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ROAD TRAFFIC NOISE REDUCING DEVICES - TEST METHOD FOR DETERMINING THE ACOUSTIC PERFORMANCE - PART 4: INTRINSIC CHARACTERISTICS - IN SITU VALUES OF SOUND DIFFRACTION

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Road traffic noise reducing devices - Test method for determining the acoustic performance - Part 4: Intrinsic characteristics - In situ values of sound diffraction

Dispositifs de réduction du bruit du trafic routier – Méthode d'essai pour la détermination des performances acoustiques – Partie 4 : Caractéristiques intrinsèques – Valeurs in situ de la diffraction acoustique

Lärmschutzeinrichtungen an Straßen - Prüfverfahren zur Bestimmung der akustischen Eigenschaften - Teil 4: Produktspezifische Merkmale - Insitu-Werte der Schallbeugung

This Technical Specification (CEN/TS) was approved by CEN on 6 June 2003 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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Foreword

This document (CEN/TS 1793-4:2003) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

It should be read in conjunction with :

EN 1793-1, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 1 : Intrinsic characteristics of sound absorption*

EN 1793-2, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 2 : Intrinsic characteristics of airborne sound insulation*

EN 1793-3, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 3 : Normalized traffic noise spectrum*

CEN/TS 1793-5, *Road traffic noise reducing devices - Test method for determining the acoustic performance – Part 5: Intrinsic characteristics – In situ values of sound reflection and airborne sound insulation.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Part of the market of road traffic noise reducing devices is constituted of products to be added on the top of noise reducing devices and intended to contribute to sound attenuation acting primarily on the diffracted sound field. These products will be called added devices. This standard has been developed to specify a test method for determining the acoustic performance of added devices.

The test method can be applied in situ, i.e. where the traffic noise reducing devices and the added devices are installed. The method can be applied without damaging the traffic noise reducing devices or the added devices.

The method can be used to qualify products before the installation along roads as well as to verify the compliance of installed added devices to design specifications. Repeated application of the method can be used to verify the long term performance of added devices.

NOTE – This method could be used to qualify added devices for other applications, e.g. to be installed along railways or nearby industrial sites. In this case special care has to be taken into account in considering the location of the noise sources and the single-number ratings should be calculated using an appropriate spectrum.

No other national or international standard exists about the subject of this standard.

1 Scope

This document describes a test method for determining the intrinsic characteristics of sound diffraction of added devices installed on the top of traffic noise reducing devices. The test method prescribes measurements of the sound pressure level at several reference points near the top edge of a noise reducing device with and without the added device installed on its top. The effectiveness of the added device is calculated as the difference between the measured values with and without the added devices, correcting for any change in height.

The test method is intended for the following applications:

- preliminary qualification, outdoors or indoors, of added devices to be installed on noise reducing devices;
- determination of sound diffraction index difference of added devices in actual use;
- comparison of design specifications with actual performance data after the completion of the construction work;
- verification of the long term performance of added devices (with a repeated application of the method).

The test method can be applied both in situ and on samples purposely built to be tested using the method described here.

Results are expressed as a function of frequency, in one-third octave bands between 100 Hz and 5 kHz. If it is not possible to get valid measurements results over the whole frequency range indicated, the results shall be given in the restricted frequency range and the reasons of the restriction(s) shall be clearly reported. A single-number rating is calculated from frequency data.

For indoor measurements see Annex B.