

Technical Bulletin

**Fire protection requirements for  
cabling systems**

- MLAR 03/2000 –
- MDBR 12/1998 –

Date: 08/2006

This technical bulletin provides you with information on specific technical subjects. It is based on the current rules and regulations and on our current test results. The contents of this document is not legally binding.

## Fire protection requirements for cabling systems

Fire protection requirements for electrical cabling and laying operations are specified in the Design Guidelines of the Construction Supervision Commission.

These are, amongst other things, the basis of the Model Building Regulation (MBO) and the DIN VDE standards (DIN VDE 0108 T1, supplementary sheet 1 for DIN VDE 0108 T1). The above DIN VDE standard contains the MLAR cabling system design directive dated 9/1993.

In practice, however, these specifications are evaluated in different ways and are not included in different state construction ordinances, or appear in a different form.

A new MLAR design directive, dated 12/1998, which was agreed by the construction supervision committees and was revised in 03/2000, has specified the requirements for cabling systems with the aim of creating a standardised regulation for the whole of the Federal Republic of Germany.

**Before commencing planning, it should be checked which current regulations exist for the building project.**

The following sections are based on the current MLAR and deal with the use of electrical installation systems for cable laying.

### 1 Aims of the MLAR

#### 1.1 Guarantee of usability

. . . of important building areas (including corridors and emergency exit routes) necessary for saving the lives of people and animals in case of fire, through the limitation of installations – in this case, cabling systems.

#### 1.2 Prevention of the spread of fire and smoke

. . . through specific fire-resistant walls and ceilings, at points through which cables pass through these walls and ceilings.

#### 1.3 Maintenance of the function of specific cabling systems

. . . for prescribed safety equipment (safety lighting, smoke alarm systems, smoke exhaust systems, etc.).

### 2 Applications

The MLAR defines different cabling system designs for:

- 2.1 Necessary stairwells, necessary rooms between necessary stairwells and exits into the open air, necessary corridors and in open corridors in front of a building's exterior walls.
- 2.2 Necessary stairwells with low usage, necessary corridors with low usage (in low height residential buildings, living accommodation, units  $\leq 200 \text{ m}^2$ , total area  $\leq 1,000 \text{ m}^2$ ).

## Fire protection requirements for cabling systems

### 3 Definition of cabling systems

Cabling systems can consist of electric cables, service connection equipment, fibre optic cables, distributors and cable insulation. Fixing systems and coatings are also part of the cables.

### 4 Installation of electrical cables

Electrical cables may be installed uncovered, if they:

- are non-combustible (DIN VDE 0284 Part 1),
  - are only used to supply the rooms according 2.1
- or
- have improved fire characteristics (according to DIN VDE 0472 Part 840, Part 816 also in conjunction with coatings).

All other cables should be installed either inside walls, using soffits, installation ducts or underfloor systems (screed-flush electrical installation systems, raised or cavity floors) in accordance with regulations.

### 5 Cable glands through walls and ceilings

Cables may only be installed through fire walls, walls and ceilings which are fire-resistant, if there is no risk of a spread of fire and smoke or measures have been taken to prevent this.

Glands are possible through

- approved partitions of the fire-resistance rating S 90.
- Installation ducts made of non-combustible materials with a fire resistance period of 90 minutes.

Individual cables may be installed through fire walls, walls and ceilings, if

- the clear distance between the cables is at least as wide as the larger cable diameter,
  - the wall or ceiling thickness is at least 80 mm
- and
- the space between the cables has been fully closed off with mortar or concrete.

Glands through openings require complete closing with materials made of mineral fibres or with materials which foam in case of fire.

## Fire protection requirements for cabling systems

### 6 Use of electrical installation systems in wall areas

When electrical cables are installed in installation duct systems in rooms according to 2.1, they must:

- not be made of combustible materials,
  - have a closed surface
- and
- have a fire-resistance period which corresponds to that of the ceilings.

If you do not bypass any ceilings, then a fire-resistance period of 30 minutes is sufficient.

When electrical cables are installed in installation duct systems in rooms according to 2.2, which do not by-pass any ceilings, they must:

- not be made of combustible materials
- and
- have a closed surface.

### 7 Use of electrical installation systems in underfloor areas

When installing electrical cables in underfloor areas, we would draw your attention to the Design Directive for Fire Protection Requirements on Cavity Floors and False Floors (MDBR). This new design directive was agreed unanimously in December 1998 by the German ARGEBAU Construction Supervision Commission.

Alongside the requirements for cavity and false floors, Chapter 5 of the design directive contains statements on cable installation in screed-flush trunking and screed-covered duct systems.

These installation systems are approved when the top covers are made of non-combustible materials. They may not have any openings. Inspection openings are approved when they close tightly and consist of non-combustible materials. There is no specified fire-resistance period.

### 8 Primary changes in the MLAR compared with the previous version

The new MLAR no longer talks of halogen-free cables, but rather defines the installation types for "normal" cables and cables with improved fire properties.

There is no longer a fire load limit of 7 kWh or 14 kWh per m<sup>2</sup> of halogen-free cables, due to a lack of practical experience. Indeed the installation regulations have become more stringent. If, previously, wall ducts made of non-combustible materials were sufficient in necessary rooms, a fire-resistance period of 30 minutes is now required.

### 9 Areas of application for Ackermann installation systems with accessories, taking the new design directives into account

**Wall installation systems** made from sheet steel can be used in rooms according to 2.2 (necessary stairwells with low usage, and necessary corridors of low usage).

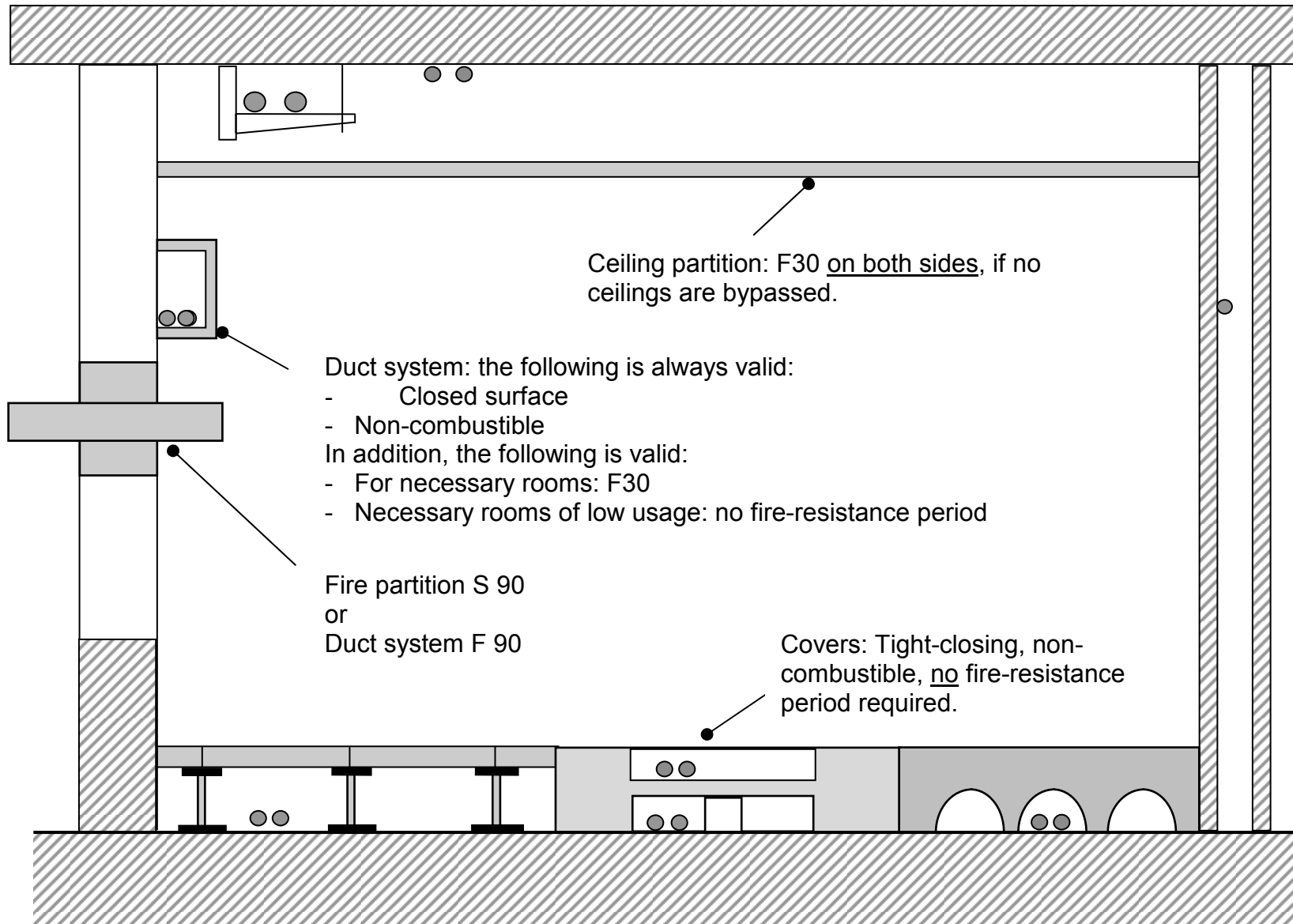
It is possible to pass our wall installation ducts through fire walls if the **fire bulkheading pack BSP 6** is used.

The use of cable installation systems, such as grid channelling systems and **wall installation duct systems** in the form of a ceiling duct in the ceiling partitions, is possible at any time, as the fire protection requirements only apply to the ceiling partition. However, on fixing, ensure that fixing materials are used which are approved for fire conditioning.

The **screed-flush trunking and screed-covered duct systems** – OKA, OKU, EBK and EÜK – can be used in necessary rooms according to 2.1, if they do not have any openings or the inspection openings are closed using the RK cassette solution or the DUF blind cover.

When passing underfloor systems through fire walls, the partitions used must have a fire-resistance period of 90 minutes. Usually, specialist design companies are used who install suitable, improved partitions. The use of our **fire bulkheading pack BSP 6** is also possible, as the approval for use in installation ducts specifies a surface of  $\leq 0.0314 \text{ m}^2$ .

Information sheet on fire protection requirements for cabling systems



## Information sheet on fire protection requirements for cabling systems

### Appendix – overview of standards and directives

#### Safety standards

DIN VDE 0100	Erection of low-voltage installations with rated voltages up to 1,000 V, initial tests
DIN VDE 0107	Low-voltage installations in hospitals and medical rooms outside hospitals
DIN VDE 0108	Low-voltage installations and safety power supplies on construction sites
DIN VDE 0132	Measures to be taken in the case of fire in or near electrical installations

#### Guidelines

MLAR 03/2000	Information sheet on fire protection requirements for cabling systems
MDBR 12/1998	Fire protection requirements for cavity floors and false floors
VdS 2025	Cable systems, guidelines on damage prevention
VdS 2097-8	Installation ducts and cable systems with function maintenance

#### Erection regulations

DIN VDE 0100-520 Wiring systems

#### Cable product regulations (for heavy-current installations)

DIN VDE 0250	Cables, wires and flexible cords for power installation
DIN VDE 0250-816	Heat-resistant silicon hose lines
DIN VDE 0267	Halogen-free cables with improved fire characteristics
DIN VDE 0276	Power cables
DIN VDE 0284	Mineral insulated cables
DIN VDE 0298	Application of cables and cords in power installations
DIN VDE 0472	Testing of cables, wires and flexible cords

#### Product definitions

DIN VDE 0604	Cable ducting systems intended for mounting on walls and/or ceilings
DIN VDE 0634	Underfloor electrical installation ducts
DIN VDE 0605	Conduit system for electrical installations

## Fire protection requirements for cabling systems

### Reference sources for standards and definitions

DIN VDE Normen            VDE-Verlag GmbH  
Merianstrasse 29  
63069 Offenbach

or

Beuth-Verlag GmbH  
Burggrafenstrasse 4–10  
10772 Berlin

VBG regulations            Carl-Heymanns Verlag KG  
Luxemburger Strasse 449  
50939 Köln

MLAR                        Publication in DIBt communications  
Deutsches Institut für Bautechnik  
Kolonnenstrasse 30L  
10829 Berlin

DIBt communications can be obtained from  
Verlag Ernst & Sohn  
Bühringstrasse 310  
13086 Berlin

VdS directives            Gesamtverband der Deutschen  
Versicherungswirtschaft e.V. (GDV)  
Amsterdamer Strasse 174  
50735 Cologne