SLOVENSKI STANDARD
SIST EN 45545-6:2013

01-maj-2013

Železniške naprave - Požarna zaščita na železniških vozilih - 6. del: Obvladovanje požara in sistemi upravljanja

Railway applications - Fire protection on railway vehicles - Part 6: Fire control and management systems

Bahnanwendungen - Brandschutz in Schienenfahrzeugen - Teil 6: Brandmelde- und Brandbekämpfungseinrichtungen und begleitende Brandschutzmaßnahmen

Applications ferroviaires - Protection contre les incendies dans les véhicules ferroviaires - Partie 6: Systèmes de gestion et de contrôle des incendies

Ta slovenski standard je istoveten z: **EN 45545-6:2013**

ICS:

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

SIST EN 45545-6:2013 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 45545-6

March 2013

ICS 13.220.20; 45.060.01

Supersedes CEN/TS 45545-6:2009

English Version

Railway applications - Fire protection on railway vehicles - Part 6: Fire control and management systems

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Ref. No. EN 45545-6:2013: E

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Foreword

This document (EN 45545-6:2013) 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of an identical text or by endorsement, at the latest by September 2013, and conflicting national standards shall be withdrawn at the latest by March 2016.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 45545-6:2009.

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 45545-6 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 requirements for fire detection, alarm systems, equipment shutdown, information and communication systems, emergency lighting, emergency brake systems and fire fighting systems to cover the objectives defined in EN 45545-1.

The measures and requirements specified in this European Standard aim to protect passengers and staff in railway vehicles in the event of a fire on board by alerting staff and passengers to a fire, delaying the fire development and controlling the movement of smoke.

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

This part is valid for railway vehicles defined in EN 45545-1.

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 2, *Classification of fires*

EN 3-7, *Portable fire extinguishers — Part 7: Characteristics, performance requirements and test methods*

EN 3-8, *Portable fire extinguishers — Part 8: Additional requirements to EN 3-7 for the construction, resistance to pressure and mechanical tests for extinguishers with a maximum allowable pressure equal to or lower than 30 bar*

EN 3-9, *Portable fire extinguishers — Part 9: Additional requirements to EN 3-7 for pressure resistance of CO_2 extinguishers*

EN 3-10, *Portable fire extinguishers — Part 10: Provisions for evaluating the conformity of a portable fire extinguisher to EN 3-7*

EN 1869, *Fire blankets*

EN 13272, *Railway applications — Electrical lighting for rolling stock in public transport systems*

EN 61310-1, *Safety of machinery — Indication, marking and actuation — Part 1: Requirements for visual, acoustic and tactile signals (IEC 61310-1)*

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

EN 45545-2, *Railway applications — Fire protection of railway vehicles — Part 2: Requirements for fire behaviour of materials and components*

EN 45545-3, *Railway applications — Fire protection of railway vehicles — Part 3: Fire resistance requirements for fire barriers*

prEN 16334:2011, *Railway applications — Passenger Alarm Systems — System requirements*

3 Terms and definitions

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

4 General requirements

The design, construction or assembly of components which are critical for fire safety, e. g. for fire detection and for fire fighting, shall comply with the objectives in EN 45545-1.

All passenger vehicles shall be fitted with a passenger alarm system to inform on-board staff and/or control centre staff about a possible fire detected by a passenger.

All passenger vehicles shall have an emergency lighting system implemented, which has sufficient light intensity and duration for evacuation of the vehicles.

All passenger vehicles shall be equipped with a passenger alarm system that provides a means of conveying information to passengers from on-board staff or control centre staff.

Fire barrier doors for passenger use shall be of the self-closing type. Powered fire barrier doors for passenger use shall stop in a fully closed position as a result of the impact of fire.

Emergency signs shall be positioned adjacent to all emergency alert activation devices, emergency exits and emergency equipment (e. g. fire extinguishers and emergency hammers). Signs shall be permanent and readily visible under emergency lighting conditions.

NOTE For architecture of passenger alarm system refer to prEN 16334.

5 Requirements for systems used in automatically initiated processes

5.1 General

When applicable, the process steps are automatic detection, leading to alarm and leading to action.

5.2 Fire detection

Fire detection devices shall be reliable and shall activate consistently in all modes of service. They shall monitor the areas or equipment defined in Table 1. Fire detection devices shall be functionally suitable for the expected fire products, e. g. flames, smoke and heat.

The following points shall be taken into consideration for the verification of functionality:

1) the origin of the fire;

2) the size of the fire;

3) the materials involved in the fire;

4) the nature of any detectors;

5) the air flow.

Table 1 — Fire detection *(1 of 2)*

	Operation category	Passenger areas	Corridors	Toilets	Staff areas	Cooking or catering area	Combustion engines	Technical cabinets containing traction equipment [d]	Other technical cabinets	Luggage compartment
Design Categories N and D	1	nr	nr	nr	nr	nr	X	nr	nr	X
	2	nr	nr	X [e]	X [c]	X [c]	X	X	nr	X
	3	X [c e]	nr	X [e]	X [c]	X [c]	X	X	nr	X
	4	X [c e]	nr	X [e]	X	X	X	X	nr	X
Design Categories S and DS	1	X [c]	X	X [a]	X	X	X	X	X [b]	X
	2	X [c]	X	X [a]	X	X	X	X	X [b]	X
	3	X [c]	X	X [a]	X	X	X	X	X [b]	X
	4	X [c]	X	X [a]	X	X	X	X	X [b]	X

Table 1 *(2 of 2)*

	Operation category	Passenger areas	Corridors	Toilets	Staff areas	Cooking or catering area	Combustion engines	Technical cabinets containing traction equipment [d]	Other technical cabinets	Luggage compartment
Design Category A	1	nr	nr	nr	nr	nr	X	X	nr	X
	2	nr	nr	X	nr	nr	X	X	nr	X
	3	X [c]	nr	X	nr	nr	X	X	X [b]	X
	4	X [c]	nr	X	nr	nr	X	X	X [b]	X

X indicates requirement.

nr indicates no requirement.

a There are no requirements for toilets inside a sleeper compartment.

b There are no requirements if there is no electrical traction equipment in the technical cabinet, and if the technical cabinet complies with one of the following conditions:

— the technical cabinet content is compliant to EN 45545-2,

— the technical cabinet is contained in a manner compliant to EN 45545-3.

c There are no requirements if the Railway vehicle is not in the field of DIRECTIVE 2008/57/EC on the interoperability of the rail system within the Community.

d when those motors are located inside body shell in technical compartment.

e Recommended.

5.3 Response to automatic detection

5.3.1 General

There shall be an automatic alarm status and automatic alarm on activation of a detector. The alarm shall be local and/or remote as specified in 5.3.2 and 5.3.3.

5.3.2 Local alarm

For design categories S and DS, a local alarm shall be given in the vicinity of the activated detector in passenger areas and sleeper compartments.

The alarm shall be audible and may be visible depending on its location, in all modes of service. Alarms in sleeper compartments shall be able to wake a sleeping occupant.

5.3.3 Remote alarm

All detections as defined in 5.2 shall give a remote alarm. The alarm shall be given either to the driver or, in case of vehicles of design category A, to the control centre.

The location of the activated detection shall be available to on-board staff or in case of design category A, to the control centre.

The alarm shall be audible and/or visible depending on its type and location, in all modes of service.

5.4 Specified actions required for response to automatic alarm

5.4.1 General

Actions required for an affected vehicle which has automatic alarm status, are specified in this section.

5.4.2 Selective shut down of energy

5.4.2.1 General

The requirements are applied on two levels, the primary level and the secondary level. The application of this principle can be seen from the following.

The primary level requirements are applied to the equipment in the area giving rise to the alarm as defined in Table 2. For example if a detector used to monitor a fire associated with defined electrical or mechanical equipment activates and triggers an alarm, then the requirement for a shut down facility is limited to the defined equipment.

The secondary level requirements are applied to equipment that is not burning but is or may be, exacerbating the hazard arising from the fire. For example if a detector used to monitor a passenger area or staff area is activated, then there are requirements that certain other equipment shall react in a specific manner.

Thus, the selective shut down of energy supply has three aims:

1) to avoid the supply of additional energy to the fire (primary);
2) to avoid collateral fire problems which may arise from the impact of fire and/or the affected equipment on its surroundings as it fails (secondary);
3) to facilitate fire fighting.

In all cases, there is a requirement that the selected shut down of energy supply shall not apply to any equipment or any system which is required to function for the relevant period of the fire incident, until its function is no longer required.

5.4.2.2 Selective shut down of energy supply – primary level requirements

The objective is to have an available device for shutting down easily the energy supply. The term "selective" is used to indicate the existence of limitations on the scope of the requirements.

The primary level requirements for selective shut down of energy supply are given in Table 2.