International Standard

ISO 19013-1

Third edition
2026-08

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

Part 1: Diesel fuels

Tuyaux de caoutchouc et flexibles pour les circuits de carburant pour les moteurs à combustion interne — Spécifications —

Partie 1: Carburants diesel

Reference number
ISO 19013-1:2026(en)

© ISO 2026



COPYRIGHT PROTECTED DOCUMENT

© ISO 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **2**

4 Classification ... **2**

5 Sizes ... **3**
5.1 Tubing ... 3
5.2 Hoses ... 3

6 Performance requirements for hose and tubing ... **4**
6.1 General ... 4
6.2 Burst pressure ... 4
6.3 Adhesion ... 4
6.4 Low-temperature flexibility ... 4
6.5 Internal cleanliness ... 4
6.6 Extractable waxy materials ... 4
6.7 Tear resistance (applicable to tubing only) ... 4
6.8 Ozone resistance ... 5
6.9 Heat ageing resistance ... 5
6.10 Resistance to surface contamination by engine oil ... 5
6.11 Resistance to surface contamination by non-petroleum hydraulic (brake/clutch) fluid ... 5
6.12 Resistance to kinking ... 5
6.13 Resistance to suction ... 5
6.14 Resistance to fuels ... 6
6.15 Burn-through resistance ... 6
6.16 Electrical resistance ... 6
6.17 Life-cycle test (types 1, 2 and 3 only) ... 6

7 Frequency of testing ... **6**

8 Marking ... **6**

Annex A (normative) **Cleanliness and extractables test** ... **8**

Annex B (normative) **Resistance of tubing to tearing** ... **10**

Annex C (normative) **Method for determining the resistance to surface contamination** ... **13**

Annex D (normative) **Life-cycle test** ... **14**

Annex E (informative) **Example of tests of specific application for OEMs** ... **15**

Annex F (normative) **Type approval tests** ... **16**

Annex G (normative) **Routine tests** ... **17**

Annex H (informative) **Production acceptance tests** ... **18**

© ISO 2026 – All rights reserved

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

This third edition cancels and replaces the second edition (ISO 19013-1:2019), which has been technically revised.

The main changes are as follows:

— inclusion of requirements in Clauses 5 and 6;

— revision of Clause 7.

A list of all parts in the ISO 19013 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

© ISO 2026 – All rights reserved

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

Part 1: Diesel fuels

WARNING — Persons using this document should be familiar with normal laboratory practice. This document 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.

1 Scope

This document specifies the requirements for rubber tubing and hoses used in diesel fuel circuits for internal combustion engines. The diesel fuels covered include "bio-diesels" which consist of the methyl ester of rape seed oil at levels up to 20 % by volume in conventional diesel fuels.

NOTE See Annex E for a detailed description of the "line call-out" used in tests for specific original equipment manufacturer (OEM) applications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies..

ISO 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

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

ISO 1629, *Rubber and latices — Nomenclature*

ISO 1817, *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

ISO 3302-1, *Rubber — Tolerances for products — Part 1: Dimensional tolerances*

ISO 4671, *Rubber and plastics hoses and hose assemblies — Methods of measurement of the dimensions of hoses and the lengths of hose assemblies*

ISO 4926, *Road vehicles — Hydraulic braking systems — Non-petroleum-based reference fluid*

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

ISO 7233:2021, *Rubber and plastics hoses and hose assemblies — Determination of resistance to vacuum*

ISO 7326:2016, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8031, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity*

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

ISO 10619-1:2017, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 1: Bending tests at ambient temperature*

© ISO 2026 – All rights reserved

ISO 10619-2:2021, *Rubber and plastics hoses and tubing — Measurement of flexibility and stiffness — Part 2: Bending tests at sub-ambient temperatures*

ISO 23529, *Rubber — General procedures for preparing and conditioning test pieces for physical test methods*

SAE J2027, *Standard for Protective Covers for Gasoline Fuel Line Tubing*

SAE J2044:2009, *Quick Connect Coupling Specification for Liquid Fuel and Vapor/Emissions Systems*

SAE J2260, *Nonmetallic Fuel System Tubing with One or More Layers*

EN 14214, *Liquid petroleum products — Fatty acid methyl esters (FAME) for use in diesel engines and heating applications — Requirements and test methods*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Classification

The product shall consist of extruded rubber materials with or without an integral reinforcement, which can be pre-formed or non-pre-formed before final vulcanization. The product can also have a rubber or thermoplastic barrier layer, either as an internal layer or forming the inner liner, to impart improved fluid resistance or reduced fuel vapour permeability, or both.

Seven hoses and tubings for specific applications are specified, as follows:

— Type 1:

  — Class A = Pressurized [0,7 MPa (7 bar) working pressure] feed and return lines from the fuel tank to the engine compartment (−40 °C to +80 °C continuous);

  — Class B = Pressurized [0,2 MPa (2 bar) working pressure] feed and return lines from the fuel tank to the engine compartment (−40 °C to +80 °C continuous);

— Type 2:

  — Class A = Pressurized [0,7 MPa (7 bar) working pressure] feed and return lines in the engine compartment (−40 °C to +100 °C continuous);

  — Class B = Pressurized [0,2 MPa (2 bar) working pressure] feed and return lines in the engine compartment (−40 °C to +100 °C continuous);

— Type 3:

  — Class A = Pressurized [0,7 MPa (7 bar) working pressure] feed and return lines in the engine compartment (−40 °C to +125 °C continuous);

  — Class B = Pressurized [0,2 MPa (2 bar) working pressure] feed and return lines in the engine compartment (−40 °C to +125 °C continuous);

— Type 4 Low pressure [0,12 MPa (1,2 bar) working pressure] fuel filler, vent and vapour handling (−40 °C to +80 °C continuous).

© ISO 2026 – All rights reserved