Distribution: Restricted

Delivery report

Emission test report Soudal
Sample Soudatight hybrid

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2016/MRG/R/0673

Soudal
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June 2016

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TABLE OF CONTENTS

1 OBJECTIVE

Determination of the volatile organic compound emissions 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 Emicode label.

2 SAMPLE INFORMATION

Sample group code	2016060
Sample monster code	20160945
Sample identification	**S1: Soudatight hybrid**
Date of production	04/03/2016
Batch N°	205664851 02/17
Type of product	Joint sealant
Date of reception of the sample	11/04/2016
Preconditioning period (start – end)	/
Date of the test (start – end)	22/04/2016 – 20/05/2016

Table 1: Sample information

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
- 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
- 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
- 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
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CEN/TS 16516 method	
Analytical methods	**analytes**
ISO 16000-3	Volatile aldehydes (C1-C4)
ISO 16000-6 + extra clauses	VOC, VVOC, SVOC
Test chamber parameters	**values**
	S1
Chamber volume (m^3)	0.062
Air exchange rate (h^{-1})	0.5
Temperature (°C)	22.7
Relative humidity (%)	50.0
Loading factor (m^2/m^3)	0.007
Sample preparation	
Dimensions (m^2)	0.00045
Application amount (g)	2.79

Table 2: Overview of the test method parameters

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: BELGIAN DECREE

VOC analysis after 28 days						
	CAS number	RT	Identification[1]	Concentration ($\mu g/m^3$)	SER_a ($\mu g/m^2h$)	R_i
VOC with LCI						
TXIB	6846-50-0	29.7	1	13	930	0.029
VOC without LCI (non-assessable)						
TVOC (C6-C16)				13	930	
TSVOC				<5		
R						0.029
Σcarcinogens				<1		
Toluene				<1		
D.L.: detection limit < 0.5 $\mu g/m^3$ Q.L.: quantification limit < 1 $\mu g/m^3$						

Analysis of the volatile aldehydes (C1-C4) after 28 days		
Analyte	CAS number	Concentration ($\mu g/m^3$)
Formaldehyde	50-00-0	<1
Acetaldehyde	75-07-0	<1
D.L.: detection limit < 0.5 $\mu g/m^3$ Q.L.: quantification limit < 1 $\mu g/m^3$		

[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

Parameter	**Concentration ($\mu g/m^3$)**	**Threshold level after 28 days ($\mu g/m^3$)**
R –value (dimensionless)	0.029	≤ 1
TVOC	13	≤ 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

4.2. RESULTS EMISSION TEST: AGBB (2015 PROTOCOL)

analysis after 3 days		
	Concentration ($\mu g/m^3$)	SER_a ($\mu g/m^2h$)
TVOC (C6-C16)	38	2700
Σcarcinogens	<1	

VOC analysis after 28 days						
	CAS number	RT	Identification[1]	Concentration ($\mu g/m^3$)	SER_a ($\mu g/m^2h$)	R_i
VOC with LCI						
TXIB	6846-50-0	29.7	1	13	930	0.029
VOC without LCI (non-assessable)						
TVOC (C6-C16)				13	930	
TSVOC				<5		
R						0.029
Σcarcinogens				<1		
Toluene				<1		
D.L.: detection limit < 0.5 $\mu g/m^3$ Q.L.: quantification limit < 1 $\mu g/m^3$						
Analysis of the volatile aldehydes (C1-C4) after 28 days						
Analyte	CAS number			Concentration ($\mu g/m^3$)		
Formaldehyde	50-00-0			<1		
Acetaldehyde	75-07-0			<1		
D.L.: detection limit < 0.5 $\mu g/m^3$ Q.L.: quantification limit < 1 $\mu g/m^3$						

Parameter	Test after 3 days		Test after 28 days	
	Concentration ($\mu g/m^3$)	**Limit value ($\mu g/m^3$)**	**Concentration ($\mu g/m^3$)**	**Limit value ($\mu g/m^3$)**
R –value (dimensionless)	-	-	0.029	≤ 1
TVOC	38	≤ 10000	13	≤ 1000
TSVOC	-	-	<5	≤ 100
Total carcinogens	<1	≤ 10	<1	≤ 1
TVOC without LCI	-	-	-	≤ 100

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- 3: not identified, calibrated as toluene equivalent

4.3. RESULTS EMISSION TEST: GEV EMICODE

	Concentration (µg/m³)	Classification
TVOC after 3 days	38	EC 1 PLUS
TVOC after 28 days	13	EC 1 PLUS
TSVOC after 28 days	<5	EC 1 PLUS
R value based on German AgBB LCI (NIK) after 28 days	0.029	EC 1 PLUS
Sum of non-assessable VOC	-	EC 1 PLUS
Formaldehyde after 3 days	<1	EC 1 PLUS
Acetaldehyde after 3 days	<1	EC 1 PLUS
Sum of form- and acetaldehyde (ppm)	<0.05	EC 1 PLUS
Sum of volatile C1/C2 after 3 days	<10	EC 1 PLUS
Any volatile C1/C2 after 28 days	<1	EC 1 PLUS

As this joint sealant contains silan functional adhesives a sample was taken to check if the most recent German Occupational Exposure Limit of alcohols are not exceeded during installation work. The identified compound methanol was measured with a concentration of 9 mg/m³, compliant with the 8-hour workplace German limit value of 270 mg/m³.

4.4. RESULTS EMISSION TEST: FRENCH DECREE

	CAS number	Identification[1]	Concentration (µg/m³)	Classification
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			28	A+

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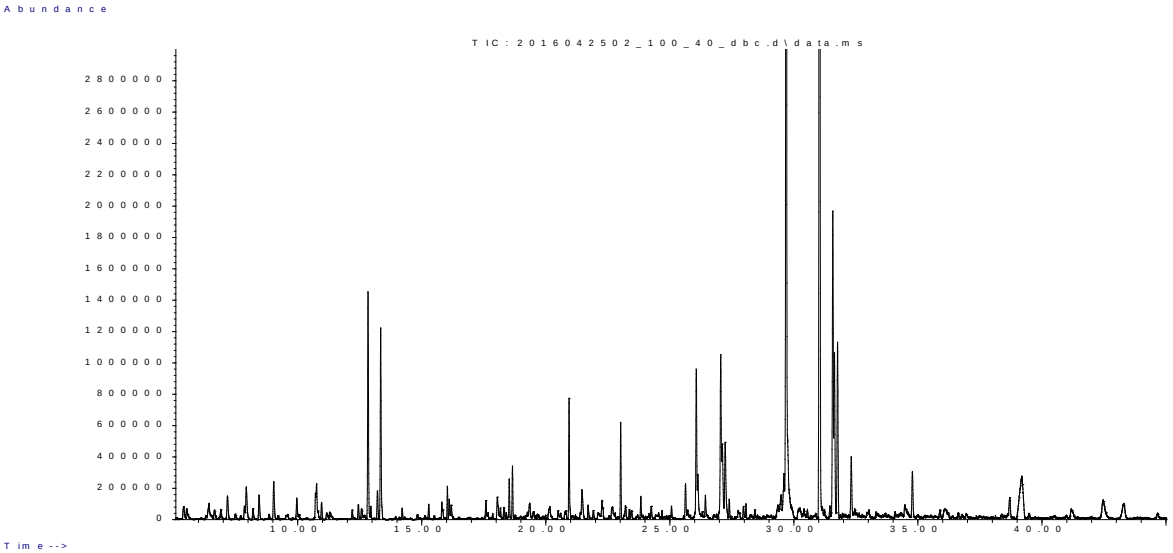
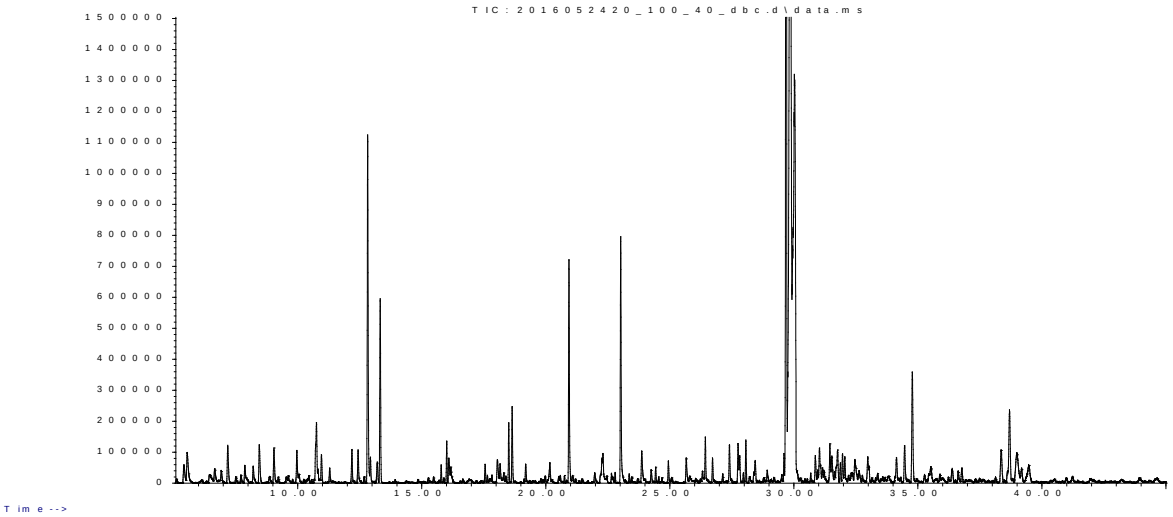
- 3: not identified, calibrated as toluene equivalent

4.5. CHROMATOGRAMS

S1 3 days



S1 28 days



5 CONCLUSION

The tested product complies with the Belgian Royal Decree, the French regulations (A^+), the German AgBB health evaluation procedure and the GEV Emicode label EC 1^{PLUS}. The released alcohol concentrations comply with the 8-hour workplace German limit value, thus EC 1^{PLUS}-R.

This research report contains the results of samples, analysed within the scope of a study ordered by Soudal (Everdongenlaan 18-20, 2300 Turnhout, Belgium). It relates to the samples with the following VITO - identification:

Sample monster codes belonging to sample group 2016060	
From	To
20160945	20160945

Sampling and testing methods with reference MIM-GA-013, MIM-GA-014 and MIM-OR-022 are part of the scope of the ISO 17025 accreditation (BELAC certificate 045-TEST).

The analytical results in this research report only relate to the samples analysed. Interpretations, advice and other not merely objective information are not covered by the ISO 17025 accreditation. Upon request, further information on measurement uncertainty, dates of analysis and sample preservation will be provided by the VITO project leader concerned.

This research report consists of 11 numbered pages, and the signature below confirms the authorisation of the analytical results according to ISO 17025.

M. Lor
Project manager