CSA Group

Z107.56-13
(reaffirmed 2018)

Measurement of noise exposure

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CSA Group

Standards Update Service

Z107.56-13
August 2013

Title: *Measurement of noise exposure*

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Published in August 2013 by CSA Group
A not-for-profit private sector organization
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6

*To purchase standards and related publications, visit our Online Store at **shop.csa.ca***
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ISBN 978–1–77139–056–9

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Preface

This is the fourth edition of CSA Z107.56, *Measurement of noise exposure*, which is part of the CSA Z107 series of Standards on workplace noise control, vibration control, and occupational audiology. This edition supersedes the third edition, entitled *Procedures for the measurement of occupational noise exposure*, published in 2006, and previous editions published in 1994 and 1986.

Measuring workers' noise exposure is an essential part of any hearing conservation program in determining the risk of occupational hearing loss. This Standard provides standard procedures for carrying out these measurements that are based on established definitions, units, instrumentation, and industry practices.

These methods, which can be applied to individuals or groups, are designed to give results representative of workers' noise exposure while minimizing the number and duration of measurements. The Standard also provides guidelines for selecting and using each of the three instruments of measurement: noise dosimeters, integrating sound level meters, and sound level meters.

Note: *Although this Standard was written to measure noise exposure in the workplace, it can equally be used to measure non-occupational noise exposures, including those from music players, radios, or other sound reproduction devices.*

New to this edition of Z107.56 are requirements for measurement of noise exposure from sound sources close to the ear (see Clause 7). This new criteria has been introduced to address the need to assess noise exposure of workers assigned to wear communications headsets or other related in-helmet or under-hood noise sources. In addition, new procedures are specified to capture all sources of near-ear and far-ear exposures associated with music players, radios, or other sound reproducing devices used in the workplace (Clause 8).

This Standard was prepared by the Subcommittee on Noise Exposure Assessment and Control, under the jurisdiction of the Technical Committee on Occupational Hearing Conservation and the Strategic Steering Committee on Occupational Health and Safety, and has been formally approved by the Technical Committee.

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

3) *This Standard was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*

4) *To submit a request for interpretation of this Standard, please send the following information to **inquiries@csagroup.org** and include "Request for interpretation" in the subject line:*

a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*

b) *provide an explanation of circumstances surrounding the actual field condition; and*

c) *where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at standardsactivities.csa.ca.

5) *This Standard is subject to periodic review, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line:*

a) *Standard designation (number);*
b) *relevant clause, table, and/or figure number;*
c) *wording of the proposed change; and*
d) *rationale for the change.*

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Measurement of noise exposure

1 Scope

1.1

This Standard describes procedures for determining the occupational noise exposure level of workers ($L_{ex,T}$) using sampling techniques. $L_{ex,T}$ represents the long-term noise exposure of workers and is calculated from measurements of $L_{eq,t}$ in the workplace.

Notes:

1) *Noise exposure has been expressed as % dose in the past. However, the use of $L_{eq,t}$ is recommended, as it is more convenient and less likely to be misunderstood.*

2) *The procedures in this Standard normally form part of any occupational hearing conservation program. Users of this Standard should be proficient in noise measurement.*

1.2

This Standard provides procedures for measuring the occupational noise exposure from all types of noise, e.g., continuous noise, tonal noise, and impulsive noise. All types of noise (including impulsive noise) are included in a single equivalent sound level for an individual or group.

Note: *Although this Standard was written to measure noise exposure in the workplace, it can equally be used to measure non-occupational noise exposures, including those from music players, radios or other sound reproduction devices.*

1.3

This Standard can be used to determine the noise exposure level of individuals ($L_{ex,T}$) or extended to groups (L_{Group}) with similar noise exposures. It can also be used to measure the average noise ($L_{eq,t}$) from a given job or activity (e.g., operating a particular machine).

1.4

This Standard provides for measurements in terms of equivalent sound level, $L_{eq,t}$ (3 dB exchange rate), and calculation of noise exposure level, $L_{ex,T}$, regardless of noise type. Procedures for calculating related quantities, such as % dose, are provided.

This Standard may also be used to measure L_{OSHA} (5 dB exchange rate) and calculate the associated indices as shown in Annex C. In this case, the results may not be a good representation of exposure to impulsive noise.

Note: *Measurements taken in L_{eq} cannot be converted to L_{OSHA} , or vice versa, unless the time distribution of sound levels is known.*

1.5

This Standard provides procedures to determine the noise exposure level of workers with a given precision. In certain cases, the user is only interested in determining that a worker's exposure is above or below the criterion level. Therefore, the procedures in this Standard can be less rigorously applied when the noise exposure level is either far above or far below the criterion level.