

SLOVENSKI STANDARD

SIST EN 1762:2004

01-januar-2004

Nadomešča:
SIST EN 1762:2000

Gumene cevi in cevni priključki za utekočinjeni naftni plin, LPG (tekoča ali plinska faza) in zemeljski plin do 25 barov (2,5 MPa) - Specifikacija

Rubber hoses and hose assemblies for liquefied petroleum gas, LPG (liquid or gaseous phase), and natural gas up to 25 bar (2,5 MPa) - Specification

Gummischläuche und Schlauchleitungen für Flüssiggas LPG (flüssig oder gasförmig) und Erdgas bis 25 bar (2,5 MPa) - Spezifikation

Tuyaux et flexibles en caoutchouc pour le gaz de pétrole liquéfié GPL (en phase liquide ou gazeuse) et le gaz naturel jusqu'à 25 bar (2,5 MPa) - Spécification

Ta slovenski standard je istoveten z: **EN 1762:2003**

ICS:

75.200	Oprema za skladiščenje nafte, naftnih proizvodov in zemeljskega plina	Petroleum products and natural gas handling equipment
83.140.40	Gumene cevi	Hoses

SIST EN 1762:2004 en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1762:2004

<https://standards.iteh.ai/catalog/standards/sist/3b038d1c-d32a-4566-979d-2d19e7a36728/sist-en-1762-2004>

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1762

October 2003

ICS 23.040.70

Supersedes EN 1762:1997

English version

Rubber hoses and hose assemblies for liquefied petroleum gas,
LPG (liquid or gaseous phase), and natural gas up to 25 bar
(2,5 MPa) - Specification

Tuyaux et flexibles en caoutchouc pour le gaz de pétrole
liquéfié GPL (en phase liquide ou gazeuse) et le gaz
naturel jusqu'à 25 bar (2,5 MPa) - Spécification

Gummischläuche und -schlauchleitungen für Flüssiggas
LPG (flüssig oder gasförmig) und Erdgas bis 25 bar (2,5
MPa) - Spezifikation

This European Standard was approved by CEN on 8 September 2003.

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 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 Management Centre has the same status as the official versions.

(standards.iteh.ai)

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.

[SIST EN 1762:2004](https://standards.iteh.ai/catalog/standards/sist/3b038d1c-d32a-4566-979d-2d19e7a36728/sist-en-1762-2004)

<https://standards.iteh.ai/catalog/standards/sist/3b038d1c-d32a-4566-979d-2d19e7a36728/sist-en-1762-2004>



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents	Page
Foreword.....	3
1 Scope	3
2 Normative references	3
3 Terms and definitions.....	4
3.1 Additional Terms and definitions.....	4
3.1.1 Electrically Bonded Hose/Hose Assembly.....	4
3.1.2 Electrically Conductive Hose/Hose Assembly.....	4
3.1.3 Electrically Discontinuous Hose/Hose Assembly	4
4 Classification.....	4
5 Materials and construction	5
5.1 Hose	5
5.2 Hose assemblies.....	5
6 Dimensions.....	5
6.1 Nominal bore, internal diameters, outside diameters, tolerances, and minimum bend radius	5
6.2 Minimum thickness of lining and cover	7
6.3 Concentricity	7
6.4 Tolerances on length.....	7
7 Physical properties.....	7
7.1 Rubber Compounds	7
7.2 Finished hose & hose assemblies.....	7
8 Electrical properties	9
8.1 Textile reinforced hoses with bonding wires.....	9
8.2 Textile reinforced hoses with conducting materials.....	9
8.3 Wire helix reinforced hoses	9
8.4 Hose assemblies that are required to be discontinuous.....	9
9 Type approval.....	9
10 Frequency of testing.....	9
11 Marking	10
11.1 Hoses	10
11.2 Hose assemblies	10
Annex A (normative) Flammability test	11
A.1 Method	11
A.2 Assessment.....	11
Annex B (normative) Test frequency.....	12
Annex C (informative) Test frequency.....	13

Foreword

This document (EN 1762:2003) has been prepared by Technical Committee CEN/TC 218 "Rubber and plastic 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 2004, and conflicting national standards shall be withdrawn at the latest by April 2004.

This document supersedes EN 1762:1997.

Annex A and B are normative. Annex C is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Standard specifies the requirements for rubber hoses and rubber hose assemblies used for the transfer of liquefied petroleum gas (LPG) in liquid or gaseous phase and natural gas with a maximum working pressure of 25 bar (2,5 MPa) and vacuum within the temperature range of -30 °C to +70 °C and, when designated -LT, -50 °C to +70 °C.

<https://standards.iteh.ai/catalog/standards/sist/3b038d1c-d32a-4566-979d-2d19e7a36728/sist-en-1762-2004>

2 Normative references

This European Standard incorporates by dated or undated references, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated by amendment or revision. For undated references latest edition of the publication referred to applies (including amendments).

EN 28033 *Rubber and plastics hose - Determination of adhesion between components* (ISO 8033:1991)

EN ISO 1402 *Rubber and plastics hoses and hose assemblies — Hydrostatic testing* (ISO 1402:1994)

EN ISO 1746 *Rubber or plastics hoses and tubing — Bending tests* (ISO 1746: 1998, including technical corrigendum 1:1999)

EN ISO 4671 *Rubber and plastics hoses and hose assemblies — Methods of measurement of dimensions* (ISO 4671:1984)

EN ISO 4672 *Rubber and plastics hoses — Sub-ambient temperature flexibility tests* (ISO 4672:1987)

EN ISO 7233 *Rubber and plastics hoses and hose assemblies — Determination of suction resistance* (ISO 7233:1991)

EN ISO 7326 *Rubber and plastics hoses — Assessment of ozone resistance under static conditions* (ISO 7326:1991)

EN ISO 8031 *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance* (ISO 8031:1993)

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

EN 1762:2003 (E)

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

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

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

ISO 8330 *Rubber and plastics hoses and hose assemblies -- Vocabulary*

3 Terms and definitions

For the purposes of this standard, the terms and definitions given in ISO 8330 apply.

3.1 Additional Terms and definitions**3.1.1 Electrically Bonded Hose/Hose Assembly**

hose/hose assembly that uses a metallic wire connection to conduct static electricity

3.1.2 Electrically Conductive Hose/Hose Assembly

hose/hose assembly that is capable of conducting static electrical charges, using a conductive rubber layer, without the use of a metallic wire

3.1.3 Electrically Discontinuous Hose/Hose Assembly

hose /Hose Assembly that incorporates a metallic wire connection to one end coupling of the assembly only or electrically insulated from both end-couplings

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 1762:2004
<https://standards.iteh.ai/catalog/standards/sist/3b038d1c-d32a-4566-979d-2d19e7a36728/sist-en-1762-2004>

4 Classification

Hoses/Hose assemblies for this application are classified into 5 types and 3 grades according to their use, construction, and electrical properties. The maximum WP for all hoses/hose assemblies is 25 bar

Type	Application
D	delivery hose
D-LT	delivery hose, low temperature;
SD	suction and delivery hose, helix reinforced
SD-LTS	suction and delivery hose "smooth hose", helix reinforced, low temperature
SD-LTR	suction and delivery hose, rough bore (having an internal, non-embedded helical wire of stainless steel), low temperature

Hoses for this application are divided into 3 grades according to their electrical properties:

Designation	Electrical property
M	Electrically bonded
Ω	Electrically conductive using a conductive rubber layer
Discontinuous	Electrically discontinuous

5 Materials and construction

5.1 Hose

The hose shall consist of the following:

- a lining of synthetic rubber resistant to n-pentane;
- a reinforcement of layers of woven, braided or spirally wound textile material or braided or spirally wound stainless steel wire,
- an embedded stainless steel metallic helix reinforcement (types SD, SD-LTS and SD-LTR only);
- two or more low resistance electrical bonding wires (type "M" only);
- an outer cover of synthetic rubber, resistant to abrasion and outdoor exposure, the cover being be pricked to allow gas permeation;
- an internal, non-embedded stainless steel helical wire, suitable for use at $-50\text{ }^{\circ}\text{C}$ (type SD-LTR only).

5.2 Hose assemblies

Hose assemblies shall incorporate metallic couplings attached to the hose by the assembler or built in by the manufacturer. In order to produce the required electrical properties, the couplings should be attached in accordance with clause 8.

Chlorinated materials shall not be used in contact with any stainless steel materials.

6 Dimensions iTeh STANDARD PREVIEW

6.1 Nominal bore, internal diameters, outside diameters, tolerances, and minimum bend radius

For hoses without built-in couplings, and when measured in accordance with method A of EN ISO 4671, the internal diameter and outside diameter and their tolerances shall conform to Table 1 or Table 2, depending on the type.

For hoses with built-in couplings, the outside diameters in Tables 1 and 2 do not apply.

When tested by the method described in EN ISO 1746, the value of the minimum bend radius shall be as given in Table 1 or Table 2, depending on the type.

EN 1762:2003 (E)

Table 1 — Dimensions and tolerances of hoses of types D and D-LT

Nominal bore	Internal diameter mm	Tolerance mm	Outside diameter mm	Tolerance mm	Design minimum bend radius* mm
12	12,7	± 0,5	22,7	± 1,0	100
15	15	± 0,5	25	± 1,0	120
16	15,9	± 0,5	25,9	± 1,0	125
19	19	± 0,5	31	± 1,0	160
25	25	± 0,5	38	± 1,0	200
32	32	± 0,5	45	± 1,0	250
38	38	± 0,5	52	± 1,0	320
50	50	± 0,6	66	± 1,2	400
51	51	± 0,6	67	± 1,2	400
63	63	± 0,6	81	± 1,2	550
75	75	± 0,6	93	± 1,2	650
76	76	± 0,6	94	± 1,2	650
80	80	± 0,6	98	± 1,2	725
100	100	± 1,6	120	± 1,6	800
150	150	± 2,0	174	± 2,0	1200
200	200	± 2,0	224	± 2,0	1600
250	254	± 2,0	—	—	2000
300	305	± 2,0	—	—	2500

*) The design minimum bend radius is measured to the surface of the hose on the inside of the bend.

(standards.iteh.ai)

Table 2 — Dimensions and tolerances of hoses of types SD, SD-LTS and SD-LTR

Nominal bore	Internal diameter mm	Tolerance mm	Outside diameter mm	Tolerance mm	Design minimum bend radius* mm
12	12,7	± 0,5	22,7	± 1,0	90
15	15	± 0,5	25	± 1,0	95
16	15,9	± 0,5	25,9	± 1,0	95
19	19	± 0,5	31	± 1,0	100
25	25	± 0,5	38	± 1,0	150
32	32	± 0,5	45	± 1,0	200
38	38	± 0,5	52	± 1,0	280
50	50	± 0,6	66	± 1,2	350
51	51	± 0,6	67	± 1,2	350
63	63	± 0,6	81	± 1,2	480
75	75	± 0,6	93	± 1,2	550
76	76	± 0,6	94	± 1,2	550
80	80	± 0,6	98	± 1,2	680
100	100	± 1,6	120	± 1,6	720
150	150	± 2,0	174	± 2,0	1000
200	200	± 2,0	224	± 2,0	1400
250	254	± 2,0	—	—	1750
300	305	± 2,0	—	—	2100

*) The design minimum bend radius is measured to the surface of the hose on the inside of the bend.

NOTE Nominal bores 250 and 300 apply to hoses with built-in couplings only.

6.2 Minimum thickness of lining and cover

When measured in accordance with EN ISO 4671, the minimum thickness of both the lining and cover of all hoses shall be 1,6 mm.

Not applicable to hose assemblies with built-in couplings

6.3 Concentricity

When measured in accordance with EN ISO 4671, the concentricity based on a total indicator reading shall be 1,0 mm for hoses of nominal bore 12–76 and 1,5 mm for hoses of nominal bore 80–200.

Not applicable to hose assemblies with built-in couplings

6.4 Tolerances on length

The tolerances on the measured length of hoses and hose assemblies shall be $\pm 1\%$.

7 Physical properties

7.1 Rubber Compounds

The physical properties of the rubber compounds used for the lining and cover shall comply with the values given in Table 3, when tested by the methods listed in Table 3.

Tests shall be carried out either on samples taken from the hose or from separately vulcanized sheets, vulcanized to the same state as the hose.

Table 3 — Physical properties of compounds

Property	Unit	Requirements		Method of test
		Lining	Cover	
1. Min. tensile strength	MPa	10	10	ISO 37 (dumb-bell test piece)
2. Min. elongation at break	%	250	250	ISO 37 (dumb-bell test piece)
3. Max. abrasion resistance	mm ³		170	ISO 4649, Method A
4. Ageing				ISO 188 (14 days at +70 °C, air-oven method)
Max. hardness change from original value	IRHD	+10	+10	
Max. tensile strength change from original value	%	± 30	± 30	
Max. change in elongation at break from original value	%	-35	-35	
5. Max. mass increase	%	+10	-	ISO 1817 after 7 days storing in n-pentane at +23 °C
Variation of hardness	IRHD	+10/-3	-	
Max. hardness value after ageing	IRHD	85	-	
Max. mass reduction	%	-5 -10 (LT-types)	-	ISO 1817 (see above) after additional drying for 70 h at +40 °C

7.2 Finished hose & hose assemblies

When tested by the methods listed in Table 4, the physical properties of the finished hose and hose assemblies shall comply with the values given in Table 4.