
International Standard



6224

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Plastics hoses, textile-reinforced, for water — Specification

Tuyaux thermoplastiques à armature textile pour l'eau — Spécifications

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

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.

International Standard ISO 6224 was developed by Technical Committee ISO/TC 45, *Rubber and rubber products*, and was circulated to the member bodies in March 1979.

It has been approved by the member bodies of the following countries :

| | | |
|---------------------|------------------------|----------------|
| Australia | Germany, F.R. | Spain |
| Austria | Greece | Sri Lanka |
| Belgium | Hungary | Sweden |
| Bulgaria | Libyan Arab Jamahiriya | Thailand |
| Canada | Mexico | Turkey |
| Czechoslovakia | Netherlands | United Kingdom |
| Denmark | Poland | USA |
| Egypt, Arab Rep. of | Romania | USSR |
| France | South Africa, Rep. of | |

No member body expressed disapproval of the document.

Plastics hoses, textile-reinforced, for water — Specification

1 Scope and field of application

This International Standard specifies requirements for three types of textile-reinforced thermoplastic water hoses, for pressure applications up to a maximum temperature of +55 °C, as follows :

Type 1 — Light service, for use in areas where severe abrasion is not encountered, and with a design working pressure of 0,6 MPa (all sizes).

Type 2 — Heavy service, for use in areas where severe abrasion is expected, and with a design working pressure of 1,0 MPa (all sizes).

Type 3 — Heavy service, for use in areas where high resistance to collapse and crush is necessary and with a design working pressure of 2,5 MPa (sizes up to 25 mm).

NOTE — Satisfactory methods of test for resistance to abrasion, collapse, crushing and ultra-violet light do not exist at present. Requirements will be added as and when such methods become available.

2 References

ISO/R 36, *Determination of the adhesion strength of vulcanized rubbers to textile fabrics.*

ISO 176, *Plastics — Determination of loss of plasticizers — Activated carbon method.*

ISO 471, *Rubber — Standard temperatures, humidities and times for the conditioning and testing of test pieces.*

ISO 1307, *Rubber hose — Bore sizes, tolerances on length, and test pressures.*

ISO 1402, *Rubber hose — Hydrostatic testing.*

ISO 1746, *Rubber hose — Bending test.*

ISO 4672, *Rubber products — Hoses — Low temperature flexibility tests.*

3 Construction

Hoses shall be as uniform as is commercially practicable in colour, opacity and other physical properties, and shall consist of :

- a flexible thermoplastic lining;
- a reinforcing layer, or layers, of natural or synthetic textile, applied by any suitable technique;
- a flexible thermoplastic cover which may have a smooth or fluted finish. The colour may be different from that of the lining.

The cover and lining shall be fully gelled and shall be free from visible cracks, porosity, foreign inclusions or other defects causing the hose to be unserviceable. They shall not contain open cells or porosity.

4 Dimensions and tolerances

4.1 Bore size

Bore sizes and tolerances shall be as shown in table 1, which is in accordance with ISO 1307.

Table 1 — Nominal bores and tolerances

| Dimensions 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 |

NOTE — If special cases call for extra sizes :

- for smaller or larger dimensions, further numbers should be chosen from the R10 series of preferred numbers, with tolerances as given in ISO 1307;
- for intermediate dimensions, numbers should be chosen from the R20 series of preferred numbers, with the tolerances as given for the next larger size.

4.2 Length

The tolerance on cut lengths shall be as specified in ISO 1307.

5 Pressure rating

The design working pressure of the hoses shall comply with the requirements of table 2.

6 Hydrostatic tests

When tested by the method specified in ISO 1402 at standard laboratory temperature as specified in ISO 471, the hoses shall withstand the appropriate proof and minimum burst pressures specified in table 2.

During and after the proof pressure hold test, the hose shall be examined and shall show no evidence of leakage, cracking and abrupt distortion, indicating irregularity in materials or manufacture, or other signs of failure.

7 Minimum bend radius

When tested by the method specified in ISO 1746, using a minimum radius of curvature of five times the nominal bore size, the hose shall show no signs of collapse.

8 Adhesion

When tested by the method specified in ISO/R 36, the adhesion between lining and cover shall be not less than 1,4 kN/m.

9 Loss in mass on heating

When tested by the method specified in ISO 176, samples of the lining and cover shall have a loss in mass not greater than 4 %.

10 Low temperature flexibility

When tested by the method specified in ISO 4672 at $-10\text{ }^{\circ}\text{C}$, the hose shall be capable of being bent to a radius of 10 times the nominal bore size without kinking or any sign of cracking, and with a maximum increase in stiffness of 15 times.

11 Marking

The hose shall be marked using a contrasting indelible ink with the following information or as agreed between the purchaser and the supplier :

- a) the number of this International Standard;
- b) the manufacturer's name or trademark;
- c) the hose type;
- d) the nominal bore.

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Table 2 – Working pressures at standard laboratory temperature

| Type | Design working pressure | | Proof pressure | | Minimum burst pressure | |
|------|-------------------------|--------|----------------|--------|------------------------|---------|
| | MPa | (bar) | MPa | (bar) | MPa | (bar) |
| 1 | 0,6 | (6,0) | 0,75 | (7,5) | 1,5 | (15,0) |
| 2 | 1,0 | (10,0) | 1,6 | (16,0) | 3,15 | (31,5) |
| 3 | 2,5 | (25,0) | 5,0 | (50,0) | 10,0 | (100,0) |