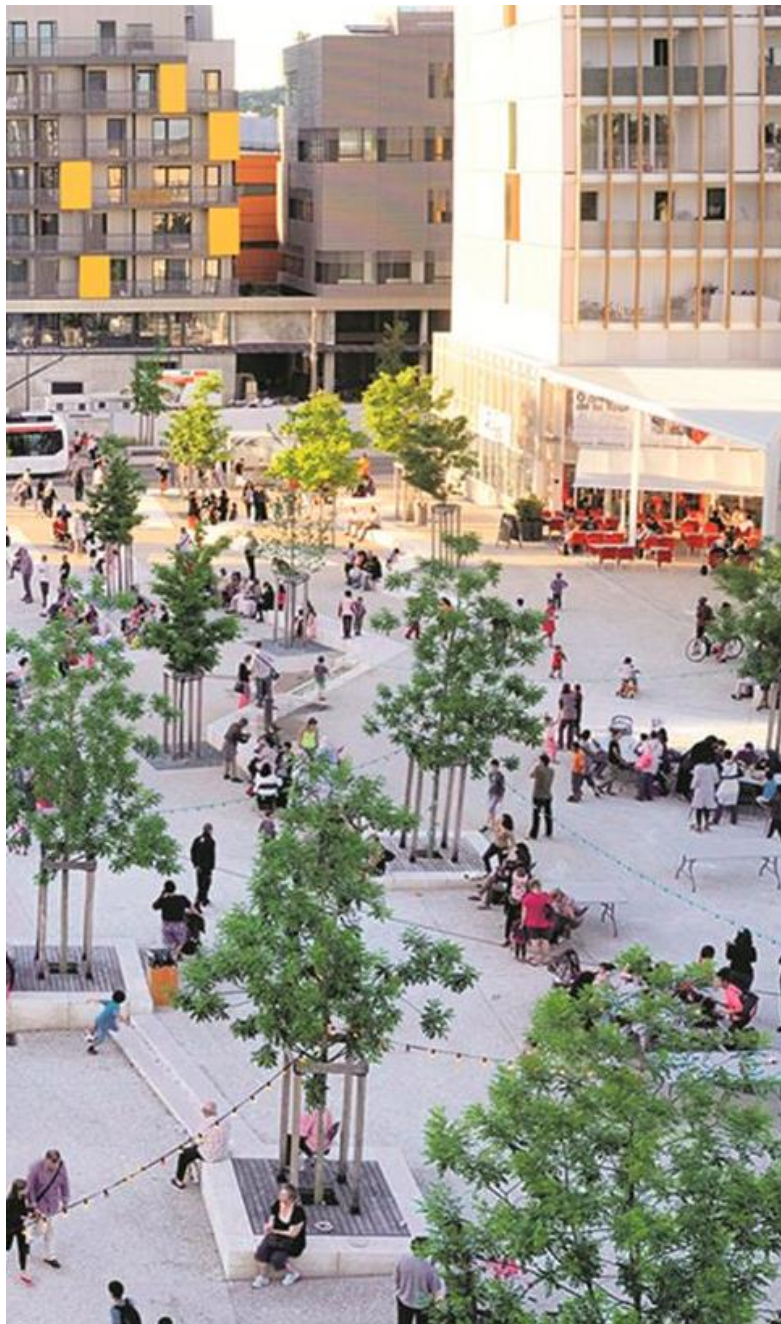




Proposal for harmonised VOC emissions classes

21/04/2021 – François MAUPETIT

CSTB
le futur en construction

Three EU notified regulations in different MS

GERMANY: AGBB (SINCE 2005)

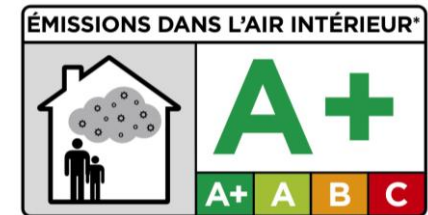
BELGIUM: ROYAL DECREE (SINCE 2014)

- > Pass / fail system
- > Long list of individual VOC + TVOC

FRANCE: A+ LABEL (SINCE 2013)

- > Class system
- > Short list of individual VOC + TVOC

And many voluntary labelling schemes



60612 BELGISCH STAATSBAD — 18.08.2014 — MONITEUR BELGE		
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 into indoor air.	≤ 1
Het totale gehalte aan vluchtige organische stoffen (TVOC).	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).	≤ 1 000 µg/m³
Het totale gehalte aan halfvluchtige organische stoffen (TSVOC).	Voor de stoffen waarvoor nog geen LCI-waarde werd bepaald, geldt de gecorrigeerde 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.	≤ 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		≤ 1 µg/m³
Acetaldehyde (EINECS 200-836-8; CAS 75-07-0)	De bereiding van de teststaal gebeurt volgens ISO 16000-11, CEN/TS 16516 en relevante aanvullende bepalingen in CEN productnormen.	≤ 200 µg/m³
Toluene (EINECS 203-625-9; CAS 108-88-3)		≤ 300 µg/m³
Formaldehyde (EINECS 200-001-8; CAS 50-00-0)		≤ 100 µg/m³

Active participation in standardization work

CEN TC351 WG2 “EMISSIONS INTO INDOOR AIR”

- > EN 16516 standard (CEN, 2017)

Active participation in collective expertise

EU JRC ISPRA

- > ECA report 24 (2005), ECA report 27 (2012)
- > ECA report 29 (2013)

Active participation in EU expert groups

SUB GROUP ON DANGEROUS SUBSTANCES

SUB GROUP ON EU-LCI

- > 159 agreed EU-LCI (2020)

EUROPEAN COLLABORATIVE ACTION
URBAN AIR, INDOOR ENVIRONMENT AND HUMAN EXPOSURE

Environment and Quality of Life

Report No 27

**Harmonisation framework for indoor
products labelling schemes in the EU**



EUROPEAN COMMISSION
JOINT RESEARCH CENTRE - INSTITUTE FOR HEALTH & CONSUMER PROTECTION
CHEMICAL ASSESSMENT AND TESTING UNIT

2012

EUR 25276 EN

Testing according to EN 16516 horizontal standard

Based on parameters already in use in existing evaluation schemes (mandatory and voluntary)

4 MAIN PARAMETERS

- > Individual VOC (EU-LCI)
- > CMR VOC
- > Formaldehyde
- > TVOC

With the EU harmonized low emission class at least as protective as existing classes

Performance declaration for VOC emissions determined according to EN 16516

Essential characteristics for health related assessment

Emissions of individual VOC into a reference room (EU-LCI ratio)

3 CLASSES

- > Calculation of the sum of concentrations in reference room / EU-LCI ratios
- > EU-LCI available and updated: [EU-LCI Values | Internal Market, Industry, Entrepreneurship and SMEs \(europa.eu\)](https://ec.europa.eu/eurobarometer/surveys/trends/industry/industry_en)

Class	VOC 0	VOC 1	VOC 2
Sum of EU-LCI ratios	sum $\leq$ 1	sum $\leq$ 2	no class limit

Essential characteristics for health related assessment

CMR VOC emissions into a reference room (CMR_{VOC})

2 CLASSES

- > CMR_{VOC} : Carc. 1A & 1B, Mut. 1A & 1B, Repr. 1A & 1B that can be measured using EN 16516
- > CMR_{VOC} with threshold and with associated EU-LCI are evaluated as individual VOC

Class	CMR 0	CMR 1
CMR_{VOC}	$\leq 1 \mu\text{g}/\text{m}^3$	no class limit

Performance declaration for VOC emissions determined according to EN 16516

Essential characteristics for health related assessment

Formaldehyde emissions into a reference room

3 CLASSES

> F2 formaldehyde emission class = Limit value of upcoming REACH regulation

Class	F 0	F 1	F 2*
Formaldehyde	$\leq 10 \mu\text{g}/\text{m}^3$	$\leq 30 \mu\text{g}/\text{m}^3$	$\leq 123 \mu\text{g}/\text{m}^3$

*: to be adapted according to REACH restriction procedure outcome

Performance declaration for VOC emissions determined according to EN 16516

Essential characteristics for hygienic assessment

Total quantity of VOC into a reference room

4 CLASSES

> TVOC is one of the most widely used global indicator of VOC emissions

Class	SUM 0	SUM 1	SUM 2	SUM 3
TVOC	$\leq 200 \mu\text{g}/\text{m}^3$	$\leq 500 \mu\text{g}/\text{m}^3$	$\leq 1000 \mu\text{g}/\text{m}^3$	no class limit

Performance declaration for VOC emissions determined according to EN 16516

Essential characteristics for hygienic assessment

Total quantity of VOC into a reference room

4 CLASSES

> TVOC is one of the most widely used global indicator of VOC emissions

Class	SUM 0	SUM 1	SUM 2	SUM 3
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3 CLASSES

> Sum of compounds without EU-LCI

> A, B, C can be used as a complementary information to SUM classes: e.g. SUM 1^A

Class	A	B	C
Σ compounds without EU-LCI (C6-C22)	$\leq 100 \mu\text{g}/\text{m}^3$	$\leq 200 \mu\text{g}/\text{m}^3$	no class limit

Performance declaration fo VOC emissions determined according to EN 16516

Essential characteristic indoor air emissions can be illustrated by a colour code

5 INDOOR AIR CLASSES (IA CLASSES)

Sum EU-LCI ratios	VOC 0	VOC 1	VOC 2 / NPD		
CMR _{VOC}	CMR 0	CMR 1 / NPD			
Formaldehyde	F0	F1	F2 / NPD		
TVOC	SUM 0	SUM 1	SUM 2	SUM 3 / NPD	
Indoor air class	IA 0	IA 1	IA 2	IA 3	IA 4

> Individual essential characteristics shall be reported in addition to IA classes

Performance declaration for VOC emissions determined according to EN 16516

Essential characteristic indoor air emissions can be illustrated by a colour code

5 INDOOR AIR CLASSES (IA CLASSES)

Sum EU-LCI ratios	VOC 0	VOC 1	VOC 2 / NPD		
CMR _{VOC}	CMR 0	CMR 1 / NPD			
Formaldehyde	F0	F1	F2 / NPD		
TVOC	SUM 0	SUM 1	SUM 2	SUM 3 / NPD	
Indoor air class	IA 0	IA 1	IA 2	IA 3	IA 4

> Individual essential characteristics shall be reported in addition to IA classes

Performance declaration for VOC emissions determined according to EN 16516

Example of performance declaration of VOC emissions

INDICATION IN CE MARKING: IA CLASSES

IA1

INDICATION IN THE DECLARATION OF PERFORMANCE (DoP)

Essential characteristic	Test method	Class
Indoor air emissions	EN 16516	IA1 VOC 0 (EU-LCI 2021) CMR 0 F1 SUM 0 ^B

A performance declaration scheme for VOC emissions from building products determined using EN 16516 is proposed:

BASED ON FOUR ESSENTIAL CHARACTERISTICS

- > Individual VOC: sum of EU-LCI ratios
- > CMR_{VOC}
- > Formaldehyde
- > TVOC (+ $\sum$ compounds without EU-LCI)

USING AN EMISSION CLASS CONCEPT WITH A CHALLENGING LOWER EU EMISSION CLASS

- > Improvement of product indoor emission performances and selection of low emission products

POSSIBLY ASSOCIATED WITH A COLOUR CODE REPORTING FORMAT

