



The customer requirements in the rail sector are becoming ever higher for suppliers who have to observe the applicable standards and regulations.

## **I QUALITY MANAGEMENT SYSTEMS**

**DIN EN 9001 – 2015** is taken as a prerequisite. It defines the minimum requirements for quality management which an organisation must satisfy in order to be able to provide products and services which meet customer expectations as well as the regulatory requirements. The management system should also demonstrate a continuous improvement process.

## **I TECHNICAL SPECIFICATION ON INTEROPERABILITY**

The **TSI** (technical specification on interoperability) is taken as a binding specification. This ensures a reliable and interoperable, i.e. technically compatible, European railway system. Requirements and test procedures for components and subsystems are covered here.

## **I FSF-COMPATIBLE DESIGN**

In order to make the handling of drawings and parts lists easier, these are designed to be **FSF** compliant. This means that specific documents are collected in groups thematically or in line for the structure of the product and modularly organised.

## **I FIRE PROTECTION IN RAILWAY VEHICLES**

**DIN EN 45545** is essential for preventive fire protection. This European standard replaces the old **DIN 5510**. **DIN EN 45545** is a material testing standard which has set European fire protection standards since 2016.

## **I BONDING OF RAILWAY VEHICLES AND VEHICLE PARTS**

**DIN EN 6701** contains the bases for bonding in the production of parts and components in railway vehicles. It defines the quality requirements for the bonding technology.

## **I WELDING OF RAILWAY VEHICLES AND VEHICLE PARTS**

For welding, **DIN EN 15085** forms the basis for the welding of metallic materials in the production and maintenance of railway vehicles and components.

### I ELECTRONIC SYSTEMS IN RAILWAY VEHICLES

Electronic components are designed in accordance with **DIN EN 50155** or **DIN EN 50153**. This standard describes railway applications and should be used for electronic systems in railway vehicles. This standard does not require a certificate or fulfilment of the standard, but rather consideration of the operating conditions in railway vehicles which are classified, comparable, and comprehensible through this standardisation. High-voltage testing at 5000 volts is carried out in accordance with **DIN EN 60335**.

### I BONDING OF WOOD MATERIALS

Wood materials such as multiplex boards are bonded with weatherproof glue in accordance with **DIN EN 687052.1**. Bonding was previously done in accordance with **AW 100**. The dimensions and variations for multiplex boards for general use are defined in **DIN 4078** depending on the intended use.

### I DOCUMENTS FOR MAINTENANCE

Technical systems, components, devices, and operating equipment must be kept in functional conditions, or must be quickly restored in the event of a breakdown. Key foundations for this are set out in a comprehensible and practical documentation in **DIN 13460**.

### I STATE OF RAILWAY VEHICLES

**DIN 27200** "State of railway vehicles - Terms and definitions for the reliable state of railway vehicles" and **DIN 27201** "State of railway vehicles - Basic principles and production technology". These describe the organisation, the qualification of testing personnel, and the general requirements for the testing procedure.

### I ELASTIC, TEXTILE, AND LAMINATE FLOOR COVERINGS

In order to make the choice between the very different types of elastic floor coverings and to ensure that the right covering for the actual requirements can be chosen, **DIN EN ISO 10874** specifies a classification system for elastic, textile, and laminate floor coverings. The standard divides the different areas of application into residential, commercial, and industrial.

### I TESTING OF FLOOR COVERINGS

The properties of a floor covering with respect to lubricating materials such as water are collected under sure footing. People's resistance to slipping is particularly compromised on wet and smooth surfaces. **DIN 51130** or **DIN EN 1399** are used for orientation so that standardised classification can be carried out.

### I ACOUSTICS - ASSESSMENT OF SOUND INSULATION

The sound insulation in components has been an integral part of the planning and construction of buildings for many years. The tool for proper planning is **DIN EN ISO 717**, among other things.

### I THERMAL PERFORMANCE OF BUILDING MATERIALS AND PRODUCTS

The thermal performance of building materials and products, as well as determination of thermal resistance in accordance with **DIN EN 12664** describes the hot plate and heat flow meter methods.

### I DESIGN GUIDE FOR RAILWAY VEHICLES AND THEIR COMPONENTS

**DIN 25201** applies for the selection and use of bolted joints in railway vehicles. It should provide support to the designer in the selection of bolts and make them aware of the classifications and terms required for this.