SLOVENSKI STANDARD
SIST EN 45545-3:2013

01-maj-2013

Železniške naprave - Požarna zaščita na železniških vozilih - 3. del: Zahteve za požarno odpornost požarnih pregrad

Railway applications - Fire protection on railway vehicles - Part 3: Fire resistance requirements for fire barriers

Bahnanwendungen - Brandschutz in Schienenfahrzeugen - Teil 3: Feuerwiderstand von Feuerschutzabschlüssen

Applications ferroviaires - Protection contre les incendies dans les véhicules ferroviaires - Partie 3: Exigences de résistance au feu des barrières au feu

Ta slovenski standard je istoveten z: **EN 45545-3:2013**

ICS:

13.220.20	Požarna zaščita	Fire protection
45.060.01	Železniška vozila na splošno	Railway rolling stock in general

SIST EN 45545-3:2013 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 45545-3

March 2013

ICS 45.060.01; 13.220.20

Supersedes CEN/TS 45545-3:2009

English Version

Railway applications - Fire protection on railway vehicles - Part 3: Fire resistance requirements for fire barriers

Applications ferroviaires - Protection contre les incendies dans les véhicules ferroviaires - Partie 3: Exigences de résistance au feu des barrières au feu

Bahnanwendungen - Brandschutz in Schienenfahrzeugen - Teil 3: Feuerwiderstand von Feuerschutzabschlüssen

This European Standard was approved by CEN on 7 December 2012.

CEN and CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN and CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN and CENELEC members are the national standards bodies and national electrotechnical committees of 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 United Kingdom.

CEN-CENELEC Management Centre:
Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword

This document (EN 45545-3:2013) has been prepared by Technical Committee CEN/TC 256 “Railway applications”, the secretariat of which is held by DIN.

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 September 2013, and conflicting national standards shall be withdrawn at the latest by March 2016.

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 document supersedes CEN/TS 45545-3:2009.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 2008/57/EC.

For relationship with EU Directive 2008/57/EC, see informative Annex ZA, which is an integral part of this document.

This series of European standards *Railway applications — Fire protection on railway vehicles* consists of:

— *Part 1: General*;

— *Part 2: Requirements for fire behaviour of materials and components*;

— *Part 3: Fire resistance requirements for fire barriers*;

— *Part 4: Fire safety requirements for railway rolling stock design*;

— *Part 5: Fire safety requirements for electrical equipment including that of trolley buses, track guided buses and magnetic levitation vehicles*;

— *Part 6: Fire control and management systems*;

— *Part 7: Fire safety requirements for flammable liquid and flammable gas installations*.

According to the CEN/CENELEC Internal Regulations, the national standards organisations 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

EN 45545-3 has been developed from existing fire safety regulations for railway vehicles from the International Union of Railways (UIC) and different European countries.

In using the operation and design categories defined in EN 45545-1, the requirements laid down in this part take into account the current operating conditions for European public rail transport.

1 Scope

This part of EN 45545 specifies the fire resistance requirements and testing methods for fire barriers for railway vehicles.

The objective of the measures and requirements, specified in this part of EN 45545, is to protect passengers and staff in railway vehicles in the event of a developing fire on board.

It is not within the scope of this part of EN 45545 to describe measures that ensure the preservation of the railway vehicles in the event of a fire.

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 1364-1, *Fire resistance tests for non-loadbearing elements — Part 1: Walls*

EN 1364-2, *Fire resistance tests for non-loadbearing elements — Part 2: Ceilings*

EN 1634-1, *Fire resistance and smoke control tests for door, shutter and openable window assemblies and elements of building hardware — Part 1: Fire resistance tests for doors, shutters and openable windows*

EN 13501-2, *Fire classification of construction products and building elements — Part 2: Classification using data from fire resistance tests, excluding ventilation services*

EN 45545-1:2013, *Railway applications — Fire protection on railway vehicles — Part 1: General*

EN 45545-5, *Railway applications — Fire protection on railway vehicles — Part 5: Fire safety requirements for electrical equipment including that of trolley buses, track guided buses and magnetic levitation vehicles*

EN ISO 1182, *Reaction to fire tests for products — Non-combustibility test (ISO 1182)*

EN ISO 1716, *Reaction to fire tests for products — Determination of the gross heat of combustion (calorific value) (ISO 1716)*

EN ISO 13943:2010*, Fire safety — Vocabulary (ISO 13943:2008)*

ISO 834-1, *Fire-resistance tests — Elements of building construction — Part 1: General requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 45545-1:2013 apply.

4 Application of fire barriers

Railway vehicles shall be equipped with fire barriers at the locations specified in Table 1.

5 Classification, requirements and test procedures

5.1 General requirements

5.1.1 Introduction

The use of the following parameters shall be according to the principles described in EN 13501-2.

5.1.2 Integrity criterion E

The integrity shall be determined by two methods during the test:

— cracks or openings in excess of given dimensions;

— sustained flaming on the unexposed side.

The times of each mode of integrity failure shall be recorded.

5.1.3 Insulation criterion I

Heat transmission shall be limited so that neither the unexposed surface nor any material in close proximity to that surface is ignited. The product/element shall also provide a barrier to heat, sufficient to protect people near to it.

5.1.4 Radiation criterion W

A product/element that satisfies the insulation criterion I is also deemed to satisfy the W requirement for the same period.

5.2 Classification of fire barriers

Fire barriers shall have fire resistance properties verified by:

— a fire resistance test based on the principles of EN 1363-1, or

— assessment based on fire resistance testing.

Fire barriers shall have performance based on the three parameters (E, W, I) as specified in Table 1.

Barrier performance shall be designated for example as E 30, I 15, which means: integrity is maintained for 30 min and insulation is maintained for 15 min.

5.3 Arc barrier Type A

Type A arc barriers according to EN 45545-5 shall satisfy the requirements for an E15 fire barrier.

5.4 Arc barrier Type B

Type B arc barriers according to EN 45545-5 shall satisfy the requirements for an E60 fire barrier.

5.5 Requirements

5.5.1 General

The requirements for fire barriers depend upon the operation and design categories and their location in the railway vehicle.

The fire barriers shall be located as specified in Table 1. Examples of the barriers in Table 1 are described in Figure 1 to Figure 4.

All vertical fire barriers in the cross section of a railway vehicle shall cover the entire area between floor and roof. In this context, the middle floor of a double decked vehicle shall be considered as a floor for the upper deck and as a roof for the lower deck. Where a vertical barrier reaches the side wall, it shall be extended to the body shell.

Closing devices for ventilation ducts shall conform to the following requirements:

a) where a ventilation duct passes through a fire barrier, the duct shall have a closing device where it passes through the barrier unless the complete duct meets the same level of fire resistance requirements as the barrier either for its entire length, or for its length to the next fire barrier or closing device;

b) closing devices shall meet the same fire resistance requirements as fire barriers;

c) closing devices shall operate on reaction to a fire.

Penetrations through fire barriers, for example for ducts or cables, shall not reduce the fire resistance of the barrier.

Table 1 — Fire barrier requirements *(1 of 3)*

No	Fire origin	Protected location	Remarks	Operation category	Requirements
1	Underfloor technical cabinet containing electrical high power supply or traction circuits other than brake resistors	Passenger and staff area including driver's cab	Tested in accordance with EN 1364-2. Requirements are defined from underfloor to the top of the floor covering.	1, 2 and 4 3	E15 E15; I15
2	Underfloor traction transformers or reactors filled with insulation fluid	Passenger and staff area including driver's cab	Tested in accordance with EN 1364-2 Whole cross section and 1 m longer than the object on each longitude direction Requirements are defined from underfloor to the top of the floor covering	1 and 2 3 and 4	E15 E15; I15
3	Underfloor combustion engine (including heating equipment, fuel tank and pipe work)	Passenger and staff area including driver's cab	Tested in accordance with EN 1364-2 Whole cross section and 1 m longer than the object on each longitude direction Requirements are defined from underfloor to the top of the floor covering	1 and 2 3 and 4	E15 E15; I15
4	Underfloor area not covered by positions 1-3	Passenger and staff area including driver's cab	Tested in accordance with EN 1364-2 Requirements are defined from underfloor to the top of the floor covering	1 to 4	No requirement

Table 1 *(2 of 3)*

No	Fire origin	Protected location	Remarks	Operation category	Requirements
5	Passenger area	Adjacent passenger area	Tested in accordance with EN 1364-1 (walls) The full cross section shall be tested with all elements positioned as they would be present in an actual railway vehicle	1, 2, 4 3	No requirements E15 for the full cross section elements shall be located at a distance not exceeding 30 m from another full cross section element
6	Passenger area	Driver' s cab	Fire barriers are tested in accordance with EN 1364-1 (walls) and Clause 6 of this document The full cross section shall be tested with all elements positioned as they would be present in an actual railway vehicle	1 and 2; 4 3	No requirements E10; E15; I15 [a]
7	Inside the luggage container	Outside the luggage container	Tested in accordance with EN 1364-1 (walls)	1 to 4	E15