

# Fire Resistance

# rejiband®

# E90

fire resistance



wire mesh cable tray complies with these requirements with a number of features and properties as described in the **E90 Certification**.

Safety is a growing concern within electrical installations.

In the event of a fire the behaviour of electrical equipment, when exposed to high temperatures, determines whether the installation achieves a certain safety level. **rejiband®**

**rejiband®** wire mesh cable tray is manufactured in accordance with the requirements and tests of the product standard **IEC 61537 "Cable Tray and Cable Ladder Systems"**. So far this standard has not yet covered the fire risks and fire resistance.

## DIN 4102-12

"Cable Tray and Cable Ladder Systems"

E30

E60

**E90**

When studying the properties of **rejiband®** wire mesh cable tray against fire, **Pemsa** has used the German Standard DIN 4102-12 which is the main reference in other European countries.

This standard tests the complete installations, in order to evaluate the structural integrity of the assembly and how the components react when exposed to fire.

A 3m length of wire mesh tray, accessories and power cables are the subject of the test. According to the final results, the certification may be issued at three different levels:

Table 1.  
Standards.

STANDARDS	E30	E60	E90
Time	30 min.	60 min.	90 min.
Temperature	840 °C	950 °C	1000 °C

The purpose of this test is to validate the correct operation of the electrical system and to ensure that critical services (fire suppression system, emergency lighting, ventilation and other basic installations) remain functional for long enough to organise evacuation in the event of fire.

# Fire Resistance

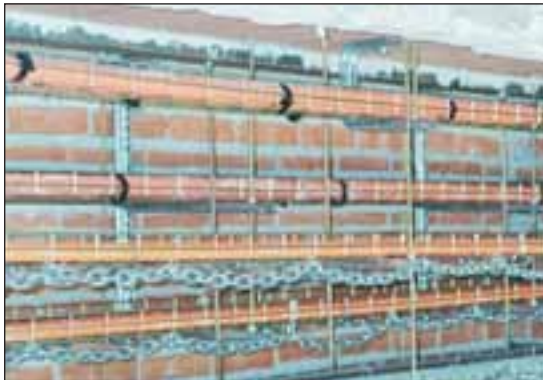


Figure 1:  
General View Of  
The Assembly

## Test Set-up

The test set-up consisted of a 3m length of wire mesh tray, including joints and accessories, supported on brackets at intervals of 1.2m. The power cables, up to 1kV, should be fire resistant at the same or higher level than halogen free, high safety cables. The wire mesh tray was then loaded with chains to simulate the cable weight and other standard conditions of the test.



Figure 2:  
Assembly  
Before Test

During the test, a standardised temperature vs. time curve is imposed in the test oven, obtaining the 3 levels of certification and their corresponding times and temperatures as shown on table 1.

The results prove that the cables maintain electrical continuity during the test, and therefore the operational integrity of the installation is maintained.

As the test was progressing, both cables and trays were damaged by the high temperatures as defined in DIN 4102-12. Trays are deformed but maintain their support function. The cable sheathing starts to burn causing risk to the correct functioning of the system.

As shown in figure 3, **rejiband**<sup>®</sup> wire mesh cable tray and its accessories neither collapsed nor were they detached from the supports, ensuring enough structural resistance within the system.



Figure 3: Assembly After  
Test

## rejiband<sup>®</sup> — E90

The wire mesh cable tray exceeded the fire resistance test, qualifying for the highest level of resistance proposed by this standard, the **E90**. The tray with cables were tested for **90 minutes** at temperatures of **1,000°C** (in accordance with the conditions of DIN 4102-12), maintaining circuit integrity against fire.

## Conclusions

The combined use of **rejiband**<sup>®</sup> wire mesh tray with high safety halogen-free electrical cables improves substantially the safety of the installation. Since both components provide a self extinguishing system, which does not produce toxic, corrosive or opaque fumes (more typical for polymeric & halogen materials), this allows a period of time long enough for evacuation and emergency works.

Investing in safety equipment and systems with high fire resistance must be accompanied by a safe installation that ensures their correct functioning in the most critical situations.