

FIRE PROTECTION MOULDED PARTS FOR TECHNICAL CABINET LININGS USING **ZZ® 281-a FIRE PROTECTION MAT, SELF ADHESIVE**

TECHNICAL INFORMATION



TECHNICAL INFORMATION ON ACHIEVING FIRE RESISTANCE OF ELECTRICAL CABINETS

- USING **ZZ® 281-a FIRE PROTECTION MAT, SELF-ADHESIVE**

1. CONTENT AND USE

- / This technical information outlines possible solutions for fire protection upgrading of electrical cabinets in rail vehicles using **ZZ® 281-a Fire Protection Mat, self-adhesive**.
- / The test results do not replace a usability certificate but can serve as a basis for evaluation or for planning usability tests.
- / Application-specific boundary conditions not addressed in this technical information may impact the functionality of the penetration seal.

2. DESCRIPTION OF **ZZ® FIRE PROTECTION MAT**

- / **ZZ® 281-a Fire Protection Mat, self-adhesive** is a pre-cut mat made of polyurethane foam designed for lining electrical cabinets in rail vehicles for fire protection purposes. The fire protection effect is based on halogen-free fire protection additives that expand in the event of a fire, forming an insulating layer. This layer significantly slows the spread of fire and smoke, facilitating the rescue of people and protection of materials.
- / The penetration seal is suitable for use in rail vehicles and provides fire resistance with compartmentalizing effectiveness for 30 minutes (**E30**) and thermal insulation for up to 30 minutes (**I30**), in accordance with the **EI30** classification.
- / The installation of **ZZ® 281-a Fire Protection Mat, self-adhesive** for lining is described in detail in the construction examples.

3. IMPLEMENTATION OF FIRE PROTECTION UPGRADING OF ELECTRICAL CABINETS USING **ZZ® 281-a FIRE PROTECTION MAT, SELF-ADHESIVE**

Products	ZZ® 281-a Fire Protection Mat, self-adhesive This product meets the requirements of EN 45545-2 for hazard levels HL1, HL2, and HL3, and satisfies the criteria R22 and R23.
Component	This product can be applied to surfaces in electrical cabinets that need fire protection upgrading and do not yet provide sufficient fire resistance.
Assembly	The component surface must be cleaned before the installation of ZZ® 281-a Fire Protection Mat, self-adhesive . If the product does not adhere properly on its own, the lining must be fully bonded using a heat-resistant adhesive (e.g., Hensomastik K2000). Once the adhesive has cured, the system is operational.
Special Notes	The implementation of fire protection upgrading of electrical cabinets with ZZ® 281-a Fire Protection Mat, self-adhesive was carried out according to the specifications of the current test report (see attachment). The dimensions of the installations used and further details can also be found in this test report.

4. SUMMARY

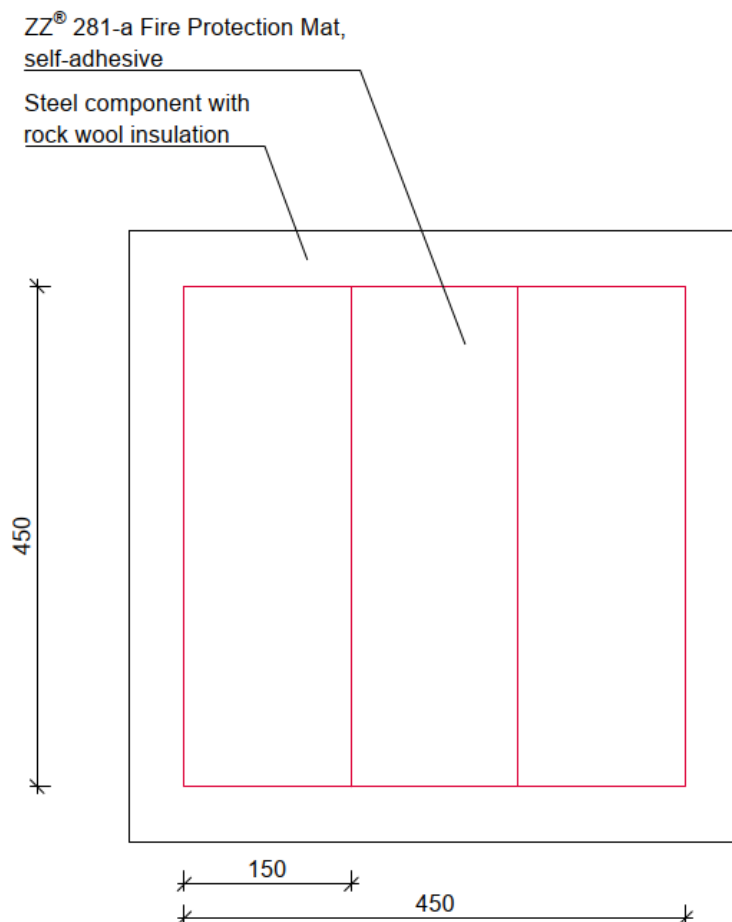
- / Fire protection measures using **ZZ® 281-a Fire Protection Mat, self-adhesive** in rail vehicles can be implemented after verifying the boundary conditions.
- / **ZZ® 281-a Fire Protection Mat, self-adhesive** achieve a fire resistance of 30 minutes compartmentalization and up to 30 minutes thermal insulation, in accordance with **EI30** classification.
- / The example shown in the sealing solution (see following pages) highlights the key construction details that typically need to be considered.
- / If constructions are planned that substantially deviate from the examples provided here, ZAPP-ZIMMERMANN is available to assist in the verification process.

EXAMPLE – WALL AND CEILING LINING FOR **ZZ® 281-a FIRE PROTECTION MAT, SELF-ADHESIVE** IN WALL AND CEILING CONFIGURATION

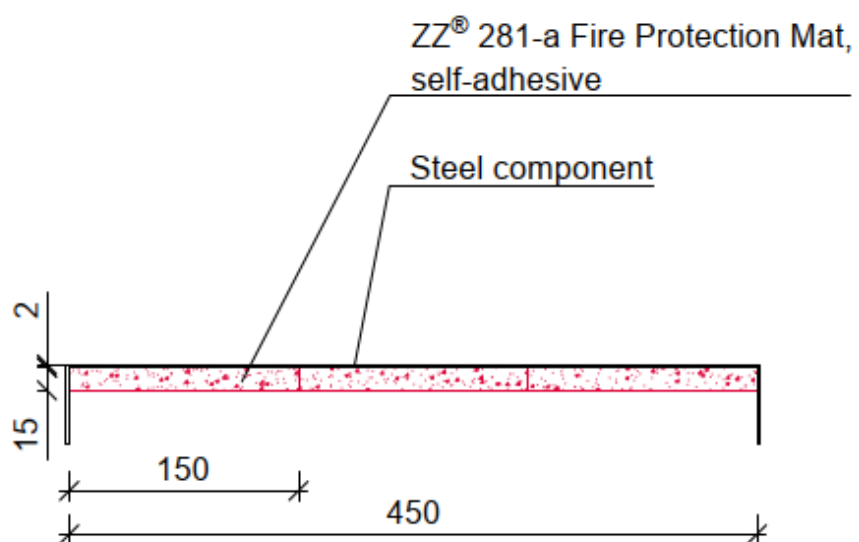
The diagrams illustrate the fundamental principle of lining and the constructive installation of **ZZ® 281-a Fire Protection Mat, self-adhesive** in wall and ceiling configurations. It is important to note that a minimum thickness of insulating material must be used to achieve the fire resistance class of the surrounding component.

A 15 mm thick lining with **ZZ® 281-a Fire Protection Mat, self-adhesive** achieves a compartmentalization of 30 minutes (**E30**) and thermal insulation for 30 minutes (**I30**), in accordance with **EI30** classification.

Example of lining – Face View



Example of lining— Section View



FOUNDATIONS OF THIS TECHNICAL INFORMATION

This technical information on **ZZ® 281-a Fire Protection Mat, self-adhesive** in railway vehicles is based on the following documents:

- / Test Report Nr. R23-0711A, Currenta from 12.12.2023
- / Test Report Nr. R24-0249, Currenta from 25.06.2024
- / R22, R23 according to EN 45545-2
 - Classification Report Nr. 17/1713, Currenta
 - Test Report Nr. 17/1669 ISO 4589-2
 - Test Report Nr. 17/1588 ISO 5659-2
 - Test Report Nr. 19/0433 ISO 5659-2
 - Test Report Nr. 17/1711 NF X 70-100-1/-2
- / DIN EN 45545-3: 2013
- / DIN EN 1364-1: 2015
- / EN 1366-3: 2021
- / Construction diagrams according to examples

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Illustrations

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