ASME PTC 36-2018
[Revision of ASME PTC 36-2004 (R2013)]

Measurement of Industrial Noise

Performance Test Codes

AN AMERICAN NATIONAL STANDARD

The American Society of
Mechanical Engineers

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The American Society of Mechanical Engineers
Two Park Avenue • New York, NY • 10016 USA

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This Code will be revised when the Society approves the issuance of a new edition.

ASME issues written replies to inquiries concerning interpretations of technical aspects of this Code. Interpretations are published on the Committee web page and under http://go.asme.org/InterpsDatabase. Periodically certain actions of the ASME PTC Committee may be published as Cases. Cases are published on the ASME website under the PTC Committee Page at http://go.asme.org/PTCcommittee as they are issued.

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The American Society of Mechanical Engineers
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NOTICE

All Performance Test Codes must adhere to the requirements of ASME PTC 1, General Instructions. The following information is based on that document and is included here for emphasis and for the convenience of the user of the Code. It is expected that the Code user is fully cognizant of Sections 1 and 3 of ASME PTC 1 and has read them prior to applying this Code.

ASME Performance Test Codes provide test procedures that yield results of the highest level of accuracy consistent with the best engineering knowledge and practice currently available. They were developed by balanced committees representing all concerned interests and specify procedures, instrumentation, equipment-operating requirements, calculation methods, and uncertainty analysis.

When tests are run in accordance with a code, the test results themselves, without adjustment for uncertainty, yield the best available indication of the actual performance of the tested equipment. ASME Performance Test Codes do not specify means to compare those results with contractual guarantees. Therefore, it is recommended that the parties to a commercial test agree before starting the test and preferably before signing the contract on the methods to be used for comparing the test results with the contractual guarantees. It is beyond the scope of any code to determine or interpret how such comparisons shall be made.

FOREWORD

In October 1967, the Board on Performance Test Codes recognized the need for procedures and measuring techniques to provide reliable and accurate sound-measurement analysis. This action was taken in view of the growing environmental concern that lengthy, unprotected exposure to high industrial noise levels is detrimental to human health. This concern has also resulted in government-sponsored noise-level criteria. Accordingly, the Board on Performance Test Codes authorized the organization of Performance Test Codes Committee No. 36 on Measurement of Industrial Sound. The new PTC 36 was published as an American National Standard in 1985.

In May 1992, at the request of the Board on Performance Test Codes, a committee was convened to consider revisions to PTC 36-1985. There were three principal reasons for undertaking the revision. First, the technology of digital sound data acquisition and processing had evolved dramatically since the development of the first edition of the Code, resulting in more widespread use of sound-intensity methods. Second, extending the scope of the Code to encompass far-field measurements was considered likely to make the Code more useful to a broader range of potential users. Third, a considerable enlargement of uncertainty considerations, included as an integral part of the procedure, was believed to enhance its applicability. Keeping these industry needs in mind, changes were made to the 1985 edition and published as PTC 36-2004.

The latest revisions are as follows:

(a) deleted reference to B133.8-2011 because it is to be withdrawn and absorbed, in parts, into this Code

(b) deleted references to sound intensity because it has become less popular than anticipated in 1992

(c) removed reference to two-surface method due to its relatively infrequent use by professionals

(d) introduced a more general formula for the K2 environmental absorption correction

(e) introduced a new method of uncertainty analysis, shown in Nonmandatory Appendix A

ASME PTC 36-2018 was approved by the PTC Standards Committee on January 16, 2018, and was approved as an American National Standard by the ANSI Board of Standards Review on May 15, 2018.

ACKNOWLEDGMENT: The preparation of this Code required several years, and a previous member of the Committee was not active at the time of its publication. The Committee chair would therefore like to recognize and thank Stephen Hambric for his significant contributions to the development of this Code.

ASME PTC COMMITTEE
Performance Test Codes

(The following is the roster of the Committee at the time of approval of this Code.)

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CORRESPONDENCE WITH THE PTC COMMITTEE

General. ASME Codes are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Code may interact with the Committee by requesting interpretations, proposing revisions or a case, and attending Committee meetings. Correspondence should be addressed to:

Secretary, PTC Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

Proposing Revisions. Revisions are made periodically to the Code to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Code. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Code. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Proposing a Case. Cases may be issued to provide alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the Code and the paragraph, figure, or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the Code to which the proposed Case applies.

Interpretations. Upon request, the PTC Standards Committee will render an interpretation of any requirement of the Code. Interpretations can only be rendered in response to a written request sent to the Secretary of the PTC Standards Committee.

Requests for interpretation should preferably be submitted through the online Interpretation Submittal Form. The form is accessible at http://go.asme.org/InterpretationRequest. Upon submittal of the form, the Inquirer will receive an automatic e-mail confirming receipt.

If the Inquirer is unable to use the online form, he/she may mail the request to the Secretary of the PTC Standards Committee at the above address. The request for an interpretation should be clear and unambiguous. It is further recommended that the Inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry in one or two words.
Edition:	Cite the applicable edition of the Code for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. Please provide a condensed and precise question, composed in such a way that a "yes" or "no" reply is acceptable.
Proposed Reply(ies):	Provide a proposed reply(ies) in the form of "Yes" or "No," with explanation as needed. If entering replies to more than one question, please number the questions and replies.
Background Information:	Provide the Committee with any background information that will assist the Committee in understanding the inquiry. The Inquirer may also include any plans or drawings that are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in the format described above may be rewritten in the appropriate format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

Moreover, ASME does not act as a consultant for specific engineering problems or for the general application or understanding of the Code requirements. If, based on the inquiry information submitted, it is the opinion of the Committee that the Inquirer should seek assistance, the inquiry will be returned with the recommendation that such assistance be obtained.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The PTC Standards Committee regularly holds meetings and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the PTC Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at http://go.asme.org/PTCcommittee.

Section 1
Object and Scope

1-1 OBJECT

The object of this Code is to describe procedures for measuring and reporting airborne sound emission from stationary sound sources and equipment, or from facilities composed of multiple stationary sound sources.

1-2 PURPOSE

The purpose of this Code is to recommend measurement procedures in a variety of acoustical environments, including settings influenced by background or extraneous noise. Generally, an A-weighted sound-pressure level (see Section 2) is used to quantify the sound emission of industrial equipment and facilities.

1-3 SCOPE

This Code provides guidelines for the following two methods of measuring near- and far-field sound levels:

(a) Survey Method (Survey Grade). This method is used to expeditiously perform cursory measurements to assess acoustical performance of systems and equipment. This may consist of preliminary or limited measurements for further study and review, or for more in-depth follow-up work. Refer to ANSI/ASA S12.56/ISO 3746.

(b) Engineering Method (Engineering Grade). This method is used to perform precise field measurements for assessing acoustical performance and compliance with acoustical requirements. These types of measurements usually include an assessment of variability in the data and of uncertainty. Refer to ANSI/ASA S12.54/ISO 3744.

General guidance for sound-level measurements is found in Nonmandatory Appendix B.

1-4 UNCERTAINTY

There are two levels of uncertainty accuracy, engineering and survey, that are dependent on the test conditions during the measurement. These are discussed in subsection 3-3.