Emissions into indoor air
Experience with EN 16516 in Belgium

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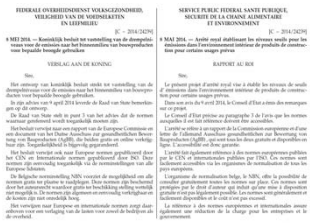
- Belgian legislation // approach
- Market surveillance // approach and results



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Belgian legislation • timeline

- Preparatory studies and stakeholder consultation started in 2010
- Royal Decree Published in 2014
- 2015: transition period
- 2016-2017: Market surveillance campaign
- 2016: Extension to wall coverings and ceilings: on hold until decision on European classes.

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Belgian legislation • basic principles

It is not allowed to put products on the market or make them when they don't **comply to the limit values** of the royal decree.

The emissions are conform its **product type**.

The product type is defined as in the CPR => taking into account specific raw materials and a specific production process.

Limit values instead of a label because not all people exposed have influence on the products (e.g. in meeting rooms, in day care centres, ...).

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Belgian legislation • basic principles

Procedures

- The manufacturer establishes for every product type **a product emission file**.
- The manufacturer implements procedures to maintain the declared performance during production (~ **FPC**). Changes in raw materials and production process are taken into account.
- The manufacturer investigates **complaints**, keeps track of non-conform products, informs distributors and establishes a procedure for all of this.

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Belgian legislation • basic principles

CPR proof

Art. 10. If a harmonised technical specification exist which contains the characteristics of this decree, the manufacturer declares these characteristics in alignment with the CPR and the technical harmonised specification. In this case stipulations of the CPR are applicable.

Next to references to product type, FPC, intended use, harmonised test standards, …

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Belgian legislation • basic principles

Reference test method

- No obligation for the manufacturer to use a certain test method nor to use an accredited lab.
- If the manufacturer uses another test method, he shall establish a link in the product emission file.
- It is allowed to use historical data or data from suppliers, this shall be motivated in the product emission file.
- When the authorities do market surveillance, they are obliged to use the EN 16516 which is used as reference. The market surveillance authorities shall use an accredited lab.

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Belgian legislation • basic principles

Moment of sampling

- No sooner than when the product is packaged and ready to be made available on the market.
- Every product in the warehouse and which is packaged, is assumed to be ready to be made available on the market, unless the market player has a procedure demonstrating the opposite.

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Belgian legislation • scope

- Floor covering materials with intended use …
- Adhesives for floor covering materials
- Finishing materials (varnishes …)
- Excluded intended uses: use in industry, laboratories, spaces for motorized vehicles and spaces not for people

Based on simple prioritizing together with industry:
Large surfaces
Direct contact
Sector did preparatory work
To be extended with wallcoverings and ceilings.
All materials are equally treated in order to create level playing field.

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Belgian legislation • scope

Some products are exempted to establish a product emission file ("deemed to satisfy")

- 100% natural stone
- 100% ceramic material
- 100% steel
- Untreated glass

They still need to comply to the limit values.
Based on common sense.
Some other sectors prepared a dossier asking to enlarge this list when the decree is revised.

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Belgian legislation • limit values

Bijlage 2. Karakteristieken en bijhorende drempelniveaus

Karakteristiek	Bepaald volgens	Drempelniveau na 28 dagen	
R De R-waarde is de som van alle ratios Ri voor alle vluchtige organische stoffen met een gekende LCI-waarde (lowest concentration of interest). De ratio Ri is de verhouding van de gemeten concentratie in de testkamer van een bepaalde vluchtige organische stof en de bij deze vluchtige organische stof horende LCI-waarde.	De concentraties van de individuele vluchtige organische stoffen waarden worden bepaald volgens CEN/TS 16516 Construction products — Assessment of emissions of regulated dangerous substances from construction products — Determination of emissions intoindoor air. De LCI-waarden zijn deze van de geharmoniseerde lijst opgesteld door het Joint Research Centre van de Europese Commissie (DG JRC) (Report No 29 - Harmonisation framework for health based evaluation of indoor emissions from construction products in the European Union using the EU-LCI concept) .	≤ 1	
Het totale gehalte aan vluchtige organische stoffen (TVOS)		≤ 1 000 µg/m³	Building code
Het totale gehalte aan halfvluchtige organische stoffen (TSVOS)		≤ 100 µg/m³	
CMR stoffen categorie 1A en 1B zoals bedoeld in Art. 36(1)(c) van Verordening (EG) nr. 1272/2008 van het Europees Parlement en de Raad van 16 december 2008 betreffende de indeling, etikettering en verpakking van stoffen en mengsels	Voor de stoffen waarvoor nog geen LCI-waarde werd bepaald, geldt de genotificeerde LCI-waarde van AgBB (Ausschuss zur gesundheitlichen Bewertung von Bauprodukten) die op het moment van in de handel brengen of aanbieden op de markt van toepassing zijn.	≤ 1µg/m³	
Acetaldehyde (EINECS 200-836-8; CAS 75-07-0)	De bereiding van de teststalen gebeurt volgens ISO 16000-11, CEN/TS 16516 en relevante aanvullende bepalingen in CEN productnormen.	≤ 200 µg/m³	Building code
Tolueen (EINECS 203-625-9; CAS 108-88-3)		≤ 300 µg/m³	Building code
Formaldehyde (EINECS 200-001-8; CAS 50-00-0)		≤ 100 µg/m³	WHO

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Belgian legislation • limit values • TVOC

TVOC shall not be used for health risk assessment.

TVOC is a proxy indicator used as risk management.

It is being used in building certification schemes, by contractors, by architects, by engineers, etc.

It is a simple measure to lower the risk of having bad indoor air quality which may lead to SBS, asthma, …

Some MS, contractors, architects, … who are new in the field of IAQ may use this as a first pragmatic and easy step into achieving better air quality.

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Belgian legislation • limit values • TVOC

TVOC has been discussed intensively with the different sectors and it turned out to be a reasonable limit value (taking into account sampling moment / storage time / uncovered products / …)

The non-conforming ones were said to be known as “bad” products which had to be phased out anyways in the future.

The criteria are an underestimation: we assume for the time being that the product is the only source in the model room. In real life combined exposure is possible.

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Belgian legislation • complex products

FAQ document

If put on the market as kit, the kit shall fulfil the criteria.

Which criteria must be met by a parquet that still has to be painted?

There are two possibilities.

1. The parquet manufacturer paints the parquet by himself in his plant (or by subcontracting the job). He then places a painted product on the market and he is responsible for it. The combination of parquet and paint should comply with the requirements.
2. The parquet gets painted after being installed on the construction site. Here we can have two scenarios:
   - Either the parquet and the paint are not supplied as a kit (see above). The parquet floor is painted by a party that has no contractual relation with the manufacturer. The manufacturer does not interfere in choosing the paint. Here both products must be compliant separately.
   - Or the parquet and the paint are supplied as a kit. The manufacturer and supplier of the parquet can also supply the paint. Here the kit as a whole must comply.

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Belgian legislation • product emission file

- Product type identification
  - Product type
  - Link between product type and commercial names
  - Intended use
- Motivation demonstrating that the product type is conform the royal decree
  - Demonstrate that the type testing (tests, historical data, …) complies with high probability to the limit values
  - Representativity of the product type for the products put on the market
  - Identification of the procedures
  - In case of product grouping this shall be explained
- Specific documentation
  - Test reports
  - Correlations
  - Historical data
  - Data from suppliers or intermediate products

Market surveillance results:
MANUFACTURERS STRUGGLE WITH TERMS AS PRODUCT TYPE, TYPE TESTING, LINKING TYPE TESTS TO ACTUAL PRODUCTS. OFTEN THEY CONSIDER IT SUFFICIENT TO HAVE ONE AGBB REPORT.

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Belgian legislation • use of existing test reports

- It is not imperative to perform all tests again for Belgium. The method set out in the legislation is the reference test method and not the mandatory method. The PEF is important as it enables you to justify and document the reasons why you consider existing test reports would be sufficient to meet the requirements.
- The justification must be thoroughly done. Here are a few points you should focus on: Are all products of the range covered? How did you do this? Has the product (or its composition) remained identical throughout the years or has it changed? Does the changing composition have an impact on the emissions? Have you performed an alternative or quick test to have an idea on the evolution of the results? Is the product tested the same as the product on the Belgian market?

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Market surveillance • general

- Testing by authority mandatory by accredited lab
- 2 elements:
  - Product testing
  - Review of product emission file
- 58 products tested: 39 full + 19 T(S)VOC

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Market surveillance • approach

A first campaign. Very reasonable attitude of the authorities.

- 2016: letter to inform them
- TESTRESULT **Not OK** + EMISSION FILE **OK**
  - Temporary stop on selling the product
  - Retesting OK => OK
  - Retesting Not OK => take back from market
- TESTRESULT **Not OK** + EMISSION FILE **Not OK**
  - Take back from market
- TESTRESULT **OK** + EMISSION FILE **Not OK**
  - 2 months time to fix emission file. No withdrawal from market.

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Market surveillance • difficulties

- Limited availability of test chambers
- Assessment takes a long time (min. 28 days)
- Sampling at distributors (chain issues)
- Unclear use of existing certificates
- Sometimes unclear definition of the product (finishing products vs cleaning products)
- Test method for liquid products needs refinement
- Cost

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Market surveillance • products sampled

	samples	Test conform	Dossier conform	
Textile	9	9		
Synthetic (PVC flexible, rigid, ...)	7	4	6	All 4 non conform results confirmed by retesting / withdrawn from market
linoleum	/	/	/	
laminated	9	8	0	
Epoxy, ...	9	5	4	warning
Emulsion adhesives	6	6	6	
Two component adhesives	/	/	/	
Solvent based adhesives	5	5	5	
Parquet varnish	7	3	6	R>1, emissions file not OK // putting on the market stopped
Waxes, oils	6	4	5	Dossier OK + retest OK / no further action

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Market surveillance • results

TEST

- 6/58 not conform
  - TSVOC x5
  - TSVOC x1,2
  - CMR x8
  - TSVOC x2
  - R 1,1
  - TVOC x2

PRODUCT EMISSION FILES

- 44/58 not existing or not conform at time of sampling
- After a first warning 33/58 non compliant and further down to 11/58.

- Vinyl products are point of attention for future campaigns

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Implementation • policies

Proactive

- Via building assessment
  - Assessment at building level through modelling => list of emission results needed (digital CE?)
  - In situ measurements
- Via products legislation
  - General risk management via TVOC
  - Specific health assessment product: via LCI.
- Legislation sets the importance and is a clear tool for awareness building

Reactive

- a legal reference test method + limit values (in case of consumer complaints) allows for clear guidance in case of complaints

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Conclusion • Discussion

- The implementation of BWR3 should allow for different views on dealing with the IAQ by policy makers, contractors, architects, engineers, ...
- Art 8 CPR: The CE marking shall be the **only** marking which attests conformity of the construction product with the declared performance in relation to the essential characteristics.
- Variability in the production process is inherent to all products. It is the manufacturer who know his product and production process best to be able to guarantee compliance to the declared performance based on the product type. This is no different than for tensile strength.
- Implementation of EN 16516 is possible
- The product emission file helps to establish communication with the manufacturer and to judge the risk for the public health by the public authorities. It comes with responsibilities, but also gives the manufacturer freedom regarding test method, FPC, ...
- One of the reasons why implementation of BWR3 is difficult, is the lack of understanding of the CPR principles being controlled production conform to a declared performance.

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