
**Plastics hose — General-purpose
collapsible water hose, textile-
reinforced — Specification**

*Tuyaux plastiques — Tuyaux d'eau écrasables d'usage général
renforcés textiles — 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 8029 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

This second edition cancels and replaces the first edition (ISO 8029:1985), which has been technically revised.

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Introduction

This International Standard has been prepared to provide minimum requirements for the satisfactory performance of textile-reinforced thermoplastic collapsible water hose, for discharge applications, conveying water, aqueous sludge or slurries.

In view of such applications, requirements, and the corresponding tests, have been specified for exposure to laboratory light sources (see 8.2.5) and for abrasion resistance (see 8.2.6).

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Plastics hose — General-purpose collapsible water hose, textile-reinforced — Specification

1 Scope

This International Standard specifies the requirements for four types of textile-reinforced thermoplastics collapsible water hoses for general applications for use in the temperature range of $-10\text{ }^{\circ}\text{C}$ to $+55\text{ }^{\circ}\text{C}$.

Such hoses are classified into four types, as follows:

- low pressure, designed for a maximum working pressure of up to 4,0 bar at $23\text{ }^{\circ}\text{C}$ and up to 2,0 bar at $55\text{ }^{\circ}\text{C}$;
- medium pressure, for a maximum working pressure of up to 7,0 bar at $23\text{ }^{\circ}\text{C}$ and up to 3,6 bar at $55\text{ }^{\circ}\text{C}$;
- high pressure, for a maximum working pressure of up to 10,0 bar at $23\text{ }^{\circ}\text{C}$ and up to 5,1 bar at $55\text{ }^{\circ}\text{C}$;
- extra-high pressure, for a maximum working pressure of up to 15,5 bar at $23\text{ }^{\circ}\text{C}$ and up to 7,9 bar at $55\text{ }^{\circ}\text{C}$.

This standard does not apply to products used for fire-fighting or the conveyance of drinking water.

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2 Normative references

The following referenced documents are indispensable for the application 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 3, *Preferred numbers — Series of preferred numbers*

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 1746:—¹⁾, *Rubber or plastics hoses and tubing — Bending tests*

ISO 4892-2, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps*

ISO 4892-3, *Plastics — Methods of exposure to laboratory light sources — Part 3: Fluorescent UV lamps*

ISO 4892-4, *Plastics — Methods of exposure to laboratory light sources — Part 4: Open-flame carbon-arc lamps*

1) To be published. (Revision of ISO 1746:1998)

ISO 8033, *Rubber and plastics hose — 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 9352, *Plastics — Determination of resistance to wear by abrasive wheels*

ISO/TR 17784:2003, *Rubber and plastics hoses and hose assemblies — Guide for use by purchasers, assemblers, installers and operating personnel*

ISO 23529, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

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 one of the following four types depending on their pressure rating at the specified temperatures:

- Type A: Low working pressure hose, designed for a maximum working pressure of up to 4,0 bar at 23 °C and up to 2,0 bar at 55 °C;
- Type B: Medium working pressure hose, designed for a maximum working pressure of up to 7,0 bar at 23 °C and up to 3,6 bar at 55 °C;
- Type C: High working pressure hose, designed for a maximum working pressure of up to 10,0 bar at 23 °C and up to 5,1 bar at 55 °C;
- Type D: Extra high working pressure hose, designed for a maximum working pressure of up to 15,5 bar at 23 °C and up to 7,9 bar at 55 °C.

5 Couplings and end fittings

Hoses may be fitted with the appropriate coupling type and the end fitting to form hose assemblies.

NOTE Guidance on coupling type is given in Annex D and ISO/TR 17784:2003, Clause 7: Couplings.

6 Materials and construction

The hose shall consist of

- a) a flexible thermoplastic lining;
- b) a reinforcement made of natural or synthetic textile material, applied by any suitable technique;
- c) a flexible thermoplastic cover.

The lining and the cover shall be of uniform thickness, fully gelled and free from visible cracks, porosity, foreign inclusions and other defects. The cover may have a smooth or fluted finish, and shall be abrasion-resistant.

7 Dimensions and tolerances

7.1 Inside diameter and tolerance

The inside diameter of the hose and the tolerance on the inside diameter shall meet the requirements of Table 1.

Table 1 — Nominal bore, inside diameter and tolerance on inside diameter

Nominal bore	Inside diameter mm	Tolerance on I.D. mm
19	19	±1,5
25	25	±1,5
31,5	31,5	±1,5
40	40	±1,75
50	50	±1,75
63	63	±1,75
65	65	±2,0
75	75	±2,0
80	80	±2,25
100	100	±2,25
125	125	±2,25
150	150	±2,25
160	160	±2,25
200	200	±3,0
250	250	±3,0
300	300	±3,0
350	350	±4,0
400	400	±4,0

NOTE If special cases call for extra sizes:

- for smaller or larger dimensions, further numbers shall be chosen from the R10 series of preferred numbers (see ISO 3), with tolerances as given in ISO 1307;
- for intermediate dimensions, numbers shall be chosen from the R20 series of preferred numbers (see ISO 3), with the tolerances as given for the next-larger size in the table above.

7.2 Tolerance on length

If the cut length of the hose is less than or equal to 1 800 mm, the tolerance on length shall be as specified in ISO 1307.

If the cut length of the hose is over 1 800 mm, the tolerance shall be ±2 % of the length specified.

8 Physical properties

8.1 Plastic compounds

The physical properties of compounds used for the lining and the cover shall conform to the values in Table 2, when determined by the methods listed in the table.

Tests shall be carried out either on test pieces taken from the hose or on test pieces taken from sheet made, using a laboratory press, under the same conditions as used in the manufacture of the hose.

Table 2 — Physical properties of compounds

Property	Requirements		Test method
	Lining	Cover	
Tensile strength (min.), MPa	10,0	10,0	ISO 37 (dumb-bell test piece)
Elongation at break (min.), %	160	160	ISO 37 (dumb-bell test piece)
Ageing			ISO 188 (48 h at +70 °C, air-oven method)
Max. change in tensile strength from original value, %	±20	±20	ISO 37 (dumb-bell test piece)

8.2 Performance requirements for finished hose

8.2.1 Hydrostatic requirements at standard laboratory temperature

When tested at standard laboratory temperature as specified in ISO 23529, by the method described in ISO 1402, hoses shall withstand the appropriate proof and minimum burst pressures specified in Table 3.

At the maximum working pressure appropriate to the type and size of hose as specified, the change in length of the hose shall not exceed $\pm 7\%$ and the change in diameter of the hose shall be no greater than $\pm 20\%$ when measured by the method described in ISO 1402.

During and after the proof pressure hold test described in ISO 1402, the hose shall be examined for evidence of leakage, cracking, abrupt distortion or other signs of failure indicating irregularities in material or manufacture. No such defects shall be observed.

Table 3 — Hydrostatic-pressure requirements at 23 °C

I.D. mm	Pressure bar ^a											
	Type A			Type B			Type C			Type D		
	Max. working pressure	Proof pressure	Min. burst pressure	Max. working pressure	Proof pressure	Min. burst pressure	Max. working pressure	Proof pressure	Min. burst pressure	Max. working pressure	Proof pressure	Min. burst pressure
19	—	—	—	7,0	10,5	21,0	10,0	15,0	30,0	15,5	23,2	46,5
25	—	—	—	7,0	10,5	21,0	10,0	15,0	30,0	15,5	23,2	46,5
31,5	—	—	—	7,0	10,5	21,0	10,0	15,0	30,0	15,5	23,2	46,5
40	4,0	6,0	12,0	7,0	10,5	21,0	10,0	15,0	30,0	15,5	23,2	46,5
50	4,0	6,0	12,0	7,0	10,5	21,0	10,0	15,0	30,0	15,5	23,2	46,5
63	4,0	6,0	12,0	7,0	10,5	21,0	10,0	15,0	30,0	15,5	23,2	46,5
65	4,0	6,0	12,0	7,0	10,5	21,0	10,0	15,0	30,0	15,5	23,2	46,5
75	3,0	4,5	9,0	7,0	10,5	21,0	9,0	13,5	27,0	11,5	17,2	34,5
80	3,0	4,5	9,0	7,0	10,5	21,0	9,0	13,5	27,0	11,5	17,2	34,5
100	3,0	4,5	9,0	7,0	10,5	21,0	9,0	13,5	27,0	—	—	—
125	2,5	3,7	7,5	5,0	7,5	15,0	7,0	10,5	21,0	—	—	—
150	2,5	3,7	7,5	5,0	7,5	15,0	7,0	10,5	21,0	—	—	—
160	2,5	3,7	7,5	5,0	7,5	15,0	7,0	10,5	21,0	—	—	—
200	2,5	3,7	7,5	4,0	6,0	12,0	5,0	7,5	15,0	—	—	—
250	2,0	3,0	6,0	4,0	6,0	12,0	5,0	7,5	15,0	—	—	—
300	2,0	3,0	6,0	—	—	—	—	—	—	—	—	—
350	2,0	3,0	6,0	—	—	—	—	—	—	—	—	—
400	2,0	3,0	6,0	—	—	—	—	—	—	—	—	—

^a 1 bar = 0,1 MPa.

8.2.2 Hydrostatic-pressure requirements at 55 °C

When tested by the method specified in ISO 1402 at (55 ± 2) °C, hoses shall withstand the appropriate proof and minimum burst pressures specified in Table 4.

8.2.3 Adhesion test

When determined in accordance with ISO 8033 (using type 1 test pieces for inside diameters of less than 32 mm and type 2 test pieces for inside diameters of 32 mm and greater) at standard laboratory temperature as specified in ISO 23529, the adhesion between the lining and the reinforcement, between the layers of reinforcement and between the reinforcement and the cover shall not be less than 1,5 kN/m.