ANSI S12.3-1985
(ASA 57-1985)

Reaffirmed by ANSI
April 16, 1990

Reaffirmed by ANSI
August 8, 1996

Reaffirmed by ANSI
July 10, 2001

Reaffirmed by ANSI
May 3, 2006

Reaffirmed by ANSI
June 28, 2011

Reaffirmed by ANSI
May 6, 2016

Reaffirmed by ANSI
June 19, 2020

Standards Secretariat
Acoustical Society of America
335 East 45th Street
New York, New York 10017

AMERICAN NATIONAL STANDARD
Statistical Methods for Determining and Verifying Stated Noise Emission Values of Machinery and Equipment

ABSTRACT

This standard defines the preferred methods for determining and verifying noise emission values for machinery and equipment which are stated in product literature or labeled by other means.

Published by the American Institute of Physics for the Acoustical Society of America

AMERICAN NATIONAL STANDARDS ON ACOUSTICS

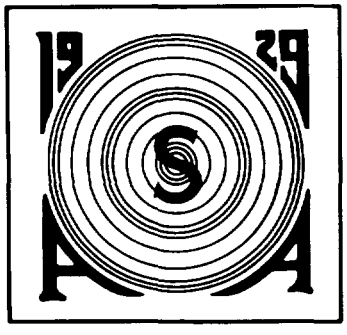
The Acoustical Society of America holds the Secretariat for Accredited Standards Committees S1 on Acoustics, S2 on Mechanical Shock and Vibration, S3 on Bioacoustics, and S12 on Noise. Standards developed by these committees, which have wide representation from the technical community (manufacturers, consumers, and general-interest representatives), are published by the American Institute of Physics for the Acoustical Society of America as American National Standards after approval by their respective standards committees and the American National Standards Institute.

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 S12.3-1985 on 24 May 1985.

An American National Standard implies a consensus of those substantially concerned with its scope and provisions. An American National Standard is intended as a guide to aid the manufacturer, the consumer, and the general public. The existence of an American National Standard does not in any respect preclude anyone, whether he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standard. American National Standards are subject to periodic review and users are cautioned to obtain the latest editions.

Caution Notice: An American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken to reaffirm, revise, or withdraw this standard no later than five years from the data of publication.



FOREWORD

[This Foreword is not part of American National Standard Statistical Methods for Determining and Verifying Stated Noise Emission Values of Machinery and Equipment, S12.3-1985 (ASA Catalog No. 57-1985).]

This American National Standard describes the preferred methods for determining and verifying noise emission values for machinery and equipment which are stated in product literature or labeled by other means. The methods of this American National Standard are consistent with ISO 7574 for Acoustics—Statistical methods for determining and verifying stated noise emission values of machinery and equipment.

This standard was developed using the American National Standards Institute (ANSI) Accredited Standards Committee Procedure under the Secretariat of the Acoustical Society of America.

Accredited Standards Committee S12, under whose jurisdiction this standard was developed, has the following scope:

> Standards, specifications, and terminology in the field 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 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, W. Melnick
Air Conditioning & Refrigeration Institute ● A. C. Potter, R. J. Evans (*Alt*)
Aluminum Association ● S. I. Roth
AT&T Information Systems ● H. R. Silbiger
American Academy of Opthalmology and Otolaryngology ● R. F. Naunton, L. A. Michael (*Alt*)
American Industrial Hygiene Association ● C. D. Bohl
American Iron and Steel Institute ● E. H. Toothman
American Mining Congress ● H. B. Johnson, G. Coonan (*Alt*)
American Occuptational Medical Association ● T. R. Hatfield
American Otological Society, Inc. ● J. Tonndorf
American Petroleum Institute ● W. R. Thornton
American Society of Heating, Refrigerating and Air-Conditioning Engineers ● H. S. Pei
American Speech, Hearing and Language Association ● J. Collins
Audio Engineering Society, Inc. ● M. R. Chial
Compressed Air & Gas Institute ● J. Addington
Computer & Business Equipment Manufacturers Association ● L. F. Luttrell
Electric Light & Power Group ● C. E. Hickman
Federal Aviation Administration ● J. E. Wesler
Motor Vehicle Manufacturers Association ● D. B. Smith
National Bureau of Standards ● S. L. Yaniv
National Council of Acoustical Consultants ● G. C. Tocci
National Electrical Manufacturers Associate ● W. L. Billington
Naval Ship R & D Center ● A. Zaloumis
Owens-Corning Fiberglass ● R. Moulder
Power Tool Institute ● J. L. Bennett, L. D. Bergsten (*Alt*)
U.S. Army Human Engineering Laboratory ● D. C. Hodge
U.S. Army Medical Corps ● R. K. Sedge (Maj.)
U.S. Department of the Air Force ● H. E. von Gierke
U.S. Department of Army, Environment Office ● P. D. Schomer
U.S. Department of the Navy Bureau of Medicine and Surgery ● J. W. Greene

Individual experts of the S12 Committee were

L. Batchelder
R. W. Benson
S. Feldman
R. S. Gales
W. J. Galloway
E. E. Gross, Jr.
R. M. Guernsey
W. W. Lang
G. C. Maling, Jr.
P. K. Baade
R. G. Bartheld
R. D. Bruce
J. Goldstein
R. K. Hillquist
D. Johnson
A. H. Marsh
W. Melnick
R. W. Young

This document was developed by Standards Committee S12 with the assistance of Working Group S12-7 on Statistical Sampling Procedures for Noise Emission Requirements which has the following membership:

Lyle F. Luttrell, *Chairman*

Daniel R. Flynn John Lahmeyer William W. Lang Robert Hellweg

Suggestions for improvement of this standard will be welcomed. They should be sent to the Standards Secretariat, Acoustical Society of America, 335 East 45th Street, New York, NY 10017.

CONTENTS

American National Standard Statistical Methods for Determining and Verifying Stated Noise Emission Values of Machinery and Equipment

0 INTRODUCTION

The object of noise emission labeling is to indicate a limit below which the noise emission value of an individual machine and/or a specified large proportion of the noise emission values of a batch of machines lie.

The principal purposes of this standard are to prescribe methods for verifying labeled noise emission values and to provide information to the labeler on the determination of noise emission values for product noise labeling purposes. The methods presented in the standard are consistent with the requirements of ISO 4871 and ISO 7574.

This standard considers the term "label" to include all means for providing information on the noise emission values to potential users of the equipment; this includes labels, brochures, advertisements, commercial literature, etc.

The methods described in this standard may also be applied to values stated for other purposes, e.g., to the upper noise emission limit set by an authority for a specific family of machines.

NOTE: Although this standard is drafted mainly in terms of A-weighted sound power level as a noise emission quantity, it is equally applicable to other single-number quantities.

This standard contains three methods:

I. Method for determining and verifying the noise emissions of machines with individually labeled values (Sec. 6).

II. Method for determining and verifying labeled values for batches of machines (Sec. 7).

III. Simple (transition) method for determining and verifying labeled values for batches of machines (Sec. 8).

1 SCOPE

This standard describes methods for determining and verifying labeled values for the noise emitted by machinery and equipment. Two types of labeling are considered in this standard: machines labeled with individual values and machines labeled with the same value for the batch. For economical reasons, the labeled value for all machines of a batch of machines may be checked by sampling procedures.

This standard does not deal with the consequences to be drawn if the labeled value is not verified for the batch of machines or for the single machine.

2 PURPOSE

The principal purposes of this standard are to prescribe methods for verifying labeled noise emission values and to provide information to the labeler on the determination of noise emission values for product noise labeling purposes.

3 FIELD OF APPLICATION

This standard applies to machines produced in very small quantities as well as to machines produced by mass production methods. This standard applies to families of machines or equipment for which special measurement test codes for the determination of noise emission quantities are prepared. This standard requires that the labeled value be determined using the same measurement test code as that specified for verification. If no special test code for a particular family exists, the basic standards in the ANSI S1.31–S1.35 series may be appropriate.

NOTE: This does not preclude the use of other standards which may form the basis of special measurement test codes.

Section 6 contains methods for determining and verifying the labeled noise emission values which apply to machines labeled with individual values.

Section 7 contains statistical sampling methods for verifying the labeled noise emission values which apply to batches of machines. The labeled value for all machines of a batch is checked by sampling procedures. The use of Sec. 7 requires a labeling code for the family of machines. The labeling code must specify a reference standard deviation, the type of sampling to be used (single, double, or sequential), and the sample size required when testing the compliance of a batch of a specific family of machines. The procedures of Sec. 7 assume that the noise emission values of a batch of ma-