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AMERICAN NATIONAL STANDARD

Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)

ANSI/ASA S3.41-2015

Accredited Standards Committee S3, Bioacoustics

Standards Secretariat
Acoustical Society of America
1305 Walt Whitman Road, Suite 300
Melville, NY 11747

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ANSI/ASA S3.41-2015

Revision of ANSI/ASA S3.41-1990 (R 2008)

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Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)

Secretariat:

Acoustical Society of America

Approved on July 14, 2015 by:

American National Standards Institute, Inc.

Abstract

This Standard specifies the characteristics of acoustic signals to be used for audible emergency evacuation and audible evacuation signals with relocation instructions. It applies to the audible signal only and not to the signaling system components or equipment. The audible emergency signal is intended to draw the attention of all persons within the signal reception area to an emergency situation (fire, gas leaks, explosion, nuclear radiation, etc.) requiring immediate evacuation from the area. This Standard specifies parameters of the audible emergency signal, i.e., the temporal pattern, the required sound pressure level at all places within the intended signal reception area and the spectral content for certain applications, in order for the audible emergency signal to be recognizable.

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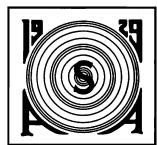
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Acoustical Society of America
ASA Secretariat
1305 Walt Whitman Road, Suite 300
Melville, New York 11747
Telephone: 1 (631) 390-0215
Fax: 1 (631) 923-2875
E-mail: asastds@acousticalsociety.org

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Foreword

[This Foreword is for information only, and is not a part of the American National Standard ANSI/ASA S3.41-2015 American National Standard Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI). As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.]

This standard comprises a part of a group of definitions, standards, and specifications for use in bioacoustics. It was developed and approved by Accredited Standards Committee S3 Bioacoustics, under its approved operating procedures. Those procedures have been accredited by the American National Standards Institute (ANSI). The Scope of Accredited Standards Committee S3 is as follows:

Standards, specifications, methods of measurement and test, and terminology in the fields of psychological and physiological acoustics, including aspects of general acoustics which pertain to biological safety, tolerance and comfort.

This standard is a revision of ANSI/ASA S3.41-1990 (R 2008), which has been technically revised. In this revision, ANSI/ASA S3.41-1990 American National Standard Audible Emergency Signal has been updated to provide basis material for, and coordinate with, newer UL/ULC (Underwriters Laboratories and Underwriters Laboratories of Canada) and NFPA (National Fire Protection Association) standards.

One of the significant changes in audible signals since the last revision of this standard is the advent of the low-frequency (520 Hz ± 10%) sounders. These appliances are designed to wake occupants with greater effectiveness than mid-frequency appliances. Work has also been done on the spectral component of this signal and is documented in Clause 7 (from UL).

While the 520 Hz signals may wake occupants with greater effectiveness, the working group suggests that there is not enough research to support the elimination of the mid-range frequency audible signal (see Clause 8). The mid-range audible signal is generally accepted as being effective by being piercing and irritating, which it is designed to be. The mid-range audible signal will “drive” occupants out of the area.

The use of multiple frequencies may be beneficial to people with hearing losses at certain frequencies. If they have threshold shifts at low frequencies, a mid-frequency signal may help and likewise for the inverse.

ANSI/ASA S3.41-1990 was essentially the same as ISO 8201:1987. This document is substantially different as described above. Additional information on auditory danger signals is given in ISO 7731:2003. (See Bibliography.)

At the time this Standard was submitted to Accredited Standards Committee S3, Bioacoustics, for approval, the membership was as follows:

C.J. Struck, *Chair*
P.B. Nelson, *Vice-Chair*

S.B. Blaeser, *Secretary*

Acoustical Society of AmericaC.J. Struck
.....P.B. Nelson (Alt.)

American Academy of AudiologyC. Schweitzer
.....T. Ricketts (Alt.)

American Academy of Otolaryngology, Head and Neck Surgery, Inc.	R.A. Dobie A. Kim (Alt.)
American Industrial Hygiene Association	T.K. Madison D. Driscoll (Alt.)
American Speech-Hearing-Language Association	L.A. Wilber N. DiSarno (Alt.)
Beltone/GN Resound	S. Petrovic
Council for Accreditation in Occupational Hearing Conservation	L.D. Hager
Diagnostics Group	T. McColley P. Dobrowski (Alt.)
ETS – Lindgren Acoustic Systems	S. Dunlap D. Winker (Alt.)
Etymotic Research, Inc.	M.C. Killion J.K. Stewart (Alt.)
Food and Drug Administration	S-C Peng
G.R.A.S. Sound & Vibration	B. Schustrich J. Soendergaard (Alt.)
Hearing Industries Association	A. Bopp M. Jones (Alt.)
NEMA, Signaling Protection & Communication Section (3SB)	J. McNamara R. Reiswig (Alt.)
National Hearing Conservation Association	G.L. Poling R. Danielson (Alt.)
National Institute for Occupational Safety and Health	M.R. Stephenson W.J. Murphy (Alt.)
National Institute of Standards and Technology	R.P. Wagner S. Fick (Alt.)
National Park Service	M. McKenna K. Frstrup (Alt.)
Natus Medical, Inc.	Y. Hekimoglu
Ocean Conservation Research	M. Stocker
Starkey Laboratories	D.A. Preves T.H. Burns (Alt.)
U.S. Air Force	R.L. McKinley B.D. Simpson (Alt.)
U.S. Army Aeromedical Research Laboratory	W. Ahroon
U.S. Army CERL	D.K. Delaney M.J. White (Alt.)

U.S. Army Research Laboratory, Human Research and Engineering DirectorateA. Scharine
..... A. Fouts (Alt.)

University of Cincinnati Animal Audiology Clinic/Bioacoustics Lab..... P.M. Scheifele
..... D.K. Brown (Alt.)

Individual Experts of the Accredited Standards Committee S3, Bioacoustics, were:

R.F. Burkard
M.D. Burkhard
A.J. Campanella

R.L. McKinley
V. Nedzelnitsky

P.D. Schomer
C.J. Struck
L.A. Wilber

Working Group S3/WG 88, Standard Audible Emergency Evacuation and Other Signals, which assisted Accredited Standards Committee S3, Bioacoustics, in the development of this standard, had the following membership:

A. Berezowski, Chair

D. Finnegan
J. McNamara
W.J. Murphy

C.V. Pavlovic
R.P. Schifiliti

R.S. Schlauch
M. Stoops
P. Tran

Suggestions for improvements of this standard will be welcomed. They should be sent to Accredited Standards Committee S3, Bioacoustics, in care of the Standards Secretariat of the Acoustical Society of America, 1305 Walt Whitman Road, Suite 300, Melville, New York 11747. Telephone: 631-390-0215; FAX: 631-923-2875; E-mail: asastds@acousticalsociety.org.

American National Standard

Audible Emergency Evacuation (E2) and Evacuation Signals with Relocation Instructions (ESRI)

1 Scope and purpose

1.1 Scope

This Standard specifies the characteristics of acoustic signals to be used for audible emergency evacuation (E2) and audible evacuation signals with relocation instructions (ESRI). It applies to the audible signal only and not to the signaling system components or equipment. The use of these signals either as the only audible means of signaling or as a part of a voice message is subject to the requirements of governing laws, codes or other standards.

This Standard specifies parameters of the audible emergency signal, i.e., the temporal pattern, the required sound pressure level at all places within the intended signal reception area, and the spectral content for certain applications, in order for the audible emergency signal to be recognizable.

This Standard applies to:

- the audible signal that is used alone as a general evacuation signal (E2 application) for a building or area, or
- the audible evacuation signal component of a pre-recorded or system-generated voice message that is played in a building or area to signal general evacuation (E2 application), or
- the audible signal component of a pre-recorded or system-generated voice message that is played in a building or area to signal instructions to evacuate one area and relocate to another area of a building (ESRI application).

This Standard does not apply to audible signals that are applied for any use other than E2 or ESRI signals. This Standard does not apply to warning signals, to situations covered by national regulations for public disaster control, to alarm systems onboard ships, or to signals from all outdoor moving vehicles, such as police cars, fire engines, and ambulances.

1.2 Purpose

The audible emergency signal is intended to draw the attention of all persons within the signal reception area to an emergency situation (fire, gas leaks, explosion, nuclear radiation, etc.) requiring immediate evacuation from the area.

The primary audience of this document is the fire protection community. This consists of building and fire code officials, inspectors, fire protection engineers, architects, designers, technicians and equipment manufacturers.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

UL 464-2014 (draft) *Audible Signaling Devices for Fire Alarm and Signaling Systems Including Accessories*