INTERNATIONAL STANDARD

**ISO 8028**

Second edition
1999-07-15

# Rubber and/or plastics hoses and hose assemblies for airless paint spraying — Specification

*Tuyaux et flexibles en caoutchouc et/ou en plastique pour pulvérisation «AIRLESS» des peintures — Spécifications*



Reference number
ISO 8028:1999(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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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 8028 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 8028:1987) which has been technically revised.





International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland
Internet iso@iso.ch

Printed in Switzerland

# Rubber and/or plastics hoses and hose assemblies for airless paint spraying — Specification

**WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.**

## 1 Scope

This International Standard specifies the requirements for four types, differentiated by burst pressure and temperature of use, of elastomeric hose and hose assembly for use in airless paint spraying.

## 2 Normative references



The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.



ISO 471:1995, *Rubber — Temperatures, humidities and times for conditioning and testing.*

ISO 1402:1994, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing.*

ISO 1817:1999, *Rubber, vulcanized — Determination of the effect of liquids.*

ISO 6803:1994, *Rubber or plastics hoses and hose assemblies — Hydraulic-pressure impulse test without flexing.*

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

ISO 7751:1991, *Rubber and plastics hoses and hose assemblies — Ratios of proof and burst pressure to design working pressure.*

ISO 8031:1993, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance.*

ISO 8033:1991, *Rubber and plastics hoses — Determination of adhesion between components.*

ISO 8580:1987, *Rubber and plastics hoses — Determination of ultra-violet resistance under static conditions.*

## 3 Types of hose

Four types of hose and hose assembly are specified, as follows:

— Type A: Assemblies designed for a maximum working pressure of 200 bar (20 MPa), intended for spraying paints containing solvents at temperatures from –20 °C to +50 °C.

— Type B: Assemblies designed for a maximum working pressure of 360 bar (36 MPa), intended for spraying paints containing solvents at temperatures from –20 °C to + 50 °C.

— Type C: Assemblies designed for a maximum working pressure of 200 bar (20 MPa), intended for spraying paints containing solvents at temperatures from –20 °C to + 80 °C.

— Type D: Assemblies designed for a maximum working pressure of 360 bar (36 MPa), intended for spraying paints containing solvents at temperatures from –20 °C to + 80 °C.

## 4 Construction and materials

The hose for use in assemblies shall consist of a smooth seamless lining of rubber or plastics material, a reinforcement and a cover of rubber or plastics material. With a composite hose, normally a plastic tube is used and a rubber cover.

The hose construction shall contain an electrically conductive element capable of being connected to the end fittings to ensure compliance with 6.3 throughout the expected life of the hose assembly.

The hose shall have permanent couplings. The couplings shall be electrically conducting and connected to the conductive element constructed in the hose.

## 5 Dimensions and tolerances

The internal diameters and tolerances shall be in accordance with the values given in Table 1.



**Table 1 — Diameters and tolerances**

Dimensions in millimetres



| Internal diameter | Tolerance |
|---|---|
| 3,2<br>4<br>5 | ± 0,5 |
| 6,3<br>8<br>9,5<br>12,5 | ± 0,75 |

## 6 Performance requirements for finished assemblies

NOTE All test pieces used in hydrostatic and pulse tests should preferably be destroyed at the end of the test.

### 6.1 Hydrostatic requirements

When tested at a standard laboratory temperature as specified in ISO 471 by the method specified in ISO 1402, the assemblies shall withstand the appropriate proof and minimum bursting pressures given in Table 2.

When testing the assemblies at proof or minimum bursting pressure, the appropriate pressure shall be maintained for 1 min and no leakage shall occur.

The ratios of working pressure, proof pressure and minimum bursting pressure are in accordance with the values given for No. 2 types of ISO 7751:1991.

**Table 2 — Hydrostatic-pressure requirements**

| Hose type | Working pressure<br>bar[a] | Proof pressure<br>bar | Minimum bursting pressure<br>bar |
|---|---|---|---|
| A | 200 | 400 | 800 |
| B | 360 | 720 | 1 440 |
| C | 200 | 400 | 800 |
| D | 360 | 720 | 1 440 |

[a] 1 bar = 0,1 MPa

### 6.2 Pulse test requirements

Four assemblies shall be tested in accordance with ISO 6803. The pulse pressure used shall be 125 % of the working pressure. The test temperature shall be 50 °C for types A and B and 80 °C for types C and D. Each test assembly shall withstand 150 000 pulses without leaking, cracking, abrupt distortion or other signs of failure. At the end of 150 000 cycles, the hose assembly shall meet the requirements of 6.3.

### 6.3 Electrical-continuity requirements

When tested for electrical continuity in accordance with ISO 8031, every hose assembly shall have a maximum resistance of $3 \times 10^4\ \Omega$/m.



### 6.4 Adhesion requirements



When tested in accordance with ISO 8033, the adhesion between components shall be not less than 2,0 kN. With a plastics tube and rubber cover, the rubber shall adhere continuously to the plastics layer.

### 6.5 Ultra-violet resistance (plastics cover only)

When tested in accordance with ISO 8580:1987, method 1, the test piece shall show no signs of cracking.

### 6.6 Resistance to ozone (rubber cover only)

When tested in accordance with Method 1 of ISO 7326:1991, the test piece shall show no signs of cracking.

## 7 Physical requirements of lining

When the lining compound is tested in accordance with 8.3 of ISO 1817:1999 and immersed in the liquids given in Table 3 for $(72^{\ 0}_{-2})$ h at a standard laboratory temperature as specified in ISO 471, the test piece shall show no decrease in volume and any increase in volume shall not exceed the values given in Table 3.

**Table 3 — Maximum increase in volume of test piece**

| Test liquid | Percentage increase in volume, max. | |
|---|---|---|
| | Types A and B | Types C and D |
| Toluene | 10 | 5 |
| Acetone | 10 | 5 |
| Ethanol | 15 | 15 |
| White spirit, commercial grade | — | 5 |
| Dioctylphthalate | — | 5 |

## 8 Marking

Each hose assembly shall be clearly and durably marked, at least every metre, with at least the following information:

a) the manufacturer's name or identification;

b) the manufacturer's product identification (optional);

c) the number of this International Standard;

d) the type of hose;

e) the working pressure, in bars, and maximum temperature, in degrees Celsius (°C);

f) the internal diameter, in millimetres;

g) the quarter and year of manufacture (e.g. 3Q98).

**ICS 83.140.40; 87.100**

Price based on 4 pages