
International Standard



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Plastics hoses — Textile-reinforced thermoplastics type for compressed air — Specification

Tuyaux en plastiques — Type en thermoplastique armé de textile pour l'air comprimé — 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 5774 was developed by Technical Committee ISO/TC 45, *Rubber and rubber products*, and was circulated to the member bodies in March 1978.

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

| | | |
|---------------------|----------------|----------------|
| Australia | France | Romania |
| Austria | Germany, F. R. | Sweden |
| Belgium | India | Thailand |
| Brazil | Italy | Turkey |
| Bulgaria | Korea, Rep. of | United Kingdom |
| Canada | Mexico | USA |
| Czechoslovakia | Netherlands | USSR |
| Egypt, Arab Rep. of | Poland | |

No member body expressed disapproval of the document.

Plastics hoses — Textile-reinforced thermoplastics type for compressed air — Specification

1 Scope and field of application

This International Standard specifies requirements for two types of thermoplastics hoses with textile reinforcement for application in the temperature range $-10\text{ }^{\circ}\text{C}$ to $+55\text{ }^{\circ}\text{C}$ as follows :

Type A — Industrial air hoses with a maximum working pressure of 1,0 MPa (10 bar).

Type C — Air hoses for heavy duty mining and construction work with a maximum working pressure of 1,6 MPa (16 bar).

NOTE — Requirements for types B and D hoses, corresponding with ISO 2398, *Industrial rubber hose for compressed air (up to 2,5 MPa)*, will be added later.

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 1402, *Rubber hose — Hydrostatic testing*.

ISO 1817, *Vulcanized rubbers — Resistance to liquids — Methods of test*.

3 Materials and construction

3.1 The hose shall be as uniform as commercially practicable in colour, opacity and other physical properties and shall consist of

- a flexible thermoplastics lining resistant to oil mist;
- a natural or synthetic textile reinforcement;
- a flexible thermoplastics cover, which may have a smooth or fluted finish as agreed between the purchaser and the supplier. The colour may be different from that of the lining.

3.2 The cover and lining shall be fully gelled and free from visible cracks, porosity, foreign inclusions or other defects which might affect serviceability.

4 Dimensions and tolerances

4.1 Bore

Bores and tolerances shall be in accordance with the nominal dimensions given in table 1.

Table 1 — Nominal bores

Dimensions in millimetres

| Type A | | Type C | |
|--------------|------------|--------------|------------|
| Nominal bore | Tolerance | Nominal bore | Tolerance |
| 5 | $\pm 0,5$ | | |
| 6,3 | | — | |
| 8 | | — | |
| 10 | | — | |
| 12,5 | $\pm 0,75$ | 12,5 | $\pm 0,75$ |
| 16 | | 16 | |
| 20 | | 20 | |
| 25 | $\pm 1,25$ | 25 | $\pm 1,25$ |
| 31,5 | | 31,5 | |
| 40 | $\pm 1,50$ | 40 | $\pm 1,50$ |
| 50 | | 50 | |

4.2 Length

The tolerance on cut lengths shall be in accordance with table 2.

Table 2 — Tolerance on cut lengths

Dimensions in millimetres

| Length | Tolerance |
|---------------------|-----------|
| up to 300 | ± 3 |
| over 300 to 600 | $\pm 4,5$ |
| over 600 to 900 | ± 6 |
| over 900 to 1 200 | ± 9 |
| over 1 200 to 1 800 | ± 12 |
| over 1 800 | $\pm 1\%$ |

5 Physical requirements for finished hoses

5.1 Hydrostatic requirements

5.1.1 The hoses, when tested by the method described in ISO 1402, shall meet the requirements specified in table 3.

Table 3 – Hydrostatic requirements at 23 ± 2 °C

| Characteristic | Type A | Type C |
|--------------------------------------|------------------|------------------|
| Design working pressure | 1,0 MPa (10 bar) | 1,6 MPa (16 bar) |
| Proof pressure | 2,0 MPa (20 bar) | 4,0 MPa (40 bar) |
| Change in diameter at proof pressure | ± 10 % | ± 10 % |
| Change in length at proof pressure | ± 8 % | ± 8 % |
| Minimum burst pressure | 4,0 MPa (40 bar) | 8,0 MPa (80 bar) |

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

5.2 Adhesion

When tested in accordance with ISO/R 36, the adhesion between lining and reinforcement, and between reinforcement and cover, shall be not less than 1,5 kN/m.

5.3 Cold bend radius

The hose shall be subjected to a temperature of $-10 \pm 0,3$ °C for 24 h in a straight position. After this time and while still at -10 °C, the hose shall be evenly and uniformly bent over a mandrel having a diameter equal to twice the minimum bend radius specified in table 4. Bending shall be accomplished within a period of not less than 8 s and not more than 12 s.

Hoses of less than 25 mm nominal bore shall be bent through 180° over the mandrel, and hoses of 25 mm nominal bore and above shall be bent through 90° over the mandrel.

After bending, the hose shall be allowed to warm to room temperature and shall be visually examined for cover cracks, then subjected to the proof test described in ISO 1402 at the

appropriate value specified in table 3. There shall be no cover cracks or leakage.

Table 4 – Minimum bend radius

Dimensions in millimetres

| Nominal bore | Bend radius |
|--------------|-------------|
| 5 | 90 |
| 6,3 | 100 |
| 8 | 115 |
| 10 | 125 |
| 12,5 | 180 |
| 16 | 205 |
| 20 | 240 |
| 25 | 300 |
| 31,5 | 420 |
| 40 | 500 |
| 50 | 630 |

5.4 Loss in mass on heating

Samples of lining and cover, when tested in accordance with ISO 176 (method B), shall not show a loss in mass greater than 4 %.

5.5 Resistance to liquids

The lining, when tested by the method described in ISO 1817, immersing in oil No. 1 for $70 \pm 0,5$ h at a temperature of 55 °C, shall not show a volume change greater than 15 %.

6 Marking

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

- manufacturer's name or trade mark;
- the number of this International Standard;
- the hose type and nominal bore;
- year of manufacture (last two digits).