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Thermoplastic multi-layer (non-vulcanized) hoses and hose assemblies for the transfer of hydrocarbons, solvents and chemicals — Specification

Tuyaux et flexibles multicouches (non vulcanisés) thermoplastiques pour le transfert des hydrocarbures, des solvants et des produits chimiques — Spécifications

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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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

This second edition cancels and replaces the first edition (ISO 27126:2014), which has been technically revised, based on EN 13765:2018.

The main changes compared to the previous edition are as follows:

— the normative references have been updated and changed (Clause 2);

— lower minimum and/or higher maximum temperature have been added upon agreement with the manufacturer (Clause 4);

— some austenitic steel wire has been added (Clause 5);

— change in length and twist at proof pressure instead maximum working pressure have been modified (Clause 7);

— the electrical resistance requirement between end fittings has been modified (Clause 7);

— marking of the hose and assembly has been updated (Clause 10);

— in Annex D, thickness has been replaced by outside diameter (equals to the distance between the two plates) and tolerances on test force have been added;

— in Annex H, requirements have been added;

— in Annex K and Annex L, tests requirements have been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Thermoplastic multi-layer (non-vulcanized) hoses and hose assemblies for the transfer of hydrocarbons, solvents and chemicals — Specification

WARNING — Persons using this document should be familiar with normal laboratory practice. This document does not purport to address all 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 determine the applicability of any other restrictions.

1 Scope

This document specifies requirements for four types of thermoplastic multi-layer (non-vulcanized) hoses and hose assemblies for carrying hydrocarbons, solvents and chemicals. It specifies bore sizes from 25 mm to 300 mm, working pressures from 0,4 MPa (4 bar) to 1,4 MPa (14 bar) and working temperatures from −30 °C to 150 °C, according to type.

Type 1 hoses are suitable for vapour applications. Types 2 to 4 hoses are suitable for liquid applications.

NOTE 1 See Annex A concerning the selection of the material for the inner wall of layers and any polymeric coating of the internal wire helix related to the chemical(s) to be conveyed by the hoses and/or hose assemblies.

NOTE 2 It is intended that the manufacturer be consulted where a polymeric coated internal wire is being considered for use with low conductivity hydrocarbons or chemicals.

This document does not apply to hoses and hose assemblies for:

— aircraft refuelling (see ISO 1825);

— fuel dispensing (see ISO 5772);

— oil burners (see ISO 6806);

— liquefied petroleum gas and liquefied natural gas (see ISO 27127);

— fire fighting (see ISO 14557);

— offshore liquefied natural gas (see EN 1474-2);

— refrigeration circuits.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 209, *Aluminium and aluminium alloys — Chemical composition*

ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

ISO 1402:2021, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing*

ISO 1817:2015, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 2411, *Rubber- or plastics-coated fabrics — Determination of coating adhesion*

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

ISO 7233:2021, *Rubber and plastics hoses and hose assemblies — Determination of resistance to vacuum*

ISO 7326:2016, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8031:2020, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity*

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

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

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

ISO 16143-3:2014, *Stainless steels for general purposes — Part 3: Wire*

EN 590, *Automotive fuels — Diesel — Requirements and test methods*

EN 10088-3:2014, *Stainless steels — Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Classification

Hoses shall be classified according to working pressure and working temperature range as given in Table 1.

Table 1 — Pressure and temperature range

	Type 1		Type 2		Type 3		Type 4	
	MPa	bar	MPa	bar	MPa	bar	MPa	bar
Maximum working pressure	0,4	4	1,0	10	1,4	14	1,4	14
Proof pressure	0,6	6	1,5	15	2,1	21	2,1	21
Minimum burst pressure	1,6	16	4	40	5,6	56	5,6	56
Vacuum rating	0,05	0,5	0,09	0,9	0,09	0,9	0,09	0,9
Working temperature range (°C)	−20 to +60		−30 to +80		−30 to +80		−30 to +150	
NOTE 1 bar = 0,1 MPa.								

Upon agreement with the manufacturer, lower minimum and/or higher maximum temperature are allowed depending on the materials used and the compatibility with the fluid conveyed at those temperatures. Other properties and requirements mentioned in this document shall be met.