

Standard Requirements for Rail Vehicles



Millions of people use the public transport infrastructure every day. No wonder then that safety in this area is at the top of the priority list when it comes to choosing single components.

At the present time, there are no universal standard requirements for rail vehicle construction. Each country lays down its own standards with which components must then conform.

The **CEN/TS 45545-2** is a technical specification, recognised by 30 European countries, which deals with cable routing systems in railway vehicles and which defines the requirements for components in case of fire with regard to fire behaviour (oxygen index), formation of smoke and smoke gas toxicity. The design of rail vehicles and the type of rail traffic define the degree of danger involved – so-called hazard levels. They determine how long the passengers may remain in the rail vehicle in case of fire and how hazardous this situation is for them.

Overall, three hazard levels (HL 1-3) are defined, HL 3 being the most dangerous level.

All AGRO metal cable glands of the Progress® type series with seal inserts made of FPM or intumescent material are certified for the strictest requirements of Hazard Level 3 by the renowned RST fire laboratory, meaning that they can be safely used in rail vehicles.

Apart from the overall technical specifications of CEN/TS, there are country-specific norms of recognised significance.

When components are checked in accordance with the **German Industry standard DIN 5510, Part 2**, the fire behaviour of materials in rail vehicles is classified by combustibility (S2 - S5), formation of smoke (SR1 / SR2), dripping behaviour (ST1 / ST2) and smoke gas toxicity. The materials are subdivided into fire classifications from S2 (inflammable) to S 5 (hardly inflammable at all).

The **French Norm NFF 16-101/102** is a must for any vehicle in personal transport in France. It specifies the fire behaviour, smoke formation and smoke gas toxicity. Depending on the test conducted, materials are subdivided into different classes: fire behaviour, I0 to I4, smoke formation M0 to M4, and smoke gas toxicity F0 to F5.

The **Italian norm UNICEI 11170** lays down guidelines for rail and track-guided vehicles and categorises them into four classes from LR1 to LR4.