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**Thermoplastic multi-layer (non-vulcanized) hoses and hose assemblies for the transfer of liquid petroleum gas and liquefied natural gas — Specification**

*Tuyaux et flexibles multicouches (non vulcanisés) thermoplastiques pour le transfert de gaz de pétrole liquide et de gaz naturel liquéfié — Spécifications*



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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.

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 documents 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 45, *Rubber and rubber products*, Subcommittee SC 1, *Rubber and plastics hoses and hose assemblies*.

ISO 27127 is based on EN 13766:2010 with the following modifications to comply with the requirements of ISO/TC 45/SC 1:

- the pressure unit “bar” has been replaced by “MPa (bar)”;
- all references to EN or EN/ISO standards were replaced by references to ISO standards wherever possible;
- [Clause 2](#), references have been amended;
- [6.1, Table 2](#), have been amended (tolerance for ID 150 only, the other tolerances are already sufficient to accommodate the required changes of ID to include inch size mandrels);
- [7.2, Table 3](#), now requires the change in length and twist to be measured at maximum working pressure instead of proof pressure and [Annex D](#) has been amended accordingly;
- [7.4, Table 4](#), the reference to the test method clause, to determine electrical resistance between fittings according to ISO 8031 has been corrected;
- [Clause 10](#), the marking has been amended according ISO/TC 45/SC 1 remarks.

# Thermoplastic multi-layer (non-vulcanized) hoses and hose assemblies for the transfer of liquid petroleum gas and liquefied natural gas — Specification

**WARNING** — Persons using this International Standard should be familiar with normal laboratory practice. This International Standard does not purport to address all the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate health and safety practices and to ensure compliance with any national regulatory conditions.

## 1 Scope

This International Standard specifies requirements for two types of thermoplastic multi-layer (non-vulcanized) transfer hoses and hose assemblies for carrying liquefied petroleum gas and liquefied natural gas. Each type is subdivided into two classes, one for onshore duties, and the other for offshore.

- Class A hose is for use onshore.
- Class B hose is for use offshore.

This International Standard is applicable for hose sizes from 25 mm to 250 mm, working pressures from 10,5 bar to 25 bar and operating temperatures from  $-196^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$ , according to class.

NOTE Offshore LNG hose assemblies are also specified in EN 1474-2.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 148-1, *Metallic materials — Charpy pendulum impact test — Part 1: Test method*

ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles*

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

ISO 8031:2009, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance and conductivity*

ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary*

ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

ISO 1402:2009, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing*

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

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

ISO 13934-1, *Textiles — Tensile properties of fabrics — Part 1: Determination of maximum force and elongation at maximum force using the strip method*

ISO 16143-3, *Stainless steels for general purposes — Part 3: Wire*

EN 10088-3, *Stainless steels — Part 3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 8330 apply.

### 4 Classification

Hoses shall be classified as given in [Table 1](#) according to their

- usage:
  - Class A hose is for use onshore,
  - Class B hose is for use offshore,
- working pressure, and
- working temperature range.

**Table 1 — Pressure and temperature range**

Pressure/temperature	Class A		Class B		Class A		Class B	
	Type 1		Type 1		Type 2		Type 2	
	MPa	Bar	MPa	Bar	MPa	Bar	MPa	Bar
Maximum working pressure	2,50	25	2	20	1,30	13	1,05	10,5
Proof pressure	3,75	37,5	3	30	1,95	19,5	1,58	15,8
Minimum burst pressure	10	100	10	100	5,20	52	5,25	52,5
Working temperature range (°C)	-50 ± 3 to +45		-50 ± 3 to +45		-196 ± 5 to +45		-196 ± 5 to +45	
NOTE 1 1 bar = 0,1 MPa.								
NOTE 2 Due to pressurization during test and operations, the temperature of the fluid could increase. The indicated temperatures are measured at atmospheric pressure.								

### 5 Materials and construction

Hoses shall be constructed as shown in [Figure 1](#) and shall consist of the following:

- a) **Class A:**
  - 1) an internal wire helix of austenitic stainless steel conforming to EN 10088-3, Table 4, numbers 1,443 6 (X3CrNiMo 17-13-3) or ISO 16143-3, Table 1 X2CrNi 19-11, X5CrNiMo 17-12-2, X2CrNiMo 17-12-2;
  - 2) a multi-ply wall of layers of films and fabrics made of thermoplastics that in combination give the required properties specified in [Table 1](#) and provide a complete seal;