

**Implementation of
ISO 4639-2 : 1995**

**Rubber tubing and hoses for
fuel circuits for
internal-combustion engines —
Specification**

Part 2. Oxygenated fuels

ICS 23.040.70:27.020

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 Plastics Federation
- LP Gas Association

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 April 1996

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The following BSI references relate to the work on this standard:
Committee reference PRI/66
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National foreword

This British Standard reproduces verbatim ISO 4639-2 : 1995 and implements it as the UK national standard.

This British Standard is published under the direction of the Sector Board for Materials and Chemicals whose Technical Committee PRI/66 has the responsibility to:

- 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.

NOTE. International and European Standards, as well as overseas standards, are available from Customer Services, BSI, 389 Chiswick High Road, London W4 4AL.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

**Rubber tubing and hoses for fuel circuits
for internal-combustion engines —
Specification —**

Part 2:
Oxygenated fuels

*Tuyaux et tubes en caoutchouc pour circuits à carburants pour moteurs à
combustion interne — Spécifications —*

Partie 2: Carburants oxygénés



Reference number
ISO 4639-2:1995(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 4639-2 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

ISO 4639 consists of the following parts, under the general title *Rubber tubing and hoses for fuel circuits for internal-combustion engines — Specification*:

- *Part 1: Conventional liquid fuels*
- *Part 2: Oxygenated fuels*
- *Part 3: Oxidized fuels*

Annexes A, B, C and D form an integral part of this part of ISO 4639.

Rubber tubing and hoses for fuel circuits for internal-combustion engines — Specification —

Part 2: Oxygenated fuels

1 Scope

This part of ISO 4639 specifies requirements for rubber tubing and hoses for use in fuel circuits using liquid fuels containing oxygenated compounds such as alcohols. It does not cover equipment used for the distribution of liquid fuels. The hoses and unreinforced tubing are used in conventional carburettor systems where fuel is unlikely to become oxidized. Moderate resistance to oxidized (sour) fuel is, however, provided.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 4639. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 4639 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 37:1994, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties.*

ISO 48:1994, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD).*

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

ISO 286-1:1988, *ISO system of limits and fits — Part 1: Bases of tolerances, deviations and fits.*

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

ISO 815:1991, *Rubber, vulcanized or thermoplastic — Determination of compression set at ambient, elevated or low temperatures.*

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

ISO 1746:1983, *Rubber or plastics hoses and tubing — Bending tests.*

ISO 1817:1985, *Rubber, vulcanized — Determination of the effect of liquids.*

ISO 3302:1990, *Rubber — Dimensional tolerances for use with products.*

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

ISO 4672:1988, *Rubber and plastics hoses — Sub-ambient temperature flexibility tests.*

ISO 6133:1981, *Rubber and plastics — Analysis of multi-peak traces obtained in determinations of tear strength and adhesion strength.*

ISO 7233:1991, *Rubber and plastics hoses and hose assemblies — Determination of suction resistance.*

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.*

ISO 8308:1993, *Rubber and plastics hoses and tubing — Determination of transmission of liquids through hose and tubing walls.*

3 Types of tubing and hoses

For the purpose of this part of ISO 4639, tubing and hoses are divided into three different types:

- Type 1: Tubing with a working pressure of up to 0,12 MPa inclusive;
- Type 2: Hoses with a working pressure in the range 0 to 0,12 MPa inclusive;
- Type 3: Hoses with a working pressure in the range 0 to 0,3 MPa inclusive.

In addition, the three types 1, 2 and 3 are further divided into two grades:

- Grade A: operating in an environmental temperature of up to 120 °C;
- Grade B: operating in an environmental temperature of up to 140 °C.

Grade B tubing may be provided with a cover.

4 Tubing and hose bores

The bore of all tubing and hoses shall be clean and free from any contamination when examined visually.

5 Sizes

5.1 Tubing

When determined by the methods described in ISO 4671, bore diameters and wall thicknesses shall be as specified in table 1.

Tolerances shall be selected from the appropriate categories specified in ISO 3302: M3 for moulded hoses, E2 for extrusions.

Table 1 — Tubing bore diameters and wall thicknesses

Dimensions in millimetres

Nominal bore	Nominal wall thickness
3,5	3,5
4	3,5
5	4
7	4,5
9	4,5
11	4,5
13	4,5

NOTE 1 For information, the unions on which the tubing is to be fitted have the following diameters:

4 mm, 4,5 mm, 6 mm or 6,35 mm, 8 mm, 10 mm, 12 mm and 14 mm.

5.2 Hoses

When determined by the methods described in ISO 4671, the dimensions, tolerances and concentricity of hoses shall comply with tables 2 and 3.

Table 2 — Hose dimensions

Dimensions in millimetres

Bore diameter	Tolerance	Wall thickness	Outside diameter	Tolerance
3,5	± 0,3	3	9,5	± 0,4
4			10	
5			11	
6			12	
7			13	
7,5			13,5	
8			14	
9	± 0,4	3,5	15	± 0,6
11			18	
12			19	
13			20	
16			24	
21	± 0,4	4	29	± 1
31,5			40	
40			50	
	+0,5 -1	4,25		
		5		