



FINAL DRAFT International Standard

ISO/FDIS 5771

Rubber hoses and hose assemblies for transferring anhydrous ammonia — Specification

*Tuyaux et flexibles en caoutchouc pour le transfert d'ammoniac
anhydre — Spécifications*

ISO/TC 45/SC 1

Secretariat: DIN

Voting begins on:
2024-01-22

Voting terminates on:
2024-03-18

ITeC Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/FDIS 5771](https://standards.iteh.ai/catalog/standards/iso/b854ed1f-c2d6-4b6f-a38b-675245da4e9a/iso-fdis-5771)

<https://standards.iteh.ai/catalog/standards/iso/b854ed1f-c2d6-4b6f-a38b-675245da4e9a/iso-fdis-5771>

ISO/CEN PARALLEL PROCESSING

RECIPIENTS OF THIS DRAFT ARE INVITED TO SUBMIT, WITH THEIR COMMENTS, NOTIFICATION OF ANY RELEVANT PATENT RIGHTS OF WHICH THEY ARE AWARE AND TO PROVIDE SUPPORTING DOCUMENTATION.

IN ADDITION TO THEIR EVALUATION AS BEING ACCEPTABLE FOR INDUSTRIAL, TECHNOLOGICAL, COMMERCIAL AND USER PURPOSES, DRAFT INTERNATIONAL STANDARDS MAY ON OCCASION HAVE TO BE CONSIDERED IN THE LIGHT OF THEIR POTENTIAL TO BECOME STANDARDS TO WHICH REFERENCE MAY BE MADE IN NATIONAL REGULATIONS.

iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO/FDIS 5771](https://standards.iteh.ai/catalog/standards/iso/b854ed1f-c2d6-4b6f-a38b-675245da4e9a/iso-fdis-5771)

<https://standards.iteh.ai/catalog/standards/iso/b854ed1f-c2d6-4b6f-a38b-675245da4e9a/iso-fdis-5771>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2024

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.....	1
4 Pressure rating.....	2
5 Materials and construction.....	2
5.1 Lining.....	2
5.2 Reinforcement.....	2
5.3 Cover.....	2
5.4 Hose assemblies.....	2
6 Dimensions.....	3
6.1 Inside diameters and tolerances.....	3
6.2 Outside diameter.....	3
6.3 Concentricity.....	3
6.4 Tolerances on length.....	3
7 Physical properties.....	3
7.1 Rubber compounds.....	3
7.2 Finished hose.....	4
7.3 Ammonia resistance tests.....	4
7.3.1 Test lengths.....	5
7.3.2 Ammonia conditioning.....	5
7.3.3 Flexing of conditioned hose.....	7
7.3.4 Burst-pressure test on conditioned and flexed hoses.....	8
7.3.5 Physical-property tests on conditioned and flexed hoses.....	8
8 Hose assembly delivery test and annual in-use test requirements.....	8
9 Frequency of testing.....	8
10 Marking.....	9
11 Packaging and storage.....	9
12 Test certificate.....	9
Annex A (normative) Type frequency for type tests and routine tests.....	10
Annex B (informative) Recommendations for the lengths of hoses supplied in bulk and for tolerances on the lengths of hose assemblies.....	12
Bibliography.....	13

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

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.

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 °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* — fdis-5771

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.