ASA/ANSI S1.17-2014/Part 1
(Revision of ANSI S1.17-2004/Part1

Reaffirmed by ANSI May 21, 2019

AMERICAN NATIONAL STANDARD

Microphone Windscreens – Part 1: Test Procedures for Measurements of Insertion Loss in Still Air

Secretariat:

Acoustical Society of America

Approved on April 29, 2014:

American National Standards Institute, Inc.

Abstract
This standard describes test procedures for determining the insertion loss of windscreens mounted on measurement microphones. Insertion loss is determined over a specified frequency range and for still-air conditions in the test facility.

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ANSI/ASA S1.17-2014/Part 1

Accredited Standards Committee S1, Acoustics

Standards Secretariat
Acoustical Society of America
35 Pinelawn Road, Suite 114 E
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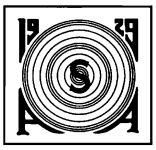

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Contents

Tables

Foreword

[*This Foreword is for information only and is not a part of the American National Standard ANSI/ASA S1.17-2014/Part 1 American National Standard Microphone Windscreens – Part 1: Test Procedures for Measurements of Insertion Loss in Still Air*.]

This standard comprises a part of a group of definitions, standards, and specifications for use in acoustics. It was developed and approved by Accredited Standards Committee S1 Acoustics, under its approved operating procedures. Those procedures have been accredited by the American National Standards Institute (ANSI). The Scope of Accredited Standards Committee S1 is as follows:

> *Standards, specifications, methods of measurement and test, and terminology in the field of physical acoustics, including architectural acoustics, electroacoustics, sonics and ultrasonics, and underwater sound, but excluding those aspects which pertain to biological safety, tolerances, and comfort.*

This standard is a revision of ANSI S1.17-2004/Part 1, which has been technically and editorially revised.

This standard is not comparable to any existing IEC or ISO standard.

This standard includes three informative annexes.

At the time this standard was submitted to Accredited Standards Committee S1, Acoustics, for approval, the membership was as follows:

P. Battenberg, *Chair*
R.J. Peppin, *Vice-Chair*

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Individual Experts of Accredited Standards Committee S1, Acoustics, were:

S.L. Ehrlich	W.W. Lang	J.P. Seiler
K.M. Eldred	A.H. Marsh	L. Wu
	P.D. Schomer	

Working Group S1/WG 19, Windscreens, which assisted Accredited Standards Committee S1, Acoustics, in the development of this standard, had the following membership:

A.J. Campanella, Chair

M. Buzduga	A.H. Marsh	B. Tinianov
R.L. Clark	R.J. Peppin	K. Wilson
E. Frederiksen	R. Raspet	G.S.K. Wong

Suggestions for improvements to this standard will be welcomed. They should be sent to Accredited Standards Committee S1, Acoustics, in care of the Standards Secretariat of the Acoustical Society of America, 35 Pinelawn Road, Suite 114E, Melville, New York 11747-3177. Telephone: 1 631-390-0215; FAX: 1 631-390-0217; E-mail: asastds@aip.org.

Introduction

Windscreens are commonly placed around microphones for measurements of sound pressure levels at outdoor and indoor locations in conditions with moving air. Windscreens are also used to protect a microphone from harsh environmental conditions, such as from dust, rain, or possible mechanical contact with any object. The measurement of a sound with a windscreen over the microphone in moving air yields a result with less total uncertainty than a measurement without the windscreen around the microphone.

As a goal, the measurement of a sound without a windscreen and without moving air would be close to the measurement of the same sound with a windscreen installed and in air moving at any speed. Practically, the measurement of a sound in moving air with a windscreen over a microphone yields a result with less of the influence of the airflow-induced turbulence near the microphone than would be present if the windscreen were not installed.

Windscreens introduce some high frequency insertion loss, dependent on windscreen structure and material, and a small amount of diffraction gain at mid-frequencies. This will affect the frequency characteristic of a measurement instrument.

The purpose of this Part 1 is to describe procedures to determine this insertion loss (ANSI/ASA S1.1-2013, 6.71) of a windscreen mounted on a microphone located in still air or moving slowly along a path in still air.

American National Standard

Microphone Windscreens — Part 1: Test Procedures for Measurements of Insertion Loss in Still Air

1 Scope

1.1 Part 1 of this standard describes alternative methods for determining the insertion loss of a windscreen placed around a specified stationary microphone in still air or moving slowly along a path in still air. The insertion loss is determined by measuring the sound pressure level without and with the windscreen around the microphone. The insertion loss is measured either in anechoic space or in a reverberation room. The measured insertion loss is the result of the characteristics of the windscreen including sound absorption, sound insulation and sound diffraction properties of the windscreen material, and from sound diffraction effects of the windscreen size, shape and construction details.

NOTE Although measurements of insertion loss of a windscreen in still air do not characterize the acoustical performance of the windscreen in moving air, they do provide an indication of the effect of a windscreen at wind speeds approaching zero on the level of the sound pressure at the microphone as modified by the presence of that windscreen.

1.2 This standard applies to any kind or shape of windscreen made from any kind of porous material and intended to be placed around a measurement microphone to reduce the influence of moving air on the sound pressure at the microphone, or to provide protection from dust and other particles in the air. Other windscreen properties are cited in Annex A. This standard also applies to porous "nose cones" placed around a microphone in a flow of air or other gas.

1.3 Insertion loss is measured in an anechoic room for applications where it is important to know the effect of a windscreen on a microphone's directional response as well as the effect on the acoustical sensitivity of a measurement system. Insertion loss is measured in the diffuse field of a reverberation room for applications where sound arrives at a microphone from random directions.

1.4 This standard describes methods for determining the insertion loss of a windscreen over a frequency range selected by the user as applicable to an intended measurement of the sound pressure level at a point in a sound field. The measured insertion losses may be used to classify windscreens according to their physical properties. The measured insertion losses may also be useful for estimating the sound pressure levels that would have been measured in the absence of a windscreen. Annex A provides general information about microphone windscreens.[1]

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.

ANSI/ASA S1.1-2013, American National Standard Acoustical Terminology

ANSI/ASA S1.40-2006 (R 2011), American National Standard Specifications and Verification Procedures for Sound Calibrators

[1] The Bibliography contains a list of references with information about the design and testing of microphone windscreens.