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

This document is a preview generated by EVS

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13483:2013 sisaldab Euroopa standardi EN 13483:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 13483:2013 consists of the English text of the European standard EN 13483:2013.
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 19.06.2013.	Date of Availability of the European standard is 19.06.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

This document is a preview generated by EVS

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, 75.200

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:
Aru 10, 10317 Tallinn, Eesti; 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:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13483

June 2013

ICS 23.040.70; 75.200

Supersedes EN 13483:2005

English Version

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

Tuyaux et flexibles en caoutchouc et en plastique 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 25 April 2013.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2013 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 13483:2013: E

This document is a preview generated by EVS

Contents

Page

Foreword 4

1 Scope 5

2 Normative references 5

3 Terms and definitions 6

4 Classification 6

5 Materials and construction 6
5.1 Fuel hose 6
5.2 Vapour hose 7
5.3 Vapour tubing 7
5.4 Vapour recovery fuel hose assembly 7

6 Pressure requirements 7

7 Dimensions and tolerances 7
7.1 Diameters and bend radii 7
7.2 Minimum thickness of lining and cover of the fuel hose 8
7.3 Concentricity 8
7.4 Tolerance on cut lengths 8

8 Physical properties 8
8.1 Compounds 8
8.2 Finished hoses/tubing 9
8.3 Hose assembly 11

9 End fittings 11

10 Type tests 12

11 Frequency of testing 13

12 Marking 13
12.1 Hoses 13
12.2 End fittings 13
12.3 Hose assemblies 13

Annex A (normative) **Test method for determination of low temperature class resistance at –30 ºC (for normal temperature class) and –40 °C (for low temperature class)** 14
A.1 Test piece 14
A.2 Apparatus 14
A.3 Test method 14

Annex B (normative) **Test method for pressure requirements of vapour recovery hoses and tubes** 15
B.1 Principle 15
B.2 Test method 15

Annex C (normative) **Test method for determination of change in length due to swelling** 16
C.1 Principle 16
C.2 Test method 16

Annex D (normative) **Test method for determination of pressure loss** 17
D.1 Vapour tubing/hose 17
D.2 Fuel hose 17

Annex E (normative) **Method for determination of adhesion between components** 18
E.1 Dry adhesion 18
E.2 Adhesion after contact with fuel 18

This document is a preview generated by EVS

Annex F (normative) **Test method for the determination of low temperature flexibility** **19**
F.1 Test piece **19**
F.2 Apparatus **19**
F.3 Test method **19**

Annex G (normative) **Test method for the determination of rate of fuel permeation** **21**
G.1 Test piece **21**
G.2 Apparatus **21**
G.3 Test method **21**

Annex H (normative) **Test method for flammability** **22**
H.1 Test piece **22**
H.2 Apparatus **22**
H.3 Test method **22**

Annex I (normative) **Test method for the determination of leakage (leak test)** **24**

Annex J (normative) **Test method for fatigue strength under reversed bending stresses (flex test)** **25**
J.1 Apparatus and test piece **25**
J.2 Test method **25**
J.3 Test observations and report **26**

Annex K (normative) **End-fitting pull-off test** **27**
K.1 Test piece **27**
K.2 Apparatus **27**
K.3 Test method **27**

Annex L (normative) **Test frequency for type tests and routine tests** **28**

Annex M (informative) **Test frequency for production acceptance tests** **30**

Bibliography **32**

This document is a preview generated by EVS

Foreword

This document (EN 13483:2013) 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 December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

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

This document supersedes EN 13483:2005.

Compared with EN 13483:2005, the following fundamental changes have been made:

a) In Table 3 "Physical properties of compounds" the compound "Thermoplastic" has been added.

b) In Annex L the testing of the ozone resistance has been deleted.

c) The normative references have been updated.

WARNING — Persons using this document should 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.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

This document is a preview generated by EVS

1 Scope

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

The hose assemblies with vapour recovery for delivery systems on petrol filling stations need to be capable of withstanding anticipated mechanical, thermal and chemical stressing and be resistant to the combustible liquids used in these applications as well as their vapour and vapour air mixtures. It is imperative that the assemblies be constructed in such a way that actions during normal operation cannot give rise to dangerous electrostatic charges nor that there will be any reduction in the performance of the vapour recovery.

The assemblies are intended for use at ambient temperatures between –30 °C and +55 °C for normal temperature class and –40 °C and +55 °C for low temperature class at a working pressure ≤ 16 bar[1)].

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 (≤ 15 % oxygenated compounds) with internal vapour recovery tubing or hose.

NOTE This European Standard is not applicable to multi chamber fuel dispensing hoses.

As part of the certification of a new dispenser, testing of fuel samples in accordance with EN 228 should be 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, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 26801, *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 8031:2009, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity (ISO 8031:2009)*

EN ISO 8033, *Rubber and plastics hose — Determination of adhesion between components (ISO 8033)*

EN ISO 8330:2008, *Rubber and plastics hoses and hose assemblies — Vocabulary (ISO 8330:2007)*

EN ISO 10619-1, *Rubber or plastics hoses and tubing — Measurement of flexibility and stiffness — Part 1: Bending tests at ambient temperature (ISO 10691-1)*

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

1) 1 bar = 0,1 MPa

This document is a preview generated by EVS

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

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

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

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

ISO 4649:2010, *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 8330:2008 and the following apply.

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 Ω: electrically conductive.

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

— normal temperature class with an ambient working temperature of −30 °C to +55 °C;

— low temperature class (LT) with an ambient working temperature of −40 °C to +55 °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.

This document is a preview generated by EVS