

ISO/TC 45/SC 1

Secretariat: DSM

Voting begins  
on: 2015-07-08

Voting terminates  
on: 2015-09-08

---

---

## Rubber hoses and hose assemblies — Wire-braid-reinforced hydraulic types for oil-based or water-based fluids — Specification

*Tuyaux et flexibles en caoutchouc — Types hydrauliques avec  
armature de fils métalliques tressés pour fluides à base d'huile ou à  
base d'eau-- Spécifications*

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

ISO/FDIS 1436

<https://standards.iteh.ai/catalog/standards/iso/a8f7ece4-c15d-4815-9394-1f6d850dd475/iso-fdis-1436>

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.



Reference number  
ISO/FDIS 1436:2015(E)

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

ISO/FDIS 1436

<https://standards.iteh.ai/catalog/standards/iso/a8f7ece4-c15d-4815-9394-1f6d850dd475/iso-fdis-1436>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, 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  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
[copyright@iso.org](mailto:copyright@iso.org)  
[www.iso.org](http://www.iso.org)

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Classification</b> .....	<b>2</b>
<b>5 Materials and construction</b> .....	<b>2</b>
5.1 Hoses.....	2
5.2 Hose assemblies.....	2
<b>6 Dimensions</b> .....	<b>2</b>
6.1 Hose diameters, cover thickness and hose concentricity.....	2
6.2 Length.....	3
<b>7 Performance requirements</b> .....	<b>4</b>
7.1 General.....	4
7.2 Hydrostatic requirements.....	4
7.3 Minimum bend radius.....	4
7.4 Resistance to impulse.....	5
7.4.1 Oil-based fluid impulse test.....	5
7.4.2 Water-based fluid impulse test.....	5
7.4.3 Optional impulse test.....	6
7.5 Leakage of hose assemblies.....	6
7.6 Cold flexibility.....	6
7.7 Adhesion between components.....	6
7.8 Vacuum resistance.....	6
7.9 Fluid resistance.....	7
7.9.1 General.....	7
7.9.2 Oil resistance.....	7
7.9.3 Water resistance.....	7
7.10 Ozone resistance.....	7
7.11 Visual examination.....	7
<b>8 Marking</b> .....	<b>8</b>
8.1 Hoses.....	8
8.2 Hose assemblies.....	8
<b>Annex A (normative) Type and routine testing of production hoses</b> .....	<b>9</b>
<b>Annex B (informative) Production acceptance testing</b> .....	<b>10</b>
<b>Annex C (informative) Recommendations for lengths of supplied hoses and tolerances on lengths of hose assemblies</b> .....	<b>11</b>

## 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*.

This fifth edition cancels and replaces the fourth edition (ISO 1436:2009), of which it constitutes a minor revision.

ISO/FDIS 1436

<https://standards.iteh.ai/catalog/standards/iso/a8f7ece4-c15d-4815-9394-1f6d850dd475/iso-fdis-1436>

# Rubber hoses and hose assemblies — Wire-braid-reinforced hydraulic types for oil-based or water-based fluids — Specification

## 1 Scope

This International Standard specifies requirements for six types of wire-braid-reinforced hose and hose assembly of nominal size from 5 to 51 plus, for one of the five types (type R2ATS), nominal size 63. They are suitable for use with water-based hydraulic fluids HFC, HFAE, HFAS and HFB as defined in ISO 6743-4 at temperatures ranging from to  $-40\text{ °C}$  to  $+60\text{ °C}$  or oil-based hydraulic fluids HH, HL, HM, HR and HV as defined in ISO 6743-4 at temperatures ranging from  $-40\text{ °C}$  to  $+100\text{ °C}$ .

This International Standard does not include requirements for end fittings. It is limited to requirements for hoses and hose assemblies.

NOTE It is the responsibility of the user, in consultation with the hose manufacturer, to establish the compatibility of the hose with the fluid to be used.

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

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

ISO 6605, *Hydraulic fluid power — Hoses and hose assemblies — Test methods*

ISO 6743-4, *Lubricants, industrial oils and related products (class L) — Classification — Part 4: Family H (Hydraulic systems)*

ISO 6803, *Rubber or plastics hoses and hose assemblies — Hydraulic-pressure impulse test without flexing*

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

ISO 7326:2006, *Rubber and plastics hoses — Assessment of ozone resistance under static conditions*

ISO 8033:2006, *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.

## 4 Classification

Six types of hose are specified, distinguished by their construction, working pressure and oil resistance:

- Type 1ST: hoses with a single braid of wire reinforcement and having a thick cover.
- Type 2ST: hoses with two braids of wire reinforcement and having a thick cover.
- Types 1SN and R1ATS: hoses with a single braid of wire reinforcement and having a thin cover.
- Types 2SN and R2ATS: hoses with two braids of wire reinforcement and having a thin cover.

NOTE Types 1SN and R1ATS and types 2SN and R2ATS have the same reinforcement dimensions as type 1ST and type 2ST, respectively, except that they have thinner covers designed to assemble with fittings without removal of the cover or a portion of the cover. SAE J 517, *Hydraulic Hose*, defines a type S as having the same dimensions and construction as the type R1AT and type R2AT which were specified in ISO 1436:2009, but at a higher maximum working pressure. This document uses type R1ATS and type R2ATS to represent these hose types.

## 5 Materials and construction

### 5.1 Hoses

Hoses shall consist of a rubber lining resistant to oil- or water-based hydraulic fluids, one or two layers of high-tensile steel wire and a weather- and oil-resistant rubber cover.

### 5.2 Hose assemblies

Hose assemblies shall be manufactured using hoses conforming to the requirements of this International Standard.

Hose assemblies shall be manufactured only with those hose fittings whose correct functioning has been verified in accordance with 7.2, 7.4, 7.5 and 7.6 of this International Standard. The manufacturer's instructions shall be followed for the preparation and fabrication of hose assemblies.

## 6 Dimensions

### 6.1 Hose diameters, cover thickness and hose concentricity

When measured in accordance with ISO 4671, the hose diameters and the cover thickness (where appropriate) shall conform to the values given in [Table 1](#).

When measured in accordance with ISO 4671, the concentricity of hoses shall conform to the values given in [Table 2](#).