SLOVENSKI STANDARD
SIST EN 1794-3:2016

01-oktober-2016

Protihrupne ovire za cestni promet - Neakustične lastnosti - 3. del: Odziv na ogenj - Obnašanje pri gorenju in razvrstitev protihrupnih ovir

Road traffic noise reducing devices - Non-acoustic performance - Part 3: Reaction to fire - Burning behaviour of noise reducing devices and classification

Lärmschutzvorrichtungen an Straßen - Nichtakustische Eigenschaften - Teil 3: Brandverhalten - Brennverhalten von Lärmschutzvorrichtungen und Klassifizierung

Dispositifs de réduction du bruit du trafic routier - Performances non acoustiques - Partie 3: Réaction au feu - Comportement au feu des dispositifs de réduction du bruit et classification

Ta slovenski standard je istoveten z: **EN 1794-3:2016**

ICS:

13.220.40	Sposobnost vžiga in obnašanje materialov in proizvodov pri gorenju	Ignitability and burning behaviour of materials and products
93.080.30	Cestna oprema in pomožne naprave	Road equipment and installations

SIST EN 1794-3:2016 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1794-3

July 2016

ICS 13.220.40; 93.080.30

English Version

Road traffic noise reducing devices - Non-acoustic performance - Part 3: Reaction to fire - Burning behaviour of noise reducing devices and classification

Dispositifs de réduction du bruit du trafic routier - Performance non acoustique - Partie 3: Réaction au feu - Comportement au feu des dispositifs de réduction du bruit et classification

Lärmschutzvorrichtungen an Straßen - Nichtakustische Eigenschaften - Teil 3: Brandverhalten - Brennverhalten von Lärmschutzvorrichtungen und Klassifizierung

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 1794-3:2016) has been prepared by Technical Committee CEN/TC 226 “Road equipment”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2017, and conflicting national standards shall be withdrawn at the latest by January 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard, *Road traffic noise reducing devices — Non-acoustic performance*, is part of a series composed of the following:

— *Part 1: Mechanical performance and stability requirements*;

— *Part 2: General safety and environmental requirements*;

— *Part 3: Reaction to fire — Burning behaviour of noise reducing devices and classification*.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

It is necessary to understand how different materials react to fire and what happens if it burns because this situation could have adverse effects on environment and human life and cause in special situations great consequences in economic or social aspects.

In general, the brushfire test gives enough information for most applications for noise reducing devices. In case where more stringent requirements are necessary, further testing for reaction to fire will be done according to EN 13501-1.

This European Standard also contains indications for smoke hazard; density and toxic fumes, because this could create dangerous situations for the traffic and nearby living people. Test for smoke density and toxic fumes are necessary in all cases.

The European Standard for classification, the EN 13501 series, is clear in its classification. This European Standard defines specific tests to classify products and for Noise Reducing Devices. This European Standard give more information about how to prepare specimen and supporting constructions if they are needed in a way that this product can be tested according to the specific standards mentioned in the EN 13501 series.

1 Scope

This European Standard is to give authorities, designers and specifiers information with respect to reaction to fire, smoke density and toxic fumes of materials used in noise reducing devices.

The combination of brushwood fire test, smoke density test and test for toxic fumes give in general enough safety information. This European Standard gives also information if more stringent requirements are requested for situations with a higher level of safety.

For noise reducing devices, this European Standard gives a method how to handle substantial components of non-homogeneous products (as defined in EN 13501-1 and ISO/DIS 5659-2:2016) and how to handle non-homogeneous products and in which cases the influence of non-substantial components on the total result of the classification may be neglected.

The following effects will be taken into account: ignitability, burning droplets, smoke growth rate, smoke density, toxic fumes.

The European Commission Decision 96/603/EC establish the list of products belonging to Classes A 'No contribution to fire '. The materials, and products made from them, that are listed in the Annex to this Decision, will, on account of their low level of combustibility and subject to the conditions also set out in the Annex, be classified in Classes A1 and Class $A1_{FL}$ as provided for in Tables 1 and 2 of the Annex to Decision 2000/147/EC. For the purpose of this classification, no reaction-to-fire testing of those materials and products made from them is required. The products considered having no contribution to fire are excluded from this standard.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1363-1:2012: *Fire resistance tests — Part 1: General Requirements*

EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements — Part 1: Classification using data from reaction to fire tests*

EN 13823, *Reaction to fire tests for building products —- Building products excluding floorings exposed to the thermal attack by a single burning item*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2)*

ISO/DIS 5659-2:2016, *Plastics — Smoke generation — Part 2: Determination of optical density by a single-chamber test*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
noise reducing device
NRD
device that is designed to reduce the propagation of traffic noise away from the road environment

Note 1 to entry: This may be a noise barrier, cladding, a road cover or an added device. These devices may include both acoustic and structural elements.

3.2
noise barrier
noise reducing device that obstructs the direct transmission of airborne sound emanating from road traffic

3.3
acoustic elements
elements whose primary function is to provide the acoustic performance of the device

3.4
structural elements
elements whose primary function is to support or hold in place acoustic elements

3.5
cladding
noise reducing device that is attached to a wall or other structure to reduce the amount of sound reflected

3.6
cover
noise reducing device which either spans or overhangs the highway

3.7
added device
added component that influences the acoustic performance of the original noise-reducing device (acting primarily on the diffracted energy)

3.8
toxic fumes
content of CO, HCN, HCl and NO_x measured value after 10 min in µg/g

3.9
product range of noise reducing devices
range of products with the same composition and properties but that only differ in thickness and/or colours

4 Symbols and abbreviations

$D_{s,max}\ 10_i$	maximum smoke density during 10 min of test of material i
$D_{s,max}\ 10_{total}$	maximum smoke density during 10 min of test of the cladding or acoustic element
$w_{t,i}$	weight of the material i
$w_{t,total}$	total weight of all material(s) part(s) of the cladding or acoustic element

5 Test methods and classification

5.1 Resistance to brushwood fire

5.1.1 General

A noise reducing device can be exposed to fire are from dry vegetation or other material in close proximity. More severe fires from spilt fuel can arise as the result of traffic accidents.

Where a noise reducing device is in close proximity to property it can also be necessary to consider the need to ensure that fire is not spread from the highway.

Where flammable systems are used, it is recommended that firebreaks of fire-resistant materials or other design are incorporated into the noise reducing device in order to prevent the propagation of fire. This clause is not applicable to such fire resistant material.

This clause describes a test for a representative panel of a vertical noise barrier under normal exposure to brushwood fires at the roadside.

It does not provide information on the results of exposure to more severe conditions e.g. ignition by burning spilt fuel. The test should not be used to provide information on the fire safety of claddings used for tunnels or partial covers over the highway.

5.1.2 Classification

The noise reducing device, after being tested by the method given in 5.1.3, shall be classified as follows:

— class 1: if the panel has been damaged to a greater extent than as defined for classes 2 and 3;

— class 2: if the damaged area above either source is less than 0,06 m^2 and extends to no more than 200 mm above the base of the panel, and the panel has not been burnt through to the other side;

— class 3: if there is no damage other than discoloration.

5.1.3 Fire test

Acoustic elements of at least 2 m long by 1,5 m high shall be tested by exposure to localized sources of fire at its base next to the front and rear faces independently. Panels shall be free of absorbed water before testing. For wood elements, the moisture content shall be reduced to a value below 18 % by an appropriate drying method. Other materials will be stabilized at an atmosphere of 50 % RH and 23 °C according to EN 1363-1:2012, F.1.

The mass and dimensions of the panel to be tested shall be measured and the panel shall be photographed. An identical panel shall be examined to determine its construction; the dimensions of its elements, including wall thickness of hollow sections, shall be measured and noted on a sketch at 1:20 scale.

Testing shall be carried out in an enclosed fireproof and draught-free chamber having a volume of at least 150 m^3.

Fume extraction devices may be installed in or near the ceiling, but shall be prevented from fanning any flames during the test.

The temperature of the chamber, including the floor, before the test begins shall be between 15 °C and 25 °C. The chamber should be fitted with an observation port or window in a suitable position to observe the panel during the test.

5.1.3.1 Two identical sources of fire shall be prepared as follows:

a) a rectilinear wire mesh basket 300 mm by 200 mm by 300 mm high shall be made from welded steel wire mesh, having a square mesh of 3 mm diameter drawn steel wire at 50 mm centres;

b) in addition, three 3 mm diameter wires 300 mm long shall be secured in a vertical position inside the basket, equispaced along the central line of the shorter dimension.

The flammable material shall comprise shavings of spruce, 0,2 mm thick by 2 mm wide, and approximately 50 mm long. The material shall be free from splinters and have a maximum moisture content of 30 %; it shall be acclimatized at 20 °C and 65 % relative humidity until its weight is constant.