International Standard 1403

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Rubber hoses for water, general purpose — Specification

Tuyaux en caoutchouc pour l'eau, à usages généraux — Spécifications

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 1403 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products.*

This second edition cancels and replaces the first edition (ISO 1403:1976), of which clauses 1 to 4, sub-clause 5.2 and clauses 6 and 7 have been technically revised.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Rubber hoses for water, general purpose — Specification

1 Scope and field of application

This International Standard specifies the minimum acceptance requirements for the satisfactory performance of three types of general purpose rubber water hose for use at up to 60 °C:

Type 1 — Low pressure: Designed for a maximum working pressure of 0,6 MPa (6 bar) for all sizes.

Type 2 — Medium pressure: Designed for a maximum working pressure of 1,0 MPa (10 bar) for sizes up to and including 50 mm nominal bore.

Type 3 — High pressure: Designed for a maximum working pressure of 2,5 MPa (25 bar) for sizes up to and including 25 mm nominal bore.

NOTE — These hoses should not be used for conveying potable (drinking) water.

The list of nominal bore sizes given in table 1 [based on the R 10 series of preferred numbers (see ISO 3)] is not intended to be restrictive and does not preclude the manufacture of sizes outside this list which may be the subject of individual national standards.

2 References

ISO 3, *Preferred numbers — Series of preferred numbers.*

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

ISO 188, *Rubber, vulcanized — Accelerated ageing or heat-resistance tests.*

ISO 1307, *Rubber and plastics hoses — Bore diameters and tolerances on length.*

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

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

ISO 7751, *Rubber and plastics hoses and hose assemblies — Ratios of proof and burst pressure to design working pressure.*

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

3 Construction

The hose shall consist of

— a rubber lining;

— a reinforcement of natural or synthetic fibres;

— a rubber cover.

4 Sizes and tolerances

4.1 Nominal bore

The bore of the hose shall be in accordance with the nominal dimensions and tolerances given in table 1, which is in accordance with ISO 1307.

Table 1 — Nominal bores and tolerances

Values in millimetres

Nominal bore	Tolerance
10	± 0,75
12,5	± 0,75
16	± 0,75
20	± 0,75
25	± 1,25
31,5	± 1,25
40	± 1,50
50	± 1,50
63	± 1,50
80	± 2,00
100	± 2,00

NOTE — If special cases call for extra sizes:

a) for smaller or larger dimensions, further numbers shall be chosen from the R 10 series of preferred numbers (see ISO 3) with tolerances as specified in ISO 1307;

b) for intermediate dimensions, numbers shall be chosen from the R 20 series of preferred numbers (see ISO 3), with the tolerances as for the next larger bore size from the R 20 series.

4.2 Cut lengths

The tolerances on cut lengths of hose shall be as specified in ISO 1307.

5 Physical tests on finished hoses

5.1 Tensile strength and elongation at break of rubber lining and cover

The rubber used for the lining and cover of the hose shall, when tested in accordance with ISO 37, have a tensile strength and elongation at break of not less than the values given in table 2.

Table 2 — Tensile strength and elongation at break

Hose type	Hose element	Tensile strength MPa	Elongation at break %
1 and 2	Lining Cover	5,0	200
3	Lining Cover	7,0	200

5.2 Accelerated ageing test

After ageing for 3 days at a temperature of 70 ± 1 °C as specified in ISO 188, the tensile strength and elongation at break of the lining and cover shall not vary by more than −25 % and +10 % to −30 % respectively from the initial values.

5.3 Hydrostatic test

When tested in accordance with ISO 1402, the hose shall meet the requirements of table 3.

Table 3 — Hydrostatic test requirements

Hose type	Working pressure		Proof pressure		Burst pressure	
	MPa	bar	MPa	bar	MPa	bar
1	0,60	6,0	0,96	9,6	1,89	18,9
2	1,0	10,0	1,6	16,0	3,15	31,5
3	2,5	25,0	4,0	40,0	7,88	78,8

5.4 Performance requirements

The maximum variation in length and outside diameter at proof pressure shall be ± 7 %.

5.5 Adhesion test

When tested in accordance with ISO 8033, the adhesion between the various elements shall be not less than 1,5 kN/m.

5.6 Ozone test

When tested in accordance with ISO 7326, the test piece shall show no signs of cracking.

6 Marking

Each length of hose shall bear the following information either by indelible marking on the hose or on a label tied to each end of the hose:

a) the manufacturer's name or trade mark;

b) the number of this International Standard;

c) the statement "non-potable water";

d) the nominal bore size;

e) the design working pressure;

f) the quarter and the year of manufacture.