

## **Ministry of the Environment Decree**

### **on the fire safety of buildings**

By decision of the Ministry of the Environment, the following is hereby laid down pursuant to § 117b of the Land Use and Building Act (132/1999), as amended by Act 958/2012:

#### Chapter 1

#### **General**

##### § 1

##### *Scope*

This Decree shall apply to the construction of new buildings and to the extension of buildings or to the addition of space that is to be counted in a building's floor area. The Decree shall also apply to repair and alteration work carried out on a building if the building or a part thereof will become more hazardous as a result of such repair or alteration work, and the improvement of the building's fire safety is thereby justified, taking account of the nature of the repair and alteration work and the prevention of risk to personal safety.

##### § 2

##### *Definitions*

For the purposes of this Decree:

- 1) *automatic fire-extinguishing system* refers to equipment that detects a fire and extinguishes it at its initial stage, or else keeps it under control until final extinguishing can be carried out;
- 2) *dry riser* refers to a pipeline intended for the transfer of water for fire-extinguishing that is permanently installed in a building;
- 3) *passageway* refers to a passable route from each point of the floor area leading to an exit;
- 4) *usable attic* refers to an attic in a residential building for the storage of household goods or for drying laundry;
- 5) *flashover* refers to a rapid transfer of conditions in which the surfaces of combustible materials within an enclosure are entirely ignited;
- 6) *heating appliance* refers to a device forming part of the building or external to it in which solid, liquid or gaseous substances are burned, and that is joined to the building or to a separate chimney flue;
- 7) *heat insulator* refers to a construction product used for thermal insulation made from one or more materials;
- 8) *material* refers to one base material or an evenly distributed mixture, for example metal, stone, wood, concrete, mineral wool, whose properties are evenly distributed, or a polymer;
- 9) *fire-separating door* refers to a door that fulfils the requirements of a prescribed fire class;

- 10) *fire-separating building element* refers to a building element that separates fire compartments, meeting the requirements of a prescribed fire class;
- 11) *fire-separated exit* refers to a fire-separated area through which safe evacuation from the building can be made;
- 12) *division into parts* refers to the division of a fire compartment or void into smaller areas or volumes by a building element that meets the requirements of a prescribed class in order to limit the spread of fire;
- 13) *fire or explosion hazardous area* refers to an area with a significant or major fire or explosion hazard;
- 14) *fire detector* refers to an installation that automatically and immediately indicates a beginning fire, and also warns of defects endangering its operational reliability;
- 15) *fire load* refers to the sum of the total heat released through the complete combustion of the materials in a room. These materials include the load-bearing, bracing, fire-separating and other building elements and furnishings;
- 16) *fire load density* refers to the fire load per floor area expressed in megajoules per square metre (MJ/m<sup>2</sup>);
- 17) *fire- and smokeproof exit* refers to a fire-separated exit that is accessed only through a fire-separated space on storey level (*safety lock*) and further through a balcony or other space facing the open air in order to prevent the release of fire and combustion gases into the exit;
- 18) *fireproof exit* refers to a fire-separated exit that is accessed only through a fire-separated space (*safety lock*) on storey level;
- 19) *fire wall* refers to a wall that prevents the spread of fire to the other side of the wall for a stated period of time and withstands the collapse of adjoining buildings and impacts caused by the collapse;
- 20) *fire resistance* refers to the ability of a building element to fulfil the requirements prescribed for it for a specified period of time (load-bearing requirement or fire-separating requirement, or both) at a specified load and a specified fire exposure;
- 21) *fire resistance time* refers to the period of time, expressed in minutes, for which a building element has been verified to meet the prescribed requirements;
- 22) *safety lock* refers to a fire-separated space between two fire compartments. A safety lock has doors that open separately into each adjoining fire compartment without a need to open the doors at the same time;
- 23) *fire compartment* refers to an interior area of the building from which the spread of fire is prevented for a stated period of time by fire-separating building elements or by some other effective means;
- 24) *fire lane* refers to a driveway or other drive access by which fire engines can get sufficiently close to the building and to water supply facilities in case of fire;
- 25) *surface* refers to the surface part of walls, ceilings and floors, the properties of which have an influence on the ignition and spread of fire;
- 26) *evacuation area* refers to a unitary and functional part of a building in relation to the arrangements for evacuation;
- 27) *building element* refers to a fixed part of a building, such as a wall, dividing wall, floor, roof, beam, column, door or duct, which may mean both separate construction products with their connections and elements that consist of one or more products;
- 28) *extinguishing route* refers to a passageway for firefighters that leads from the outside to basement floors and that is separate from the exits of storeys;
- 29) *smoke extraction* refers to the removal of smoke and heat generated by fire from a building, automatically or by gravity;
- 30) *chimney* refers to a structure that consists of one or more flues surrounded by a wall or walls. Combustion products are conducted along the flue to the open air;
- 31) *internal corridor* refers to a corridor in an evacuation area that leads to an exit;

- 32) *protective covering* refers to a construction product or object composed of a number of construction products that protects a building material behind it from ignition, charring or other fire damage for a stated period of time;
- 33) *fire detector and alarm connected to mains power supply* refers to a device that detects a beginning fire, alerts those in the area, is connected to the electrical mains power supply and whose supply of electrical current is ensured;
- 34) *building material* refers to a construction product, material or component that is used in construction;
- 35) *fireplace* refers to a building element or a device in which solid, liquid or gaseous substances are burned;
- 36) *attic* refers to the space between the uppermost floor and the roof of a building, where it is possible to move about;
- 37) *exit* refers to a door leading directly out from an evacuation area, or a space in the building or outside of it, through which safe evacuation to the ground level or to some other safe place is possible in case of fire;
- 38) *fire escape* refers to a route that is less passable than an exit through which it is possible to escape from a fire to safety. A fire escape may be a suitably located balcony or window opening through which escape is possible, either by rescue action or via a fixed ladder, or using some other suitable building elements, to the ground level or to some other safe place in the event of fire.
- 39) *void in the uppermost floor* refers to a space where it is not possible to move about due to insufficient height, the shape of the space or for some other reason.

### § 3

#### *Demonstration of compliance with essential technical requirements regarding fire safety*

The chief designer, building designer and specialist designer shall, in accordance with their respective duties, take care of the design of the building so that the building meets the essential technical requirements set for fire safety in accordance with its intended use.

The essential technical requirements set for fire safety will be met if the building is designed and constructed in accordance with the classes and numerical criteria set out in this Decree.

The fire safety requirements will also be met if the building is designed and constructed based on a design fire scenario that covers the situations that are likely to occur in the building. The meeting of the requirement shall be attested on a case-by-case basis, taking into account the properties and use of the building. In a design that is based on a design fire scenario, methods that are of demonstrated validity must be used. The basis for the design, the models used and the obtained results shall be presented in connection with the building permit procedure.

If the height of the building exceeds 140 metres, the meeting of the essential technical requirements shall be demonstrated on the basis of a design fire scenario; however, the minimum requirements based on classes and numerical criteria must also be met.

### § 4

#### *Fire classes of buildings*

The building fire classes are P0, P1, P2 and P3.

Fire classes P1, P2 and P3 are to be used when the building is designed on the basis of the classes and numerical criteria set out in this Decree. Fire class P0 is to be used when the building is designed primarily or entirely using the procedure based on a design fire scenario.

Different parts of a building may belong to different fire classes provided that the spread of fire from one part to another is prevented by a firewall.

## § 5

### *Use of the building*

A building or its fire compartment shall be classified on the basis of its primary use.

For the purposes of this Decree:

- 1) *dwelling* refers to premises used as residences, such as residential apartments and leisure apartments;
- 2) *accommodation premises* refers to premises such as hotels, holiday homes and residential homes that are normally in use 24 hours a day and where no one is under care or in confinement;
- 3) *institutions* refers to premises such as hospitals, homes for the elderly, prisons and day-care centres that are in use 24 hours a day, and where people are under care or in confinement;
- 4) *assembly and business premises* refers to premises such as restaurants, shops, schools, day-care centres and other early childhood education premises, sports halls, exhibition halls, theatres, churches, libraries and day-care institutions that are generally in daytime or evening use and occupied by a considerable number of members of the public or customers;
- 5) *office premises* refers to premises such as offices and bureaux that are generally in daytime use and where the majority of the personnel are familiar with the premises;
- 6) *production and storage premises* refers to premises associated with industrial activity and storage, such as ordinary industrial premises, premises for agricultural production and large warehouses with a generally regular personnel familiar with the local conditions;
- 7) *garages* refers to premises intended for the keeping of cars and similar motor vehicles.

The activities in production and storage premises are divided into two fire hazard classes:

- 1) 1) activities involving a minor or moderate fire hazard;
- 2) 2) activities involving a significant or major fire hazard, or where there may be an explosion hazard.

An area where there is fire or explosion hazard must not be located in a building where there are dwellings, accommodation premises, institutions or assembly and business premises. However, necessary areas where there is a fire or explosion hazard and that are required by the intended use of the building may be located with the above-mentioned premises if effective arrangements are in place to ensure that these do not jeopardise personal safety.

## § 6

### *Fire load and determination of fire load category*

The fire loads that form the basis of the design of a P0 fire class building shall be determined.

The fire load categories of the fire compartments of a P1 fire class building shall be determined. The fire load categories are as follows:

- 1) less than 600 MJ/m<sup>2</sup>;
- 2) at least 600 MJ/m<sup>2</sup>, but not more than 1 200 MJ/m<sup>2</sup>;
- 3) over 1,200 MJ/m<sup>2</sup>.

The fire load category shall be determined on the basis of the use of the fire compartment, or the fire load and the fire load category determined on the basis of this shall be determined by calculation.

§ 7

*Determination of fire load category on the basis of use*

Areas of a building or of a part thereof that are reserved for various uses may be placed in fire load categories according to use on the basis of the determined fire load density.

Areas belonging to fire load category *less than 600 MJ/m<sup>2</sup>* are dwellings, accommodation premises, institutions, office premises, garages and some assembly and business premises, such as restaurants, schools, sports halls, theatres, churches, day-care centres, day-care institutions and shops with a fire compartment size not exceeding 300 square metres.

Areas belonging to fire load category *at least 600 MJ/m<sup>2</sup> but not more than 1 200 MJ/m<sup>2</sup>* are some assembly and business premises such as shops (fire compartment size over 300 square metres), exhibition halls and libraries, fire compartments of residential buildings that contain storage areas for personal property, and premises for the repair and servicing of motor vehicles.

Areas belonging to fire load category *over 1 200 MJ/m<sup>2</sup>* are storage areas that form separate fire compartments.

The fire load of production and storage premises is determined on a case-by-case basis.

§ 8

*Restrictions on the size, number of occupants and use of buildings*

The size and number of occupants of a P2 and a P3 fire class building shall, depending on the use of the building, be restricted in order to guarantee personal safety and to facilitate extinguishing and rescue work. The restrictions on the size of a building are set out in Tables 1 a and 1 b, and the restrictions on the number of occupants in Table 2.

Table 1 a. Restrictions regarding use and size of P3 fire class building.

Building	Number of storeys no more than	Height <sup>1)</sup> no more than	Gross floor area no more than
one-storey, general	1	9 m	2 400 m <sup>2</sup> (4 800 m <sup>2</sup> *)
two-storey, general	2	9 m	1 600 m <sup>2</sup> (2 400 m <sup>2</sup> *)
Institution	1	9 m	2 400 m <sup>2</sup>
Production or storage building	1 <sup>2)</sup>	14 m	no restriction
Drying house for agricultural products that forms a separate building	1	18 m	no restriction
Garage	1	9 m	no restriction
Residential building where successive storeys belong to different apartments	not permitted	not permitted	not permitted
<sup>1)</sup> The height of a building is calculated from the ground level to the point of intersection of the roof and the face of the elevation (MRA 58 §). If necessary, the mean height of the building's corner points shall be calculated. <sup>2)</sup> No more than 200 m <sup>2</sup> of fire-separated and no more than 50 m <sup>2</sup> of non-fire-separated areas that essentially relate to the business of the building may be located on the second storey. * The building is provided with an automatic fire-extinguishing system that is suitable for this purpose.			

Table 1 b. Restrictions regarding the use and size of a P2 fire class building.

Building	Number of storeys no more than	Height <sup>1)</sup> no more than	Gross floor area no more than
General	2	9 m	no restriction
one-storey production or storage building	1 <sup>2)</sup>	no restriction	no restriction

Fire hazard class 2 production or storage building	1 <sup>2)</sup>	no restriction	no restriction
Residential building, institution (excluding closed prisons), accommodation building and office building of more than two storeys <sup>3)</sup>	8 *	28 m *	12 000 m <sup>2</sup> *
Assembly and business building of more than two storeys <sup>3)</sup>	4 *	14 m *	12 000 m <sup>2</sup> *
A residential building of more than two storeys, where all the storeys of each housing unit belong to one and the same apartment <sup>3)</sup>	4	14 m	12 000 m <sup>2</sup>
<sup>1)</sup> The height of a building is calculated from the ground level to the point of intersection of the roof and the face of the elevation (MRA 58 §). If necessary, the mean height of the building's corner points shall be calculated. <sup>2)</sup> No more than 200 m <sup>2</sup> of fire-separated and no more than 50 m <sup>2</sup> of non-fire-separated areas that essentially relate to the business of the building may be located on the second storey. <sup>3)</sup> Storage premises with a fire load exceeding 1 200 MJ/m <sup>2</sup> are not permitted within the building. * The building is provided with an automatic fire-extinguishing system that is suitable for its purpose.			

Table 2. P2 and P3 fire class building: maximum permissible number of persons

Fire class of building	P2			P3	
	1	2	over two storeys*	1	2
Storeys					
Use					
Dwellings, persons	no restriction	no restriction	1 000	250 (500 *)	150 (250 *)
Accommodation premises, number of places not exceeding	150 (300 *)	50 (100 *)	500	50 (100 *)	10
Institutions, number of places not exceeding	100 (200 *)	25 (50 *)	150	10 (25 *)	not permitted
Assembly and business premises, persons	no restriction	250 (500 *)	1 000	500 (1 000 *)	50
Office premises	no restriction	no restriction	1 000	250 (500 *)	150
Production and storage premises	no restriction	50 (100 *)	not permitted	no restriction	not permitted
The restrictions on the number of occupants of two-storey buildings relate to cases where the premises of the stated use are entirely or partly located on the second storey of the building. If such premises exist on the first storey only, the restrictions on a one-storey building may be applied. If the building comprises premises of different categories of use, the safety level of the building shall be assessed by considering the building as a whole. * The building is provided with an automatic fire-extinguishing system that is suitable for its purpose. An exception is a residential building of no more than 14 metres height, where all the storeys of each housing unit belong to one and the same apartment.					

## § 9

### *Limitation signs*

If an application for a permit relates to a design that is based on a smaller number of occupants than the size of the building would normally permit, or on an exceptionally small fire load, this limitation must be stated in the building permit application. A fixed sign indicating the limitation shall be placed in the building in an easily noticeable place.

## § 10

### *Prevention of ignition*

The hazard of ignition of fire within a building must be as low as possible.

Technical installations shall be made in such a way that the hazards of ignition of fire and spread of fire and smoke within the building is not essentially increased thereby.

Fireplaces, chimneys and heating devices shall be located and built or installed in such a manner that their use will not create a hazard of fire or explosion.

## Chapter 2

### MAINTAINING THE LOAD-BEARING CAPACITY OF STRUCTURES

#### § 11

##### *Load-bearing capacity of structures in a fire situation*

A building and the building elements therein must not cause danger through collapse within a specified period of time after the start of a fire. If necessary for the safety of people or with regard to the extent of the damage, the building must sustain the combustion of the entire fire load and the cooling phase without collapse.

#### § 12

##### *Design based on classification*

The class requirements regarding load-bearing capacity of the structures of P1 and P2 fire class buildings are laid down in Table 3.

The class requirement for load-bearing structures of a basement storey below the uppermost basement storey of a P3 fire class building is R 60, A2-s1, d0.

If a load-bearing element is required to have a longer fire resistance time than with respect to integrity E and insulation I than with respect to load-bearing capacity R, the longer fire resistance time shall also be applied to the load-bearing capacity.

Fulfilment of the class requirement shall be attested by testing, calculation, combining the results of testing and calculation, or by using an acceptable design method based on the use of tables. Conformity with class requirement is determined on the basis of the standard temperature/time curve.

Table 3. Class requirements of load-bearing and reinforcing structures in P1 and P2 fire class buildings.

Building	Building's fire class and fire load categories MJ/m <sup>2</sup>			
	P1			P2
	More than 1 200	600-1 200	Less than 600	-
<b>one- or two-storey building, general</b>	R 120 (R60 *)	R 90 (R60 *)	R 60	R 30
- institutions, accommodation premises	R 120, A2 (R60 *, A2)	R 90, A2 (R60 *, A2)	R 60, A2	R 30
- uppermost basement storey	R 120, A2 (R90 *, A2)	R 90, A2 (R60 *, A2)	R 60, A2	R 60, A2
- uppermost floor in a building where there is no attic and the structure is an essential part of the structural body <sup>1)</sup>	R 60	R 60	R 60	R 30
- single-storey production and storage building	R 60 (R30 *) (R15, A2 *)	R 60 (R30 *) (R15, A2 *)	R 60 (R30 *) (R15, A2 *)	R 30 (R15 *) (R15, A2)
- uppermost floor in a building where there is no attic and the structure is not an essential part of the structural body <sup>1)</sup>	R 15	R 15	R 15	R 15
<b>Building of over two storeys with a height not exceeding 28 m, general</b>	R 180, A2 (R90 *, A2)	R 120, A2 (R60 *, A2)	R 60, A2	R 60 * # <sup>3),4)</sup>
- uppermost basement storey	R 180, A2 (R90 *, A2)	R 120, A2 (R60 *, A2)	R 60, A2	R 60 * A2
- residential building, dwelling, uppermost storey	R 60 +	R 60 +	R 60 +	R 60 * # <sup>3)</sup>
- residential building, dwelling, two uppermost storeys <sup>2)</sup>	R60 * #	R60 * #	R60 * #	R 60 * # <sup>3)</sup>
- a residential building of more than two storeys, with a height not exceeding 14 m and where all the storeys of each housing unit belong to one and the same apartment	R 45, A2 (R30, A2 *)	R 45, A2 (R30, A2 *)	R 45, A2 (R30, A2 *)	R 45 # (R30 * #)

<b>Building of over two storeys with a height greater than 28 m but not exceeding 56 m, general</b>	R 240, A2 (R180 *, A2)	R 180, A2 (R120 *, A2)	R 120, A2 (R90 *, A2)	not possible
<b>Building of over two storeys with a height exceeding 56 m</b>	R180 *, A2	R120*, A2	R 120 *, A2	not possible
<b>Basement storeys below uppermost basement storey</b>	R 240, A2 (R180 *, A2)	R 180, A2 (R120 *, A2)	R 120, A2 (R 120 *, A2)	R 120, A2 (R90 *, A2)
<b>Notes on the Table:</b>	<p>The fire resistance time requirement for balconies is half that of the load-bearing structures of the storey. Load-bearing structures must be made of building materials of at least class D-s2, d2, unless otherwise stated in the table.</p> <p>The class requirement for the flight of stairs and staircase landing of a fire-separated exit in a building of over two storeys is R 30. The class requirement for the flight of stairs and staircase landing of the exit of a basement storey below the uppermost basement storey is R 60. If class requirement A2-s1, d0 is prescribed for load-bearing structures, this also applies to flights of stairs and staircase landings. Flights of stairs and staircase landings of the exit of a building of over two storeys and P1 fire class must be made of at least A2-s1, d0-class building materials.</p> <p>No fire resistance requirements are prescribed for roof structures of an attic or void that are not essential load-bearing structures of the building's structural body or structures that brace the structural body in a fire.</p> <p><sup>1)</sup> '[E]ssential parts of the structural body' are the main trusses, the secondary trusses that brace the structural body and the stiffener plates for the uppermost floor, and other such individual structures that act to preserve the stability of the uppermost floor, plus the connections between them.</p> <p><sup>2)</sup> When the three uppermost storeys are provided with an automatic fire-extinguishing system that is suitable for its purpose.</p> <p><sup>3)</sup> NB the requirements laid down in § 24(3)</p> <p><sup>4)</sup> If the fire load category according to use is 600—1 200 MJ/m<sup>2</sup>, the class requirement will be R 90 * # <sup>3)</sup></p>			
<b>Symbols in the table:</b>	<p>* The building is provided with an automatic fire-extinguishing system that is suitable for its purpose.</p> <p># Heat insulators and other fillings must be at least A2-s1, d0-class.</p> <p>+ The essential insulating part of heat insulators and other fillings must be at least D-s2, d2-class.</p> <p>A2 Load-bearing structures must be at least A2-s1, d0-class.</p> <p>not possible. Not possible.</p>			

### § 13

#### *Design of load-bearing structures based on design fire scenario*

When the design of load-bearing structures is based on a design fire scenario, a building is considered sufficiently fire-safe with respect to load-bearing structures if:

- 1) A two-storey building that is demanding in terms of personal safety, and a building of more than two storeys can be reasonably trusted not to collapse during the fire or cooling phase;
- 2) a building of one or two storeys does not collapse during the period of time required for securing evacuation, rescue operations and controlling the fire.

The conditions represented by the design fire scenario are used as the fire action, in such a way that the fire action is likely to cover the situations that will arise in the building in question. The design criteria are set out in Table 4.

In design of the load-bearing structures that is based on a design fire scenario, a slower rise in temperature and the cooling of load-bearing structures may be taken into consideration provided that the building is provided with an automatic fire-extinguishing system that is suitable for its purpose.

Table 4. Design criteria when the design of essential load-bearing structures is based on a design fire concept.

Building	Restrictions	Resistance of essential load-bearing structures in a fire	Design fire load density MJ/m <sup>2</sup>
one-storey	Height no greater than 9 m	30 minutes without cooling phase	Q <sub>f,k</sub>

one-storey	Height exceeding 9 m	60 minutes without cooling phase	$Q_{fi,k}$
two-storey, general	Height no greater than 9 m	30 minutes without cooling phase	$Q_{fi,k}$ , at least 600 MJ/m <sup>2</sup>
two-storey, general	Height exceeding 9 m	60 minutes without cooling phase	$Q_{fi,k}$ , at least 600 MJ/m <sup>2</sup>
two storeys, - accommodation premises - institution - assembly and business premises	More than 50 places More than 25 places More than 250 people	Fire and cooling phase	$Q_{fi,k}$ , at least 600 MJ/m <sup>2</sup>
More than two storeys	Height no greater than 28 m	Fire and cooling phase	$Q_{fi,k}$ , at least 600 MJ/m <sup>2</sup>
More than two storeys	Height exceeding 28 m	Fire and cooling phase	2.0* $Q_{fi,k}$ , at least 900 MJ/m <sup>2</sup>

$Q_{fi,k}$  is the statistically or computationally determined characteristic value of the total fire load density (80 % fractile). The study is carried out for a completely developed fire. If it can be demonstrated that no flashover will occur, the design can be made for a local fire. Flashover is regarded as having taken place if the average temperature of a hot smoke storey reaches 500 degrees Celsius, or if the radiation from the smoke storey to the floor exceeds 20 kW/m<sup>2</sup>.

### Chapter 3

## PREVENTION OF THE SPREAD OF FIRE FROM A COMPARTMENT

### § 14

#### *Fire separation of a building and division into parts of a fire compartment*

A building shall, if its size so requires, be divided into fire compartments in order to restrict the spread of fire and smoke, to provide safe evacuation and to facilitate rescue and extinguishing measures.

The building's various storeys, basement storeys and attics must be made into separate fire compartments (*fire separation by storey*). A fire compartment may, however, comprise several storeys, excluding compartments with rooms for accommodation or patient rooms, with the following restrictions:

- 1) in a building whose height exceeds 28 metres, no more than two storeys above this height of 28 metres may comprise a single fire compartment, and the size of a single fire compartment must not exceed 2 400 square metres; and
- 2) at a height of over 56 metres, a fire compartment is restricted to a single storey, apart from residential apartments, where two-storey fire compartments are permitted. In this case, access must be arranged to an exit from both storeys.

The size of a fire compartment must be limited so that a fire igniting in the compartment does not cause unreasonably vast damages (*fire separation by area*).

Premises with essentially different uses, or with essentially different fire loads, must be set up as separate fire compartments (*fire separation by use*). However, assembly and business premises, office premises and accommodation premises and institutions other than overnight accommodation areas may be located in the same fire compartment, provided that this does not jeopardise personal safety and that all the fire technical requirements of all the premises located in the same fire compartment are met. The following must constitute separate fire compartments:

- 1) exits;
- 2) dwellings;
- 3) overnight accommodation areas of accommodation premises and institutions;
- 4) boiler rooms;
- 5) fuel storage areas;
- 6) garages, excluding separate garage buildings of one-family houses;
- 7) engine rooms of central ventilation plants within the building, if these serve a number of fire compartments;

- 8) lift shaft and engine rooms, apart from lift shafts that are located in a fire-separated stairwell;
- 9) separate large storage premises.
- If necessary, fire compartments shall be divided into parts in order to restrict the spread of fire and smoke, to provide safe evacuation and to facilitate rescue and extinguishing measures.

§ 15

*Size of fire compartment; subdivision of fire compartments*

Table 5 applies to the maximum areas of fire compartments and their division into parts.

Table 5. Maximum area (square metres) of fire compartment by use, and division of fire compartments into parts.

Use	Building's fire class and number of storeys			
	P1	P2 over two storeys <sup>1)</sup>	P2 one or two storeys	P3
<b>STOREYS</b>				
<b>Residential buildings</b>	by apartment	by apartment	by apartment	by apartment
<b>Accommodation premises and institutions</b>				
- overnight accommodation areas	800 <sup>2</sup> (1 200 * <sup>2</sup> )	800 <sup>2</sup>	800 <sup>2</sup> (1 200 <sup>2</sup> *)	400 <sup>2</sup> (600 <sup>2</sup> *)
- other premises	1 600 (3 200 *)	1 200	1 600 (2 400 *)	400 (1 200 *)
<b>Assembly and business premises and office premises</b>				
- one-storey	2 400 (24 000 *)	not possible	2 400 (9 600 *)	400 (1 200 *)
- two storeys	2 400 (12 000 *)	not possible	2 400 (4 800 *)	400 (600 *)
- more than two storeys, office premises	2 400 (9 600 *)	2 400	not possible	not possible
- more than two storeys, shop premises	2 400 (4 800 *)	300	not possible	not possible
- more than two storeys, other premises	2 400 (4 800 *)	1 200	not possible	not possible
<b>Production and storage premises, fire hazard class 1</b>				
- one-storey, general	6 000 <sup>5)</sup> (60 000 *)	not possible.	4 000 <sup>5)</sup> (36 000 *)	2 000 (12 000 *)
- building without heat insulation	12 000 (60 000 *)	not possible	12 000 (36 000 *)	12 000
- greenhouse	24 000 <sup>5)</sup>	not possible	24 000 <sup>5)</sup>	24 000 <sup>5)</sup>
- two-storey	4 000 <sup>5)</sup> (24 000 *)	not possible.	2 000 <sup>5)</sup> (12 000 *)	not permitted
- more than two-storey	3 000 (9 000 *)	not permitted	not permitted	not permitted
<b>Production and storage premises, fire hazard class 2</b>				
- one-storey	2 000 <sup>5)</sup> (12 000 *)	not possible	1 000 <sup>5)</sup> (6 000 *)	2 000*
- more than one-storey	1 000 (6 000 *)	not permitted	not permitted	not permitted
<b>Garages</b>				
- as part of an above-surface building	3 000 <sup>3)5)</sup> (24 000 *)	not possible	3 000 (24 000 *)	400 (3 000*)
- separate garage above ground surface	3 000 <sup>3)4)5)</sup> (24 000 *)	not possible	3 000 <sup>3)</sup> (24 000 *)	1 000 (6 000*)
- underground	1 500 <sup>5)</sup> (10 000 *)	not possible	1 500 <sup>5)</sup> (10 000 *)	not permitted
<b>ATTICS</b>	1 600	1 600	1 600	according to compartments below
<b>BASEMENT STOREYS</b>	800	800	800	400
Attics and uppermost floor voids shall be divided into 400 m <sup>2</sup> parts; however, in fire class P3 residential buildings, they shall be divided at least by apartment.				
Base floor voids shall be divided into 400 m <sup>2</sup> parts if the area's surfaces (apart from minor parts) do not meet the D-s2, d2-class requirements.				
<sup>1)</sup> The building is provided with an automatic fire-extinguishing system that is suitable for its purpose, apart from a residential building of two to four storeys, where all storeys of each housing unit belong to one and the same apartment and whose height				

does not exceed 14 m.

<sup>2)</sup> The fire compartment shall be divided into parts by accommodation room.

<sup>3)</sup> The surface area of an open garage compartment may be 50 per cent greater.

<sup>4)</sup> In an open garage of no more than five storeys, the maximum area may be used as the surface area of the storeys, even though the driveways between the various storeys are combined. This, however, requires that the class of the intermediate floors be at least REI 60.

<sup>5)</sup> The surface area of a fire compartment may be increased by a maximum of 50 per cent if the area is provided with a fire detector that is linked to the emergency centre and effective extinguishing work can be commenced at a sufficiently early stage.

\* When the building or area is provided with an automatic fire-extinguishing system that is suitable for its purpose.

## § 16

### *Fire-separating and partitioning building elements*

Fire-separating building elements together with any attached installations and equipment must prevent the spread of fire from one fire compartment to another for a specified period of time.

A structure that entirely or in some respects meets the requirements only in the case of integrity E may be approved as a fire-separating building element. In this case, the evacuation of people must not be jeopardised, and the fire must not spread to another fire compartment during the required fire resistance time.

The class requirements for fire-separating building elements are set out in Table 6.

The class requirement for a partitioning building element is EI 15.

Table 6. Class requirements for fire-separating building elements

	Building's fire class and number of storeys, and fire load category MJ/m <sup>2</sup>					
	P1			P2 over two storeys	P2 one or two storeys	P3
	More than 1 200	600-1 200	Less than 600	-	-	-
<b>Storeys, general</b>	EI 120 <sup>1)</sup> (EI 60 *) <sup>1)</sup>	EI 90 <sup>1)</sup> (EI 60 *) <sup>1)</sup>	EI 60 <sup>1)</sup>	EI 60 <sup>2)</sup>	EI 30	EI 30
- building over 56 metres high	EI 90, A2 *	EI 60, A2 *	EI 60, A2 *	not possible	not possible	not possible
- uppermost floor, if fire-separating requirement	EI 60	EI 60	EI 60	EI 60 <sup>2)</sup>	EI 30	EI 30
- production and storage premises, fire hazard class 1, area-based compartmentalisation	EI-M 90, A1 (EI-M 60, A1 *)	EI-M 90, A1 (EI-M 60, A1 *)	EI-M 90, A1 (EI-M 60, A1 *)	not possible	EI-M 90, A1 (EI-M 60, A1 *)	EI-M 90, A1 (EI-M 60, A1 *)
- production and storage premises, fire class 2, area-based compartmentalisation	EI-M 120, A1 (EI-M 60, A1 *)	EI-M 120, A1 (EI-M 60, A1 *)	EI-M 120, A1 (EI-M 60, A1 *)	not possible	EI-M 120, A1 (EI-M 60, A1 *)	EI-M 60, A1 *
- garages, area-based compartmentalisation	EI 60, A2	EI 60, A2	EI 60, A2	not possible	EI 60	EI 30
<b>Attics</b>	EI 30	EI 30	EI 30	EI 30	EI 30	EI 30
<b>Basement storeys</b>	EI 120, A2 (EI 90, A2 *)	EI 90, A2 (EI 60, A2 *)	EI 60, A2	EI 60, A2	EI 60, A2	EI 30, A2 <sup>3)</sup>
<sup>1)</sup> Fire-separating building elements of a building of over two storeys and P1 fire class must be made of at least A2-s1, d0-class building materials. <sup>2)</sup> NB the requirements laid down in § 24(3). <sup>3)</sup> In a basement belonging to a single dwelling, the class requirement is EI 30. A1 Building materials A1 class						

A2 Building materials at least A2-s1, d0-class

\* When the building or area is provided with an automatic fire-extinguishing system that is suitable for its purpose.

## § 17

### *Fire doors, windows and shutters*

The fire resistance time of a door, small window and other building elements covering relatively small openings in a fire-separating building element shall be at least half of the fire resistance time required for the fire-separating element. The fire resistance time of a building element that protects an opening in an intermediate floor and in the fire-separating wall of a basement storey whose floor is at a distance greater than 14 metres from the building's entry level must be the same as that of the fire-separating building element.

A fire door must be self-closing and self-bolting. However, no door closer is required in storey-level doors of residential apartments in buildings of less than 56 metres in height.

If a fire door is kept open in normal use, it shall be equipped with devices that will close the door in the event of fire.

Partitioning doors in accommodation premises shall be equipped with closing devices.

## § 18

### *Penetrations in fire-separating structures*

Pipes, shafts, ducts, cables and flues, and penetrations required by conveyors that are mounted through a fire-separating building element must not essentially reduce the fire-separating capacity of the building element.

## § 19

### *Ventilation devices*

Ventilation devices must not increase the hazard of spreading fire or flue gases.

The walls of ventilation ducts servicing more than one fire compartment or part must be made of building materials of at least class A2-s1, d0. The ducts must be easy to clean.

## § 20

### *Attics and voids*

Attics and voids shall be built in such a way that the hazard of ignition of fire and spread of fire and smoke within the building is not essentially increased thereby.

Extensive voids must be divided into parts in order to restrict the spread of fire.

The spread of fire in voids of wall-type building elements must be restricted at least by storey.

## § 21

### *External walls and balconies*

External walls and balconies shall be constructed so that a fire will not spread from one fire compartment to another through them during a specified period of time.

In glassed balconies, the spread of fire from one balcony to another and to an adjacent fire compartment must be restricted. The fire-separating requirement for the balcony slab of a glassed balcony of a building exceeding two storeys is EI 30; however, minor sealing parts and penetrations may be class E 15. If the free gap between facing walls of adjacent glassed

balconies or the distance of the wall to the window of an adjacent fire compartment is less than 2 metres, the wall in question must be class EI 15.

## Chapter 4

### LIMITATION OF DEVELOPMENT OF FIRE

#### § 22

##### *General requirements*

The building materials used must not contribute to the development of a fire in a hazardous manner.

#### § 23

##### *Internal surfaces*

The class requirements for internal surfaces are set out in Table 7.

The class requirements do not apply to building elements with a small area, such as ordinary doors, windows, attachment surfaces, handrails, skirtings and joints between boards. Nor do the requirements apply to beams and columns that meet the class requirements R 30 and D-s2, d2.

Surfaces may be coated with an unclassified layer of filler, putty or paint or wallpaper, which does not essentially affect the characteristics of the class required for the relevant surface.

Requirements that are one main class lower may be permitted for surfaces if, considering the use of the fire compartment, the hazard of ignition or spread of fire is smaller than normal. This does not, however, apply to internal corridors, exits or areas for which the requirement is D-s2, d2.

Table 7. Class requirements for internal surfaces

Use	Surface	Fire class of building		
		P1	P2	P3
<b>Dwellings</b>	walls and roofs	D-s2, d2 <sup>1)</sup>	D-s2, d0 <sup>4)</sup>	D-s2, d2 <sup>1)</sup>
<b>Accommodation premises</b>	walls and roofs	D-s2, d2	B-s1, d0 <sup>4)2)</sup> (C-s2, d1 * <sup>4)2)</sup> )	D-s2, d2
<b>Institutions</b>	walls and roofs floors	B-s1, d0 D <sub>FL</sub> -s1	B-s1, d0 <sup>4)</sup> D <sub>FL</sub> -s1	D-s2, d2 -
<b>Assembly and business premises</b>				
- fire compartment maximum 300 m <sup>2</sup> : restaurants, shops, schools, sports halls, theatres, churches, day-care centres and day-care institutions	walls and roofs	D-s2, d2	D-s2, d2 <sup>4)</sup>	D-s2, d2
- fire compartment exceeding 300 m <sup>2</sup> : restaurants, schools, sports halls, theatres, churches, day-care centres and day-care institutions	walls and roofs	C-s2, d1 (D-s2, d2 *)	C-s2, d1 <sup>4)</sup> (D-s2, d2 * <sup>4)</sup> )	D-s2, d2
- fire compartment exceeding 300 m <sup>2</sup> : shops, exhibition halls and libraries	walls and roofs floors	B-s1, d0 (C-s2, d1 *) D <sub>FL</sub> -s1	B-s1, d0 <sup>4)</sup> (C-s2, d1 * <sup>4)</sup> ) D <sub>FL</sub> -s1	B-s1, d0 (C-s2, d1 *) -
<b>Office premises</b>	walls and roofs	D-s2, d2 <sup>1)</sup>	B-s1, d0 <sup>4)2)</sup> (D-s2, d2 * <sup>4)</sup> )	D-s2, d2 <sup>1)</sup>
<b>Production and storage premises</b>				
- fire hazard class 1	walls roofs floors	D-s2, d2 D-s2, d2 D <sub>FL</sub> -s1	D-s2, d2 <sup>4)</sup> B-s1, d0 D <sub>FL</sub> -s1	D-s2, d2 D-s2, d2 -
- fire hazard class 2	walls and roofs floors	B-s1, d0 A2 <sub>FL</sub> -s1	B-s1, d0 A2 <sub>FL</sub> -s1	B-s1, d0 A2 <sub>FL</sub> -s1

<b>Car repair shops and service stations, garages</b>	walls and roofs floors	B-s1, d0 A2 <sub>FL</sub> -s1	B-s1, d0 A2 <sub>FL</sub> -s1	B-s1, d0 <sup>5)</sup> A2 <sub>FL</sub> -s1
<b>Attics and uppermost floor voids</b>				
- usable attics	floors	D <sub>FL</sub> -s1	D <sub>FL</sub> -s1	D <sub>FL</sub> -s1
- non-usable attics and uppermost floor voids that are fire-separated from the premises below	internal surfaces of attic or void	D-s2, d2	D-s2, d2	-
- uppermost floor voids that are not fire-separated from the premises below. This requirement does not apply to a heat insulator's ventilation slot.	inner surfaces of void	B-s1, d0	B-s1, d0	-
<b>Basements</b>	walls and roofs floors	C-s2, d1 D <sub>FL</sub> -s1	B-s1, d0 D <sub>FL</sub> -s1	D-s2, d2 D <sub>FL</sub> -s1
<b>Technical servicing areas</b>	walls and roofs floors	B-s1, d0 D <sub>FL</sub> -s1	B-s1, d0 <sup>4)</sup> D <sub>FL</sub> -s1	B-s1, d0 D <sub>FL</sub> -s1
<b>Boiler rooms, feeder rooms and liquid fuel storages</b>	walls and roofs floors	B-s1, d0 A2 <sub>FL</sub> -s1	B-s1, d0 A2 <sub>FL</sub> -s1	B-s1, d0 A2 <sub>FL</sub> -s1
<b>Solid fuel storage</b>	walls and roofs floors	B-s1, d0 A2 <sub>FL</sub> -s1	B-s1, d0 A2 <sub>FL</sub> -s1	D-s2, d2 -
<b>Exits and safety locks</b>	walls and roofs floors	A2-s1, d0 <sup>3)</sup> D <sub>FL</sub> -s1	A2-s1, d0 <sup>3)</sup> D <sub>FL</sub> -s1	B-s1, d0 D <sub>FL</sub> -s1
<b>Internal corridors in accommodation and office premises</b>	walls and roofs floors	B-s1, d0 D <sub>FL</sub> -s1	B-s1, d0 <sup>4)</sup> D <sub>FL</sub> -s1	B-s1, d0 D <sub>FL</sub> -s1
<b>Saunas and bathroom areas</b>	walls and roofs	D-s2, d2	D-s2, d2	D-s2, d2
<sup>1)</sup> Minor parts of wall surfaces may be covered by unclassified building materials. <sup>2)</sup> Minor parts of wall surfaces may be covered by D-s2, d2-class building materials. Also applies to walls with protective covering. <sup>3)</sup> The class requirement for minor building element surfaces is B-s1, d0. <sup>4)</sup> When protective covering is required, the surface class requirement is determined according to the building material class requirement of the protective covering. <sup>5)</sup> In a separate garage, not exceeding 1 000 square metres, and in a garage (forming part of a building) not exceeding 60 square metres, the class requirement (apart from basement level) is D-s2, d2. * When the area is provided with an automatic fire-extinguishing system that is suitable for its purpose. - no requirement				
The requirements in the table also apply to the surface pipes and ventilation ducts or their insulators, unless the number of these is insignificant. In the case of pipe insulators, the values of the table shall apply, with the subindex L added to the entry depicting fire participation for walls and roofs. The additional attributes regarding smoke production and flaming droplets remain unchanged.				

## § 24

### *Protective coverings of internal surfaces*

The internal wall and roof surfaces of a building of fire class P2 and of one to two storeys must be fitted with a protective covering of K<sub>2</sub> 10 class, made of at least B-s1, d0-class building materials. However, no protective covering is required:

- 1) if the insulating parts of heat insulators are at least class B-s1, d0;
- 2) for walls, where the construction product forming their inner and outer surface, with attachments, meets class requirement B-s1, d0 (inner surface) and EI 15 (as building element). The above does not apply to dwellings, accommodation premises and institutions;
- 3) for walls of a one-storey production or storage building with no attic, where the inner surface meets class requirement B-s1, d0, apart from exits;
- 4) for the uppermost floor of a one-storey production or storage building that has no attic and that belongs to fire hazard class 1, where the construction product forming their inner and outer surface, with attachments, meets class requirement B-s1, d0 (inner surface) and REI 15 (as building element).
- 5) for non-load-bearing ceilings of a one-storey production or storage building that has no attic and that belongs to fire hazard class 1, where the construction product forming their lower and upper surface, with attachments, meets class requirement B-s1, d0 (lower surface) and EI 15 (as building element).
- 6) for beams and columns that meet R 30 - and D-s2, d2 -class requirements.

The exit surfaces of a building of fire class P2 and more than two storeys, apart from the top and front surface of landings and stairs, must be fitted with a protective covering of K<sub>2</sub> 10 class, made of at least A2-s1, d0-class building materials. Protective covering is not, however, required for minor building elements or for building elements that (apart from minor structural parts) are made of building materials of at least A2-s1, d0 class.

Inner surfaces of a building of fire class P2 and more than two storeys, apart from exit surfaces, must be fitted with a protective covering of K<sub>2</sub> 30 class, made of at least A2-s1, d0-class building materials. Protective covering is not, however, required for building elements that (apart from minor structural parts) are made of building materials of at least A2-s1, d0 class, or for non-load-bearing internal partitioning walls of a fire compartment. Nor is protective covering required for a wall or roof surface when its share of the total surface area of the fire compartment walls and roof is:

- 1) no more than 20 per cent;
- 2) over 20 per cent, but no more than 80 per cent and the fire resistance time of load-bearing and fire-separating building elements has been extended by 30 minutes;
- 3) over 80 per cent and the fire resistance time of load-bearing and fire-separating building elements has been extended by 60 minutes.

However, the internal surfaces of a residential building of fire class P2, of three or four storeys and with a height not exceeding 14 metres may be fitted with protective covering of at least K<sub>2</sub> 10 class made of building materials of at least A2-s1, d0 class, if the surfaces are given protective covering in their entirety.

The inner surfaces of a building of fire class P21 and more than two storeys, whose skeletal framework is not at least A2-s1, d0 class, must be fitted with a protective covering of K<sub>2</sub> 30 class, made of at least A2-s1, d0-class building materials. The above does not apply to a fire compartment's non-load-bearing internal partition walls.

## § 25

### *General requirements for external wall*

The external wall of a building of fire class P1 must be mainly constructed of building materials of at least class A2-s1, d0.

The heat insulator of a P2 fire class building of over two storeys and of a P1 fire class building of over 56 metres in height must be at least A2-s1, d0 class.

In a P1 fire class building not exceeding 56 metres in height, a heat insulator whose insulating part meets the B-s1, d0-class requirements, or a heat insulator that is protected and positioned in such a way that the spread of fire into the insulator is limited for a time that in the case of the building interior and sides of openings is at least half of the fire resistance time requirement of the area's fire-separating building elements may be used. A heat insulator whose insulating part does not meet the D-s2, d2-class requirement must be interrupted at, at most, two-storey intervals up to a height of 28 metres, and thereafter at single-storey intervals, by a building material that impedes the progress of the spread of fire in the insulator.

The frame of a non-load-bearing external wall of a P1 fire class building must consist of D-s2, d2-class building materials.

The performance of the external wall structure may also be demonstrated by a full-scale test.

## § 26

### *Class requirements for surfaces of external walls and ventilation gaps*

The class requirements for surfaces of external walls and ventilation gaps are set out in Table 8.

Surfaces may be coated with an unclassified layer of filler, putty or paint that do not essentially affect the characteristics of the class required for the relevant surface.

Table 8. Class requirements for surfaces of external walls and ventilation gaps

	External surface of external wall	External surface of ventilation gap	Internal surface of ventilation gap	Conditions for use of classes
<b>P1 fire class building, general</b>	B-s1, d0	B-s1, d0	B-s1, d0	1)
Residential and office building of no more than 28 m in height, general	B-s2, d0	B-s2, d0	B-s1, d0	6)
- residential building, when additional thermal insulation whose insulating part does not meet the B-s1, d0 requirement and whose thickness does not exceed 100 mm has been used in repair and alteration work	B-s2, d0	B-s2, d0	B-s1, d0	7)
- external surface part of external wall, if the structures surrounding that part protect the wall surface from the spread of fire	D-s2, d2	D-s2, d2	B-s1, d0	6)
- residential building, uppermost storey	D-s2, d2	D-s2, d2	A2-s1, d0	6) 4)
Residential and office building with a height exceeding 14 m but no more than 28 m	D-s2, d2 *	D-s2, d2 *	B-s1, d0 *	1) 2) 3) 4) 5)
Residential and office building of no more than 14 m in height,	D-s2, d2	D-s2, d2	B-s1, d0	1) 2) 3) 4)
Production and storage building or assembly and business building of one or two storeys and no more than 28 m in height	D-s2, d2	D-s2, d2	B-s1, d0	3) 4) 5) 6) 8)
<b>P2 fire class building</b>				
Building of over two storeys and no more than 28 m in height, general	B-s2, d0 *	B-s2, d0 *	K <sub>2</sub> 10, A2-s1, d0 *	
- residential, accommodation and office building, and assembly and business building	D-s2, d2 *	D-s2, d2 *	K <sub>2</sub> 10, A2-s1, d0 *	2) 3) 4) 5)
Residential building of more than two storeys and no more than 14 m in height, whose basement and storeys of each housing unit belong to one and the same apartment	D-s2, d2	D-s2, d2	B-s1, d0	2) 3) 4)
Building of no more than two storeys, general	D-s2, d2	D-s2, d2	D-s2, d2	
- institutions	B-s2, d0 (D-s2, d2 *) <sup>3)</sup>	B-s2, d0 (D-s2, d2 *) <sup>3)</sup>	B-s1, d0	
<b>P3 fire class building</b>	D-s2, d2	D-s2, d2	-no requirement	
<p>Balconies shall comply with the requirements set for the outer surface of an exterior wall. However, the requirement for the surfaces (excluding floors) of a balcony designed for use as a fire escape of a building not exceeding 28 metres in height is B-s2, d0. By way of derogation to the above, the beams and columns of a balcony of a P2 fire class building of more than two storeys may be class D-s2, d2, if the balcony is provided with an automatic fire-extinguishing system that is suitable for its purpose. The requirements shall not apply to minor surfaces such as hand railings.</p> <p>In the case of an open-access balcony, compliance shall be made with the requirements set for an exit. However, the walls and columns of the access balcony of a P2 fire class building of more than two storeys may be class D-s2, d2. The beams and columns of an access balcony of a P2 fire class building of more than two storeys may be class D-s2, d2, if the access balcony is provided with an automatic fire-extinguishing system that is suitable for its purpose. The requirements shall not apply to minor surfaces such as hand railings.</p> <p>The fixing accessories for the facade cladding may, to a small extent, be of class D-s2, d2 in a building with a height not exceeding 28 m.</p> <p>1) If the insulating part of a heat insulator does not meet the B-s1, d0 requirements, the surface structures of the external surface must protect the insulator from fire in such a way that the protection corresponds to an EI 30 building element, or the inner surface of the ventilation gap must be fitted with K<sub>2</sub> 30, A2-s1, d0 protective covering.</p> <p>2) Apart from the first storey and the upper and lower surfaces of the fire escapes, whose participation in a fire may jeopardise use of the fire escapes.</p> <p>3) The spread of fire in a ventilation gap must be restricted at each storey, and the spread of fire in a horizontal direction to the ventilation gap in the external wall of a fire-separated staircase must be prevented.</p> <p>4) The spread of fire from the facade into an attic and the uppermost floor must be restricted so that this corresponds to an EI 30-building element.</p> <p>5) The collapse of extensive parts of the facade structure in the event of a fire must be restricted.</p> <p>6) If the insulating part of a heat insulator does not meet the B-s1, d0 requirements, the surface structures of the external surface must protect the insulator from fire in such a way that the protection corresponds to an EI 15 building element, or the inner surface of the ventilation gap must be fitted with K<sub>2</sub> 30, A2-s1, d0 protective covering.</p>				

- 7) The interruption of insulators on each storey referred to in § 25 shall not be required if the requirements in comment 6) are met.  
8) An external wall and its windows and other openings must meet the EI 30 requirement.

\* The building is provided with an automatic fire-extinguishing system that is suitable for its purpose.

## § 27

### *Requirements for the uppermost floor*

The heat insulator of a P2 fire class building of over two storeys and of a P1 fire class building of over 56 metres in height must be at least A2-s1, d0 class.

In a P1 fire class building not exceeding 56 metres in height, a heat insulator whose insulating part meets the B-s1, d0-class requirements, or a heat insulator that is protected and positioned in such a way that the spread of fire into the insulator is limited for a time that in the case of the building interior and sides of openings is at least the fire resistance time requirement of the area's fire-separating building elements may be used. By way of derogation to the above, however, it is sufficient that the spread of the fire into the insulator be restricted for a time that is at least half of the fire resistance time requirement of the area's fire-separating building elements.

- 1) in a one- or two-storey building with no attic;
- 2) In a building not exceeding 28 metres in height, if the insulating part of the heat insulator meets the class D-s2, d2 requirement.

Penetrations and other installations must be carried out in such a way that the protection of heat insulators does not deteriorate as a result of these.

## § 28

### *Roof*

A roof must not easily ignite from a fire at a neighbouring building.

Fire must not spread in a roof or in its underlay in a way that causes a hazard.

The roof must be B<sub>ROOF(t2)</sub>-class. A roof not belonging to the B<sub>ROOF(t2)</sub> class may, however, be approved for a separate building that does not have a fireplace or, in a special case, for another building if this does not give rise to the risk of a regional fire.

Large roof surfaces must be divided into parts of no more than 2 400 square metres. This requirement does not apply in cases where the underlay is of at least class A2-s1, d0 or to other solutions whose level of fire safety can be regarded as acceptable.

## Chapter 5

### **PREVENTION OF THE SPREAD OF FIRE TO NEIGHBOURING BUILDINGS**

## § 29

### *Distance between buildings*

The spread of fire from one building to another must not endanger personal safety or cause unacceptable economic or societal losses.

The distance between buildings on neighbouring plots or construction sites (*neighbouring building*) must be such that fire does not spread easily to neighbouring buildings and that the hazard of regional fire remains small.

If the distance between neighbouring buildings is less than 8 metres, limitation of the spread of fire shall be ensured through structural or other means.

§ 30

*Firewall*

A building must be provided with a firewall if it is situated adjacent to a neighbouring building or so close to a neighbouring building that the spread of fire is evident.

The fire wall in a P0 and P1 fire class building and in a P2 fire class building whose height exceeds 14 metres must be made of A1-class building materials, and the doors in it must be made of at least A2-s1, d0-class building materials.

The fire resistance time of the door in a firewall or similar building element must be at least the same as the fire resistance time that the firewall is required to have.

The class requirements for firewalls are set out in Table 9.

Table 9. Class requirements for firewalls

Fire class of building	P0 and P1			P2	P3
Fire load MJ/m <sup>2</sup>	More than 1 200	600-1 200	Less than 600	-	-
	EI-M 240	EI-M 180	EI-M 120	EI-M 120	EI-M 60 <sup>1)</sup>
1) The EI-M 60 requirement may be replaced by fire separation if the facing external walls of the buildings meet the EI 60-class requirement against internal fire.					

Chapter 6

**EVACUATION IN CASE OF FIRE**

§ 31

*General requirements*

It must be possible to evacuate a building safely in case of fire.

A building shall be provided with an adequate number of appropriately located exits that are sufficiently spacious and passable, so that the time to evacuate the building will not be so long as to cause danger.

Exits shall lead outside to the ground level or to some other safe place in case of fire.

An exit or a safety lock must not be constructed from such building materials or building elements and must not house such equipment or installations that would increase the fire load in a way that cannot be regarded as acceptable, or that would jeopardise personal safety due to smoke formation.

§ 32

*Maximum length of route to nearest exit*

The length of a passageway to the nearest exit must not be so long as to constitute a hazard.

Table 10 sets out the maximum length of a passageway to the nearest exit on the basis of the use of the evacuation area.

The distance from each point of the evacuation area to an exit can be determined along the shortest passable route. If the passageways to two separate exits partly join, the length of the common part is doubled in the calculation. When calculating the length of a passageway, the level differences in the passageway must be taken into account.

Table 10. Maximum length of route to nearest exit (metres).

Use of evacuation area	General (m)	Fire alarm based on smoke detection or automatic fire-extinguishing system (m)	Fire alarm based on smoke detection and automatic fire-extinguishing system (m)
Evacuation area from which there is only one exit	30 <sup>1) 2)</sup>	30 <sup>1)</sup>	30 <sup>1)</sup>
Sleeping premises at an institution	30	30	30
Accommodation premises, other premises of institutions, and shops	30	40–50 <sup>3)</sup>	45-60 <sup>3)</sup>
Other premises	45 <sup>2)</sup>	50-60 <sup>3)</sup>	60-70 <sup>3)</sup>

<sup>1)</sup> Distances may be exceeded by 20 per cent in a ground-level storey if emergency evacuation is possible through easily opened windows.  
<sup>2)</sup> The building inspection authority may, where this is justified, require shorter maximum route lengths when an exceptional risk of rapid ignition and spread of fire due to the special use of the premises may jeopardise safe evacuation.  
<sup>3)</sup> The lower limit corresponds to a (maximum) 3 metre average room height, and an upper limit of over a 10 metre average room height. In-between values are obtained by linear interpolation.

### § 33

#### *Number of exits*

Each evacuation area of a building where people are staying or working besides temporarily shall be provided with a number of independent, separate and appropriately located exits that are at least in accordance with Table 11.

Table 11. Number of exits and type of exit.

Distance of floor of uppermost storey from entry level of staircase serving it (m)	Use of evacuation area	Number of exits, at least		
		Fire-separated, or access to safe place <sup>1)</sup>	Protected from fire	Protected from fire and smoke
No more than 24	General - dwelling, office premises of less than 300 m <sup>2</sup> , or production or storage premises of less than 300 m <sup>2</sup> - dwelling, office premises of less than 300 m <sup>2</sup> , or production or storage premises of less than 300 m <sup>2</sup>	2 1 v)	1 *	
Over 24 and no more than 38	General - dwelling, or office premises smaller than 300 m <sup>2</sup> ;		2 1 *	
Over 38 and no more than 52	General - dwelling, or office premises smaller than 300 m <sup>2</sup> ;		2	1 *
Over 52	General		1 *	1 *

<sup>1)</sup> 'Safe place' refers to access directly to the outside or to another safe place.  
v) The evacuation area is provided with a fire escape that is suitable for this purpose.  
\* The building is provided with an automatic fire-extinguishing system that is suitable for this purpose.

If this does not pose a hazard to personal safety, one exit may be regarded as sufficient also in a single-storey:

- 1) accommodation building, whose rooms are entered directly from outside
- 2) an institution intended for no more than 10 clients;

3) small assembly and business premises.

Evacuation areas must have a fire escape if this is required for personal safety reasons.

Exits of parts of the building separated by a firewall must be constructed separately so that in the event of a fire there is no need to use any door that may be in the firewall.

#### § 34

##### *Dimensions of exits*

The minimum width of an exit shall be calculated on the basis of the number of occupants evacuating through the exit. The number of occupants of an evacuation area may be distributed between different exits, and the widths of the exits added up.

The highest number of occupants intended to be present in an evacuation area shall be used as the number of occupants. If several evacuation areas are connected to the same exit, the width of the exit shall be designed according to the evacuation area with the highest number of occupants.

The width of an exit must be at least 1 200 millimetres and its free height must be at least 2 100 millimetres. However, by way of derogation to the above:

- 1) in an evacuation area where the maximum number of occupants is 60, the second exit may be no less than 900 millimetres in width;
- 2) in residential buildings of not more than two storeys, one exit of no less than 900 millimetres in width is permitted;
- 3) If a lift or other device for moving between levels is installed in the exit of an existing building, the dwelling's exit may be no less than 850 millimetres wide.

If the number of occupants exceeds 120, the total minimum width of the exits shall be calculated by increasing the original 1 200 millimetres by 400 millimetres for each following group of 60 people.

The width of an internal corridor leading to an exit is calculated in the same way as the width of the exit according to the number of occupants passing along the corridor.

#### § 35

##### *Doors used for evacuation*

The number and width of doors leading to exits and from rooms to internal corridors must be adequate in relation to the number of occupants using them.

Doors of exits, and of areas leading to them, must be easy to open in an emergency. In the case of the storey-level door of a dwelling, or if the number of people evacuating through the door exceeds 60, doors must open in the direction of the exit.

#### § 36

##### *Calculation of evacuation time*

For sites that are demanding from the aspect of personal safety, where risks to evacuation safety arise from the use or situation of the premises or from the restricted or reduced capacity of the occupants, the building inspection authority may require a site-specific calculation of evacuation time to be carried out as part of the safety report referred to in § 117b of the Land Use and Building Act.

Performance of an evacuation time calculation may also be a requirement for other sites if their large size or exceptional circumstances may jeopardise personal safety.

§ 37

*Safety report*

The safety report referred to in § 117b of the Land Use and Building Act must state:

- a) how long, on average, it will take to evacuate the occupants (by their own means or, taking account of the use of the premises, with help) from fire compartments and from parts of a fire compartment (i.e. a fire compartment that is divided into separate rooms),
- b) an estimate of how long the formation of hazardous conditions will take in a room and in a fire compartment, and
- c) an estimate of whether there is sufficient time for evacuation or rescue from the hazardous conditions.

If the estimated time is not sufficient for evacuation or rescue from the hazardous conditions, the building project promoter shall order structural or other necessary measures in order to achieve the safety level necessary from the aspect of personal safety.

If the location, large size or exceptional conditions of the building pose a particular hazard to personal safety, the building inspection authority may, for good reasons, require that the building be provided with equipment or arrangements to improve fire safety where this is necessary.

Chapter 7

**FIRE TECHNICAL INSTALLATIONS**

§ 38

*Fire detector and fire alarm*

Dwellings, accommodation premises, institutions, day-care institutions, day-care centres and other early childhood education premises and schools must be provided with an appropriate system that gives a warning at an early stage of a beginning fire.

Table 12 shall apply to the provision of a building with a system that gives warning at an early stage of a beginning fire.

Table 12. Fire detection installations required at premises

Premises	Number of places	Fire alarm linked to power supply mains	Fire detector	Fire detector linked to emergency centre
Dwellings linked to power supply mains	no restriction	x		
Accommodation premises	No more than 50 accommodation places Over 50 accommodation places	x		x
Institutions, general	No more than 25 beds More than 25 beds	x		x
- day-care centres in use 24 hours a day	No more than 50 beds More than 50 beds	x		x
Day-care institutions	no restriction	x		
Day-care centres and other early childhood education premises	No more than 150 children More than 150 children	x		x
Schools	No more than 250 pupils	x		

	251-500 pupils		x	
	Over 500 pupils			x

### § 39

#### *Automatic fire-extinguishing system*

There must be an automatic fire-extinguishing system that is suitable for its purpose and linked to the emergency centre:

- 1) in a P2 fire class building of over two storeys, including balconies that are designed for use as fire escapes. This requirement does not apply to a residential building of fire class P2 and more than two storeys, where all the storeys of each housing unit belong to one and the same apartment and the height of the building does not exceed 14 metres;
- 2) in an exit that serves more than one evacuation area in a fire class P2 building of over two storeys. An automatic fire-extinguishing system will not, however, be required if the exit's load-bearing and partitioning structures and the staircases and landings, apart from the top surface of storey levels and stairs and minor installations, are made of at least class A2-s1, d0 building materials;
- 3) in the three uppermost storeys, excluding the exit, of a P1 fire class building with a height of no more than 28 metres, if the load-bearing frame of the two uppermost storeys does not meet the A2-s1, d0-class requirements;
- 4) in a building whose height exceeds 56 metres.

### Chapter 8

## **ORGANISATION OF EXTINGUISHING AND RESCUE OPERATIONS**

### § 40

#### *Prerequisites for rescue and extinguishing work*

The prerequisites for extinguishing fires and rescuing people in a building and in its vicinity shall be taken into account in the design.

It must be possible for fire and service rescue equipment to have adequately close access to the building (*fire lane*).

There must be access to each fire compartment of an attic for extinguishing operations. If the height of the building does not exceed 28 metres, access to the attic fire compartments from the outside shall be required.

Extinguishing routes shall be arranged so that basement stories can be reached from the ground level without a need to pass through the exits of the storeys. The minimum width of an extinguishing route is 900 millimetres. However, if a lift or other device for moving between levels is installed in the exit of an existing building, the minimum width of an extinguishing route shall be at least 850 millimetres. A basement that forms part of a single dwelling does not need to have a separate extinguishing route.

Extinguishing routes of basement storeys must not be connected to fire- and smoke-proof exits. Connection to a fireproof exit may be arranged via a safety lock, and to a fire-separated exit via a fire-separating door.

§ 41

*Lift used in rescue and extinguishing work*

A lift must be available for use in rescue and extinguishing work (*firefighting lift*);

- 1) in areas above the entrance level when the distance of the floor of the uppermost storey exceeds 38 metres from the building's entrance level;
- 2) in areas below the entrance level when the distance of the floor of the basement storey exceeds 14 metres from the building's entrance level and the surface area of that basement storey's evacuation area exceeds 800 m<sup>2</sup>;

The internal dimensions of the lift cage must be suitable for the conveyance of a stretcher.

§ 42

*Smoke extraction*

In order to enhance the efficiency of extinguishing and rescue operations, means shall be designed and constructed in a building for smoke extraction that is suitable for the different premises of the building.

Means must be arranged for the extraction of smoke from a fire-separated exit and a fire-separated lift shaft, and for the flow of replacement air.

Means shall be provided for smoke extraction from the spaces of the basement storey, so that it will not be necessary to use fire-separated exits or fire-separated extinguishing routes for smoke extraction.

If so required on justified grounds, smoke extraction shall be arranged using special measures, such as smoke vents, smoke venting windows or windows located in the upper part of the rooms and that are easy to open.

§ 43

*Dry riser*

A building the height of whose uppermost floor level from the entry level of the staircase that serves it exceeds 24 metres or the distance of whose basement storey floor level from the entry level of the staircase that serves it exceeds 14 metres must be provided with a dry riser that is suitable for its purpose.

§ 44

*Entry into force*

This Decree shall enter into force on x [day] xx [month] 201x.

Upon the entry into force of this Decree, pending projects shall be subject to the rules valid at the time of entry into force of this Decree.

Minister for Housing, Energy and the Environment

Senior Engineer