

Rubber and plastics hoses, tubing and assemblies for use with propane and butane and their mixtures in the vapour phase - Part 1: Hoses and tubings

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 16436-1:2014+A3:2020 sisaldab Euroopa standardi EN 16436-1:2014+A3:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 16436-1:2014+A3:2020 consists of the English text of the European standard EN 16436-1:2014+A3:2020.
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English Version

Rubber and plastics hoses, tubing and assemblies for use  
with propane and butane and their mixtures in the vapour  
phase - Part 1: Hoses and tubings

Tuyaux, tubes et flexibles en caoutchouc et en plastique  
pour utilisation avec le propane, le butane et leurs  
mélanges en phase vapeur - Partie 1: Tuyaux et tubes

Gummi- und Kunststoff-Schläuche und -  
Schlauchleitungen mit und ohne Einlage zur  
Verwendung mit Propan, Butan und deren Gemischen  
in der Gasphase - Teil 1: Schläuche mit und ohne  
Einlage

This European Standard was approved by CEN on 12 July 2019.

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## European foreword

This document (EN 16436-1:2014+A3:2020) has been prepared by Technical Committee CEN/TC 181 “Dedicated liquefied petroleum gas appliances”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by November 2020, and conflicting national standards shall be withdrawn at the latest by November 2020.

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 includes Amendment 1, approved by CEN on 2015-10-01, Amendment 2, approved by CEN on 2018-05-13, and Amendment 3, approved by CEN on 2019-07-12.

This document supersedes A3 EN 16436-1:2014+A2:2018 A3.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1, A2 A2 and A3 A3.

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, Turkey and the United Kingdom.

## 1 Scope

This European Standard specifies the characteristics and performance requirements for tubing and hoses made of either rubber or plastics for use with commercial propane and commercial butane and mixtures thereof, in the vapour phase, for connection of appliances, from:

- pressurized gas container to a regulating device,
- pressurized gas container to an appliance,
- regulating device to an appliance, and
- regulating device to installation pipework,

in environments of a temperature range from  $-30\text{ }^{\circ}\text{C}$  to  $+70\text{ }^{\circ}\text{C}$ . Working pressures are from 0 bar to 30 bar.

Three classes are defined in Table 1 according to the maximum working pressures and minimum ambient temperatures.

This European Standard only covers the tubing or hose part of assemblies. The assemblies themselves will be covered by EN 16436-2.

This European Standard does not apply to hoses for:

- welding purposes (see EN ISO 3821, EN 1327);
- propulsion purposes;
- LPG transfer purposes (see EN 1762).

## 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 ISO 176, *Plastics - Determination of loss of plasticizers - Activated carbon method (ISO 176:2005)*

EN ISO 1402, *Rubber and plastics hoses and hose assemblies - Hydrostatic testing (ISO 1402:2009)*

EN ISO 4080, *Rubber and plastics hoses and hose assemblies - Determination of permeability to gas (ISO 4080:2009)*

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 4671:2007)*

EN ISO 7326, *Rubber and plastics hoses - Assessment of ozone resistance under static conditions (ISO 7326:2016)*

EN ISO 8033, *Rubber and plastics hoses - Determination of adhesion between components (ISO 8033:2016)*

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

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

EN ISO 30013, *Rubber and plastics hoses - Methods of exposure to laboratory light sources - Determination of changes in colour, appearance and other physical properties (ISO 30013:2011)*

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

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

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

### 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

##### **commercial butane**

hydrocarbon product composed predominantly of butanes and/or butenes

Note 1 to entry: The remaining part can consist mainly of propane/propene and pentane/pentene isomers.

[SOURCE: ISO 9162]

#### 3.2

##### **commercial propane**

hydrocarbon product composed predominantly of propane and/or propene

Note 1 to entry: The remaining part can consist mainly of ethane/ethene and butane/butene isomers.

[SOURCE: ISO 9162]

#### 3.3

##### **tubing**

single core of plastic or rubber with no reinforcement or cover

#### 3.4

##### **hose**

rubber or flexible thermoplastic lining with a reinforcement made of natural or synthetic textile material applied either spirally wound or braided, and a flexible rubber or thermoplastic outer cover

### 4 Classification of tubing and hose

One class of tubing and two classes of hose are specified in Table 1 depending on the maximum working pressure and minimal ambient temperatures.