JIS

JAPANESE INDUSTRIAL STANDARD

JIS T 8161-2 : 2020

(JSAA/JSA)

Acoustics — Hearing protectors — Part 2: Estimation of effective A-weighted sound pressure levels when hearing protectors are worn

14 S

T 8161-2 : 2020

Contents

Foreword

This Japanese Industrial Standard has been established by the Minister of Health, Labour and Welfare and the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by Japan Safety Appliance Association (JSAA)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act. This Standard partially replaces **JIS T 8161**:1983, which has been withdrawn.

This **JIS** document is protected by the Copyright Act.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, published patent application or utility model rights. The relevant Ministers and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, published patent application or utility model rights.

JIS T 8161 series consists of the following 2 parts under the general title *Acoustics — Hearing protectors —*:

Part 1: Subjective method for the measurement of sound attenuation

Part 2: Estimation of effective A-weighted sound pressure levels when hearing protectors are worn

Acoustics — Hearing protectors — Part 2 : Estimation of effective A-weighted sound pressure levels when hearing protectors are worn

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 4869-2** : 2018, Edition 2, with some changes in the technical contents to increase convenience of use.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA. Uncertainty of attenuation values and ratings is given in Annex E.

This Standard estimates an "effective" level, i.e. the A-weighted sound pressure level at the head centre with the listener absent, minus the attenuation of the hearing protection devices. Effective values are estimated since those are required to assess noise hazard with respect to permissible noise exposure limits. An effective level differs from that in the ear canal since it has been converted to a sound-field value via the transfer function of the open ear. Effective levels are typically 5 dB to 10 dB less than ear canal levels depending on the spectrum of the incident noise.

Ideally, the A-weighted sound pressure level effective when a hearing protector is worn should be estimated on the basis of both the octave-band sound attenuation data of the hearing protector (measured in accordance with **JIS T 8161-1**) and the octave-band sound pressure levels of the noise. It is recognized, however, that in many situations information on the octave-band sound pressure levels of the noise might not be available. Therefore, for many practical purposes, there is a need for simpler methods to determine the effective A-weighted sound pressure levels which are only based on the A- and C-weighted sound pressure levels of the noise. This Standard addresses both of these situations by specifying an octave-band calculation method as well as two alternative simplified procedures, the *HML* method and the *SNR* method.

The octave-band method is a calculation method involving the workplace octave-band sound pressure levels and the octave-band sound attenuation data for the hearing protector that is being assessed. Although it can be thought of as an "exact" reference method, it has its own inherent inaccuracies, since it is based upon mean sound attenuation values and standard deviations for a group of test subjects, and not the specific sound attenuation values for the individual person in question.

The *HML* method specifies three attenuation values, *H*, *M* and *L*, determined from the octave-band sound attenuation data of a hearing protector. These values, when combined with the C- and A-weighted sound pressure levels of the noise, are used to calculate the effective A-weighted sound pressure level when the hearing protector is worn.

The *SNR* method specifies a single attenuation value, the single number rating, de-