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AMERICAN NATIONAL STANDARD

**Guidelines for the Preparation of Standard
Procedures to Determine the Noise Emission
from Sources**

Secretariat:

Acoustical Society of America

Approved on 15 February 1983 :

American National Standards Institute, Inc.

Abstract

This Standard contains guidelines for the preparation of procedures (standards, test codes, recommended practices, etc.) for determination of noise emission from sources. Included are the general questions that need to be considered during development of a measurement procedure. Guidelines on the following subjects are included: prefatory material, measurement conditions, measurement operations, data reduction, preparation of a test report, and guidelines for the selection of a descriptor for noise emission.

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Standards Secretariat
Acoustical Society of America
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New York, New York 10017

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ABSTRACT

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AMERICAN NATIONAL STANDARDS ON ACOUSTICS

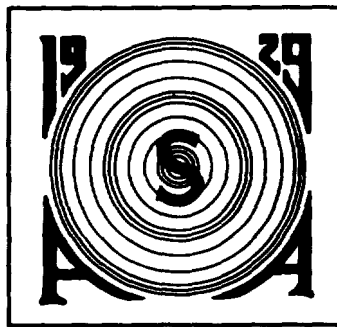
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These standards are developed as a public service to provide standards useful to the public, industry, and consumers, and to Federal, State, and local governments.

This standard was approved by the American National Standards Institute as ANSI S12.1-1983 on 15 February 1983.

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FOREWORD

[This Foreword is not a part of American National Standard Guidelines for the Preparation of Standard Procedures to Determine the Noise Emission from Sources, S12.1-1983 (ASA Catalog No. 49-1983).]

This standard is based on a document generated as a result of the Workshop on Development of Standards for Environmental Sound held in Deerfield Beach, Florida, in December 1977. The Workshop was organized and managed by the Acoustical Society of America under the auspices of the Ad Hoc ANSI Standards Planning Panel on Noise Abatement and Control. The Workshop was sponsored by the U.S. Environmental Protection Agency in cooperation with the National Bureau of Standards.

Because this standard was considered to be needed by various organizations that prepare procedures for the measurement of noise emission from sources, working group, S1-74, was formed in 1978 under the jurisdiction of American National Standards Committee S1 on Acoustics with the charge to prepare an ANSI Standard from the document generated at the Deerfield Beach Workshop. The proposed standard was approved by Standards Committee S1 to be published as S1.39-1980 and circulated for a period of comment and criticism.

Responsibility to complete the standard was transferred in the fall of 1981 to the American National Standards Committee S12 on Noise. Working Group S12-5 (the former S1-74) assisted the committee in final editing of this standard.

American National Standards Committee S12 under whose jurisdiction this standard was developed, had the following scope:

Standards, specifications, and terminology, in the fields of acoustical noise pertaining to methods of measurement, evaluation and control; including biological safety, tolerance and comfort and physical acoustics as related to environmental and occupational noise.

At the time this draft standard was submitted to Standards Committee S12 for approval, the membership was as follows:

K. M. Eldred, *Chairman*

W. Melnick, *Vice-Chairman*

A. Brenig, *Secretary*

Acoustical Society of America ● K. M. Eldred
Air-Conditioning & Refrigerating Institute ● A. C. Potter, H. C. Skarbek (*Alt*)
Alliance of American Insurers ● A. Cudworth
Aluminum Association ● S. I. Roth
American Academy of Otolaryngology-Head & Neck Surgery, Inc. ● R. F. Naunton, L. A. Michael (*Alt*)
American Industrial Hygiene Association ● C. D. Bohl
American Iron & Steel Institute ● E. H. Toothman, P. A. Hernandez (*Alt*)
American Mining Congress ● H. B. Johnson (*Alt*), G. R. Coonan (*Alt*)
American Occupational Medical Association ● T. R. Hatfield, J. Sataloff (*Alt*)
American Otological Society, Inc. ● J. Tonndorf
American Petroleum Institute ● W. R. Thornton, W. Ward (*Alt*)
American Society of Heating, Refrigerating & Air Conditioning Engineers (ASHRAE) ● P. K. Baade, G. F. Hohn (*Alt*)
American Speech, Hearing & Language Association ● J. Collins
Audio Engineering Society, Inc. ● M. R. Chial
Central Institute for the Deaf ● A. F. Niemoeller
Computer & Business Equipment Manufacturers Association ● L. F. Luttrell
Electric Light & Power Group ● C. E. Hickman

Institute of Electrical & Electronics Engineers ● H. R. Silbiger, J. D. Griffiths (*Alt*)
Motor Vehicle Manufacturers Association ● D. B. Smith, T. J. Slavin (*Alt*)
National Association of Noise Control Officials ● J. M. Hector, J. W. Swing (*Alt*)
National Bureau of Standards ● S. L. Yaniv
National Electrical Manufacturers Association ● W.L. Billington
National Hearing Aid Society ● W. F. S. Hopmeier
Naval Ship Research & Development Center ● A. Zaloumis
Power Tool Institute, Inc. ● H. Hochreiter, J.L. Bennett (*Alt*)
Telephone Group ● S. R. Whitesell
U.S. Army Avionics Research & Development Activity ● M. S. Mayer
U.S. Army Human Engineering Laboratory ● D. C. Hodge, G. R. Price (*Alt*)
U.S. Army Medical Corps ● R. K. Sedge (*Maj.*)
U.S. Department of the Air Force ● E. N. von Gierke
U.S. Department of the Army, Environmental Office ● P. D. Schomer, R. Raspet (*Alt*)
U.S. Department of the Navy, Bureau of Medicine & Surgery ● J. W. Greene
U.S. Department of the Navy-Naval Sea Systems Command ● L. Herstein, K. Hartman (*Alt*)

Individual members of the S12 Committee were:

Batchelder L.	Galloway, W. J.	Hillquist, R. K.	Maling, G. C., Jr.
Benson, R. W.	Goldstein, J.	Johnson, D.	Marsh, A. H.
Feldman, S.	Gross, E.E., Jr.	Lang, W. W.	Melnick, W.
Gales, R. S.	Guernsey, R.	Lybarger, S. F.	Weissler, P. G.

Working Group S12-5 on Guidelines for the Preparation of Procedures for the Determination of Noise Emission from Sources which assisted the committee in the completion of this standard had the following membership:

Kenneth K. Eldred, *Chairman*

Peter K. Baade	Robert S. Gales	Ralph K. Hillquist	Henry E. Thomas
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Suggestions for improvements of this standard will be welcomed. They should be sent to the Standards Secretariat, Acoustical Society of America, 335 East 45 Street, New York, NY 10017.

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American National Standard

Guidelines for the Preparation of Standard Procedures to Determine the Noise Emission from Sources

1 SCOPE AND PURPOSE

This standard contains guidelines for the preparation of procedures (standards, test codes, recommended practices, etc.) for determination of noise emission from sources. These guidelines are intended to provide the framework for the thought process to be followed in developing measurement procedures. They do not contain a catalog of existing procedures nor do they contain a collection of specific requirements. Rather, they outline the general questions and issues which need to be considered during the development of a measurement procedure.

The following sections of this standard provide a structure for items to be considered during the development of a procedure for the determination of noise emission from sources. Each such procedure is, of course, unique and thus not all of the items may be applicable.

2 GUIDELINE SUMMARY CHECKLIST

This section contains a checklist which is intended to insure that all the necessary elements are considered in development of a standard procedure for determination of noise emission. The key item for consideration is the purpose. All other items should be considered in relation to the purpose, consistent with ease of use and accuracy required to meet the purpose.

Prefatory Material

- (1) Purpose—source and noise descriptor, uses and users, consequences
- (2) Scope—source and operating mode(s)
- (3) Compatibility with other procedures and standards
- (4) Noise descriptor(s) to be used
- (5) Measurement precision and accuracy intended
- (6) Definitions unique to the document

Measurement Conditions

- (1) Instrumentation specifications, tolerance limits and calibration
- (2) Support equipment
- (3) Test environment required
- (4) Physical site
- (5) Ambient conditions—acoustical and atmospheric

Test Operations

- (1) Source configuration and installation
- (2) Source operating mode(s) during test
- (3) Repeatability of operations, results
- (4) Relative complexity of the procedure

Measurements and Data Reduction

- (1) Specification of preferred sound descriptor
- (2) Replications necessary
- (3) Variability, confidence criteria
- (4) Corrections to measured data

Test Report

- (1) Documentation of source type, installation and operations; site condition, configuration and environmental conditions; measurement equipment, etc.
- (2) Report of final sound data and any adjustments made

Supplemental Information

- (1) Rationale for test procedure requirements
- (2) Explanation of compromises made
- (3) Determination of measurement uncertainty
- (4) Supportive test data
- (5) Overall assessment of the measurement procedure.

3 PREFATORY MATERIAL IN A MEASUREMENT PROCEDURE

This section enumerates and discusses the items that should be considered for inclusion in the prefatory sections of a measurement procedure.

3.1 Purpose

After an introduction with appropriate background information, the first section of a procedure for the determination of noise emission from sources should contain a concise and complete statement of purpose. The purpose generally entails four main items:

- (1) a general description of the source,
- (2) an indication of the intended uses of the measured data,