

# Railway approval? EN45545-2!?! We have the right enclosures

In this blog article, we describe the content of the EN 45545-2 standard. In addition, we show which of our industrial enclosures are suitable for use in railway technology and the advantages and disadvantages of various products.



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**On safe rails into the future**  **Rail transport as a pillar of mobility**

**Safety and reliability of rail vehicles** is of great importance economically and socially. Sustainable mobility, efficient freight transport and a switch from road to rail are hot topics that "move" us all.



From **high-speed trains** to **automated rail systems** or **modern display technology** in railway stations. Our industrial enclosures are used in many different applications.



## What is the EN 45545-2 standard and how is it related to our enclosures?

The European standard **EN 45545-2 describes the fire protection requirements for railway vehicles**. It defines the demands on **materials, components and systems with regard to their behaviour** in the event of fire and harmonises existing standards in individual countries.

### EN 45545-2 replaces following national standards

COUNTRY	OLD STANDARD	EUROPEAN NORM	TEST STANDARD
 <b>Great Britain</b>	BS 476-6/7	EN 45545-2	Flame spreading ISO 5658-2
 <b>France</b>	NF 16101 / NF 16102	Railway applications	Heat release, smoke development and mass losses ISO 5660
 <b>Germany</b>	DIN 5510	Fire protection in railway vehicles	
 <b>Italy</b>	UNI CEI 11170	Requirements for the fire behaviour of materials and components	Optical smoke density and smoke toxicity EN ISO 5659-2
 <b>Poland</b>	PN-K-02511		

Overall, the standard aims to ensure the safety of passengers and staff in rail vehicles in the event of a fire and to minimise the risk of fires in such vehicles.

Following fire technology characteristics are tested for all installed components and therefore also for our enclosures (FIRST principles):

**F** - Flame spread

**I** - Ignitability

**R** - Release of heat

**S** - Smoke emission

T - Toxic fume emission

**HL1, HL2 or HL3? - Which classes are defined and what do they indicate?**

**EN 45545-2** differentiates between **various hazard levels** and specifies so-called **HL classes (Hazard Levels)** for materials. To categorise materials into the corresponding hazard classes, the **FIRST test** methods contain specified limit values.

Specification of the required HL class for components depends on various factors:

- **Type** of rail vehicle
- **Location** where the rail vehicle is operated
- **Positioning** of the component in the vehicle
- **Potential fire hazard** of the component

**Operating type and design category define the necessary hazard level**

	N: Standard vehicles	A: Automatic operation, no trained personnel for emergencies on board	D: Double deck vehicles	S: Sleeping wagons
1 No subway sections	HL1	HL1	HL1	HL2
2 Regular use of underground sections and tunnels. Rapid evacuation possible.	HL2	HL2	HL2	HL2
3 Regular use of underground sections and tunnels. Slow evacuation possible.	HL2	HL2	HL2	HL3
4 Regular access to underground sections and tunnels (incl. Euro-Tunnel). No evacuation possible.	HL3	HL3	HL3	HL3

Exact classification and the associated requirements may vary depending on national regulations and laws. In general, **DIN EN 45545-2** differentiates between following HL classes:

1. **HL1 (Hazard Level 1):** This is the lowest hazard level in terms of fire safety. Hazard Level 1 materials are easier to ignite and can develop higher levels of smoke gases. They are normally used in less critical areas of railway vehicles.
2. **HL2 (Hazard Level 2):** Medium Hazard Level 2 materials have higher fire safety requirements than HL1, but are still less fire-safe than HL3. They are used in areas of railway vehicles where fire safety is important, but not as critical as in passenger areas, for example.
3. **HL3 (Hazard Level 3):** This is the highest hazard level. Hazard Level 3 materials are flame-retardant and produce minimal smoke gases in the event of fire. They are used in particularly sensitive areas of rail vehicles, such as sleeping wagons.

## Which enclosures can we offer for railway applications with EN 45545-2 approval?

MULTI-BOX offers a **wide range of enclosures** suitable for railway applications in accordance with DIN **EN 45545-2** to meet the various requirements of our customers.

Our railway enclosures are available in **three different materials**:

1. [Polycarbonate \(MBX PRO\)](#)
2. [Aluminium \(MBA\)](#)
3. [Polyester \(MBP\)](#)



Each material has its own **advantages and disadvantages**, which should be carefully evaluated depending on the area of application. Here you will find an overview of the different material groups and their key characteristics and features:

**Advantages & Disadvantages of the approved rail product groups:**

**POLYCARBONATE**

**POLYESTER**

**ALUMINIUM**

	(MBX)	(MBP)	(MBA)
Chemical resistance	★ ★	★ ★ ★ ★	★ ★ ★
Corrosion resistance	★ ★ ★ ★	★ ★ ★ ★	★ ★
Impact resistance	★ ★ ★ ★	★ ★ ★	★ ★ ★
UV-stability	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★
Flame retardancy	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★
Full insulated	★ ★ ★ ★	★ ★ ★ ★	★
Surface quality	★ ★ ★ ★	★ ★	★ ★ ★ ★
Weight	★ ★ ★ ★	★ ★ ★	★ ★
Thermal conductivity	★	★	★ ★ ★ ★
Special colours	★	★ ★	★ ★ ★ ★
Mechanical	★ ★ ★ ★	★ ★	★ ★ ★ ★



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**The choice of the right enclosure** depends on your specific requirements and environmental conditions. If you have any questions or require further information, please do not hesitate to contact us.

Our experts are happy to help you finding the right enclosure for your application.

[MBX PRO - Read more](#)

[MBP - Read more](#)

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**#en45545-2 #railwayapproval #railway #mbxpro #mba #multibox  
#box #enclosures**