6.7	Fire resistance	3
6.10 Cold-flex test 6.11 Abrasion test — 6.12 Dry heat resistance TANDARD PREVIEW 6.13 Oil resistance test 6.14 Adhesion test (standards.iteh.ai) 7 Marking 5 Annex A (normative) Fire test https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1- Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		6.8		
6.12 Dry heat resistance: ANDARD PREVIEW 6.13 Oil resistance test (Standards.iteh.ai) 7 Marking 5 Annex A (normative) Fire test (SIST FprEN ISO 7840:2020 https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-beel-Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered		6.9	1	
6.12 Dry heat resistance TANDARD PREVIEW 6.13 Oil resistance test 6.14 Adhesion test (Standards.iteh.ai) 7 Marking 5 Annex A (normative) Fire test https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-beel- Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10				
6.14 Adhesion test (standards.iteh.ai) 7 Marking 5 Annex A (normative) Fire test (SIST FprEN ISO 7840:2020 https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1-Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		_		
6.14 Adhesion test (standards.iteh.ai) 7 Marking 5 Annex A (normative) Fire test (SIST FprEN ISO 7840:2020 https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1-Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		_	Dry heat resistance	4
7 Marking 5 Annex A (normative) Fire test kSIST FprEN ISO 7840:2020 6 https://standards.itch.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bec1- Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10			Oil resistance test	5
7 Marking 5 Annex A (normative) Fire test kSIST FprEN ISO 7840:2020 6 https://standards.itch.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bec1- Annex B (normative) Fuel permeation test (or equivalent test method) 8 Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10		6.14	Adhesion test (standards iteh ai)	5
Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10	7	Mark		
Annex B (normative) Fuel permeation test (or equivalent test method) Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2013/53/EU aimed to be covered 10	Ann	ex A (no	rmative) Fire test <u>kSIST FprEN ISO 7840:2020</u>	6
requirements of Directive 2013/53/EU aimed to be covered	Ann	ex B (no	https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1- rmative) Fuel permeation test (or equivalent test method)	8
	Ann	ex ZA (ii regui	nformative) Relationship between this European Standard and the essential irements of Directive 2013/53/EU aimed to be covered	10
	Ribli			

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. (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 188, Small craft.

This fifth edition cancels and replaces the fourth editions (ISO 67840.2013) 4 which has been technically revised. 6e372654fd81/ksist-fpren-iso-7840-2020

The main changes compared to the previous edition are as follows:

- requirements for low permeation fuel hoses have been added;
- clarifies the test fluids for petrol;
- test fixture Figure B.1 has been revised to remove the vented capillary tube.

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.

Small craft — Fire-resistant fuel hoses

1 Scope

This document specifies general requirements and physical tests for fire-resistant hoses for conveying petrol or petrol blended with ethanol, and diesel fuel or diesel fuel blended with FAME, designed for a working pressure not exceeding 0,34 MPa for hoses with inner diameter up to and including 10 mm and 0,25 MPa for hoses up to 63 mm inner diameter in craft of hull length up to 24 m.

It applies to hoses for small craft with permanently installed fuel systems. It does not apply to hoses entirely within the splash well at the stern of the craft connected directly to an outboard engine.

Specifications for non-fire-resistant fuel hoses are given in ISO 8469: 2013 Specifications for permanently installed fuel systems are given in ISO 10088:2013.

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 1402:2009, Rubber and plastics hoses and hose assemblies — Hydrostatic testing

(**standards.iteh.ai**)
ISO 1817:2015, Rubber, vulcanized or thermoplastic — Determination of the effect of liquids

ISO 7326:2016, Rubber and plastics hoses Eprassessment of ozone resistance under static conditions https://standards.iteh.ai/catalog/standards/sist/e69be0ed-3941-4ddf-bee1-

ISO 10088:2013, Small craft — Permanently installed fuel systems

EN 14214:2012, + A2:2019, Automotive fuels — Fatty acid methyl esters (FAME) for diesel engines — Requirements and test methods

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/

3.1

FAME

Fatty Acid Methyl Esters

esters of fatty acids. The physical characteristics of fatty acid esters are closer to those of fossil diesel fuels than pure vegetable oils, but properties depend on the type of vegetable oil

3.2

tube

interior liner of the fuel hose that is normally in contact with the fuel.

4 General requirements

Hoses complying with this International Standard shall present a non-porous, smooth inner surface, free from defects and chemical contaminants.

Hoses shall demonstrate suitability for marine use by complying with the requirements of the tests in <u>Clause 6</u>. Hoses intended to be used for both petrol and diesel fuels must be tested with both test fluids separately in sections requiring preconditioning. They shall be marked according to <u>Clause 7</u>.

5 Hose inner diameter

Table 1 — Inner diameters and tolerances

Dimensions in millimetres

Inner diameter, d	Tolerance	
3,2		
4	± 0,5	
5		
6,3		
7		
8		
iTeh9STAND	ARD PREVIE	W
¹⁰ (standa	ards.iteh ⁷⁵ ai)	
12,5	or districtionally	
16 <u>kSIST Fp</u>	<u>EN ISO 7840:2020</u>	
	tandards/sist/e69be0ed-3941-4dd	lf-bee1
20	ksist-fpren-iso-7840-2020	
25		
31,5	± 1,25	
38		
40		
50	± 1,5	
63		

6 Physical tests on finished hose

6.1 General

New samples shall be used for each of the tests below.

6.2 Test liquids

- a) Petrol:
 - 1) a mixture by volume of 90 % of liquid C specified in ISO 1817:2015, Table A.1, and 10 % by volume of ethanol.
- b) Diesel:
 - 1) a mixture by volume of 90 % liquid F specified in ISO 1817:2015 and 10 % by volume of Fatty.

Acid Methyl Esters (FAME), specified in EN 14214:2008+A2:2019.

6.3 Bursting pressure

Fill three hoses or sample lengths from hoses with the applicable test liquids as specified in 6.2, and store them for 40 days in air at a temperature of 40 °C ± 2 °C. For type 15 fuel hose (see 6.9) the 40 day test period may be reduced to 28 days.

Empty the liquid out and fill the hoses or sample lengths with cold water; subject them to hydrostatic pressure as specified in ISO 1402:2009.

The bursting pressure shall be at least 1,4 MPa for hoses with an inner diameter of 10 mm or less and 1,00 MPa for hoses with an inner diameter of more than 10 mm.

6.4 Vacuum-collapse test

Table 2 — Pressure conditions for the vacuum collapse test

	Inner diameter, d	Vacuum
	mm	kPa
	<i>d</i> ≤ 10	80
	10 < <i>d</i> ≤ 25	35
iT	eh STA PSDARD	P No test/required

The test duration shall be 60 s and the diameter of the sphere 0.8 d (inner diameter of the hose). The sphere shall pass freely through the hose while under vacuum.

kSIST FprEN ISO 7840:2020

6.5 Volume change/in_test_liquids_log/standards/sist/e69be0ed-3941-4ddf-bee1-

6e372654fd81/ksist-fpren-iso-7840-2020
Determine the change of volume of the hose test sample (tube and cover) by the procedure described in ISO 1817:2015. Completely submerge the test pieces in test liquids as specified in 6.2 at a temperature of 40 °C \pm 2 °C for 40 days.

If the hose is made of a homogeneous compound (with or without reinforcement), the swelling shall not exceed 35 % by volume, as measured by displacement in water. For hose with an inner layer of fuelresistant material and a cover of another material, mainly intended for weather and ozone resistance. the increase in volume shall not exceed 35 % for the tube and 120 % for the cover.

6.6 Mass reduction of test hose

Determine the reduction in mass of the inner layer (tube) by the procedure described in ISO 1817:2015. Fill three hoses or submerge test pieces from the hoses with test liquids, as specified in 6.2, and store them for 40 days in air at a temperature of 40 °C ± 2 °C. For type 15 fuel hose (see 6.9) the 40 day test period may be reduced to 28 days.

The reduction in mass of the inner layer shall not exceed 8 % of the initial mass of the test pieces.

NOTE A reduction in mass of 8 % corresponds to a decrease in volume of approximately 10 %.

6.7 Fire resistance

Test the hose in accordance with the method described in Annex A.