

BRITISH STANDARD

**BS EN ISO
1403 : 1997**

*Incorporating
Amendment No. 1 to
BS ISO 1403 : 1995
(renumbers the BS as
BS EN ISO 1403 :
1997)*

Rubber hoses, textile-reinforced, for general-purpose water application — Specification

The European Standard EN ISO 1403 : 1997 has the status of a
British Standard

ICS 23.040.70

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PRI/66, Rubber and plastics tubing, hoses and hose assemblies, upon which the following bodies were represented:

Association of Metropolitan Authorities
 British Coal Corporation
 British Compressed Gases Association
 British Rubber Manufacturers' Association Ltd.
 Chief and Assistant Chief Fire Officers' Association
 Energy Industries Council
 Fire Extinguishing Trades Association
 Home Office
 London Fire and Civil Defence Authority
 Ministry of Defence
 RAPRA Technology Ltd.
 Society of Motor Manufacturers and Traders Limited

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

British Fluid Power Association
 Chemical Industries Association
 Health and Safety Executive
 Institute of Petroleum
 LP Gas Association
 Petrol Pump Manufacturers' Association
 United Kingdom Petroleum Industry Association Ltd.

This British Standard, having been prepared under the direction of the Sector Board for Materials and Chemicals, was published under the authority of the Standards Board and comes into effect on 15 March 1996

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Summary of pages

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b	blank	3	original
i	2	4	blank
ii	blank	5	1
EN title page	1	6	blank
iib	1	Inside back cover	blank
ISO title page	original	Back cover	2

Change of identifier

Wherever BS ISO 1403 : 1995 appears in this standard, it should read as BS EN ISO 1403 : 1997.

National foreword

This British Standard has been prepared by Technical Committee PRI/66 and is the English language version of EN ISO 1403 : 1997 *Rubber hoses, textile-reinforced, for general-purpose water applications — Specification* published by the European Committee for Standardization. It is identical with ISO 1403 : 1995 published by the International Organization for Standardization (ISO). It is a revision of BS 5119 : 1980 which is withdrawn.

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- aid enquirers to understand the text;
- present to the responsible international committee any enquiries on interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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EUROPEAN STANDARD
 NORME EUROPÉENNE
 EUROPÄISCHE NORM

EN ISO 1403

May 1997

ICS 23.040.70

Descriptors: See ISO document

English version

Rubber hoses, textile-reinforced, for general-purpose water applications — Specification

(ISO 1403 : 1995)

Tuyaux en caoutchouc à armature textile d'usage général pour l'eau —
 Spécifications
 (ISO 1403 : 1995)

Gummischläuche mit Textileinlage für allgemeine Anwendungen mit Wasser —
 Anforderung
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Ref. No. EN ISO 1403 : 1997 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 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 1997, and conflicting national standards shall be withdrawn at the latest by November 1996.

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

INTERNATIONAL
STANDARD

ISO
1403

Third edition
1995-08-01

**Rubber hoses, textile-reinforced, for
general-purpose water applications —
Specification**

*Tuyaux en caoutchouc à armature textile d'usage général pour l'eau —
Spécifications*



5*



Reference number
ISO 1403:1995(E)

ISO 1403:1995(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.

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 1403 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

This third edition cancels and replaces the second edition (ISO 1403:1986), which has been technically revised.

Rubber hoses, textile-reinforced, for general-purpose water applications — Specification

1 Scope

This International Standard specifies the requirements for three types of general-purpose textile-reinforced rubber water hose with an operating range of $-25\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$, and a maximum working pressure of up to 2,5 MPa.

NOTE 1 These hoses should **not** be used for conveyance of potable (drinking) water, for washing-machine inlets, as fire-fighting hose, for special agricultural machines and as collapsible water hose.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3:1973, *Preferred numbers — Series of preferred numbers*.

ISO 37:1994, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*.

ISO 188:1982, *Rubber, vulcanized — Accelerated ageing or heat-resistance tests*.

ISO 1307:1992, *Rubber and plastics hoses for general-purpose industrial applications — Bore diameters and tolerances, and tolerances on length*.

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

ISO 2393:1994, *Rubber test mixes — Preparation, mixing and vulcanization — Equipment and procedures*.

ISO 4671:1984, *Rubber and plastics hose and hose assemblies — Methods of measurement of dimensions*.

ISO 4672:—¹⁾, *Rubber and plastics hoses — Subambient-temperature flexibility tests*.

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

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

3 Types of hose

Three types of hose are specified, as follows:

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 all sizes;

Type 3: High pressure — designed for a maximum working pressure of 2,5 MPa (25 bar) for all sizes.

1) To be published. (Revision of ISO 4672:1988)

ISO 1403:1995(E)

4 Construction and materials

The hose shall consist of

- a rubber lining;
- a reinforcement of natural or synthetic fibres;
- a rubber cover.

The lining and cover shall be of uniform thickness, concentric to comply with the minimum thickness and free from holes, porosity and other defects. The cover finish may be smooth, fluted or fabric-marked.

5 Dimensions

5.1 Bore

The bore of the hose shall be from 10 mm to 100 mm inclusive and in accordance with the nominal dimensions and tolerances given in ISO 1307.

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 given for the next-larger size.

5.2 Lining

When measured in accordance with ISO 4671, the minimum thickness of the lining shall be 1,5 mm.

5.3 Cover

When measured in accordance with ISO 4671, the minimum thickness of the cover shall be 1,5 mm. If the cover is fluted, the depth of the flutes shall be not greater than 50 % of the cover thickness.

5.4 Cut lengths

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

6 Physical properties

6.1 Testing

Wherever possible, all tests shall be carried out on test pieces cut from finished hose. Otherwise, take samples from test sheets prepared in accordance with ISO 2393 and vulcanized to the same degree as the hose.

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

When tested in accordance with ISO 37, the lining and cover shall have a tensile strength and elongation at break of not less than the values given in table 1.

Table 1 — Minimum values of tensile strength and elongation at break of rubber lining and cover

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

6.3 Accelerated ageing

After ageing as specified in ISO 188 for 3 days at a temperature of 100 °C ± 1 °C, the tensile strength and elongation at break of the lining and cover, as determined by ISO 37, shall not vary by more than ± 25 % and ± 50 %, respectively, from the initial values.

6.4 Hydrostatic-pressure requirements

When tested in accordance with ISO 1402, the hose shall meet the requirements of table 2. The maximum variation in length and outside diameter at proof pressure shall be ± 7 %.

Table 2 — Hydrostatic-pressure requirements

Hose type	Maximum working pressure	Proof pressure	Minimum burst pressure
	MPa	MPa	MPa
1	0,60	0,90	1,80
2	1,0	1,5	3,00
3	2,5	5,0	10,00

6.5 Adhesion

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

6.6 Ozone resistance

When tested in accordance with method 2 of ISO 7326:1991, the cover shall show no signs of cracking.

6.7 Low-temperature flexibility

When tested at $-25\text{ }^{\circ}\text{C}$ by method B of ISO 4672, all types of hose shall show no cracks and shall pass the proof pressure test as specified in 6.4.

7 Marking

The hose shall be continuously and durably marked with the following information:

- a) the number of this International Standard, i.e. ISO 1403;
- b) the manufacturer's name or identification;
- c) the manufacturer's product identification (optional);
- d) the type of hose;
- e) the nominal bore;
- f) the maximum working pressure, in megapascals, if not included under d);
- g) the quarter (using 1Q, 2Q, 3Q or 4Q) and year (using four digits) of manufacture.



S

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 1307	1992	<i>Rubber and plastics hoses for general-purpose industrial applications — Bore diameters and tolerances, and tolerances on length</i>	EN ISO 1307	1995
ISO 1402	1994	<i>Rubber and plastics hoses and hose assemblies — Hydrostatic testing</i>	EN ISO 1402	1996
ISO 4671	1984	<i>Rubber and plastics hoses and hose assemblies — Methods of measurement of dimensions</i>	EN 24671	1993
ISO 4672	1988	<i>Rubber and plastics hoses — Sub-ambient temperature flexibility tests</i>	EN 24672	1993
ISO 7326	1991	<i>Rubber and plastics hoses — Assessment of ozone resistance under static conditions</i>	EN 27326	1993
ISO 8033	1991	<i>Rubber and plastics hoses — Determination of adhesion between components</i>	EN 28033	1993



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Amendment No. 1

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Instructions for replacement of pages

Where only one of the two pages on each sheet has been updated, the other page has been reprinted.

Front cover and inside front cover	Replace the pages
a and b	Insert the pages immediately after the inside front cover
i and ii	Replace the pages
EN title page and iib	Insert the pages immediately before the ISO title page
Pages 3 and 4	Replace the pages
Pages 5 and 6	Insert the pages immediately after page 4
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6.5 Adhesion

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6.6 Ozone resistance

When tested in accordance with method 2 of ISO 7326:1991, the cover shall show no signs of cracking.

6.7 Low-temperature flexibility

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- d) the type of hose;
- e) the nominal bore;
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