

SAFETY IN RAILWAY TUNNELS

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DEFINITION OF A RAILWAY TUNNEL

By definition, a railway tunnel is an excavation or a construction around the track provided to allow the railway to pass for example higher land, buildings or water. The length of a tunnel is defined as the length of the fully enclosed section, measured at rail level. A tunnel in the context of this TSI is 0.1 km or longer. Where certain requirements apply only to longer tunnels, thresholds are mentioned in the relevant clauses of the TSI.

WHAT DOES IT CONCERN TO?

This TSI concerns the control command and signalling, infrastructure, energy, operation and traffic management, and rolling stock (locomotives and passenger units) subsystems.

PURPOSE

The purpose of this TSI is to define a coherent set of tunnel specific measures for the infrastructure, energy, rolling stock, control command and signalling and operation subsystems, thus delivering an optimal level of safety in tunnels in the most cost-efficient way while permitting free movement of vehicles which are in compliance with this TSI.

WHAT DOES IT CONTAIN?

- Introduction with the technical, risk, and geographical scopes
- Definitions of the subsystem and of the scope
- Essential requirements
- Characteristics of the subsystem, particularly the functional and technical specifications of the subsystem and of the interfaces
- Interoperability constituents
- Assessment of conformity and/or suitability for use of the constituents and verification of the subsystem
- Implementation

WHAT DOES IT APPLY TO?

It applies to new, renewed and upgraded tunnels which are located on the rail network of the European Union.

ESSENTIAL REQUIREMENTS

- Safety
- Reliability and availability
- Health
- Environmental protection
- Technical compatibility
- Accessibility

TECHNICAL SCOPE

- Applies to new, renewed and upgraded tunnels which are located on the network of Union rail system.
- Stations that are in tunnels shall be in conformity with the national rules on fire safety. When they are used as safe areas they shall comply with the specifications of a safe area and same if they are used as evacuation and rescue points.

REQUIREMENTS ACCORDING TO THE LENGTH OF THE TUNNEL

0.1-0.5 km	>0.5-1 km	>1 km
Prevent unauthorised access to emergency exits and technical rooms		
Fire resistance of tunnel structures		
Fire reaction of building material		
Escape signage		
Emergency rules		
Switching off and Earthing procedures		
Provision of on-train safety and emergency information to passengers		
Operational rules related to trains running in tunnels		
	Emergency lighting	
	Escape walkways	
		Fire detection in technical rooms
		Safe area
		Access to the safe area
		Communication means in safe areas
		Evacuation and rescue points
		Emergency communication
		Electricity supply for emergency response services
		Reliability of electrical systems
		Communication and lighting at switching locations
		Earthing of contact line
		Sectioning of contact line
		Tunnel emergency plan
		Exercise

RISK SCOPE

Covered: Specific risks to the safety of passengers and on-board staff in tunnels.

Not covered:

- Health and safety of staff involved in maintenance of the fixed installations in tunnels.
- Financial loss due to damage to structures and trains, and consequently the losses resulting from non-availability of the tunnel for repairs.
- Trespass into the tunnel through the tunnel portals.
- Terrorism.
- Risks for people in the neighbourhood of a tunnel where collapse of the structure could have catastrophic consequences.

What is a TSI? Is a document that defines the technical and operational standards which must be met by each subsystem or part of subsystem in order to meet the essential requirements and ensure the interoperability of the railway system of the European Union.

For each of those subsystems, the essential requirements need to be specified and the technical specifications determined, particularly in respect of constituents and interfaces, in order to meet those essential requirements. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016L0797&from=EN>

This document is for information purposes only, for official information go to https://www.era.europa.eu/activities/technical-specifications-interoperability_en

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