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Fire Safety : NEWS

Presentation made by Jean-Philippe Vériter, 02.02.2016

RECENT CHANGES (2012-2015)

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Belgian regulatory context

1. Federal regulatory requirements
   - Royal decree of 7.7.1994 (NL: Basisnormen_FR: Normes de Base)
   - General Regulations for Labour Protection (NL: ARAB_FR:RGPT)

CHANGES

2. Local regulatory requirements
   - Specific requirements of the fire brigade
   - Local regulation
3. Specific regulation for specific types of buildings:
   - Touristic facilities
   - Facilities for elderly people
   - Hospitals
   - Dancing
   - Football stadiums
   - Car parks with LPG
   - Kinder gardens

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Royal Decree 12.07.2012
(modifies RD 7.7.1994)

- Publication in the Official Journal : 21.09.2012
- Applies to all non industrial buildings with a building permit application since 1.12.2012
- Main changes:
  - Belgian classification system is replaced by European Classification system
    - Fire resistance: Rf → R, EI, E
    - Reaction to fire : A0, A1, A2, A3 or A4 → A1, A2, B, C, D, E or F
    - Transition period until 1.12.2016
  - Requirements : < 5% of the content … Most important changes
    - Totally new requirements for reaction to fire of building materials
    - No fire resistant elements (E criterion) for facades when the building is sprinklered
    - Low-rise buildings: new rules for minimal external distance between compartments
    - New definition (more restrictive) for open car park.

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Royal Decree of 7.7.1994
= Basisnormen (NL)_Normes de Base (FR)

Before 01.12.2012: TOTAL = 6 Annexes		From 01.12.2012 TOTAL = 11 Annexes !!!
Annex 1: Terminology	**AR_KB 12.07.2012**	**Annex 1 (mod) :** Terminology
Annex 2: Low-rise buildings (<10m)	**Modification** of Annex 1 + Modification of the **scope** of the Annexes 2, 3 en 4 + **New** Annexes 2/1, 3/1, 4/1, 5/1 en 7 + **Transitional provisions** FR: Dispositions transitoires NL: Overgangsbepalingen	**Annex 2 (idem):** L.R.B.<01.12.2012 **Annex 2/1(new):** L.R.B.≥01.12.2012
Annex 3: Mid-rise buildings (10-25m)		**Annex 3 (idem):** M.R.B.<01.12.2012 **Annex 3/1 (new):** M.R.B.≥ 1.12.2012
Annex 4: High-rise buildings (>25m)		**Annex 4 (idem):** H.R.B.<01.12.2012 **Annex 4/1(new):** H.R.B.≥ 1.12.2012
Annex 5: Reaction to fire		**Annex 5 (idem):** All <01.12.2012 **Annex 5/1 (new)**: All ≥ 1.12.2012
Annex 6: Industrial buildings		**Annex 6 (idem)**: Industrial buildings
		Annex 7 (new): Compartimentation of technical installations

Fire resistance: European Classification

Rf → R, EI or REI

- Load bearing elements:
  - Rf 2h → **R** 120
  - Rf 1h → **R** 60
  - Rf ½ h → **R** 30
- Separative element (walls):
  - Rf 2h → **EI** 120
  - Rf 1h → **EI** 60
  - Rf ½ h → **EI** 30
- Element with separative and load bearing function (floors):
  - Rf 2h → **REI** 120
  - Rf 1h → **REI** 60
  - Rf ½ h →**REI** 30
- NBN 713-020 test reports can be used until 01.12.2016

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Fire resistance: European Classification
Fire doors: Rf → EI_1

- Within the EN-classification system for EI-doors, there are 2 possible classifications:
  - EI_1 (30 ,60, …) doors
  - EI_2 (30 ,60, …) doors
- I_1 is more severe than I_2 (testing criteria)
- In Belgium, the Royal decree requires EI_1 doors:
  - Rf 1h → **EI_1**60
  - Rf ½ h → **EI_1**30
- Consequence: EI_2 doors can not be accepted in Belgium !!!
- Note: doors tested according to NBN 713-020 (= Rf ½, Rf 1h and Rf 2h doors) can be accepted in Belgium until 01.12.2016

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Fire resistance: European Classification
Fire doors: S_m

High-rise building (AR_KB 12.07.2012, art. 6.9.1.2)

The inner doors of the staircases above evacuation level: S_m = smoke tightness at ambient temperature and at 200°C

- At every level **above** evacuation level (airlock is required):
  - Door at the side of the evacuation path → **EI_1**30
  - Door at the side of staircase → **EI_1**30-S_m
- At **evacuation level** (airlock can be replaced by 1 door): **EI_1**60-S_m
- At every level **under** evacuation level (airlock is required): 2 doors **EI_1**30

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Reaction to fire: European classification

- EN-classification standards:
  - EN 13501-1: Reaction to fire
    - example for vertical walls or ceilings: C-s2,d1
    - example for floors: B_{FI}-s1

      s: smoke (s1, s2 or s3) … s1 = most severe

      d: droplet (d0, d1 or d2) … d0 = most severe
  - EN 13501-5: Exposure to external fire (roofs)
    - Example: B_{ROOF} (t1)

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TABLEAU III : EXIGENCES EN MATIERE DE REACTION AU FEU DANS LES CHEMINS D'EVACUATION ET CAGES D'ESCALIER

		H.G./B.E.	M.G./B.M.			L.G./B.B.			
type/type	1	2 en/et 3	2	3		2		3	
				Hor.	Vert.	Hor.	Vert.	Hor.	Vert.
Verticale wanden Parois verticales	A2-s1, d1	B-s1, d2	B-s1, d2	C-s2, d2	B-s2, d2	C-s2, d2	B-s1, d2	D-s3, d2	C-s3, d2
Plafonds en verlaagde plafonds Plafonds et faux plafonds	A2-s1, d0	B-s1, d0	B-s1, d0	C-s2, d0	B-s2, d0	C-s2, d0	B-s1, d0	D-s3, d0	C-s3, d0
Vloeren/Sols	$A2_{Fl}$-s1	B_{Fl}-s1	B_{Fl}-s1	C_{Fl}-s1	B_{Fl}-s1	C_{Fl}-s1	B_{Fl}-s1	D_{Fl}-s2	C_{Fl}-s2

H.G. hoge gebouwen
M.G. middelhoge gebouwen
L.G. lage gebouwen
Hor. horizontale evacuatiewegen met uitzondering van die op het gelijkvloers
Vert. de traphuizen (met inbegrip van de sassen, de overlopen en de trappen zelf) en het horizontale deel van de evacuatieweg op het gelijkvloers vanaf de trapzalen tot buiten het gebouw

B.E. bâtiments élevés
B.M. bâtiments moyens
B.B. bâtiments bas
Hor. les chemins d'évacuation qui ne sont pas au niveau d'évacuation
Vert. cages d'escalier, (y compris les sas, les paliers et les escaliers) et le chemin d'évacuation au niveau d'évacuation, à partir des cages d'escalier jusqu'à l'extérieurdu bâtiment.

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Ministerial Decree 17.05.2013

(rules to use Eurocodes)

- Ministerial decree 17.05.2013 (Publication 11.06.2013) 3 pages
- Concerns Eurocodes parts 1-2 (related to stability to fire = R30, R60, R120)
- Applies to all buildings (new and extension) with a building permit application since 11.06.2013
- Content of the Ministerial Decree
  - **Annex 1** (1 page): gives the parts of the Eurocodes (actions, concrete, steel, composite, wood, masonry) that can be used without validation of the Ministry of Interior Affairs:
    - Restricted to the ISO 834 curve
    - Restricted so simple methods
    - Restricted to analysis "element by element" (without indirect effects)
  - **Annex 2** (1 page): gives a table of content (template) of a calculation note
    - To be used for any calculation note (not only those to be validated by the authority)

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Approved methods of the Eurocodes (based on the Ministerial Decree 17.05.2013)

- Approved methods of EC 3 (where no validation by the Ministry is needed)
  - § 4.2.2 : Classification of the section
  - § 4.2.4 : Calculation of the critical temperature
    - Including data of the Belgian National Appendix (NBN EN 1993-1-2 ANB:2010)
      - Default critical temperature (500°C / 540°C / 570°C)
      - Tables of critical temperature for columns
  - § 4.2.5.1 : Iterative calculation of the heating of unprotected steel
  - § 4.2.5.2 : Iterative calculation of the heating of protected steel
- Approved methods of EC 4 (where no validation by the Ministry is needed)
  - § 4.2 : tabulated data (tables 4.1 to 4.7)

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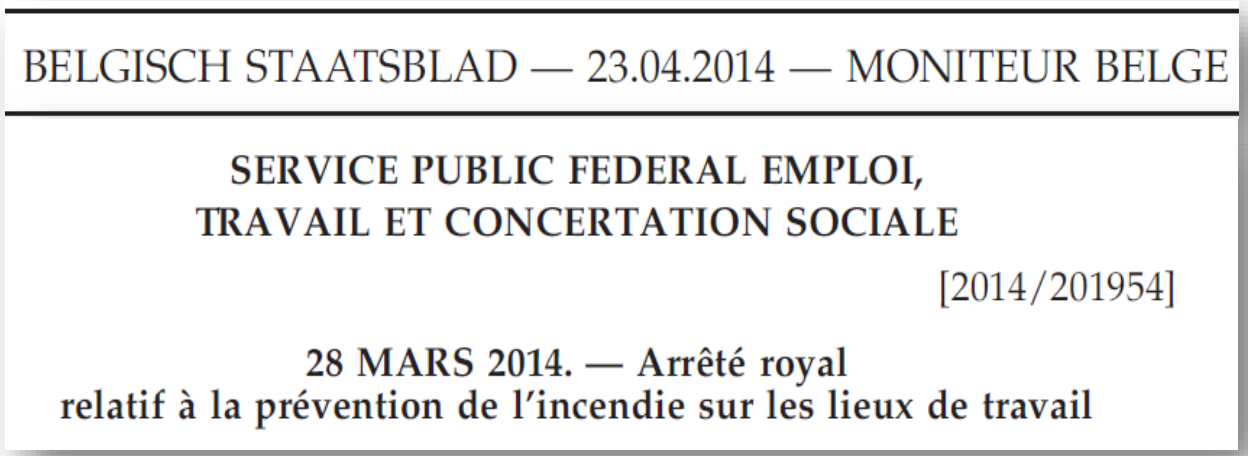
Royal Decree 28.03.2014
(modifies the General Regulation for Labor Protection)

- Royal Decree 28.03.2014 (published on 23.04.2014) modifies the article 52 of the ARAB_RGPT:
  - Some articles of RGPT are withdrawn
  - New articles with new requirements appear in the Code for Well-being:
    - Fire safety risk analysis
    - Emergency procedures
    - Fire safety prevention file



BELGISCH STAATSBLAD — 23.04.2014 — MONITEUR BELGE

SERVICE PUBLIC FEDERAL EMPLOI,
TRAVAIL ET CONCERTATION SOCIALE

[2014/201954]

28 MARS 2014. — Arrêté royal
relatif à la prévention de l'incendie sur les lieux de travail

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FUTURE DEVELOPMENTS (2016-2020)

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Transition period
(European classification system)

- End of the transition period : initially set at 1.12.2016
  (see Royal Decree 12.07.2012)
- New Royal Decree is expected soon to modify this principle:
  - For product with CE-marking, the transition period will be extended until the CE-marking becomes mandatory for this product
    - e.g. Fire doors tested following NBN 713-020 will be accepted until 1.12.2018

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Working groups
at the Ministry of Interior Affairs

- Working groups are composed by following stakeholders:
  - Engineers of the Ministry of Interior Affairs
  - Representative of the Ministry of Labor and Employment
  - Representative of the Fire Brigade Associations
  - Fire safety experts (ISIB, BBRI)
  - Sectorial representatives (ORI, Agoria, Comeo, Prebes, …)
- Work process:
  - 1° Working group writes a draft based on a consensus
  - 2° Draft document is formally discussed / validated / amended by the High Council for Fire Safety
  - 3° Official document is proposed to the Minister
  - 4° A royal / ministerial decree is published in the Official Journal

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IBZ working groups

- Sub-working group **evacuation**
  - New rules for authorized evacuation doors (e.g. sliding doors will be accepted in specific cases)
  - Discussions related to landscape offices (currently not allowed in high rise buildings)
  - Discussions related to sizing of evacuation (atrium, duplex, …)

- Sub-working group **facades**
  - New requirements for the reaction to fire of non exposed materials of facades (insulation, secondary structure)
    - Note: currently requirements only applies to the outer skin
    - Consequence : mineral wool will be imposed in some cases
      - Locally for buildings with H = 10 … 36 m
      - Globally for buildings with H > 36 m

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IBZ working groups

- Sub-working group **car parks**
  - In some cases sprinklers will become
    - Mandatory
    - An alternative to SHEVS (Smoke and Heat Exhaust Ventilation Systems)
- Sub-working group **general modifications**
  - Stairs made of **steel** will be accepted in enclosed staircases, without fire resistance requirements
  - Duplex: maximum area: exceptions are suppressed (cumulated area always < 2500 m^2)
  - Triplex will be authorized (cumulated area < 300 m^2)
  - Fire-lobby :
    - Restriction of its content (idem staircases of mid-rise and high-rise buildings)
    - In some case: 2 EI_1 30 doors will be replaced by 1 EI_1 60 door.

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Varia

- Industrial buildings
  - Technical Information Note: will probably be published in 2016
- Fire detection : new standard since 11/2015
- Boiler room : new draft prNBN B61-001 since 11/2015
  - Public enquiry is currently open !

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