

Proposal for harmonised VOC emissions classes

21/04/2021 – François MAUPETIT



Different requirements in Member States

Three EU notified regulations in different MS

GERMANY: AGBB (SINCE 2005)

BELGIUM: ROYAL DECREE (SINCE 2014)

> Pass / fail system

le futur en construction

> Long list of individual VOC + TVOC

FRANCE: A+ LABEL (SINCE 2013)

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

And many voluntary labelling schemes



Committee for Health-related Evaluation of Building Products



Bijlage 2. Karal	kteristieken 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 concen- tratie in de teskamer van een bepaalde vluchtige organische stof en de bij deze vluchtige organische stof horende LCI-warde.	De concentrates van de individuele vluchtige organi- sche sofion waarden worden heppald volgene. CEN/TS 16516 Construction products — Assessment of emits- sions of regulated dangerous substances from constru- tion products — Determination of emissions intoindoor air. De LCI-waarden zijn deze van de geharmoniseerde lijst	s 1
Het totale gehalte aan vluchtige organische stoffen (TVOS)	opgesteld door het Joint Research Centre van de Europese Commissie (DG JRC) (Report No 29 - Harmo- steation framework for health based evaluation of	≤ 1 000 μg/m ³
Het totale gehalte aan halfvluchtige organische stoffen (TSVOS)	indoor emissions from construction products in the European Union using the EU-LCI concept).	≤ 100 µg/m ³
CMR stoffen categorie 1A en 1B zoals bedoeld in Art. 26(1)(c) van Verordening (EG) nr. 1272/2008 van hee Europees Parlement en de Raad van 16 december 2008 betrefiende de indeling, etikettering en verpakking van stoffen en mengsels	Voor de stoffen waarvoor nog geen LCI-waarde werd bepaald, geld de genoetikcerede LCI-waarde van AgBB (Ausschuss zur gesundheitlichen Bewertung von Bau- produkten) die op het moment van in de handel brengen of aanbieden op de markt van toepassing zijn.	≤ lµg/m³
Acetaldehyde (EINECS 200-836-8; CAS 75-07-0)	De bereiding van de teststalen gebeurt volgens ISO	≤ 200 µg/m ³
Tolueen (EINECS 203-625-9; CAS 108-88-3)	16000-11, CEN/TS 16516 en relevante aanvullende begalingen in CEN productionermen	$\leq 300 \ \mu g/m^3$
Formaldehyde (EINECS 200-001-8; CAS 50-00-0)	echamber at care productioniteit.	$\leq 100 \ \mu g/m^3$

A continuous effort towards harmonization

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



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



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: <u>EU-LCI Values | Internal Market, Industry, Entrepreneurship</u> and SMEs (europa.eu)

Class	VOC 0	VOC 1	VOC 2
Sum of EU-LCI ratios	sum ≤ 1	sum ≤ 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 µg/m ³	no class limit



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	FO	F 1	F 2*
Formaldehyde	\leq 10 µg/m ³	\leq 30 µg/m ³	≤ 123 µg/m ³

*: to be adapted according to REACH restriction procedure outcome



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	≤ 200 µg/m ³	≤ 500 µg/m ³	\leq 1000 µg/m ³	no class limit



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 µg/m ³	≤ 500 µg/m ³	\leq 1000 µg/m ³	no class limit

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	Α	В	С
∑compounds without EU-LCI (C6-C22)	$\leq 100 \mu g/m^3$	$\leq 200 \mu g/m^3$	no class limit



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	FO	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



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	FO	F1	F2 / NPD		
туос	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



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



