



# SOUNDSOURCE


NO. 9-NA-US


## Understanding Attenuation Rating Labels



Hearing protector attenuation ratings differ from region to region. Packaging often displays more than one attenuation rating. What do the various rating numbers mean?

Howard Leight hearing protectors are shipped throughout the world. While customers may be familiar with attenuation ratings specific to their geographical region, they may be curious or even a bit confused by other rating numbers. All attenuation rating numbers are given in decibels (dB) and are based on laboratory tests designed to estimate the passive noise reduction of the hearing protector. They are not designed to predict the amount of protection an individual user will achieve. Higher numbers represent a greater potential for the protector to attenuate noise, when tested under laboratory conditions.

Below are attenuation rating examples you will see on Howard Leight packaging.

 EN 352	SNR 33 dB	SIZE
	H = 32 dB	5-12 mm
	M = 29 dB	
	L = 29 dB	


 Australian Standard <small>AS/NZS1270 Lic. 1579 SAI Global</small>	<b>AU/NZ</b>
	Hearing protector class 4 tested to AS/NZS 1270.
	When selected, used and maintained as specified in AS/NZS 1269, this protector may be used in noise up to 105 dB(A) assuming an 85 dB(A) criterion. A lower criterion may require a higher protector class.

Noise Reduction Rating  WHEN USED AS DIRECTED
<small>THE RANGE OF NOISE REDUCTION RATINGS FOR EXISTING HEARING PROTECTORS IS APPROXIMATELY 0 TO 30. (HIGHER NUMBERS DENOTE GREATER EFFECTIVENESS)</small>
<small>HONEYWELL SAFETY PRODUCTS USA, INC. SAN DIEGO, CA 92154</small>
<small>MODEL NO. MAX-1 / MAX-30</small>
<small>Federal law prohibits removal of this label prior to purchase</small>  <small>LABEL REQUIRED BY U. S. E. P. A. REGULATION 40 CFR Part 211, Subpart B</small>

## The following explains the rating numbers seen on Howard Leight packaging:

**NRR 33**

**Canada Class A(L)**

Noise Reduction Rating	<b>33</b> DECIBELS WHEN USED AS DIRECTED
THE RANGE OF NOISE REDUCTION RATINGS FOR EXISTING HEARING PROTECTORS IS APPROXIMATELY 0 TO 30. (HIGHER NUMBERS DENOTE GREATER EFFECTIVENESS)	
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### NRR [Noise Reduction Rating]

This rating is used in the United States and is accepted for use in other parts of the Americas and some Asian countries. The NRR and its labeling requirement were promulgated by the U.S. Environmental Protection Agency (EPA) in 1979.<sup>1</sup> The EPA defines the type-face size, font, wording, and placement on the package for the NRR label. The EPA also specifies the standard that must be used for testing. The table showing mean attenuation values and standard deviations at each of the nine test frequencies (from 125 Hz through 8000 Hz) is also part of the labeling requirement. In addition, the label must include the EPA's example of how to use the NRR.

Brazil uses a slightly different version of the NRR called NRRsf (subject-fit Noise Reduction Rating). The test method is governed by a different standard and the calculations are somewhat modified as well.

### Canada Class

The Canadian standard<sup>2</sup> uses a classification system that divides hearing protectors into Classes A, B or C, based upon attenuation levels. Class A protectors offer the highest protection, and may be used in 8-hour time-weighted average noise levels up to 105 dBA, Class B up to 95 dBA, and Class C up to 90 dBA. Additionally, the suffix 'L' is added to the class designation for hearing protectors that have at least 20 dB of attenuation at 125 Hz. For example, an earplug that offers maximum protection and also performs well in the low frequencies would carry the designation of Class A(L).

### SNR [Single Number Rating]

This rating number is used primarily by the European Union and the Eurasian Economic Union.<sup>3</sup> Tests are conducted at independent testing laboratories using a set of test frequencies that differ slightly from those used for the NRR. In addition to an overall rating, the SNR further rates protectors for the frequency weighting of the noise environments in which they will be used: H for high-frequency-weighted noise environments, M for mid-frequency-weighted, and L for low-frequency-weighted. Note that the HML designation does not refer to noise level, but rather the spectrum of the noise. For example, a protector might be designated with SNR 26, H = 32, M = 23, L = 14. The estimated attenuation changes according to the noise spectrum of the environment in which the protector is to be worn. The SNR is also accompanied by a table of the octave-band attenuations and standard deviations, although this information may be found inside the package.


### SLC<sub>80</sub> [Sound Level Conversion]

The SLC<sub>80</sub> is a rating number used in Australia and New Zealand.<sup>4</sup> It is an estimate of the amount of protection to be met or exceeded by approximately 80% of the wearers in a well-managed hearing protection program. Depending on the level of attenuation in the SLC<sub>80</sub> rating, a classification is assigned to a protector: Class 1 protectors may be used in noise up to 90 dBA, Class 2 protectors to 95 dBA, Class 3 protectors to 100 dBA, and so on, in 5-dB increments, up to Class 5. Packaging will often show the SLC<sub>80</sub> value, followed by the classification (i.e. SLC<sub>80</sub> 27, Class 5). As with the NRR and SNR, an octave-band table with mean attenuations and standard deviations will be included for this test method.

**SNR 33**

**SLC<sub>80</sub> 22**

**Class 4**

 EN 352	<b>SNR 33 dB</b> H = 32 dB M = 29 dB L = 29 dB	<b>SIZE</b> 5-12 mm
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 <b>Australian Standard</b> <small>AS/NZS1270 Lic. 1579 SAI Global</small>	<b>AU/NZ</b> Hearing protector class 4 tested to AS/NZS 1270. When selected, used and maintained as specified in AS/NZS 1269, this protector may be used in noise up to 105 dB(A) assuming an 85 dB(A) criterion. A lower criterion may require a higher protector class.
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## Rating numbers commonly used for hearing protectors

Each rating number is based on differing test standards, test frequencies, and calculation methods, and any given hearing protector generates different numbers depending on the rating method used.

Symbol	Definition	Test Standard	Where Used
NRR	Noise Reduction Rating	ANSI S3.19	Primarily North America
NRRsf	Subject-Fit Noise Reduction Rating	ANSI S12.6	Brazil
A, B or C	Canada Class	CSA Z94.2	Canada
SNR	Single Number Rating	ISO 4869-1 and -2	European Union and Eurasian Economic Union
SLC <sub>80</sub>	Sound Level Conversion (80 percent)	AS/NZS 1270	Australia / New Zealand

For example, the Howard Leight LaserLite® earplug displays the rating information below, depending on the geographical region in which it is distributed. It is critical to note that the rating number is a sample statistic only. It is an *estimate* of the attenuation that may be achieved if the hearing protector is worn properly. It is not a predictor of an individual’s protection level in actual use. Fit-testing remains the best method for measuring how much protection an individual user can achieve with a particular hearing protector.

NRR	CAN	SNR	SLC <sub>80</sub>
32	Class A(L)	35 (H=34, M=32, L=31)	25 (Class 4)

References:

1. The EPA labeling standard is defined in Code of Federal Regulations (CFR) 40, Part 211, Subpart B – Hearing Protective Devices.
2. Canada Class is defined in Canadian Standards Association Z94.2-14 Hearing Protection Devices - Performance, Selection, Care, and Use
3. The SNR rating and HML descriptors are defined in ISO 4869-2, Acoustics – Hearing Protectors – Part 2: Estimation of Effective A-Weighted Sound Pressure Levels When Hearing Protectors Are Worn
4. The SLC<sub>80</sub> is defined in Australian/New Zealand Standard 1270:2002, Acoustics – Hearing Protectors

*Sound Source is a periodic publication of the Hearing Conservation team of Honeywell Safety Products USA, Inc., addressing questions and topics relating to hearing conservation and hearing protection.*

*WARNING: This document does not provide important product warnings and instructions. Honeywell recommends all users of its products undergo thorough training and that all warnings and instructions provided with the products be thoroughly read and understood prior to use. It is necessary to assess hazards in the work environment and to match the appropriate personal protective equipment to particular hazards that may exist. At a minimum, a complete and thorough hazard assessment must be conducted to properly identify the appropriate personal protective equipment to be used in a particular work environment. FAILURE TO READ AND FOLLOW ALL PRODUCT WARNINGS AND INSTRUCTIONS AND TO PROPERLY PERFORM A HAZARD ASSESSMENT MAY RESULT IN SERIOUS PERSONAL INJURY.*