
**Thermoplastic tubing and hoses for
automotive use —**

**Part 2:
Petroleum-based-fuel applications**

Tubes et tuyaux en thermoplastique pour l'industrie automobile —

Partie 2: Applications pour carburants à base de pétrole



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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.

Attention is drawn to the possibility that some of the elements of this part of ISO 13775 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 13775-2 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Hoses (rubber and plastics)*.

ISO 13775 consists of the following parts, under the general title *Thermoplastic tubing and hoses for automotive use*:

Part 1: Non-fuel applications

Part 2: Petroleum-based-fuel applications

Annexes A, B and C of this part of ISO 13775 are for information only.

Introduction

This specification defines the requirements of extruded thermoplastic tubing/hoses for petroleum-based-fuel applications for automotive use. In addition, it may also be applied as a classification system to enable original equipment manufacturers (OEMs) to detail a “line call-out” of tests for specific applications where these are not covered by the six main types (see example in annex A). In this case, the tubing or hose would not carry any marking showing this ISO specification number, but may detail the OEM's own identification markings as shown on their part drawings.

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Thermoplastic tubing and hoses for automotive use —

Part 2: Petroleum-based-fuel applications

WARNING — Persons using this part of ISO 13775 should be familiar with normal laboratory practice. This part of ISO 13775 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 part of ISO 13775 specifies test requirements and test methods for extruded thermoplastic tubing and hoses for use in petroleum-based-fuel lines in vehicles powered by internal-combustion engines. This specification is intended especially for use by original equipment manufacturers (OEMs).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 13775. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 13775 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 188, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests.*

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

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

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

ISO 4639-3:1995, *Rubber tubing and hoses for fuel circuits for internal-combustion engines — Specification — Part 3: Oxidized fuels.*

ISO 4925, *Road vehicles — Non-petroleum base brake fluid.*

ISO 7628-2:1998, *Road vehicles — Thermoplastics tubing for use in air braking systems — Part 2: Mounting on vehicle and test methods.*

ISO 8031, *Rubber and plastic hoses and hose assemblies — Determination of electrical resistance.*

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

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

ISO 11758, *Rubber and plastics hoses — Exposure to a xenon arc lamp — Determination of changes in colour and appearance.*

3 Classification and materials

The product shall consist of an extruded thermoplastic material with or without an integral reinforcement. The product may also have an inner veneer to impart improved fluid resistance and/or reduced fuel vapour permeability. It may also have an extruded outer cover to improve environmental resistance and/or flame resistance. The outer cover is not necessarily bonded to the tubing or hose.

Six types of tubing and hose for specific applications are specified as follows:

Type 1: feed and return lines from the fuel tank to the engine compartment — gasoline engines;

Type 2: feed and return lines from the fuel tank to the engine compartment — diesel engines;

Type 3: feed and return lines in the engine compartment — moderate-temperature (100 °C) environment — gasoline engines;

Type 4: feed and return lines in the engine compartment — high-temperature (125 °C) environment — gasoline engines;

Type 5: feed lines in the engine compartment — diesel engines;

Type 6: multi-layer tubing or hoses for vapour lines.

4 Dimensions

Bore diameters and wall thicknesses shall be as given in Table 1.

The wall thickness shall be the sum of the individual thicknesses of the various elements in the construction of the tubing or hose. The thickness of each individual element shall be such that it is able to carry out its own function and the total function of the tubing or hose.

Table 1 — Nominal bores, internal diameters and wall thicknesses

Nominal bore	Internal diameter mm	Wall thickness (min.) mm
2	$2 \pm 0,1$	0,9
4	$4 \pm 0,1$	0,9
6	$6 \pm 0,1$	0,9
6	$6 \pm 0,1$	1,35
7,5	$7,5 \pm 0,1$	1,12
8	$8 \pm 0,1$	0,9
8	$8 \pm 0,1$	1,35
9	$9 \pm 0,1$	1,35
10	$10 \pm 0,1$	1,8
12	$12 \pm 0,1$	1,35
12	$12 \pm 0,1$	1,8
14	$14 \pm 0,1$	1,8