

INTERNATIONAL STANDARD

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Rubber hoses for bulk fuel truck delivery — Specification

*Tuyaux en caoutchouc pour livraison en vrac d'hydrocarbures liquides
par camions-citernes — Spécifications*



Reference number
ISO 2929:1991(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 2929 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This second edition cancels and replaces the first edition (ISO 2929:1975), of which it constitutes a technical revision.

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Rubber hoses for bulk fuel truck delivery — Specification

1 Scope

This International Standard specifies the requirements for two classes and three types of rubber hose for the loading and discharge of liquid hydrocarbon fuel from bulk delivery trucks, as follows:

Classes

- Class A: Collapsible.
- Class B: Non-collapsible; usually helix wire reinforced.

Types

- Type 1: For maximum working pressure of 0,3 MPa (3 bar).
- Type 2: For maximum working pressure of 0,7 MPa (7 bar).
- Type 3: For maximum working pressure of 1,0 MPa (10 bar).

The hoses are suitable for use in the temperature range $-40\text{ }^{\circ}\text{C}$ to $+55\text{ }^{\circ}\text{C}$. They are intended for delivery of fuel containing up to 50 % (V/V) of aromatic content, and are not suitable for use with volumetric measuring apparatus.

The hoses are not to be used for LP gas or aviation fuel systems.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard

are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 471:1983, *Rubber — Standard temperatures, humidities and times for the conditioning and testing of test pieces.*

ISO 1307:1983, *Rubber and plastics hoses — Bore diameters and tolerances on length.*

ISO 1402:1984, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing.*

ISO 1746:1983, *Rubber or plastics hoses and tubing — Bending tests.*

ISO 1817:1985, *Rubber, vulcanized — Determination of the effect of liquids.*

ISO 4672:1988, *Rubber and plastics hoses — Sub-ambient temperature flexibility tests.*

ISO 7326:1991, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions.*

ISO 8031:1987, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance.*

ISO 8033:1985, *Rubber and plastics hose — Determination of adhesion between components.*

3 Dimensions and tolerances

3.1 Bore

The bore of the hose shall be in accordance with the nominal dimensions and tolerances given in table 1, which (except for nominal bore diameters 38 mm and 75 mm) is in accordance with ISO 1307:1983.

Table 1 — Nominal bore diameters and tolerances

Values in millimetres

Nominal bore diameter	Tolerance
25	± 1,25
31,5	± 1,25
38	± 1,50
40	± 1,50
50	± 1,50
63	± 1,50
75	± 2,00
80	± 2,00
100	± 2,00

3.2 Length

The tolerance on hose length shall be as specified in ISO 1307:1983, table 3.

4 Hydrostatic tests

4.1 Pressure requirements

When tested in accordance with ISO 1402, the hose shall show no sign of excessive dilation or abrupt changes of section at proof pressure and shall have a minimum bursting pressure as given in table 2.

Table 2 — Pressure requirements

Type	Proof pressure		Minimum burst pressure	
	MPa	bar	MPa	bar
1	0,6	6,0	1,2	12,0
2	1,4	14,0	2,8	28,0
3	2,0	20,0	4,0	40,0

4.2 Change in length and twist

When tested in accordance with ISO 1402 and subjected to the maximum working pressure, the change in length and twist shall not exceed the limits given in table 3.

Table 3 — Change in length and twist

Parameter	Class A	Class B
Max. length change	− 5,0 %	+ 10,0 %
Max. length change 5 min after pressure reduced to 0,07 MPa	− 2,5 %	+ 2,5 %
Max. twist change	20°/m	20°/m

5 Tests on hoses

5.1 Flexibility

When tested in accordance with ISO 1746, method A, at a standard temperature (see ISO 471), the maximum permissible coefficient of deformation shall be 0,8, the minimum bending radius being 10 times the nominal diameter.

5.2 Cold resistance test

When tested in accordance with ISO 4672, method B, at − 40 °C, the hose shall not crack.

5.3 Electrical continuity

When required by the user, the electrical resistance, when tested in accordance with ISO 8031, shall be less than 2 MΩ/m.

6 Tests on pieces cut from the hose

6.1 Resistance to ozone

When tested in accordance with ISO 7326, method 2, under the following conditions, the cover shall show no evidence of cracking when examined under a magnifying power of × 2.

ozone concentration: 50 pphm

duration of exposure: 72 h

elongation: 20 %

6.2 Adhesion

6.2.1 Initial adhesion

When tested in accordance with ISO 8033, the adhesion between the lining and reinforcement, between reinforcement plies, and between the reinforcement and cover shall not be less than 1,5 kN/m.

6.2.2 Adhesion after exposure to fuel

Fill a 300 mm length of hose, one end stoppered, with liquid C (see ISO 1817). After 72 h under standard test conditions (see ISO 471), empty the hose and test adhesions in accordance with ISO 8033. The adhesion between the lining and reinforcement, between reinforcement plies, and between the reinforcement and cover shall not be less than 1,5 kN/m.

6.3 Resistance to liquids

When tested in accordance with ISO 1817, the maximum changes in volume after 70 h under standard test conditions (see ISO 471) shall be less than the values stated in table 4.

Table 4 — Change in volume

Test liquid	Change in volume (%)	
	lining	cover
Liquid B	—	100 max.
Liquid C	50 max.	—

7 Marking

The hose shall be marked with the following information:

- a) the number of this International Standard;
- b) the manufacturer's name or trademark;
- c) the designation of the class of the hose and its nominal bore diameter;
- d) the quarter and year of manufacture;
- e) the maximum working pressure.

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