

Petroleum, petrochemical and natural gas industries — Method of test for fire dampers

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National foreword



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This publication is not to be regarded as a British Standard.

It is being issued in the Draft for Development series of publications and is of a provisional nature. It should be applied on this provisional basis, so that information and experience of its practical application can be obtained.

Comments arising from the use of this Draft for Development are requested so that UK experience can be reported to the international organization responsible for its conversion to an international standard. A review of this publication will be initiated not later than 3 years after its publication by the international organization so that a decision can be taken on its status. Notification of the start of the review period will be made in an announcement in the appropriate issue of Update Standards.

According to the replies received by the end of the review period, the responsible BSI Committee will decide whether to support the conversion into an international Standard, to extend the life of the Technical Specification or to withdraw it. Comments should be sent to the Secretary of the responsible BSI Technical Committee at British Standards House, 389 Chiswick High Road, London W4 4AL.

The UK participation in its preparation was entrusted to Technical Committee PSE/17, Materials and equipment for petroleum, petrochemical and natural gas industries.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Amendments/corrigenda issued since publication

Date	Comments
30 November 2011	This corrigendum renumbers DD ISO/TS 27469:2010 as DD CEN ISO/TS 27469:2011

English Version

**Petroleum, petrochemical and natural gas industries - Method of
test for fire dampers (ISO/TS 27469:2010)**

Industries du pétrole, de la pétrochimie et du gaz naturel -
Méthode d'essai des clapets coupe-feu (ISO/TS
27469:2010)

Erdöl-, petrochemische und Erdgasindustrie - Prüfverfahren
für Brandschutzklappen (ISO/TS 27469:2010)

This Technical Specification (CEN/TS) was approved by CEN on 18 July 2011 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Foreword

The text of ISO/TS 27469:2010 has been prepared by Technical Committee ISO/TC 67 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” of the International Organization for Standardization (ISO) and has been taken over as CEN ISO/TS 27469:2011 by Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” the secretariat of which is held by AFNOR.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO/TS 27469:2010 has been approved by CEN as a CEN ISO/TS 27469:2011 without any modification.

Introduction

The purpose of this International Technical Specification is to enable evaluation of the ability of a fire damper installation to maintain the integrity of fire rated barriers. Typical fire barrier ratings are given in ISO 13702:1999, Table C.5.

The following performance criteria are evaluated by this Technical Specification:

- a) fire integrity and insulation: to limit/control the spread of radiated and conducted heat at the protected side of a fire damper installation; it is necessary to determine the distance from the damper's blades, in free air or along a duct, where temperatures do not exceed requirements;
- b) ability to provide protection from both hydrocarbon pool fires and jet fires;
- c) leakage past closed blades;
- d) ability to withstand overpressure that can arise from an explosion.

This Technical Specification is based on the use of existing approved fire research and testing facilities. Specially constructed facilities can be required for testing blast pressure withstand capability. It is important that test dampers be installed in a manner that represents their design installation.

In carrying out the tests described in this Technical Specification, it is necessary to refer to other standards connected with the fire-testing of materials and application in the petroleum and natural gas industries. The test methods simulate thermal and overpressure conditions that can result from fire and explosion. The conditions in a real incident can be different, so the test results and resultant damper designations do not guarantee safety but can be used as elements of a fire and explosion risk assessment that takes into account all other pertinent factors.

NOTE It is planned to determine some aspects of this Technical Specification during the development and testing stage.

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CAUTION - Attention is drawn to the fact that fire testing is hazardous and that there is a possibility that toxic fumes, smoke and/or gases can be evolved during tests. Mechanical and operational hazards can also occur during construction of the test elements or structures, their testing and disposal of test residues.

It is essential that an assessment of all potential hazards and risks to health be made and safety precautions identified and provided, including appropriate training to relevant personnel.

1 Scope

This Technical Specification specifies a method for determining the following:

- a) ability of fire dampers installed in ventilation systems to prevent the spread of fire and heat through designated fire divisions; typical ratings are given in ISO 13702:1999, Table C.5.
- b) fire damper operational reliability in the petroleum, petrochemical and natural gas industries, particularly offshore installations;

NOTE It is planned to determine the methodology during the testing and development phase.

- c) ability of fire dampers installed in ventilation systems to withstand blast overpressures that may result from the explosion of a flammable gas.

This Technical Specification applies to different start-up operations for different types of furnace and, therefore, tolerances in test conditions at the beginning of the test are not described in detail. The fire test enables only a limited assessment of the actuating mechanism being carried out and additional tests can be necessary to fully evaluate its operational reliability.

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 834-1, *Fire-resistance tests — Elements of building construction — Part 1: General requirements*

ISO 13702:1999, *Petroleum and natural gas industries — Control and mitigation of fires and explosions on offshore production installations — Requirements and guidelines*

ISO 15138, *Petroleum and natural gas industries — Offshore production installations — Heating, ventilation and air-conditioning*

ISO 22899-1:2007, *Determination of the resistance to jet fires of passive fire protection materials — Part 1: General requirements*

EN 1363-1, *Fire resistance tests — Part 1: General requirements*

EN 1363-2:1999, *Fire resistance tests — Part 2: Alternative and additional procedures*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

- 3.1**
fire damper
mechanical device designed to close off an air duct or aperture and prevent the passage of fire
- 3.2**
connecting duct
duct section between the fire damper and supporting construction
- 3.3**
extension duct
duct section on the unexposed side of the fire damper and on which the test temperature sensors are located
- 3.4**
test specimen
fire damper, connecting duct, extension duct, insulation and (as applicable) the perimeter penetration sealing system
- 3.5**
test construction
complete assembly of the test specimen and the supporting construction
- 3.6**
fire-damper actuating mechanism
mechanism, integral or directly associated with the fire damper that when initiated by the thermal release device, causes the movable components of the damper to change from the “open” to the “closed” position
- 3.7**
thermal release mechanism
thermally actuated device designed to respond to a rise in temperature and release the fire-damper actuating mechanism/blades at a predetermined temperature
- NOTE It can interface with mechanically, electrically, electronically, or pneumatically operated mechanisms that are positioned integrally or remotely from the device
- 3.8**
pool fire
combustion of flammable or combustible hydrocarbon liquid spilled and retained on the surface
- 3.9**
jet fire
ignited discharge of flammable material under pressure
- 3.10**
exposed
facing the fire
- 3.11**
unexposed
facing away from the fire