

Delivery report

Emission test report of a Soudal samples Sample Soudafoam FR

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Soudal
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1 OBJECTIVE

Determination of the volatile organic compound emissions for one material according the Belgian Royal Decree establishing threshold levels for the emissions to the indoor environment from construction products for certain intended uses, the French regulations, the german AgBB health evaluation procedure and the GEV Eimicode label.

2 SAMPLE INFORMATION

Table 1: Sample information

Sample group code	2017045
Sample code	20170456
Sample identification	Soudafoam FR
Date of production	
Batch N°	207189241
Type of product	Fire rated PU foam
Date of reception of the sample	22/02/2017
Preconditioning period (start – end)	/
Date of the test (start – end)	10/03/2017-07/04/2017

Photograph 1: photograph of the test sample



3 TEST METHODS - ACCREDITATION

The following test methods were used:

- Test chamber was operated according to CEN/TS 16515 (2013) (ISO 16000-9 with extra clauses): Construction products – Assessment of release of dangerous substances – Determination of emissions into indoor air (internal Vito procedure MIM-GA-013)
- Analysis of TENAX samples was performed according to CEN/TS 16515 (2013) (ISO 16000-6 with extra clauses): Construction products – Assessment of release of dangerous substances – Determination of emissions into indoor air (internal Vito procedure MIM-GA-014)
- Analysis of DNPH cartridges was performed according to CEN/TS 16515 (2013) (ISO 16000-3): Construction products – Assessment of release of dangerous substances – Determination of emissions into indoor air (internal Vito procedure MIM-OR-022)
- The test sample preparation was performed according to CEN/TS 16515 (2013) (ISO 16000-11 with extra clauses): Construction products – Assessment of release of dangerous substances – Determination of emissions into indoor air (internal Vito procedure MIM-GA-013)

Table 2: Overview of the test method parameters

CEN/TS 16516 method	
Analytical methods	analytes
ISO 16000-3	Volatile aldehydes (C1-C4)
ISO 16000-6 + extra clauses	VOC, SVOC
Test chamber parameters	values
	S1
Chamber volume (m ³)	0.11
Air exchange rate (h ⁻¹)	0.5
Temperature (°C)	22.4
Relative humidity (%)	52.7
Loading factor (m ² /m ³)	0.007
Sample preparation	
Dimensions (m ²)	0.00077
Application amount (g)	

The CEN/TS 16516 test method described above is accredited to EN ISO/IEC 17025 by BELAC n° 045-TEST. At present the accreditation does not cover the compounds marked with *, however analysis for these compounds was performed at the same level of quality as for the accredited compounds. The analytical measurement uncertainty (expanded uncertainty) for volatile aldehydes amounts to maximum 15 % and 30 % for the other target compounds.

4 RESULTS

4.1. RESULTS EMISSION TEST SAMPLE 1

4.1.1. BELGIAN DECREE

VOC analysis after 28 days						
	CAS number	RT	Id ¹	Conc. ($\mu\text{g}/\text{m}^3$)	SER _a ($\mu\text{g}/\text{m}^2\text{h}$)	R _i
VOC with LCI²						
-	-	-	-	-	-	-
TVOC (C6-C16)				6	390	
TSVOC				<5	/	
R						/
Σcarcinogens				<1		
Toluene				<1		
D.L.: detection limit < 0.5 $\mu\text{g}/\text{m}^3$ Q.L.: quantification limit < 1 $\mu\text{g}/\text{m}^3$						
Analysis of the volatile aldehydes (C1-C4) after 28 days						
Analyte	CAS number		Concentration ($\mu\text{g}/\text{m}^3$)			
Formaldehyde	50-00-0		<1			
Acetaldehyde	75-07-0		<1			
D.L.: detection limit < 0.5 $\mu\text{g}/\text{m}^3$ Q.L.: quantification limit < 1 $\mu\text{g}/\text{m}^3$						

¹ Identification:

- 1: identification by standard solution and retention time, confirmed by spectrum library and specifically calibrated
- 2: identification by comparison with spectrum library and plausibility declaration, calibrated as toluene equivalent
- 3: not identified, calibrated as toluene equivalent

² Compounds marked with an * are not part of the accreditation

4.1.2. FRENCH DECREE

Compound ¹	CAS number	Id ²	Concentration ($\mu\text{g}/\text{m}^3$)	Classification Fr
Formaldehyde	50-00-0	1	<1	A ⁺
Acetaldehyde	75-07-0	1	<1	A ⁺
Toluene	108-88-3	1	<1	A ⁺
Tetrachloroethylene	127-18-4	1	<1	A ⁺
Ethylbenzene	100-41-4	1	<1	A ⁺
Xylene	1330-20-7	1	<1	A ⁺
Styrene	100-42-5	1	<1	A ⁺
2-Butoxyethanol	111-76-2	1	<1	A ⁺
1,2,4-Trimethylbenzene	95-63-6	1	<1	A ⁺
1,4-Dichlorobenzene	106-46-7	1	<1	A ⁺
Trichloroethylene	79-01-6	1	<1	A ⁺
Benzene	71-43-2	1	<1	A ⁺
Bis(2-ethylhexyl)phthalate*	117-81-7	1	<1	A ⁺
Dibutyl phthalate*	84-74-2	1	<1	A ⁺
TVOC		2	9	A ⁺

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² Identification:

- 1: identification by standard solution and retention time, confirmed by spectrum library and specifically calibrated
- 2: identification by comparison with spectrum library and plausibility declaration, calibrated as toluene equivalent
- 3: not identified, calibrated as toluene equivalent

4.1.3. ABB PROTOCOL

analysis after 3 days		
	Concentration ($\mu\text{g}/\text{m}^3$)	SER _a ($\mu\text{g}/\text{m}^2\text{h}$)
TVOC (C6-C16)	21	1500
Σcarcinogens	<1	/

VOC analysis after 28 days						
	CAS number	RT	Id ¹	Conc. ($\mu\text{g}/\text{m}^3$)	SER _a ($\mu\text{g}/\text{m}^2\text{h}$)	R _i
VOC with LCI²						
-	-	-	-	-	-	-
VOC without LCI (non-assessable)²						
-	-	-	-	-	-	-
TVOC (C6-C16)				6	390	
TSVOC				<5	-	
R						/
Σcarcinogens				<1		
D.L.: detection limit < 0.5 $\mu\text{g}/\text{m}^3$ Q.L.: quantification limit < 1 $\mu\text{g}/\text{m}^3$						

Analysis of the volatile aldehydes (C1-C4) after 28 days

Analyte	CAS number	Concentration ($\mu\text{g}/\text{m}^3$)
Formaldehyde	50-00-0	<1
Acetaldehyde	75-07-0	<1
D.L.: detection limit < 0.5 $\mu\text{g}/\text{m}^3$ Q.L.: quantification limit < 1 $\mu\text{g}/\text{m}^3$		

¹ Identification:

- 1: identification by standard solution and retention time, confirmed by spectrum library and specifically calibrated
- 2: identification by comparison with spectrum library and plausibility declaration, calibrated as toluene equivalent
- 3: not identified, calibrated as toluene equivalent

² Compounds marked with an * are not part of the accreditation

4.1.4. EMICODE

analysis after 3 days		
	Concentration ($\mu\text{g}/\text{m}^3$)	SER _a ($\mu\text{g}/\text{m}^2\text{h}$)
TVOC (C6-C16) EC	21	1500
Σcarcinogens	<1	/
Formaldehyde	<1	/
Acetaldehyde	<1	/

VOC analysis after 28 days						
	CAS number	RT	Id ¹	Conc. ($\mu\text{g}/\text{m}^3$)	SER _a ($\mu\text{g}/\text{m}^2\text{h}$)	R _i
VOC with LCI²						
-	-	-	-	-	-	-
VOC without LCI (non-assessable)²						
-	-	-	-	-	-	-
TVOC (C6-C16) EC				6	390	
TSVOC				<5	-	
R						/
Σcarcinogens				<1		
D.L.: detection limit < 0.5 $\mu\text{g}/\text{m}^3$ Q.L.: quantification limit < 1 $\mu\text{g}/\text{m}^3$						
Analysis of the volatile aldehydes (C1-C4) after 28 days						
Analyte	CAS number		Concentration ($\mu\text{g}/\text{m}^3$)			
Formaldehyde	50-00-0		<1			
Acetaldehyde	75-07-0		<1			
D.L.: detection limit < 0.5 $\mu\text{g}/\text{m}^3$ Q.L.: quantification limit < 1 $\mu\text{g}/\text{m}^3$						

¹ Identification:

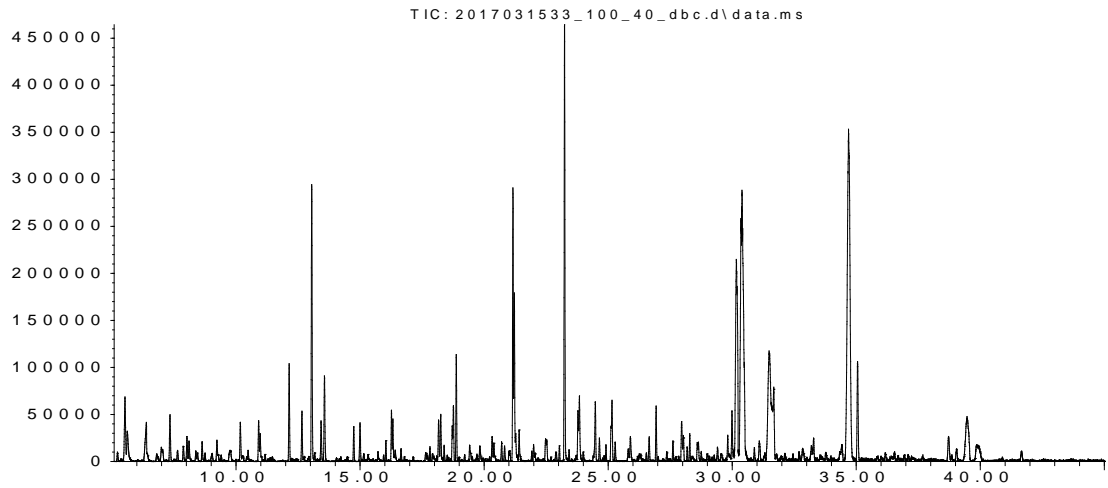
- 1: identification by standard solution and retention time, confirmed by spectrum library and specifically calibrated
- 2: identification by comparison with spectrum library and plausibility declaration, calibrated as toluene equivalent
- 3: not identified, calibrated as toluene equivalent

² Compounds marked with an * are not part of the accreditation

4.2. CHROMATOGRAMS

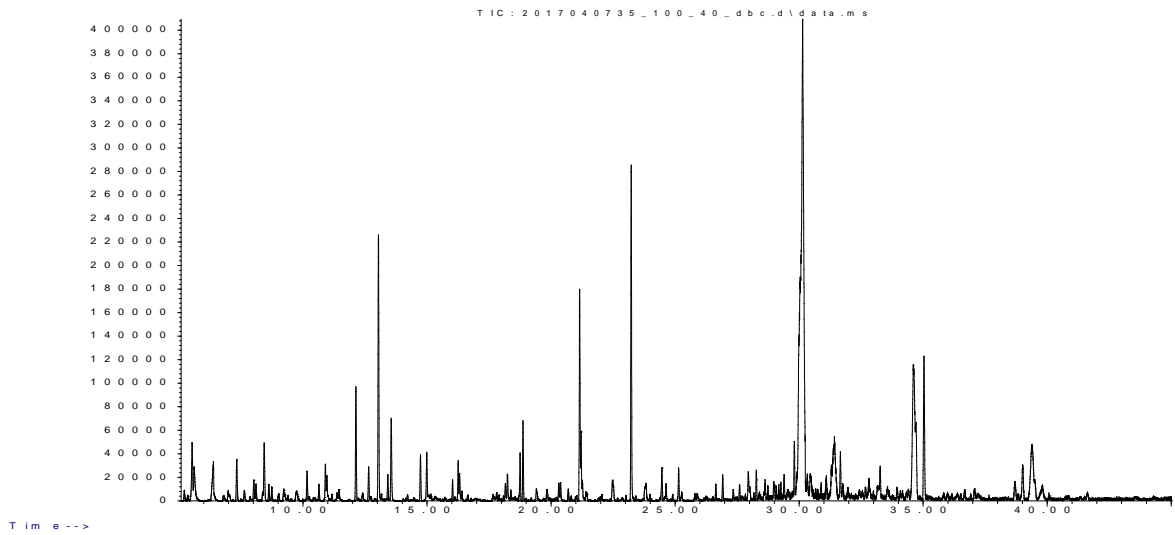
S1 3 days

Abundance



S1 28 days

Abundance



5 CONCLUSION

S1 Belgian Parameter	Concentration ($\mu\text{g}/\text{m}^3$)	Threshold level after 28 days ($\mu\text{g}/\text{m}^3$)
R –value (dimensionless)	-	≤ 1
TVOC	6	≤ 1000
TSVOC	<5	≤ 100
Carcinogenic substances category 1A and 1B, as referred to in Article 36(1)(c) of Regulation (EC) No. 1272/2008 of the European Parliament and the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures.	<1	≤ 1
Acetaldehyde (EINECS 200-836-8; CAS 75-07-0)	<1	≤ 200
Toluene (EINECS 203-625-9; CAS 108-88-3)	<1	≤ 300
Formaldehyde (EINECS 200-001-8; CAS 50-00-0)	<1	≤ 100

AgBB S1 Parameter	Test after 3 days		Test after 28 days	
	Concentration ($\mu\text{g}/\text{m}^3$)	Limit value ($\mu\text{g}/\text{m}^3$)	Concentration ($\mu\text{g}/\text{m}^3$)	Limit value ($\mu\text{g}/\text{m}^3$)
R –value (dimensionless)		-	-	≤ 1
TVOC	21	≤ 10000	6	≤ 1000
TSVOC		-	<5	≤ 100
Total carcinogens	<1	≤ 10	<1	≤ 1
TVOC without LCI		-	<5	≤ 100

	Concentration ($\mu\text{g}/\text{m}^3$)	Classification
TVOC after 3 days	21	EC 1 ^{PLUS}
TVOC after 28 days	6	EC 1 ^{PLUS}
TSVOC after 28 days	<5	EC 1 ^{PLUS}
R value based on German AgBB LCI (NIK) after 28 days	-	EC 1 ^{PLUS}
Sum of non-assessable VOC*	<5	EC 1
Formaldehyde after 3 days	<1	EC 1 ^{PLUS}
Acetaldehyde after 3 days	<1	EC 1 ^{PLUS}
Sum of form- and acetaldehyde (ppm)	-	EC 1 ^{PLUS}
Sum of volatile C1/C2 after 3 days	<1	EC 1 ^{PLUS}
Any volatile C1/C2 after 28 days	<1	EC 1 ^{PLUS}

In the final table is shown whether the products comply to the Belgian decree, the German health evaluation procedure, which label they get according to the French regulations and the Emicode label.

	French regulations	Belgian decree	AgBB	Emicode
S1	A ⁺	√	√	√