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Rubber hoses and hose assemblies for water suction and discharge— Specification

Tuyaux et flexibles en caoutchouc pour aspiration et refoulement d'eau— 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 document 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).

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This sixth edition cancels and replaces the fifth edition (ISO 4641:2016), which has been technically revised.

The main changes are as follows:

- ~~—~~ publication dates of normative references ISO 7233 and ISO 10619-2 have been updated ([Clause 2](#));
- re-writing the rubber properties limited to [Table 1](#) ([Clause 9](#))
- marking of the hose and assembly has been updated ([Clause 10](#));
- test requirements have been updated in [Annexes A](#) and [B](#).

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.

Rubber hoses and hose assemblies for water suction and discharge — Specification

1 Scope

This document specifies the minimum requirements for textile-reinforced, smooth-bore rubber water-suction and discharge hoses and hose assemblies.

Three types of hoses and hose assemblies are specified according to their operating duty requirements, i.e. their ambient and water temperature ranges:

- ambient temperatures: -25 °C to $+70\text{ °C}$;
- water temperatures during operation: 0 °C to $+70\text{ °C}$.

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

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

ISO 1307, *Rubber and plastics hoses — Hose sizes, minimum and maximum inside diameters, and tolerances on cut-to-length hoses*

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

~~ISO 2393, *Rubber test mixes — Preparation, mixing and vulcanization — Equipment and procedures*~~

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

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

ISO 8331, *Rubber and plastics hoses and hose assemblies — Guidelines for selection, storage, use and maintenance*

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

ISO 10619-2:2021, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 2: Bending tests at sub-ambient temperatures*

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 and hose assemblies for this application are classified into three types according to their operating duty requirements:

- Type 1: light-duty hoses for suction service to $-0,063$ MPa ($-0,63$ bar) and for discharge pressures up to $0,3$ MPa (3 bar);
- Type 2: medium-duty hoses for suction service to $-0,08$ MPa ($-0,8$ bar) and for discharge pressures up to $0,5$ MPa (5 bar);
- ~~—~~Type 3: heavy-duty hoses for suction service to $-0,097$ MPa ($-0,97$ bar) and for discharge pressures up to $1,0$ MPa (10 bar);

5 Coupling and fittings

Hoses shall be fitted with end fittings/couplings to form hose assemblies. [Annex C](#) lists types of coupling and end fitting.

6 Materials and construction

6.1 Lining

The lining shall consist of suitably compounded water-resistant natural or synthetic rubber. Its internal surface shall be smooth and free from imperfections which could impair the expected use.

6.2 Reinforcement

The reinforcement shall consist of a suitable textile material and may contain a helix that can be composed of metallic wire or of another suitable material.

6.3 Cover

The cover shall consist of suitably compounded natural or synthetic rubber. Its external surface may be corrugated or fluted. An external helix is optional and can be either composed of metallic wire or of another suitable material.

7 Dimensions and tolerances

7.1 Inside diameter

The nominal size range is 16 to 315 with inside diameters and tolerances in millimetres as shown in [Table 3](#).

7.2 Enlarged ends

Where enlarged ends are required, the dimensions and tolerances shall be specified by agreement between the purchaser and the manufacturer. The design of the enlarged end shall take into account the hose performance requirements.