Fire detection and fire alarm systems - Part 24: Components of voice alarm systems - Loudspeakers

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 54-24:2008 sisaldab Euroopa standardi EN 54-24:2008 ingliskeelset teksti.	This Estonian standard EVS-EN 54-24:2008 consists of the English text of the European standard EN 54-24:2008.
Standard on kinnitatud Eesti Standardikeskuse 19.05.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 19.05.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
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English Version

Fire detection and fire alarm systems - Part 24: Components of voice alarm systems - Loudspeakers

Systèmes de détection et d'alarme incendie - Composants des systèmes d'alarme vocale - Partie 24 : Haut-parleurs

Brandmeldeanlagen - Teil 24: Komponenten für Sprachalarmierungssysteme - Lautsprecher

This European Standard was approved by CEN on 23 February 2008.

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Foreword

This document (EN 54-24:2008) has been prepared by Technical Committee CEN/TC 72 “Fire detection and fire alarm systems”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by October 2008, and conflicting national standards shall be withdrawn at the latest by April 2011.

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.

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(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

EN 54 *Fire detection and fire alarm systems* consists of the following parts:

— *Part 1: Introduction*

— *Part 2: Control and indicating equipment*

— *Part 3: Fire alarm devices – Sounders*

— *Part 4: Power supply equipment*

— *Part 5: Heat detectors – Point detectors*

— *Part 7: Smoke detectors – Point detectors using scattered light, transmitted light or ionization*

— *Part 10: Flame detectors – Point detectors*

— *Part 11: Manual call points*

— *Part 12: Smoke detectors – Line detectors using an optical light beam*

— *Part 13: Compatibility assessment of system components*

— *Part 14: Guidelines for planning, design, installation, commissioning, use and maintenance*

— *Part 15: Point detectors using a combination of detected phenomena*

— *Part 16: Voice alarm control and indicating equipment*

— *Part 17: Short-circuit isolators*

— *Part 18: Input/output devices*

— *Part 20: Aspirating smoke detectors*

— *Part 21: Alarm transmission and fault warning routine equipment*

— *Part 22: Resettable line-type heat detectors*

— *Part 23: Fire alarm devices – Visual alarms*

— *Part 24: Components of voice alarm systems – Loudspeakers*

— *Part 25: Components using radio links*

— *Part 26: Point fire detectors using carbon monoxide sensors*[1)]

— *Part 27: Duct smoke detectors*[1)]

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 the United Kingdom.

1) Under preparation.

Introduction

The purpose of a voice alarm loudspeaker as a component of a voice alarm system is to provide intelligible warning to person(s) within, or in the vicinity of, a building in which a fire emergency has occurred and to enable such person(s) to take appropriate measures against a pre-determined evacuation plan.

The primary reason for using a voice alarm system instead of the coded warnings given by sounders is to reduce the time taken for those at risk to recognize that an emergency exists, and to give clear instructions on what to do next. This means that voice alarm loudspeakers need to achieve a minimum acoustical performance, as well as constructional and environmental requirements, to be suitable for use in fire detection and fire alarm systems.

This standard recognizes that the exact nature of the acoustical requirements for voice alarm loudspeakers will vary according to the nature of the space into which there are installed. It therefore specifies the minimum requirements that apply to voice alarm loudspeakers and a common method for testing their operational performance against parameters specified by the manufacturers.

This European Standard gives common requirements for the construction and robustness of voice alarm loudspeakers as well as their performance under climatic and mechanical conditions which are likely to occur in the service environment. As the types of loudspeaker considered in this European Standard are passive electromechanical devices not involving sensitive electronic circuits, electromagnetic compatibility (EMC) tests have not been included. The loudspeakers have been classified in either an indoor or an outdoor application environment category.

This European Standard requires that manufacturers specify certain characteristics in a consistent manner so that designers can make objective decisions about which loudspeaker to use in specific applications.

1 Scope

This European Standard specifies requirements, test methods and performance criteria for loudspeakers intended to broadcast a warning of fire between a fire detection and fire alarm system and the occupants of a building.

This European Standard specifies loudspeakers for two types of application environment: type A, generally for indoor use and type B, generally for outdoor use.

This European Standard does not cover loudspeakers for special applications, for example loudspeaker for use in hazardous applications, if such applications require additional or other requirements or tests than those given in this European Standard.

This European Standard is not intended to cover addressable loudspeakers, loudspeakers with active components.

Voice alarm sounders are covered in EN 54-3:2001.

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 54-1:1996, *Fire detection and fire alarm systems — Part 1: Introduction*

EN 54-3:2001, *Fire detection and fire alarm systems — Part 3: Fire alarm devices — Sounders*

EN 60068-1:1994, *Environmental testing — Part 1: General and guidance (IEC 60068-1:1988 + Corrigendum 1988 + A1:1992)*

EN 60068-2-1:2007, *Environmental testing — Part 2-1: Tests — Test A: Cold (IEC 60068-2-1:2007)*

EN 60068-2-2:1993, *Basic environmental testing procedures — Part 2-2: Tests — Tests B — Dry heat (IEC 60068-2-2:1974 + IEC 60068-2-2 A:1976)*
EN 60068-2-2:1993/A1:1993, *Basic environmental testing procedures — Part 2-2: Tests — Tests B — Dry heat – (IEC 60068-2-2:1974/A1:1993)*
EN 60068-2-2:1993/A2:1994, *Basic environmental testing procedures — Part 2-2: Tests — Tests B — Dry heat – (IEC 60068-2-2:1974/A2:1994)*

EN 60068-2-6:1995, *Environmental testing — Part 2-6: Tests — Test Fc: Vibration (sinusoidal) (IEC 60068-2-6:1995 + Corrigendum 1995)*

EN 60068-2-27:1993, *Basic environmental testing procedures — Part 2: Tests — Test Ea and guidance: Shock (IEC 60068-2-27:1987)*

EN 60068-2-30:2005, *Environmental testing — Part 2-30*: *Tests — Test Db: Damp heat, cyclic (12 h + 12 h cycle) (IEC 60068-2-30:2005)*

EN 60068-2-42:2003, *Environmental testing — Part 2-42: Tests — Test Kc: Sulphur dioxide test for contacts and connections (IEC 60068-2-42:2003)*

EN 60068-2-75:1997, *Environmental testing — Part 2-75: Tests — Test Eh: Hammer (IEC 60068-2-75:1997)*

EN 60068-2-78:2001, *Environmental testing — Part 2-78: Tests — Test Cab: Damp heat, steady state (IEC 60068-2-78:2001)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)*
EN 60529:1991/A1:2000, *Degrees of protection provided by enclosures (IP code) — Amendment A1 (IEC 60529:1989/A1:1999)*

EN 60695-11-10:1999, *Fire hazard testing — Part 11-10: Test flames — 50 W horizontal and vertical flame test methods (IEC 60695-11-10:1999)*
EN 60695-11-10:1999/A1:2003, *Fire hazard testing – Part 11-10: Test flames — 50 W horizontal and vertical flame test methods – Amendment A1 (IEC 60695- 11-10:1999/A1:2003*

EN 60695-11-20:1999, *Fire hazard testing — Part 11-20: Test flames — 500 W flame test methods (IEC 60695-11-20:1999)*
EN 60695-11-20:1999/A1:2003, *Fire hazard testing — Part 11-20: Test flames — 500 W flame test methods) — Amendment A1 (IEC 60695-11- 20:1999/A1:2003)*

EN 61260:1995, *Electroacoustics — Octave-band and fractional-octave-band filters (IEC 61260:1995)*

EN 61672-1:2003, *Electroacoustics — Sound level meters — Part 1: Specifications (IEC 61672-1:2002)*

EN ISO 9001:2000, *Quality management systems — Requirements (ISO 9001:2000)*

IEC 60268-1:1985, *Sound system equipment — Part 1: General*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 54-1:1996 and the following apply.

3.1.1
1/3 octave
frequency band as defined in EN 61260

3.1.2
coverage angle
smallest angle between two directions on either side of the reference axis at which the sound pressure level is 6 dB less than the sound pressure level on the reference axis

NOTE This angle is measured in the vertical and horizontal planes.

3.1.3
free-field condition
acoustical environment in which the sound pressure decreases with the distance (r) from a point source according to a $1/r$ law, with an accuracy of ± 10 %, in the region that will be occupied by the sound field between the loudspeaker system and the microphone during the measurements

EXAMPLE An anechoic room, a quiet outdoor space.

3.1.4
frequency response
sound pressure level at a distance of 4 m from the reference point on the reference axis, produced at 1/3 octave frequency bands, from 100 Hz to 10 kHz (centre frequencies)

NOTE This is also referred to as magnitude or amplitude response.