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Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions applying approximate environmental corrections

Acoustique — Bruit émis par les machines et équipements — Détermination des niveaux de pression acoustique d'émission au poste de travail et en d'autres positions spécifiées en appliquant des corrections d'environnement approximatives



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11202 was prepared by Technical Committee ISO/TC 43, *Acoustics*, Subcommittee SC 1, *Noise*.

This second edition cancels and replaces the first edition (ISO 11202:1995), which has been technically revised.

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Introduction

This International Standard specifies a method for determining the emission sound pressure levels at a work station and at other well defined positions, in the vicinity of a machine or piece of equipment, *in situ*. It is one of a series (ISO 11200^[15] to ISO 11205^[19]) which specifies various methods for determining the emission sound pressure level at a work station and at other specified positions of a machine or equipment. ISO 11200^[15] gives guidance on the choice of the method to be used to determine the emission sound pressure levels of machinery and equipment.

The method specified in this International Standard differs from those of ISO 11201^[16] in determining and applying a local environmental correction. It differs from ISO 11204^[18] by using an approximate method to determine the directivity of the sound radiation of a machine with a reduced number of measurement positions or even with no additional measurement. The acoustical properties of the room have to be determined to qualify the test environment and to determine a correction for local environmental influences applied to the measured sound pressure levels. With the method specified in this International Standard, results of accuracy grade 2 (engineering grade) or accuracy grade 3 (survey grade) are obtained.

For the determination of the local environmental correction two procedures are specified in this International Standard.

The first procedure (see A.1) is based on the assumption that a well-defined part of the machine, visible from and with free propagation conditions to the work station or the specified position, radiates the sound responsible for the sound pressure level at this position. With this assumption, only a sound pressure measurement at the work station and an acoustical qualification of the room are necessary to determine the local environmental correction.

The second procedure (see A.2) is generally applicable. No assumptions about the directivity of the radiation or the source location are necessary, because this directivity is determined using an approximate method with few additional measurement positions. The approximate character of this method is taken into account in qualifying the grade of accuracy of the result.

In general, the emission sound pressure levels are less than or equal to those that occur when the machinery or equipment is operating in its normal surroundings. This is because the sound pressure levels are determined by excluding the effects of background noise, as well as the effects of reflections other than those from the reflecting plane on which the machine under test is placed. For determination or calculation of the sound pressure level at the operator's position with the machine operating in a room, both sound power level and sound pressure level are required (as well as information on the room properties or reflections and noise from other sound sources or machines). A method of calculating the sound pressure levels in the vicinity of a machine operating alone in a workroom is given in ISO/TR 11690-3^[20]. Commonly observed differences are 1 dB to 5 dB, but in extreme cases the difference may be even greater.