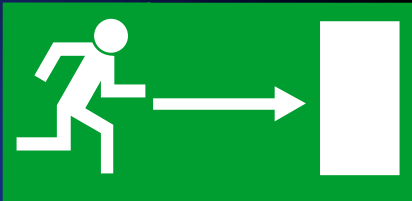


- ▶ Secure installations in emergency routes
- ▶ Can be used in false fire protection ceilings
- ▶ Installation in fire protection ducts
- ▶ Bandaging in renovation of old buildings



# Basic principles of the escape route installation systems



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2nd protection aim:

## Escape route installation systems ensure that escape routes remain usable.

Approximately 95% of all deaths during fires are caused by smoke poisoning.

If there is a fire, the emergency and escape routes are the central lifeline and must be usable under any circumstances.

### Central topic: fire loads

Any installation in the area of emergency and escape routes must not pose any additional fire load. This requirement must be fulfilled with the following installation types:

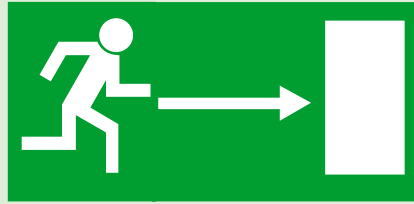
- ▶ Concealed installation
- ▶ Installation in fire protection duct systems
- ▶ Installation above suspended fire protection ceilings
- ▶ Open routing of bandaged cable support systems



Fire load:  
0 kWh/m<sup>2</sup>  
in escape  
and emergency  
routes

The image is a 3D cutaway diagram of a multi-story building. It shows the internal structure, including floors, walls, and stairs. The building is rendered in a semi-transparent style, revealing the interior. The text 'Fire load: 0 kWh/m² in escape and emergency routes' is overlaid on the left side of the image. The building has a brick facade on the ground floor and upper levels. A black car is parked in a garage area on the ground floor. The diagram illustrates the fire load distribution in the escape routes, which is zero kWh/m².

# What is an escape route?



## Scope of validity of the MLAR regulations also contains emergency and escape routes

Apart from electrical installations in fire walls and ceilings and function maintenance in a fire, the MLAR deals particularly with installations in emergency and escape routes. Special regulations apply here, as there must be the assurance that these routes can be used safely to leave a building if there is a fire. These may be:

- ▶ Necessary stairwells
- ▶ Connecting rooms between necessary stairwells and exits into the open air
- ▶ Necessary corridors

## MLAR regulations: fire protection specifications for building installation

The four letters of MLAR stand for "Muster-Leitungsanlagen-Richtlinie" or Master Conductor System Directive. This directive, created by the Construction Supervision Commission of the German Development Ministers' Conference, controls the fire protection requirements of any installation. These include specifications for the insulation of conductors, which must be passed through fire protection walls and ceilings, for the design of installations which must guarantee the function maintenance of safety-relevant systems in case of fire, and for electrical installations in the area of emergency and escape routes.

## LAR regulations of the individual German federal states

All the federal states are obliged to apply the MLAR to their construction law, but may include individual changes. This creates a Conductor System Directive or LAR for each state.



## Fire tests

### Testing for systems in suspended false ceilings

#### Tested OBO systems: tests in accordance with DIN 4102

To be able to offer practical solutions in the sense of the MLAR for electrical installations above suspended fire protection ceilings, OBO Bettermann has carried out fire testing in accordance with DIN 4102.

The following were tested:

- ▶ Cable support systems for wall and ceiling mounting to widths of 600 mm
- ▶ Collecting clamp, type 2031M/15, type 2031M/30 and type 2031 M/70 for wall and ceiling mounting
- ▶ Metal pressure clips type 2033M and type 2034M for ceiling mounting

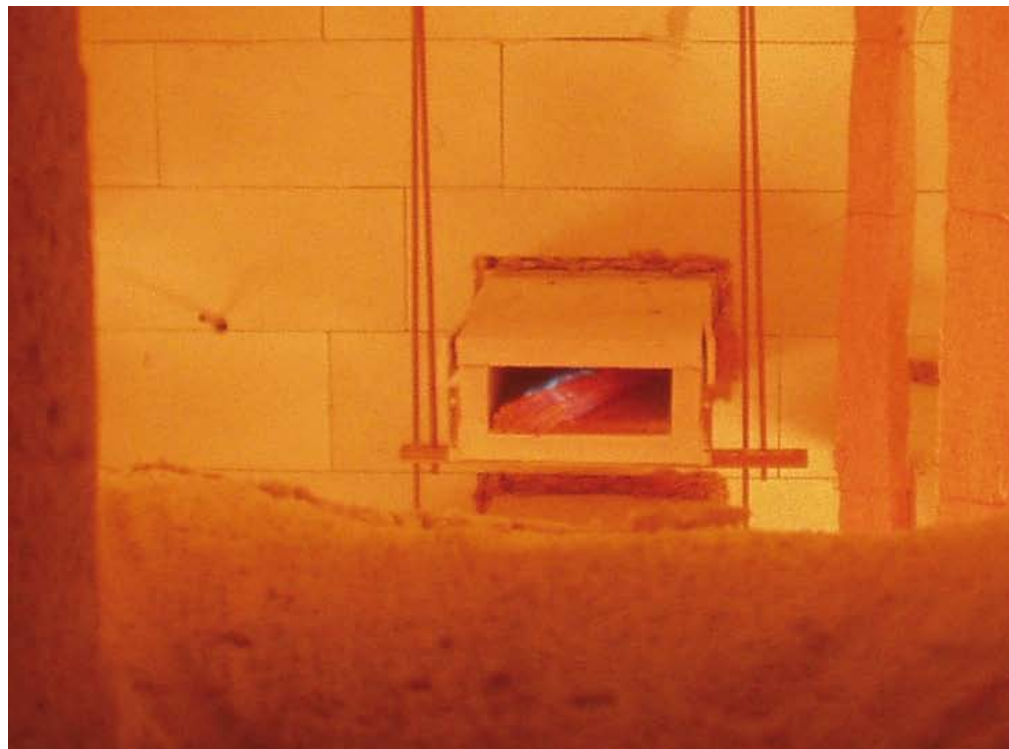
The following requirements were tested successfully:

- ▶ Stability of the routing system
- ▶ Deformation of the routing system

### Testing for the fire protection duct

The fire protection ducts BSK and BSKH were tested by an independent materials testing office according to DIN 4102 Part 11 and Part 12. The electrical cables were flamed within the duct.

Over the entire classified period of 90 minutes, neither fire nor smoke escaped from the duct system. This provides effective, safe protection of an emergency and escape route against a cable fire.



# Approved routing types in the area of emergency and escape routes



## Cable routing in false ceiling applications

Suspended fire protection ceilings, tested for fire loads from above, create a fireproof area in the space created between the ceiling and the suspended ceiling. Even if there is a fire in the cables installed there, the emergency and escape route still remains safe. However, there must be a guarantee that the suspended ceiling is not subjected to additional mechanical loads through, for example, falling cables or parts of the support system.

Therefore, according to the MLAR, only the following are approved for electrical installations above suspended fire protection ceilings in the area of emergency and escape routes:

- ▶ Routing systems for function maintenance, tested according to DIN 4102 Part 12
- ▶ Special routing systems, fire-tested for this application

The strictly controlled system limits mean that function maintenance systems can only be used with restrictions for this type of electrical installation. To provide practical installation options for false ceiling mounting, OBO has carried out fire tests based on DIN4102 for cable support systems, collecting clamps and pressure clips.



## Cable installation in fire protection ducts

OBO fire protection ducts are particularly suitable for installation in emergency and escape routes. The ducts protect the routes against the effects of a cable fire, when a much denser, blacker smoke is created.



## Bandaging of cable support systems in existing buildings

The last option to protect an emergency route is the bandaging of the existing cable support system with a coated mesh, which limits the cable fire to a localised area, preventing its spread. This measure is used when the mounting of a false ceiling, classified for fire protection, or that of a fire protection duct, is not possible due to local circumstances or insufficient space. In this case, the approval of the lowest construction authorities must be obtained before mounting.