Switzerland 2015

In September 2014, Switzerland published a suite of documents to cover the regulatory fire safety requirements in buildings. The full set is available on the VKF web site, www.vkf.ch, in French, German and Italian. Here is a summary of the requirements relevant to sprinklers. For each requirement the relevant regulatory document is referenced in brackets and an unofficial translation provided.

Sprinkler Requirements (Sprinkleranlagen – Part 19)

2.2.2 Shops

Shops with a fire compartment greater than 2,400m^2, including the attached storage and offices, are to be protected with a sprinkler system.

2.2.3 Buildings and structures with rooms with a high occupancy loading

In buildings and structures with rooms with a high occupancy loading the fire authorities can require a sprinkler system.

Under Article 13 of the Brandschutz Norm this is defined as more than 300 people or a shop larger than 1,200m^2.

2.2.4 Car parks and shelters for motorbikes

1. Single and multi-storey underground car parks, with a fire compartment of more than 4,800m^2 per floor, as well as fire compartments of more than 2,400m^2 for multi-storey car parks with open connections, must be fitted with a sprinkler system.

2. Above ground, closed car parks with a fire compartment larger than 4,800m^2, as well as partially open (surrounding walls 25% unclosed openings), single and multi-storey car parks with a fire compartment of more than 9,600m^2 per storey, must be fitted with a sprinkler system. Open connections are permitted.

3. Sprinkler systems are required in structures with a compact mechanical parking system for more than 50 vehicles.

2.3 Special Buildings

Special buildings and structures (e.g. high-rise buildings, high rack warehouses, atria, buildings with double-façades, transport structures, exhibition centres) must if required by the fire safety authorities be fitted with sprinkler systems.

In the Brandschutz Norm a high-rise building is defined as higher than 30m, a high-rack warehouse has storage higher than 7.5m.

Atria (Bauten mit Atrien und Innenhofen – Part 101)

1.3.1 Atrium (Buildings with atria)

Atrium buildings are buildings and structures with covered interior courtyards, which at least meet one of the following conditions:

- Floors connected over several levels comprise a fire compartment of more than 3,600m^2;
- The atrium extends over more than three levels;
- The atrium height is more than 11m.

2.1.4 Extinguishing systems

Quick response water extinguishing systems are required throughout. The requirements for the extinguishing system in the atrium are to be determined for each object and use. For the proof of concept the performance limits of extinguishing systems must be considered.

Construction Materials (Verwendung von Baustoffen Part 14)

Table 4.2 shows that in buildings lower than 30m the materials in horizontal escape routes may have a reaction to fire rating of RF2 instead of RF1. This is a lower rating and allows some materials to be used that are otherwise not allowed. The same applies to high-rise buildings, i.e. higher than 30m, which are hotels or have a high occupancy loading (more than 300 people).

Fire resistance of supporting elements (Brandschutzabstände Tragwerke Brandabschnitte Part 15)

3.1.1 Fire resistance

2 Extinguishing systems can be taken into account when determining the fire resistance of supporting elements and fire compartment walls and floors as well as the permitted increase in fire compartment area.

Tables 1, 2 and 3 show that in many cases the fire resistance may be reduced by 30 minutes if sprinklers are fitted.

Table 1

Building height category		**Lower Height Buildings (up to 11m)**			
Use	**Concept**	**Structural elements** [1]	**Compartment Floors**	**Compartment Walls and Horizontal Floors**	**Vertical Escape Routes**
Apartment Building **Office** **School** **Shop** (fire compartment <1,200m^2 and fewer than 300 people) **Car Park** [3] **Industrial** / **Commercial q<1,000 MJ/m^2** **Agricultural**	**Passive**	R 30 [5]	REI 30	EI 30	REI 30
	Extinguishing System	No requirement	EI 30	EI 30	REI 30
Industrial / **Commercial q>1,000 MJ/m^2**	**Passive**	R 60 [5]	REI 60 [5]	EI 60 [2] [5]	REI 60
	Extinguishing System	R 30	REI 30	EI 30	REI 60
•**Accommodation [a]** E.g. Hospitals Elderly and nursing homes	**Passive**	R 60	REI 60	EI 60	REI 60
	Extinguishing System	R 30	REI 30	EI 30	REI 60
•**Accommodation [b]** E.g. Hotels •**Remote Accommodation [c]**[5] E.g. mountain cabins •**High Occupancy Areas** •**Shops**	**Passive**	R 60	REI 60	EI 30	REI 60
	Extinguishing System [4]	R 30	REI 30	EI 30	REI 60

[1] For single storey buildings and on the top storey of multi-storey buildings there are no requirements for the fire resistance of structural elements.

[2] For single storey buildings and on the top storey of multi-storey buildings the fire resistance of fire compartment walls may be reduced to 30 minutes.

[3] When the enclosure walls have at least 25% permanent openings the following, minimum requirements apply to building components that meet RF1 construction requirements:

- No requirements for the fire resistance of supporting elements in areas up to 35m from a permanent opening.

[4] For accommodation areas the fitting of a fire alarm is not required.

[5] For two storey structures with a total area of up to 2,400m^2 the fire resistance may be reduced by 30 minutes.

Table 2

Building height category		**Medium Height Buildings (up to 30m)** [7]			
Use	**Concept**	**Structural elements** [1]	**Compartment Floors**	**Compartment Walls and Horizontal Floors**	**Vertical Escape Routes**
Apartment Building **Office** **School** **Shop** (fire compartment <1,200m^2 and fewer than 300 people) **Car Park** [6] **Industrial** / **Commercial q<1,000 MJ/m^2** **Agricultural**	**Passive**	R 60	REI 60	EI 30	REI 60
	Extinguishing System	R 30	REI 30	EI 30	REI 60
Industrial / **Commercial q>1,000 MJ/m^2**	**Passive**	R 90	REI 90	EI 60 [2]	REI 60
	Extinguishing System	R 60	REI 60	EI 30	REI 60
•**Accommodation [a]** E.g. Hospitals Elderly and nursing homes	**Passive**	R 60	REI 60	EI 60	REI 60
	Extinguishing System	R 30	REI 30	EI 30	REI 60
•**Accommodation [b]** E.g. Hotels •**Remote Accommodation [c]** E.g. mountain cabins •**High Occupancy Areas** •**Shops**	**Passive**	R 60	REI 60	EI 30	REI 60
	Extinguishing System [4]	R 30	REI 30	EI 30	REI 60

[1] For single storey buildings and on the top storey of multi-storey buildings there are no requirements for the fire resistance of structural elements.

[2] For single storey buildings and on the top storey of multi-storey buildings the fire resistance of fire compartment walls may be reduced to 30 minutes.

[6] When the enclosure walls have at least 25% permanent openings the following, minimum requirements apply to building components that meet RF1 construction requirements:

- Supporting structure R 30;
- Fire compartment structural elements EI 30 (except for the staircase)
- No requirements for the fire resistance of supporting elements in areas up to 35m from a permanent opening.

[7] For two-storey buildings with a total height above 11m and a ground floor up to 8m the requirements for buildings up to 11m apply to the supporting and fire compartment elements.

Table 3

Building height category		**High Buildings (up to 100m)**			
Use	**Concept**	**Structural elements** [8][9]	**Compartment Floors**	**Compartment Walls and Horizontal Floors**	**Vertical Escape Routes**
Apartment Building **Office** **School** **Shop** (fire compartment <1,200m^2 and fewer than 300 people) **Car Park** **Industrial** / **Commercial q<1,000 MJ/m^2** **Agricultural**	**Passive**	R 90	REI 90	EI 60	REI 90
	Extinguishing System	R 60	REI 60	EI 30	REI 90
Industrial / **Commercial q>1,000 MJ/m^2**	**Passive**	R 120	REI 120	EI 90	REI 120
	Extinguishing System	R 90	REI 90	EI 60	REI 90
•**Accommodation [a]** E.g. Hospitals Elderly and nursing homes	**Passive**	R 90	REI 90	EI 60	REI 90
	Extinguishing System	R 60	REI 60	EI 30	REI 90
•**Accommodation [b]** E.g. Hotels •**Remote Accommodation [c]** E.g. mountain cabins •**High Occupancy Areas** •**Shops**	**Passive**	R 90	REI 90	EI 60	REI 90
	Extinguishing System [4]	R 60	REI 60	EI 30	REI 90

[8] The fire resistance of supporting elements on the top floor may be reduced by 30 minutes.

[9] For single storey buildings (such as high bay warehouses and halls) no requirements are set for the fire resistance of supporting elements.

3.5 Penetrations and cableways

4 VKF-approved penetration seals for pipes (for example fire protection sleeves) are to be fitted on fire compartment components.

The installation of fire protection seals is not required:

- between rooms protected with an extinguishing system