Belgian Building Code Incentives for Sprinklers

Fire Code
KB - AR 07/07/1994, Appendices 1 to 5
(Ministry of Internal Affairs)

These appendices apply to non-industrial buildings such as offices, hotels, museums, shopping centres, schools, movie theatres, apartment complexes, sport stadia…

An automatic sprinkler installation (as well as an automatic smoke and heat evacuation ventilation system) is required in:

- single storey buildings: fire compartments exceeding 3.500m²
- multi-storey buildings: fire compartments exceeding 3.500m²
- any building: fire compartments exceeding 2 building levels (atria)

Low-rise buildings (less than 10 m high)
3.4.1 does not require EI 30 in false ceilings in evacuation routes, publicly available spaces and collective kitchens if sprinklers are fitted.

3.4.2 does not require false ceilings to be divided into volumes with a maximum dimension of 25 m separated by materials of A1 or A2-s1, d0 and EI 30 fire resistance if sprinklers are fitted.

4.4.1.2 limits on travel distances and the need for ventilation ducts in escape routes to have EI 30 fire resistance do not apply if sprinklers are fitted.

5.4 A requirement for walls separating shop units to be EI30 and extend through any false ceiling does not apply if sprinklers are fitted.

6.8.5.4.1 an 80 mm water main connection to hydrants or a 50 m3 water supply are not required if the building is fitted with sprinklers.

Mid-rise buildings (10-25 m high)
3.4.1 does not require EI 30 in false ceilings in evacuation routes, publicly available spaces and collective kitchens if sprinklers are fitted.

3.4.2 does not require false ceilings to be divided into volumes with a maximum dimension of 25 m separated by materials of A1 or A2-s1, d0 and EI 30 fire resistance if sprinklers are fitted.

3.5.1.1 Fire resistance requirements for facades do not apply if the building is fitted with sprinklers.

4.4.1.2 limits on travel distances and the need for ventilation ducts in escape routes to have EI 30 fire resistance for compartments smaller than 2,500 m^2 do not apply if sprinklers are fitted.

5.1.4.3 Sprinklers connected to the mains are required in rubbish storage rooms smaller than 24 m^2.

5.4 A requirement for walls separating shop units to be EI30 and extend through any false ceiling does not apply if sprinklers are fitted.

6.8.5.4.1 an 80 mm water main connection to hydrants or a 50 m3 water supply are not required if the building is fitted with sprinklers.

High-rise buildings (>25 m high)

3.4.1 does not require EI 30 in false ceilings in evacuation routes, publicly available spaces and collective kitchens if sprinklers are fitted.

3.4.2 does not require false ceilings to be divided into volumes with a maximum dimension of 25 m separated by materials of A1 or A2-s1, d0 and EI 30 fire resistance if sprinklers are fitted.

3.5.1.1 Fire resistance requirements for facades do not apply if the building is fitted with sprinklers.

4.4.1.2 limits on travel distances and the need for ventilation ducts in escape routes to have EI 30 fire resistance for compartments smaller than 2,500 m^2 do not apply if sprinklers are fitted.

5.1.4.3 Sprinklers connected to the mains are required in waste storage rooms smaller than 24 m^2.

5.4 A requirement for walls separating shop units to be EI30 and extend through any false ceiling does not apply if sprinklers are fitted.

6.8.5.4.1 an 80 mm water main connection to hydrants or a 50 m3 water supply are not required if the building is fitted with sprinklers.

6.9.3.1 A mechanical smoke and heat extraction system is not required in horizontal evacuation routes of buildings higher than 50 m if they are protected with sprinklers.

Guidance for renovations in Brussels

In 2022 the Brussels Fire Brigade published, ‘Renovaties Verbouwingen Herbestemming’ (Renovations, extensions, change of use) for existing buildings. It includes some incentives for sprinklers:

- Residential sprinklers in single storey buildings if fire brigade vehicles cannot get within 60 m
- Residential sprinklers in buildings <10 m high if fire brigade vehicles cannot get within 40 m
- Residential sprinklers in a building with floors up to 10 m high if it is less than 6 m from another building and the external walls do not have 60-minute fire resistance
- Residential sprinklers in a building with floors up to 25 m high if it is less than 8 m from another building and the external walls do not have 120-minute fire resistance
- Commercial sprinklers in a building with floors higher than 25 m high if it is less than 8 m from another building and the external walls do not have 240-minute fire resistance
- In addition, household waste storage areas larger than 12 m^2 must be protected by sprinklers

KB - AR 07/07/1994, Appendix 6 (Industrial Buildings)
(Ministry of Internal Affairs)

Appendix 6 to "KB 07/07/1994 - Basic Standards Fire Safety" is the industrial building code. It uses fire engineering to guide designers. Industrial buildings are classed according to their fire loading:

Class A ≤ 350 MJ/m^2
Class B 350 MJ/m^2 < Class B ≤ 900 MJ/m^2
Class C > 900 MJ/m^2

3.2 limits the fire load in a compartment to 5,700 GJ but this can be increased by a factor of six to 34,200 GJ if the compartment is sprinklered.

3.3 Table 2 permits larger fire compartments (m^2) in single storey buildings if sprinklers are provided.

	Without sprinklers		With Sprinklers	
	Unrated Structural Fire Resistance	R30	Unrated Structural Fire Resistance	R30
Class A	25,000	25,000	150,000	150,000
Class B	5,000*	10,000	40,000	60,000
Class C	2,000*	5,000	7,000*	30,000
Class C Storage (if the warehouse contents are unknown assume Class C)	5,000*	5,000*	12,500*	30,000

*If fire brigade access is improved these figures may be increased by 60%.

5.3 requires industrial buildings to be fitted with a smoke and heat ventilation system, unless the building is fitted with a gas extinguishing system, water mist system or ESFR sprinkler system. All three of these systems could be rendered ineffective by a smoke and heat ventilation system. If another type of sprinkler system is fitted, the smoke and heat ventilation system must be operated by the alarm valve of the sprinkler system and not by a smoke detection system.

5.4 requires that sprinkler systems be inspected every six months by an accredited company. The company may be accredited in Belgium to check conformity with standards or by an organisation in any other EU country with a similar accreditation procedure.

6.4 allows minimum distances between industrial buildings on different plots to be halved if they are fitted with sprinklers and if two buildings are both sprinklered and on the same plot there is no minimum distance to be applied between them.

7.2.1 Table 6 shows that travel distance to an exit may be increased from 60m to 90m if sprinklers are fitted.

KB - AR 07/07/1994, Appendix 7 (Car Parks)
(Ministry of Internal Affairs)

Appendix 7 to “KB 07/07/1994 - Basic Standards Fire Safety” is the code for car parks.
Large car parks must be protected with sprinklers. The details are in the table below.

		Total surface area of the car park, S					
		$S \leq 250\ m^2$ (*)	$250\ m^2$ (*) $< S < 60\ 000\ m^2$				$S > 60\ 000\ m^2$
			Area of the largest sub-compartment, S_{sc}				
			$S_{sc} \leq 1\ 250\ m^2$	$1\ 250\ m^2 \leq S_{sc} \leq 2\ 500\ m^2$	$2\ 500\ m^2 < S_{sc} \leq 5\ 000\ m^2$	$5\ 000\ m^2 < S_{sc}$	
Above ground level		/	SHEVS[1,2,3] **OR** Sprinkler[1,2] **OR** Ventilation opening **OR** Open	SHEVS[1,2] **OR** Sprinkler[1] **OR** Open	SHEVS[1] **OR** Sprinkler[1] **OR** Open	SHEVS[1] **&** Sprinkler[1] **OR** Open	SHEVS[1] **&** Sprinkler[1] **OR** Open
Below ground floor level	0 m $< p \leq$ 7 m	/	SHEVS[1,2,3] **OR** Sprinkler[1,2] **OR** Ventilation opening **OR** Open	SHEVS[1,2] **OR** Sprinkler[1] **OR** Open	SHEVS[1] **OR** Sprinkler[1] **OR** Open	SHEVS[1] **&** Sprinkler[1] **OR** Open	SHEVS[1] **&** Sprinkler[1] **OR** Open
	7 m $< p \leq$ 14 m		SHEVS[1,2] **OR** Sprinkler[1]	SHEVS[1] **OR** Sprinkler[1]	SHEVS[1] **&** Sprinkler[1]	SHEVS[1] **&** Sprinkler[1]	SHEVS[1] **&** Sprinkler[1]
	14 m $< p \leq$ 21 m		SHEVS[1] **OR** Sprinkler[1]	SHEVS[1] **&** Sprinkler[1]			
	> 21 m		SHEVS[1] **&** Sprinkler[1]				

(*) For car parks without a car lift this area may be increased to $625\ m^2$ if no part of the car park is more than 45 m from the entry intended for use by the fire brigade.

SHEVS = Powered smoke and heat evacuation system

3.3.2.1 In car parks fitted with a sprinkler system this installation can assure the function of automatic fire detection.

General Building Code
ARAB – RGPT art. 52
(Ministry of Employment)

French

52.2.1.6.
dans les magasins pour la vente au détail, les locaux de vente ainsi que les locaux y attenant et servant de dépôt de marchandises, dont la surface totale est égale ou supérieure à 2 000 m², y compris la surface occupée par les comptoirs et autres meubles.

52.9.3.

Dans les magasins pour la vente au détail, visés à l'article 52.2.1.6., les locaux de vente et les locaux attenants à ceux-ci et servant de dépôt de marchandises, doivent être équipés d'un réseau d'extinction automatique constamment sous pression. Un espace libre de 60 cm au moins doit exister autour de chaque tête d'extinction.

Cette disposition n'est pas applicable aux magasins où la quantité de marchandises combustibles se trouvant dans les locaux de vente n'excède pas 1 000 kg par étage.

Dérogation
AM du 6 mars 1978 (MB du 26 avril 1978)

Art. 1. *Voir article 52.3.3.3.*

Art. 2. *Par dérogation aux prescriptions de l'article 52.9.3. du Règlement général pour la protection du travail, les locaux frigorifiques qui ont une température moyenne inférieure ou égale à 4°C, qui ont une surface totale additionnée n'excédant pas 150 m² et qui sont établis dans les magasins de vente au détail visés ci-dessus, ne doivent pas être équipés d'un réseau d'extinction automatique maintenu constamment sous pression.*

Dutch

52.2.1.6.
in de winkels voor kleinhandel, de verkooplokalen evenals de eraan grenzende lokalen die als warenopslagplaats dienen en die samen een totale oppervlakte hebben die gelijk is aan of groter dan 2 000 m², de oppervlakte ingenomen door toonbanken en andere meubelen inbegrepen.

52.9.3.
In de winkels voor kleinhandel, beoogd in artikel 52.2.1.6., moeten de verkooplokalen en de eraan belendende lokalen die als warenopslagplaats dienen, uitgerust zijn met een automatisch werkend blussingsnet dat bestendig onder druk staat. Rond elke blussingskop moet een vrije ruimte van ten minste 60 cm aanwezig zijn. Deze bepaling is niet van toepassing op de winkels waarin de hoeveelheid brandbare goederen die zich in de verkooplokalen bevinden geen 1 000 kg per verdieping overtreft.

Afwijking
MB van 6 maart 1978 (BS van 26 april 1978)

Art. 1. *Zie art. 52.3.3.3.*

Art. 2. *In afwijking van de voorschriften van artikel 52.9.3. van het Algemeen Reglement voor de Arbeidsbescherming moeten de koellokalen met een gemiddelde temperatuur lager dan of gelijk aan 4 °C, met een totale samengestelde oppervlakte die geen 150 m² overtreft en opgericht in de bovenbedoelde winkels voor kleinhandel, niet uitgerust zijn met een automatisch werkend blussingsnet dat bestendig onder druk staat.*

Unofficial English Translation

52.2.1.6
in retail shops, the sales areas as well as the adjoining areas which serve for goods storage, for which the total surface area is equal or greater than 2000 m^2, including the surface used by counters and other furniture.

52.9.3
In retail shops, as envisaged in article 52.2.1.6., the sales areas and adjoining areas serving for goods storage must be equipped with an automatic extinguishing network that is constantly under pressure. Around each extinguishing head there must be a free space of at least 60cm. This measure is not applicable in shops where the quantity of combustible goods in the sales areas does not exceed 1 000 kg per floor.

Exception
AM of 6 March 1978 (MB of 26 April 1978)

Art.1. *See art. 52.3.3.3.*

Art. 2. *In exception to the requirements of article 52.9.3, of the General Rules for Work Safety, refrigerated areas with an average temperature below or equal to 4ºC, with a total additional surface area not exceeding 150 m^2 and which are situated in the above referenced retail shops, need not be fitted with an automatic extinguishing network that is constantly under pressure.*