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Ships and marine technology — Fire resistance of non-metallic hose assemblies and non-metallic compensators — Test methods

Titre manque

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Contents

Page

Foreword	iv
Introduction	iv
1 Scope	1
2 Normative references	1
3 Designation	1
4 Test specimen and specimen preparation	2
5 Number of test specimen	2
6 Test bench	2
7 Test performance	3
7.1 Installation of test specimen	3
7.2 Burner width	3
7.3 Preparation	4
7.4 Measured values and measuring points	4
7.5 Temperature during flame application	4
7.6 Pressure during flame application	5
7.7 Duration of test	5
7.8 Proof pressure application	5
8 Assessment	5
9 Type test certificate	5
Annex A (normative) Type test certificate	6
Figures	
Figure 1 — Test-specimen arrangement (hose assembly)	3
Figure 2 — Temperature measuring points	4
Tables	
Table 1 — Burner width	3
Table 2 — Temperatures	5

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 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15540 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 3, *Piping and machinery*.

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Introduction

The main objective of the test using the test bench described in this International Standard is to determine whether and for a safety period a non-metallic hose (made of rubber) assembly or non-metallic compensator (bellow made of rubber) can be exposed to fire without becoming inoperable when subjected to the design working pressure. Although the attacking fire is simulated such that it corresponds to a fire occurring in practice, it cannot be assumed that the duration of fire resistance as recorded during that test will also occur in the event of an actual fire, as the installation conditions, which greatly affect to the duration of fire resistance, may vary from case to case.

When carried out using the test bench specified in ISO 15541, the test procedure according to this International Standard is intended to lead to results capable of being reproduced by testing the same size and type.

A specimen test certificate is specified in Annex A.

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Ships and marine technology — Fire resistance of non-metallic hose assemblies and non-metallic compensators — Test methods

1 Scope

This International Standard specifies a test procedure for determining the fire resistance of non-metallic hose assemblies and non-metallic compensators with nominal diameter of up to 150 mm. It may be used for larger sizes provided proper test bench conditions are obtained.

It serves for proving whether, after the period of fire effect on the test bench specified in ISO 15541, hose assemblies and non-metallic compensators continue to be tight, even when subjected to proof pressure.

Only water is permitted as a test medium. With a view to ensuring maximum safety for both the operating personnel and the test bench in the event of damage to the hose or non-metallic compensator during the test, the use of combustible test media is excluded.

2 Normative references

The following referenced documents are indispensable for the application 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 15541, *Ships and marine technology — Fire resistance of non-metallic hose assemblies and non-metallic compensators — Requirements for the test bench*

3 Designation

The designation of the test for determining the fire resistance is composed of the elements quoted in the example below:

Test ISO 15540 — 30 — 5 — 400 — F

In this designation the elements have the following meaning:

Test:	designation
ISO 15540:	number of this International Standard
30:	test duration in minutes
5:	working pressure during flame application, in bar
400:	proof pressure following flame application, in bar
F:	test specimen with fire sleeve

4 Test specimen and specimen preparation

Non-metallic hose assemblies with a hose length of at least 500 mm shall be used as test specimen.

Each series of non-metallic compensators which have the same shape and identical construction shall be tested in their standard configuration.

The purchaser and operator of the test bench shall agree which fitting types are to be used for the test.

The test specimen may be tested either with or without fire sleeves subject to agreement; identification letter B for test without fire sleeves, identification letter F for tests with fire sleeves. If fire sleeves are used, then all specimens qualifying a series of non-metallic hose or non-metallic compensator shall be tested with fire sleeves.

Prior to the test, the test specimen shall be stored at ambient temperature for 24 h.

5 Number of test specimen

The type tests shall be carried out on a minimum of three non-metallic hose assemblies or non-metallic compensators with different nominal diameters of up to 150 mm but of identical hose or compensator construction. The smallest, the middle and the largest nominal diameter of each series shall be tested.

For an approval of non-metallic compensators with size range above 150 mm one additional test with half of the biggest size shall be tested.

6 Test bench

The test shall be carried out on a test bench according to ISO 15541.

7 Test performance

7.1 Installation of test specimen

The test specimen shall be installed on the test bench such that the burner end extends beyond one hose end fitting by at least 20 mm such that the fitting and hose is completely enclosed by the flames (see Figure 1).

In case of non-metallic compensators, the specimen shall be arranged such that the bellow (or other compensator design shape) and both end fittings or flanges are parallel to the surface of the burner and are completely enclosed by the flames.

The test specimen shall be centred above the burner surface (see Figure 1) in order to provide a flame appearance according to ISO 15541 Annex A, Figures A.1 and A.2.

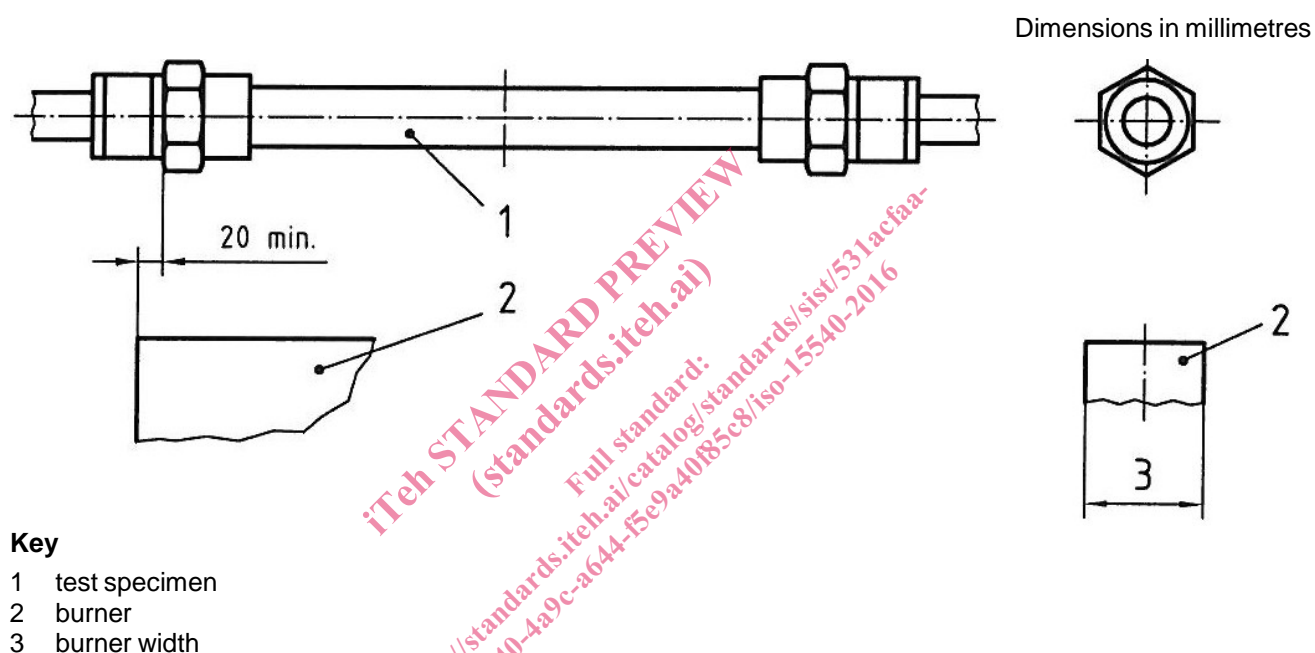


Figure 1 — Test specimen arrangement (hose assembly)

7.2 Burner width

In order to ensure that the flames reliably enclose the test specimen, the minimum burner widths shown in Table 1 shall be observed.

Table 1 — Burner width

Dimensions in millimetres

Minimum width of burner	Outside diameter of test specimens	
50	up to 25	up to 100 ^a
100	over 25 up to 75	
150	over 75 up to 125	
200	over 125 up to 150 ^a	
250	over 150 up to 200	
^a Up to 150 the flames shall be fully enclose the test specimen.		