

# Publications on signal audibility while wearing hearing protectors

## Special requirements in Germany

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### • Requirement “S”, “V” or “W” for hearing protectors in Germany (overview)

*Liedtke, M.:* [German Criteria for Selection of Hearing Protectors in the Interest of Good Signal Audibility](#). International Journal of Occupational Safety and Ergonomics (JOSE) 15 (2009) Nr. 2, pp. 163-174

*Liedtke, M.:* **Specifying a general criterion for hearing protectors with the aim of ensuring good acoustic perception**. Noise & Vibration Worldwide 33 (2002) No. 7, pp. 19-23

Abstract: A simple criterion for the selection of hearing protectors was found for use when warning signals or informative operating sounds have to be perceived or speech communication is essential. It can easily be observed, fleshes out the general recommendation given in EN 458:1993 and is compatible with other more specific criteria for signal audibility for applications with high risk of accidents when warning signals might not be perceived. A selection program for hearing protectors is available in German as a download version on the homepage of the Institute for Occupational Safety of the German Social Accident Insurance (IFA) ([www.dguv.de/ifa](http://www.dguv.de/ifa)). It is based on EN 458:1993 and the new criterion mentioned above.

*Liedtke, M.:* **Selection of Hearing Protection**. Health & Safety International (2003) No. 5, pp. 13-21

Abstract: In the European Union there are about 400 types of hearing protectors on the market. Proper selection of hearing protectors is very important because it is only those protectors that are worn during the entire exposure that are suitable to the particular application i.e. working environment and activity. When looking at occupational hearing impairment noise is still a serious problem in industry – despite the huge efforts in the field of noise abatement and hearing protection in the past that have been so effective. For almost all activities suitable products can be found from the four hundred or so hearing protectors mentioned earlier. Hearing protectors should protect against hazards caused by noise; but all too often the hearing protector itself is a burden to the user. Annoyance, added difficulty of work and irritability caused by the hearing protector lead to users' refusal to wear the protector. We hope that this article helps with the proper selection of hearing protectors for your workplace.

### • Requirement “S” or “V” for hearing protectors in Germany

*Liedtke, M.:* **Selection of hearing protectors to be used in noise areas in road traffic or railway systems in Germany.** Advances in Noise Research, Protection Against Noise, Volume II, pp. 177-182. Edited by Deepack Prasher, Linda Luxon and Ilmari Pyykkö. Whurr Publisher London 1998

Abstract: Hearing protectors may decrease the audibility of acoustic warning signals. Therefore, in noise areas where there is increased risk of accidents the use of hearing protectors is not permitted in Germany. Procedures were developed to select suitable hearing protectors to be used in railway network and road systems. A pre-selection of suitable hearing protectors is obtained by calculations based on the Zwicker-method ISO R 352, Part B, using spectra of typical noises at the workplaces. In addition, a final listening check is carried out at work, under operational conditions, by individual employees and the person responsible for safety. This indicates the suitability of the hearing protector. A certificate has to be issued for the use of hearing protectors in German road traffic.

*Liedtke, M.:* **Use of Zwicker method to predict signal audibility in noise with hearing protection devices.** Joint Meeting. 137<sup>th</sup> Regular Meeting of the Acoustical Society of America. 2<sup>nd</sup> Convention of the European Acoustics Association Forum Acousticum 1999. Integrating the 25<sup>th</sup> German Acoustics Daga Conference. Technical University, 14-19 March 1999, Berlin. Acta Acustica 85 (1999) No. 1, p. 205

Abstract: The audibility of acoustic warning signals may be decreased by the use of hearing protectors. Therefore in Germany admittance to use hearing protectors was refused in specific noise areas where the risk of accidents is increased. For the selection of suitable hearing protectors to be used in railway systems and road traffic procedures were developed. A pre-selection of suitable hearing protectors is obtained by calculations based on the Zwicker-Methode ISO R 352, Part B using spectra of typical noises at the workplaces. Additional a final listening check at work under operation conditions has to be carried out.

### • Requirement “S” for hearing protectors in Germany

*Lazarus, H.:* [Signal Recognition and Hearing Protectors With Normal and Impaired Hearing.](#) International Journal of Occupational Safety and Ergonomics (JOSE) 2005, Vol. 11, No. 3, pp. 233-250

### • Requirement “W” for hearing protectors in Germany

*Liedtke, M.:* **Specifying a general criterion for hearing protectors with the aim of ensuring good acoustic perception.** Noise & Vibration Worldwide 33 (2002) No. 7, pp. 19-23

Abstract: A simple criterion for the selection of hearing protectors was found for use when warning signals or informative operating sounds have to be perceived or speech communication is essential. It can easily be observed, fleshes out the general recommendation given in EN 458:1993 and is compatible with other more specific criteria for signal audibility for applications with high risk of accidents when warning signals might not be perceived. A selection program for hearing protectors is available in German as a download version on the homepage of the Institute for Occupational Safety of the German Social Accident Insurance (IFA) ([www.dguv.de/ifa](http://www.dguv.de/ifa)). It is based on EN 458:1993 and the new criterion mentioned above.

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Abstract: In the European Union there are about 400 types of hearing protectors on the market. Proper selection of hearing protectors is very important because it is only those protectors that are worn during the entire exposure that are suitable to the particular application i.e. working environment and activity. When looking at occupational hearing impairment noise is still a serious problem in industry - despite the huge efforts in the field of noise abatement and hearing protection in the past that have been so effective. For almost all activities suitable products can be found from the four hundred or so hearing protectors mentioned earlier. Hearing protectors should protect against hazards caused by noise; but all too often the hearing protector itself is a burden to the user. Annoyance, added difficulty of work and irritability caused by the hearing protector lead to users' refusal to wear the protector. We hope that this article helps with the proper selection of hearing protectors for your workplace.