



**International  
Standard**

**ISO 5771**

**Rubber hoses and hose assemblies  
for transferring anhydrous  
ammonia — Specification**

*Tuyaux et flexibles en caoutchouc pour le transfert d'ammoniac  
anhydre — 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 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](http://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](http://www.iso.org/patents). ISO shall not be held responsible for identifying any or all such patent rights.

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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](http://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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 218, *Rubber and plastic hoses and hose assemblies*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 5771:2008), which has been technically revised.

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The main changes are as follows:

- the scope has been updated to include the working pressure of the hose;
- the normative references in [Clause 2](#) have been updated: ISO 188 has been changed to the latest edition and reference to ISO 10619-2 has been added;
- the expression of pressure units throughout the document (MPa, bar) has been updated;
- the type, frequency and routine testing clause has been modified in accordance with the current layout (see [Clause 9](#));
- the marking clause has been updated (see [Clause 10](#));
- proof pressure and change of length tests as routine tests on finished hose have been changed (see [Annex A](#));
- [Annexes A](#) and [B](#) have been combined into one [Annex A](#).

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](http://www.iso.org/members.html).

# Rubber hoses and hose assemblies for transferring anhydrous ammonia — Specification

**WARNING** — Persons using this document should be familiar with normal laboratory practice. This document 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 determine any applicable national regulatory conditions.

**CAUTION** — All personnel working with anhydrous ammonia and its delivery systems should be familiar with and utilize the necessary safety precautions to minimize the potential for personal injury and property damage. Do not use anhydrous-ammonia hose assemblies at temperatures or pressures above those recommended by the hose manufacturer. Never recouple an anhydrous-ammonia hose. Hoses manufactured to this specification are suitable for use with anhydrous ammonia only.

## 1 Scope

This document specifies the minimum requirements for rubber hoses used for transferring ammonia, in liquid or in gaseous form, at ambient temperatures from  $-40\text{ °C}$  up to and including  $+55\text{ °C}$  at a working pressure of 2,5 MPa (25 bar). It does not include specifications for end fittings and is limited to the performance of the hoses and hose assemblies.

## 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 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 188:2023, *Rubber, vulcanized or thermoplastic — Accelerated ageing and heat resistance tests*

ISO 1307, *Rubber and plastics hoses — Hose sizes, minimum and maximum inside diameters, and tolerances on cut-to-length hoses*

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

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

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

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

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

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

## 3 Terms and definitions

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

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 Pressure rating

The pressure rating shall conform with the requirements of [Table 1](#).

**Table 1 — Pressure requirements**

Parameter	Pressure requirements	
	bar	MPa
Maximum working pressure	25	2,5
Proof pressure	63	6,3
Minimum burst pressure	125	12,5

## 5 Materials and construction

### 5.1 Lining

The lining shall be of uniform thickness of at least 1,5 mm, measured in accordance with ISO 4671, and free from holes, porosity and other defects. The finished hose lining shall conform with the performance requirements specified in [Table 3](#). The material used shall be resistant to hardening or other deterioration due to the action of ammonia.

### 5.2 Reinforcement

The reinforcement shall consist of a material not adversely affected by permeating ammonia. It shall be applied evenly and uniformly, and in such a way that the finished hose complies with the relevant performance requirements specified in [Table 4](#).

A suitable material is corrosion-resistant stainless steel.

### 5.3 Cover

The rubber cover, when used, shall be uniform in quality and thickness and shall be free from injurious defects. It shall comply with the relevant performance requirements specified in [Table 3](#). It shall also be resistant to deterioration due to exposure to ammonia and exposure to the external environment. A gas-tight rubber cover shall be pin-pricked during manufacture to permit the release of any permeating gas during service. The pinholes shall not penetrate the lining and there shall be at least 40 effective pinholes per metre of hose.

### 5.4 Hose assemblies

Hose assemblies shall be made only from hoses complying with the performance requirements specified in [Table 4](#). Only permanently attached ferrous-metal fittings shall be used. Specific information can be obtained from the hose manufacturer. In addition, guidance can be found in ISO/TR 17784.