



SLOVENSKI STANDARD

SIST EN 1761:2000

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Gumene cevi in cevni priključki za dostavo goriva s cisterno - Specifikacija

Rubber hoses and hose assemblies for fuel truck delivery - Specification

Gummischläuche und schlauchleitungen für Tankwagen - Spezifikation

Tuyaux et flexibles en caoutchouc pour la livraison d'hydrocarbures liquides par camions
-citernes - Spécification

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EUROPEAN STANDARD
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Rubber hoses and hose assemblies for fuel truck delivery - Specification

Tuyaux et flexibles en caoutchouc pour la livraison
d'hydrocarbures liquides par camions-citernes -
Spécification

Gummischläuche und -schlauchleitungen für Tankwagen -
Spezifikation

This European Standard was approved by CEN on 6 August 1999.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

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

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

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Contents	Page
Foreword	3
1 Scope	4
2 Normative references	4
3 Definitions	5
4 Types	5
5 Materials and construction	5
6 Dimensions	6
7 Physical properties	7
8 Test for security of coupling attachment	9
9 Electrical resistance	9
10 Application of tests	9
11 Marking	11
Annex A (normative) Test method for adhesion between components	12
Annex B (normative) Test method for flexibility at 20 °C	13
Annex C (normative) Test method for flammability	14
Annex D (normative) Test method for security of coupling attachment	16



Foreword

This European Standard 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 August 1999, and conflicting national standards shall be withdrawn at the latest by August 1999.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This standard is based on ISO 2929, BS 3492 and the German military standard VG 95955.

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1 Scope

This European Standard specifies the requirements for two types of rubber hoses and rubber hose assemblies for loading and discharge of liquid hydrocarbon fuels with a maximum working pressure of 10 bar (1,0 MPa).

Both types of hose are designed for:

- a) use with hydrocarbon fuels, having an aromatic hydrocarbon content not exceeding 50 % by volume and containing oxygenated compounds up to 15 %;
- b) operation within the temperature range of - 30 °C to + 70 °C, undamaged by climatic conditions of -50 °C to 70 °C when stored in static conditions.

NOTE : Hoses for use at temperatures lower than -30 °C should be the subject of discussion between manufacturer and end users.

This standard is not applicable to hoses and hose assemblies for LPG, aviation fuel systems, fuel station systems and marine applications.

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.

EN 21746	https://standards.iteh.ai/catalog/standards/sist/07fee740-d18f-4778-a930-2500ca0000/sist-en-1761-2000 Rubber or plastics hoses and tubing - Bending test (ISO 1746 : 1983)
EN 24671	Rubber and plastics hoses and hose assemblies - Methods of measurements of dimensions (ISO 4671 : 1984)
EN 24672	Rubber and plastics hoses - Sub-ambient temperature flexibility tests (ISO 4672 : 1988)
EN 27326	Rubber and plastics hoses - Assessment of ozone resistance under static conditions (ISO 7326 : 1991)
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 7233	Rubber and plastic hoses and hose assemblies - Determination of suction resistance (ISO 7233 : 1991)
EN ISO 8031	Rubber and plastics hoses and hose assemblies - Determination of electrical properties (ISO 8031 : 1993)

ISO 37	Rubber, vulcanized or thermoplastic - Determination of tensile stress-strain properties
ISO 188	Rubber, vulcanized - Accelerated ageing or heat-resistance tests
ISO 1817:1985	Rubber, vulcanized - Determination of the effect of liquids
ISO 4649	Rubber - Determination of abrasion resistance using a rotating cylindrical drum device
ISO 8330	Rubber and plastics hoses and hose assemblies - Vocabulary

3 Definitions

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

4 Types

Hoses shall be one of the following types:

- a) type D: delivery hose;
- b) type SD: suction and delivery hose, helix reinforced.

Both these types can be either:

- 1) electrically bonded, designated and marked "M" type; or
- 2) electrically conductive, using a conductive rubber layer, designated and marked "Ω" type.

5 Materials and construction

If mandrel built, particulate type, release agents shall not be used.

The hose shall be uniform in quality and free from porosity, airholes, foreign inclusions and other defects.

The hose shall consist of the following:

- a) a lining of synthetic rubber resistant to hydrocarbon fuels;
- b) a reinforcement of layers of woven, braided or spirally wound textile material;
- c) an embedded helix reinforcement (type SD only);
- d) two or more low resistance electrical bonding wires (type "M" only);
- e) an outer cover of synthetic rubber, resistant to abrasion, outdoor exposure and hydrocarbon fuels.

6 Dimensions

6.1 Nominal bore, internal diameters, outside diameters, service reeling diameters, minimum bend radius

When measured in accordance with EN 24671 the internal diameter and outside diameter and their tolerances shall comply with the values given in table 1.

When tested by the method described in EN 21746, the value of the minimum bend radius shall be as given in table 1.

Table 1 : Dimensions

Nominal bore	Internal diameter mm	Tolerance mm	Outside diameter mm	Tolerance mm	Minimum external diameter of reeling drum used in service mm	Minimum bend radius mm
19	19,0	± 0,5	31,0	± 1,0	250	125
25	25,0		37,0		300	150
32	32,0		44,0		350	175
38	38,0		51,0		450	225
50	50,0	± 0,7	66,0	± 1,2	550	275
51	51,0		67,0		550	275
63	63,0	± 0,8	79,0	± 1,6	600	300
75	75,0		91,0		700	350
76	76,0		92,0		700	350
100	100,0		116,0		N.A	450
101	101,5	± 1,6	118,0	± 1,6	N.A	450
150	150,0		170,0	± 2,0	N.A	750

NOTE : Other diameters than listed in the table can be agreed with the manufacturer.
N.A = not applicable

6.2 Concentricity

When determined in accordance with EN 24671, the concentricity, based on a total indicator reading between the internal diameter and the outside surface of the cover, shall be less than or equal to

1,0 mm for hoses of nominal bore up to and including 76, and 1,5 mm for hoses of nominal bore greater than 76.

6.3 Tolerances in length

The tolerance on the measured length of hose or hose assembly shall be ± 1 %.

6.4 Minimum thickness of lining and cover

The minimum thickness of the lining of all hoses shall be 1,6 mm.

For hoses of nominal bore up to and including 50 the minimum thickness of the cover shall be
1,6 mm.

For hoses of nominal bore greater than 50 the minimum thickness of the cover shall be 2,0 mm.

7 Physical properties

7.1 Rubber compounds

The physical properties of the compounds used for the lining and cover shall comply with the values given in table 2, when tested by the methods listed in table 2.

Tests shall be carried out either on samples taken from the hose or from separately vulcanized sheets.

Table 2 : Physical properties of rubber compound

Property	Unit	Requirements		Test methods
		Lining	Cover	
1) Tensile strength min.	MPa	7,0	7,0	ISO 37 (dumb-bell test piece)
2) Elongation at break min.	%	250	250	ISO 37 (dumb-bell test piece)
3) Swelling in fuel max.	%	50		8.2 of ISO 1817:1985 (72 h at 40 °C in liquid 3)
			100	8.2 of ISO 1817:1985 (48 h at 40 °C in liquid B)
4) Abrasion resistance max.	mm ³		180	Method A of ISO 4649
5) Ageing Tensile strength max. change from the original value	%	± 30	± 30	ISO 188 (7 days at 70 °C, air-oven method)
	Elongation at break max. change from the original value	%	± 30	

7.2 Finished hose

When tested by the methods listed in table 3, the physical properties of the finished hose shall comply with the values given in table 3.