

Delivery report

Emission test report of a Resiplast sample Sample PMMA flooring system

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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 and the French regulations.

2 SAMPLE INFORMATION

Table 1: Sample information

Sample group code	2017120	
Sample code	20171674-10171679	
Sample identification	Polyac 12	20171674
	polyac catalyst	20171675
	polyac 55	20171676
	polyac SL2	20171677
	rhine sand	20171678
	polyac 62	20171679
Date of production		
Batch N°	2016-2017	
Type of product	PMMA flooring system	
Date of reception of the sample	22/05/2017	
Preconditioning period (start – end)	22/05/2017-30/05/2017	
Date of the test (start – end)	30/05/2017-29/06/2017	

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)	22.5	
Relative humidity (%)	51.2	
Loading factor (m ² /m ³)	0.23 (recalculation necessary to reach 0.4 m ² /m ³)	
Sample preparation		
Dimensions (m ²)	0.0256	
Application amount (g)	22/05/2017: 20171674: 198.7 g 20171675: 3.9 g Mixture: 9.01g in test chamber	23/05/2017: 20171676: 200.0 g 20171677: 400.13 g 20171675: 4.0 g Mixture: 89.4 g in test chamber 20171678: 22.22 g 20171679: 15.5 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						
Methyl methacrylate*	80-62-6	10.5	1	30	38	0.014
Benzyl alcohol*	100-51-6	19.8	1	54	68	0.123
TVOC (C6-C16)				75	93	
TSVOC				<5	/	
R						0.138
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 (µg/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	100	A ⁺

¹ Compounds marked with an * are not part of the accreditation

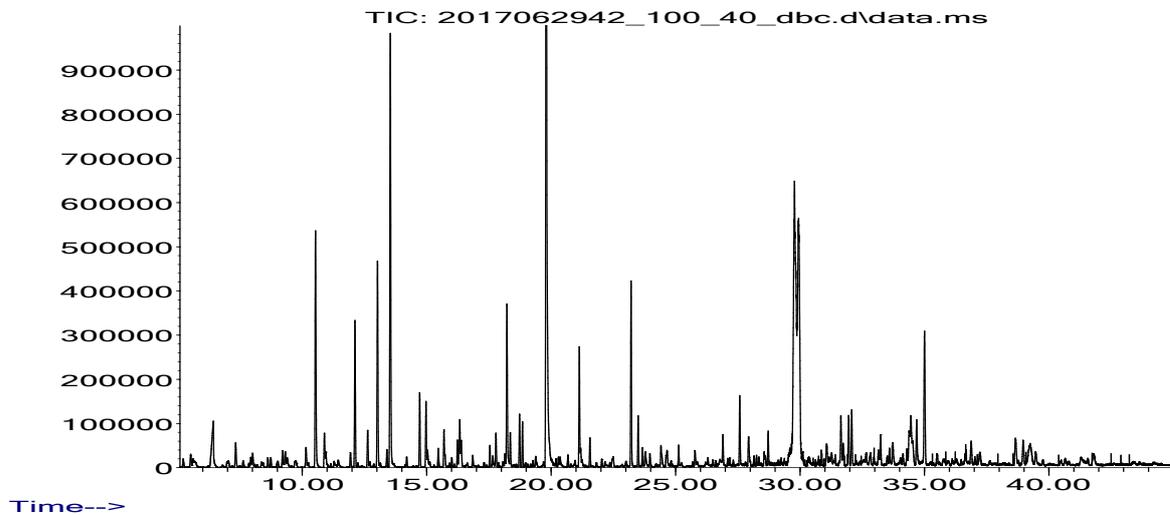
² Identification:

- 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

4.2. CHROMATOGRAMS

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)	0.138	≤ 1
TVOC	75	≤ 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

In the final table is shown whether the products comply to the Belgian decree and which label they get according to the French regulations.

	French regulations	Belgian decree
S1	A ⁺	√