
**Ships and marine technology — Fire
resistance of metallic pipe components
with resilient and elastomeric seals —
Test methods**

*Navires et technologie maritime — Résistance au feu des composants
de tuyaux métalliques avec joints élastiques ou élastomères —
Méthodes d'essai*

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Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Designation	1
4 Test pieces and preparation	2
5 Number of test pieces	2
6 Test bench	2
7 Test performance	2
7.1 Installation of test pieces	2
7.2 Preparation	3
7.3 Measured values and measuring points	3
7.4 Commencement of test	4
7.5 Test temperatures	4
7.6 Test pressures	4
7.7 Test duration	4
7.8 Heat flux	4
8 Assessment	4
9 Test certificate	5
Annex A (normative) Test certificate	6
Annex B (informative) Evidence of suitability of other pipeline components via representative nominal bores	7
Annex C (informative) Pipeline components that can be fire-test qualified using this International Standard	8
Bibliography	9

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 19921 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 3, *Piping and machinery*.

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Introduction

The purpose of this International Standard is to establish whether a metallic valve, fitting, coupling or similar piping component that contains a resilient or elastomeric seal can be exposed to fire without losing its function, i.e. without leaking when exposed to normal operating pressure.

Only water is permitted as the test medium. The use of combustible test media is prohibited in order to ensure the safety of operators and the test bench.

The test method in this International Standard is intended to provide reproducible results when combined with the test bench in accordance with ISO 19922.

In case of a request for a flame test under different test conditions, e.g. flame temperature, working pressure or duration of flame application, the test is carried out in accordance with this International Standard with the test bench in accordance with ISO 19922, but under the specific conditions requested.

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Ships and marine technology — Fire resistance of metallic pipe components with resilient and elastomeric seals — Test methods

1 Scope

This International Standard specifies test procedures for determining the fire resistance of metallic valves, pipe couplings, and similar pipe components which contain a resilient or elastomeric seal and which are used in ship engineering systems.

The purpose of this International Standard is to determine whether, after the period of fire testing on a test bench which fulfils the requirements of ISO 19922, pipeline components remain tight, and without any failure which could affect their function, even when subjected to proof pressure.

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 19922, *Ships and marine technology — Fire resistance of metallic pipe components with resilient and elastomeric seals — Requirements imposed on 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 19921 — 30 — 5 — 24 — F

In this designation the elements have the following meaning:

Test:	designation.
ISO 19921:	number of this International Standard.
30:	test duration in minutes.
5:	working pressure during flame application, in bar.
24:	proof pressure following flame application, in bar.
F:	test piece with fire sleeve.

4 Test pieces and preparation

The pipeline components to be tested shall be of a size that allows the flames to completely enclose the test pieces, as required in 7.1.

It shall be agreed between the client and the operator of the test bench how the test pieces are to be attached.

The test pieces may be tested either with or without fire protection coating, subject to agreement. Identification letter B is used for tests without fire sleeve, identification letter F for tests with fire sleeve.

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

5 Number of test pieces

The number and size of the test pieces shall be agreed between the client and the operator of the test bench. However, the tests shall be carried out on a minimum of three test pieces of different sizes. The minimum and maximum sizes of the series of components to be qualified shall be tested in all cases.

6 Test bench

The tests shall be carried out on a test bench which fulfils the requirements of ISO 19922.

7 Test performance

7.1 Installation of test pieces

The test piece shall be installed on the test bench such that the burner extends beyond the test piece by at least 20 mm on all sides (see Figure 1) and that the test piece is completely enclosed by the flames.

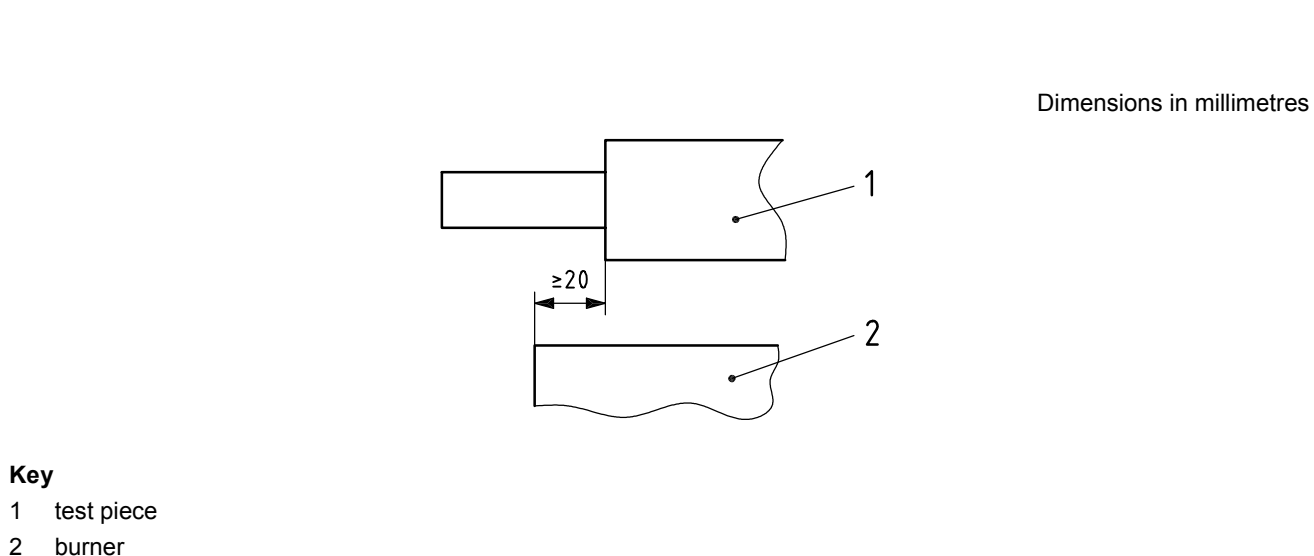


Figure 1 — Installation of test piece

7.2 Preparation

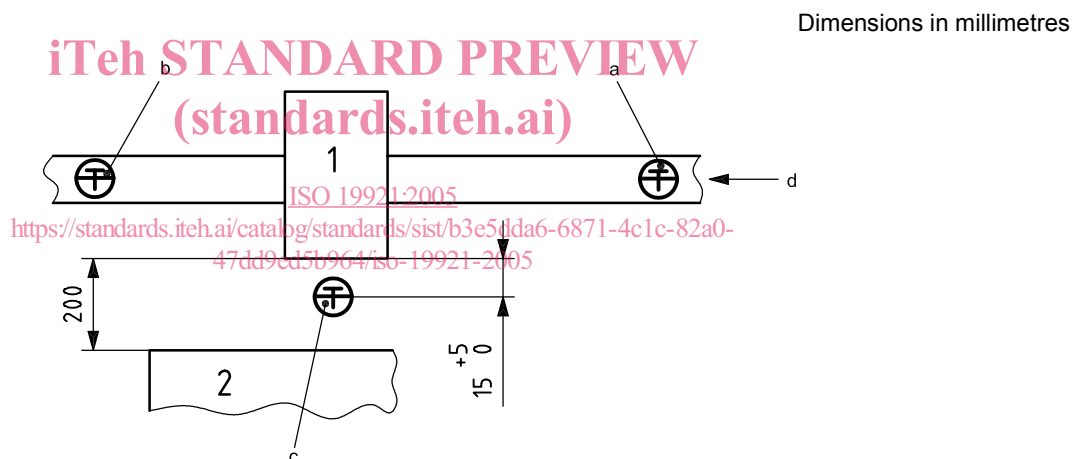
After installation, the test piece shall be rinsed with the test medium (water) for at least 1 min, in order to evacuate as far as possible the air contained in the test piece.

7.3 Measured values and measuring points

The following values shall be measured at the points indicated (see Figure 2):

- water temperature at measuring points a and b;
- flame temperature at measuring point c;
- flow rate of water;
- pressure inside test piece during flame application;
- gas consumption.

All values shall be recorded in intervals of not longer than 2 min.



Key

- 1 test piece
- 2 burner

- a Water temperature at test piece (inlet).
- b Water temperature at test piece (outlet).
- c Flame temperature below centre of test piece.
- d Flow direction.

Figure 2 — Temperature measuring points