

# ISO 532-2:2017-06 (E)

## Acoustics - Methods for calculating loudness - Part 2: Moore-Glasberg method

---

<b>Contents</b>		<b>Page</b>
Foreword .....		iv
Introduction .....		v
1	Scope .....	1
2	Normative references .....	1
3	Terms and definitions .....	1
4	General .....	5
5	Specifications of signals .....	5
5.1	General .....	5
5.2	Complex tone .....	5
5.3	Noise consisting of bands of pink or white noise of defined width .....	5
5.4	Mixture of discrete sinusoidal components and bands of pink or white noise .....	6
5.5	Sound specified in terms of the sound pressure levels in 29 adjacent one-third- octave bands .....	6
6	Instrumentation .....	6
7	Description of the method .....	7
7.1	Introduction .....	7
7.2	Determination of sound spectrum at the tympanic membrane .....	7
7.2.1	General .....	7
7.2.2	Free field and diffuse field transfer functions for sound picked up by a single microphone .....	8
7.2.3	Earphones .....	8
7.2.4	Signal recorded at eardrum .....	8
7.2.5	Head and torso simulator .....	8
7.2.6	Interpolation and extrapolation .....	8
7.3	Determination of sound spectrum at the oval window .....	9
7.4	Transformation of sound spectrum into excitation pattern .....	10
7.5	Transformation of excitation pattern into specific loudness .....	13
7.5.1	Introduction .....	13
7.5.2	Reference excitation at the reference threshold of hearing .....	14
7.5.3	Gain of the cochlear amplifier for inputs with low sound pressure levels .....	14
7.5.4	Calculation of specific loudness from excitation when $E_{THRQ}/E_0 \leq E/E_0$ .....	15
7.5.5	Calculation of specific loudness from excitation when $E_{THRQ}/E_0 > E/E_0$ .....	15
7.5.6	Calculation of specific loudness from excitation when $E > 1010$ .....	15
8	Calculation of loudness and loudness level .....	16
8.1	Calculation of monaural and binaural loudness (diotic and dichotic stimuli) .....	16
8.2	Relationship between loudness level and loudness .....	17
8.3	Calculation of the reference threshold of hearing .....	18
9	Uncertainty of calculated loudness for stationary sounds .....	18
10	Data reporting .....	19
Annex A (informative)	Comments regarding binaural loudness .....	20

<b>Annex B (informative) Results for specific test signals .....</b>	<b>21</b>
<b>Annex C (informative) Software for the calculation of loudness .....</b>	<b>26</b>
<b>Bibliography .....</b>	<b>27</b>