INTERNATIONAL STANDARD

ISO 2929

Fourth edition
2014-03-01

Rubber hoses and hose assemblies for bulk fuel delivery by truck — Specification

Tuyaux en caoutchouc et assemblages de tuyaux pour livraison en vrac d'hydrocarbures liquides par camions-citernes — Spécifications

Reference number
ISO 2929:2014(E)

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Published in Switzerland

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

This fourth edition cancels and replaces the third edition (ISO 2929:2002) which has been revised as specified below.

This minor revision of the third edition (ISO 2929:2002) was required to bring this International Standard up to date. The following changes were made.

— In Clause 2 (Normative references), reference to ISO 1746 (bending tests) has been replaced by ISO 10619-1 as ISO 1746 has been withdrawn and replaced by ISO 10619-1.

— The same editorial changes have been made in the text of the standard wherever necessary and the note in Clause 6 (referring to inside diameters above 80 mm) has been deleted.

— The term "type testing" has been added to Clause 10 and Annex E as this is now the normative term for this type of test (according to ISO 8330).

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WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International Standard 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 health and safety practices and to ensure compliance with any national regulatory conditions.

1 Scope

This International Standard specifies the requirements for two groups 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 groups of hoses are designed for:

a) use with hydrocarbon fuels having an aromatic-hydrocarbon content not exceeding 50 % by volume and containing up to 15 % of oxygenated compounds;

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 user.

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

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.

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

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

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

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

ISO 1817:2011, *Rubber, vulcanized — Determination of the effect of liquids*

ISO 4649:2010, *Rubber, vulcanized or thermoplastic — Determination of abrasion resistance using a rotating cylindrical drum device*

ISO 4671, *Rubber and plastics hoses and hose assemblies — Methods of measurement of the dimensions of hoses and the lengths of hose assemblies*

ISO 7233, *Rubber and plastics hoses and hose assemblies — Determination of resistance to vacuum*

ISO 7326:2006, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8031, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity*

ISO 8033, *Rubber and plastics hoses — Determination of adhesion between components*

ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary*

3 Terms and definitions

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

4 Classification

Hoses are designated as belonging to one of the following groups.

a) Group D: delivery hose, or, with certain restrictions, for use in low-vacuum applications (see footnote to Table 3).

b) Group SD: suction and delivery hose, helix-reinforced.

Both of these groups can be:

— electrically bonded, in which case the hose is designated and marked M-grade; or

— electrically conductive, using a conductive rubber layer, in which case the hose is designated and marked Ω-grade.

5 Materials and construction

If the hose is mandrel-built, particulate-type release agents shall not be used.

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

The hose shall consist of the following:

a) a lining of rubber resistant to hydrocarbon fuels;

b) a reinforcement of layers of woven, braided or spirally wound textile material;

c) an embedded helix reinforcement (group SD only);

d) two or more low-resistance electrical bonding wires (M-grade only);

e) an outer cover of rubber, resistant to abrasion, outdoor exposure and hydrocarbon fuels.

6 Dimensions

6.1 Nominal bore, internal diameter, outside diameter and their tolerances, service reeling diameter and minimum bend radius

When measured in accordance with ISO 4671, the internal diameter and outside diameter and their tolerances shall conform to the values specified in Table 1.

When determined in accordance with ISO 10619-1, the value of the minimum bend radius shall conform to the values specified in Table 1.