INTERNATIONAL STANDARD

ISO 4641

Second edition
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Rubber hoses for water suction and discharge — Specification

Tuyaux en caoutchouc pour aspiration et refoulement d'eau — Spécifications

Reference number
ISO 4641:1991(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 4641 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

This second edition cancels and replaces the first edition (ISO 4641:1979), of which it constitutes a technical revision.

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Rubber hoses for water suction and discharge — Specification

1 Scope

This International Standard specifies the minimum requirements for textile-reinforced, smooth-bore water-suction and discharge hoses.

Two types are specified, as follows:

— Type 1: Light-duty hoses for suction service to − 63 kPa (− 630 mbar) and for discharge pressures to 0,3 MPa (3 bar).

— Type 2: Heavy-duty hoses for suction service to − 80 kPa (− 800 mbar) and for discharge pressures to 0,5 MPa (5 bar).

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 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 7233:1983, *Rubber and plastics hoses and hose assemblies — Vacuum resistance — Methods of test.*

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

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

3 Dimensions and tolerances

The bore size range is 16 mm to 315 mm with bore tolerances in accordance with the requirements of ISO 1307.

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.

The unit lengths shall be determined according to the conditions of use. The tolerances, unless otherwise agreed between the purchaser and the manufacturer, shall be those specified in ISO 1307.

4 Materials and construction

4.1 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.

4.2 Reinforcement

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

4.3 Cover

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

5 Performance requirements

5.1 Hydrostatic tests

5.1.1 Proof test

When tested by the method specified in ISO 1402, at pressures specified in table 1, hoses shall not burst or show signs of leakage, cracking, abrupt distortion indicating irregularities in material or manufacture, or other signs of failure.

5.1.2 Bursting test

When tested by the method specified in ISO 1402, hoses shall meet the requirements of table 1.

Table 1 — Pressure requirements

Pressures in megapascals

Type	Maximum working pressure	Proof pressure	Minimum burst pressure
1	0,3	0,5	1,0
2	0,5	0,8	1,6

5.2 Resistance to suction flattening

The test shall be carried out in accordance with ISO 7233. The test conditions are as follows:

— 63 kPa (— 630 mbar) for type 1;

— 80 kPa (— 800 mbar) for type 2.

Duration of test: 10 min

For hoses of nominal internal diameter greater than 80 mm (ISO 7233, method B), the measured collapse shall not exceed 5 % of the nominal internal diameter.

5.3 Resistance to bending

When subjected to the bends given in table 2, in accordance with the methods specified in ISO 1746, hoses shall show no kinking, breaking or peeling under visual examination. The value of T/D shall not be lower than 0,95.

Table 2 — Minimum bend radii

Dimensions in millimetres

Nominal bore	Minimum bend radius
16	50
20	60
25	75
31,5	95
40	120
50	150
63	250
80	320
100	500
125	750
160	960
200	1 200
250	1 500
315	1 900

5.4 Adhesion between components

When tested in accordance with ISO 8033, the adhesion values between components shall be at least 2,0 kN/m.

5.5 Ozone test (cover only)

When tested in accordance with method 3 of ISO 7326, the test piece shall show no signs of cracking after an exposure of 48 h.

6 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 hose type;

d) the hose nominal bore;

e) the year (last two digits) and quarter of manufacture.

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Descriptors: rubber products, hoses, rubber hoses, suction hoses, specifications, tests, marking.

Price based on 2 pages