

## **Gaasiplahvatuste eest kaitsvad ventilatsioonisüsteemid**

Gas explosion venting protective systems

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14994:2007 sisaldab Euroopa standardi EN 14994:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 30.03.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14994:2007 consists of the English text of the European standard EN 14994:2007.</p> <p>This document is endorsed on 30.03.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p><b>Käsitlusala:</b> This European Standard specifies the basic design requirements for the selection of a gas explosion venting protective system. This European Standard, prEN 14797 and EN 14460 form a series of three standards which are used together.</p>	<p><b>Scope:</b> This European Standard specifies the basic design requirements for the selection of a gas explosion venting protective system. This European Standard, prEN 14797 and EN 14460 form a series of three standards which are used together.</p>
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ICS 13.240

Võtmesõnad:

ICS 13.240

English Version

## Gas explosion venting protective systems

Systèmes de protection par évènement contre les explosions de gaz

Schutzsysteme zur Druckentlastung von Gasexplosionen

This European Standard was approved by CEN on 15 December 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, 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 United Kingdom.



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## Foreword

This document (EN 14994:2007) has been prepared by Technical Committee CEN/TC 305 "Potentially explosive atmospheres - Explosion prevention and protection", the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 94/9/EC.

For relationship with EU Directive 94/9/EC, see informative Annex ZA, which is an integral part of this document.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, 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 United Kingdom.

## 1 Scope

This European Standard specifies the basic design requirements for the selection of a gas explosion venting protective system. This European Standard, EN 14797 and EN 14460 form a series of three standards which are used together.

NOTE 1 These three standards together represent the concept of gas explosion venting.

NOTE 2 To avoid transfer of explosions to other communicating equipment one should also consider applying prEN 15089.

This European Standard is applicable to:

- vent sizing to protect against the internal pressure effects of a gas explosion;
- flame and pressure effects outside the enclosure;
- recoil forces;
- influence of vent ducts;
- influence of initial temperature and pressure.

This European Standard does not provide design and application rules against effects generated by detonation reactions or runaway exothermic reactions including decomposition in the gas phase.

This European Standard is not applicable to:

- fire risks arising either from materials processed, used or released by the equipment or from materials that make up equipment and buildings;
- design, construction and testing of explosion venting devices, which are used to achieve explosion venting<sup>1)</sup>;
- protection against overpressures caused by events such as overfilling, overpressurisation, fire engulfment, overheating etc.

NOTE 3 Protection by venting against dust and hybrid explosions is specified in EN 14491.

## 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.

EN 1127-1:1997, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 13237:2003, *Potentially explosive atmospheres — Terms and definitions for equipment and protective systems intended for use in potentially explosive atmospheres*

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<sup>1)</sup> This is covered by EN 14797.

EN 13673-1, *Determination of the maximum explosion pressure and the maximum rate of pressure rise of gases and vapours — Part 1: Determination of the maximum explosion pressure*

EN 13673-2, *Determination of maximum explosion pressure and the maximum rate of pressure rise of gases and vapours — Part 2: Determination of the maximum rate of explosion pressure rise*

EN 14797:2006, *Explosion venting devices*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1127-1:1997 and EN 13237:2003 and the following apply.

#### 3.1 atmospheric conditions

conditions of the surrounding medium where the atmospheric pressure can vary between 80 kPa and 110 kPa and the temperature between  $-20\text{ }^{\circ}\text{C}$  and  $60\text{ }^{\circ}\text{C}$

#### 3.2 gas

for the purpose of this European Standard, gas, vapour or any mixture thereof at atmospheric conditions

#### 3.3 compact enclosures

enclosures having a length (height) to diameter ratio of less than 2

[EN 14373:2005, 3.14.1]

NOTE The length  $L$  is calculated along the axis parallel to the main flow during the explosion, with  $D$  being the diameter measured perpendicular to this axis. For non-circular cross-sections,  $D$  is the diameter of a circle with the same area as the actual cross-sectional area.

#### 3.4 elongated enclosures

enclosures with length (height) to diameter ratio of 2 to 10

[EN 14373:2005, 3.14.2]

NOTE The length  $L$  is calculated along the axis parallel to the main flow during the explosion, with  $D$  being the diameter measured perpendicular to this axis. For non-circular cross-sections,  $D$  is the diameter of a circle with the same area as the actual cross-sectional area.

#### 3.5 pipe

construction with a ratio length (height) to diameter greater than 10

[EN 14373:2005, 3.14.3]

NOTE The length  $L$  is calculated along the axis parallel to the main flow during the explosion, with  $D$  being the diameter measured perpendicular to this axis. For non-circular cross-sections,  $D$  is the diameter of a circle with the same area as the actual cross-sectional area.

#### 3.6 explosion venting device

device which protects a vessel or other closed volume by explosion venting

[EN 14797:2006, 3.4]

NOTE Examples of such devices are: bursting discs, vent panels and explosion doors.