BRITISH STANDARD

BS EN ISO
8028:2000

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

The European Standard EN ISO 8028:2000 has the status of a British Standard

ICS 83.140.40; 87.100

National foreword

This British Standard is the official English language version of EN ISO 8028:2000. It is identical with ISO 8028:1999. It supersedes BS EN 28028:1993 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee PRI/66, Rubber & Plastics Tubing, Hoses, to Subcommittee PRI/66/1, Industrial, chemical and petrochemical applications, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, the EN ISO title page, the EN ISO foreword page, the ISO title page, page ii, pages 1 to 4, the annex ZA page and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard, having been prepared under the direction of the Sector Committee for Materials and Chemicals, was published under the authority of the Standards Committee and comes into effect on 15 December 2000

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 8028

August 2000

ICS 83.140.40; 87.100

Supersedes EN 28028:1993

English version

Rubber and/or plastics hoses and hose assemblies for airless paint spraying - Specification (ISO 8028:1999)

Tuyaux et flexibles en caoutchouc et/ou en plastique pour pulvérisation “AIRLESS” des peintures - Spécifications (ISO 8028:1999)

Gummi- und/oder Kunststoffschläuche und -schlauchleitungen für das luftfreie Farbspritzen - Spezifikation (ISO 8028:1999)

This European Standard was approved by CEN on 13 July 2000.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN ISO 8028:2000 E

Foreword

The text of the International Standard from Technical Committee ISO/TC 45 "Rubber and rubber products" of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 218 "Rubber and plastics hoses and hose assemblies", the secretariat of which is held by BSI.

This European Standard replaces EN 28028:1993.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2001, and conflicting national standards shall be withdrawn at the latest by February 2001.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 8028:1999 has been approved by CEN as a European Standard without any modification.

NOTE: Normative references to International Standards are listed in annex ZA (normative).

EN ISO 8028:2000

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.

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 4 5	± 0,5
6,3 8 9,5 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 bar[a]	Proof pressure bar	Minimum bursting pressure bar
A	200	400	800
B	360	720	1440
C	200	400	800
D	360	720	1440

[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 150000 pulses without leaking, cracking, abrupt distortion or other signs of failure. At the end of 150000 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 10^4 /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)

Annex ZA (normative)
Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

Publication	Year	Title	EN	Year
ISO 1402	1994	Rubber and plastics hoses and hose assemblies — Hydrostatic testing	EN ISO 1402	1996
ISO 6803	1994	Rubber or plastics hoses and hose assemblies — Hydraulic-pressure impulse test without flexing	EN ISO 6803	1997
ISO 7326	1991	Rubber and plastics hoses — Assessment of ozone resistance under static conditions	EN 27326	1993
ISO 7751	1991	Rubber and plastics hoses and hose assemblies — Ratios of proof and burst pressure to design working pressure	EN ISO 7751	1997
ISO 8031	1993	Rubber and plastics hoses and hose assemblies — Determination of electrical resistance	EN ISO 8031	1997
ISO 8033	1991	Rubber and plastics hose — Determination of adhesion between components	EN 28033	1993
ISO 8580	1987	Rubber and plastics hoses — Determination of ultra-violet resistance under static conditions	EN ISO 8580	1995

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