

This document is a preview generated by EVS

Rubber and plastic hoses and hose assemblies with internal vapour recovery for measured fuel dispensing systems - Specification



## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 13483:2022 sisaldab Euroopa standardi EN 13483:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 13483:2022 consists of the English text of the European standard EN 13483:2022.
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 and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.10.2022.	Date of Availability of the European standard is 12.10.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

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

ICS 23.040.70, 75.200

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele. Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis- ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis- ja Akrediteerimiskeskusega: Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

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

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 and Accreditation.

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

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

**EN 13483**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2022

ICS 23.040.70; 75.200

Supersedes EN 13483:2013

English Version

## Rubber and plastic hoses and hose assemblies with internal vapour recovery for measured fuel dispensing systems - Specification

Tuyaux et assemblages flexibles à récupération interne  
de vapeur pour systèmes de livraison mesurée de  
carburant - Spécification

Gummi- und Kunststoffschläuche und -  
schlauchleitungen mit innenliegender Gasrückführung  
für Zapfsäulen an Tankstellen - Anforderungen

This European Standard was approved by CEN on 5 September 2022.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye 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**

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>4</b>
<b>Introduction</b> .....	<b>5</b>
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>4 Classification</b> .....	<b>7</b>
<b>5 Materials and construction</b> .....	<b>7</b>
<b>5.1 Fuel hose</b> .....	<b>7</b>
<b>5.2 Vapour hose</b> .....	<b>8</b>
<b>5.3 Vapour tubing</b> .....	<b>8</b>
<b>5.4 Vapour recovery fuel hose assembly</b> .....	<b>8</b>
<b>6 Pressure requirements</b> .....	<b>8</b>
<b>7 Dimensions and tolerances</b> .....	<b>8</b>
<b>7.1 Diameters and bend radii</b> .....	<b>8</b>
<b>7.2 Minimum thickness of lining and cover of the fuel hose</b> .....	<b>9</b>
<b>7.3 Concentricity</b> .....	<b>9</b>
<b>7.4 Tolerance on cut lengths</b> .....	<b>9</b>
<b>8 Physical properties</b> .....	<b>9</b>
<b>8.1 Compounds</b> .....	<b>9</b>
<b>8.2 Finished hoses/tubing</b> .....	<b>11</b>
<b>8.3 Hose assembly</b> .....	<b>13</b>
<b>9 End fittings</b> .....	<b>13</b>
<b>10 Type tests</b> .....	<b>14</b>
<b>11 Frequency of testing</b> .....	<b>14</b>
<b>12 Marking</b> .....	<b>15</b>
<b>12.1 Hoses</b> .....	<b>15</b>
<b>12.2 End fittings</b> .....	<b>15</b>
<b>12.3 Hose assemblies</b> .....	<b>15</b>
<b>Annex A (normative) Test method for determination of low temperature class resistance at -30 °C (for normal temperature class) and -40 °C (for low temperature class)</b> .....	<b>16</b>
<b>Annex B (normative) Test method for pressure requirements of vapour recovery hoses and tubes</b> .....	<b>17</b>
<b>Annex C (normative) Test method for determination of change in length due to swelling</b> .....	<b>18</b>
<b>Annex D (normative) Test method for determination of pressure loss</b> .....	<b>19</b>
<b>Annex E (normative) Method for determination of adhesion between components</b> .....	<b>20</b>
<b>Annex F (normative) Test method for the determination of low temperature flexibility</b> .....	<b>21</b>
<b>Annex G (normative) Test method for the determination of rate of fuel permeation</b> .....	<b>23</b>
<b>Annex H (normative) Test method for flammability</b> .....	<b>24</b>

<b>Annex I (normative) Test method for the determination of leakage (leak test)</b> .....	<b>26</b>
<b>Annex J (normative) Test method for fatigue strength under reversed bending stresses (flex test)</b> .....	<b>27</b>
<b>Annex K (normative) End-fitting pull-off test</b> .....	<b>29</b>
<b>Annex L (normative) Test frequency for type tests and routine tests</b> .....	<b>30</b>
<b>Annex M (informative) Test frequency for production acceptance tests</b> .....	<b>32</b>
<b>Annex N (informative) Environmental checklist</b> .....	<b>34</b>
<b>Bibliography</b> .....	<b>37</b>

This document is a preview generated by EVS

## European foreword

This document (EN 13483:2022) has been prepared by 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 April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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 13483:2013.

In comparison with EN 13483:2013, the following changes have been made:

- a) the normative references have been updated;
- b) in 7.3 the concentricity tolerance has been narrowed from 1,0 mm to 0,7 mm;
- c) in Table 4 the “Low temperature class” has been increased from 18 ml to 22 ml;
- d) Clause 9 “End fittings” has been amended so that mechanically suitable, conductive plastics may be used as an alternative to metallic materials;
- e) the document has been aligned with the 2017 issue of the guidance document prepared by ISO/TC 45/SC 1 on the layout of ISO and CEN standards on rubber and plastics hoses and hose assemblies (most notably with respect to Clause 11 “Frequency of testing”, Clause 12 “Marking”, and the pressure units used);
- f) informative Annex N concerning environmental aspects has been added.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

## Introduction

WARNING — Persons using this document are assumed to be familiar with normal laboratory practice. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

This document is a preview generated by EVS

## 1 Scope

This document specifies the requirements and test methods for verification for hose assemblies with vapour recovery for delivery systems on petrol filling stations.

Hoses can be constructed from rubber or thermoplastic elastomer (TPE) and this document specifies the requirements for three types of hoses in two grades and two classes of hose assemblies for measured fuel dispensing systems, including oxygenated fuels ( $\leq 15\%$  oxygenated compounds) with internal vapour recovery tubing or hose made out of rubber or thermoplastic elastomer (TPE).

The assemblies are intended for use at ambient temperatures between  $-30\text{ }^{\circ}\text{C}$  and  $+55\text{ }^{\circ}\text{C}$  for normal temperature class and  $-40\text{ }^{\circ}\text{C}$  and  $+55\text{ }^{\circ}\text{C}$  for low temperature class at a working pressure  $\leq 16\text{ bar}$ <sup>1</sup>.

This document is not applicable to multi chamber fuel dispensing hoses.

NOTE As part of the certification of a new dispenser, testing of fuel samples in accordance with EN 228 is carried out at least eight weeks after the first use of the equipment to avoid unrepresentative sulphur content results.

## 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.

EN ISO 6801, *Rubber or plastics hoses - Determination of volumetric expansion (ISO 6801)*

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

EN ISO 1402, *Rubber and plastics hoses and hose assemblies - Hydrostatic testing (ISO 1402)*

EN ISO 4671, *Rubber and plastics hoses and hose assemblies - Methods of measurement of the dimensions of hoses and the lengths of hose assemblies (ISO 4671)*

EN ISO 7326, *Rubber and plastics hoses - Assessment of ozone resistance under static conditions (ISO 7326)*

EN ISO 8031:2020, *Rubber and plastics hoses and hose assemblies - Determination of electrical resistance and conductivity (ISO 8031:2020)*

EN ISO 8033, *Rubber and plastics hoses - Determination of adhesion between components (ISO 8033)*

EN ISO 8330, *Rubber and plastics hoses and hose assemblies - Vocabulary (ISO 8330)*

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

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 527-1, *Plastics — Determination of tensile properties — Part 1: General principles*

---

<sup>1</sup> 1 bar = 0,1 MPa.



ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

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

ISO 4649:2017, *Rubber, vulcanized or thermoplastic — Determination of abrasion resistance using a rotating cylindrical drum device*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 8330 and the following 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 <https://www.electropedia.org/>

#### 3.1

##### **hose assembly**

fuel hose complete with an internal vapour tubing or vapour hose and fitted with couplings

### 4 Classification

Hoses for this application shall be divided into three types:

- Type 1, textile reinforced;
- Type 2, textile and helical wire reinforced; or
- Type 3, fine wire reinforced.

Each type of hose shall be divided into two grades:

- Grade M: electrically bonded;
- Grade  $\Omega$ : electrically conductive.

Each type of hose shall be divided into two temperature classes:

- normal temperature class with an ambient working temperature of  $-30\text{ }^{\circ}\text{C}$  to  $+55\text{ }^{\circ}\text{C}$ ;
- low temperature class (LT) with an ambient working temperature of  $-40\text{ }^{\circ}\text{C}$  to  $+55\text{ }^{\circ}\text{C}$ .

### 5 Materials and construction

#### 5.1 Fuel hose

The fuel hose shall consist of the following:

- a) a smooth, fuel resistant lining of rubber or thermoplastic elastomer (TPE);
- b) a suitable reinforcement, related to type;
- c) a non-corrugated fuel and weather resistant rubber or TPE cover.

Hose assemblies shall be capable of conducting an electrical charge from coupling to coupling.