



Rapport d'essai - Test d'émission

ENVIRONNEMENT

COMPÉTENCES

ANALYSES

PERFORMANCES



Quality of Life

WESSLING Lyon · ZI de Chesnes Tharabie · 30 rue du Ruisseau · 38070 Saint-Quentin-Fallavier
Tel. +33 (0)4 74 99 96 20 · Fax +33 (0)4 74 99 96 37

Votre contact : Florian Vanhessche - Test d'émission dans l'air intérieur
Florian.vanhessche@wessling.fr

WWW.WESSLING.FR

TEST REPORT
Emission Test Chamber Study
according to COV Decree n°2011-1-321

Product: CIRE DURE 2060

Report-No.: **ULY13-008283-1**

Sample-No.: **13-078752-01**

Client: **BIOFA FRANCE**

Project Manager: **Hugues Racine**

Saint Quentin Fallavier, 30/08/2013

The results refer only to the analyzed samples within those conditions: adequate packing, respect of conservation conditions of the samples to the laboratory and recommended time between sampling and analyse respected. The methods covered by the EN ISO 17025 accreditation are marked with an A in the norm table at the end of the report. The results performed by these methods are accredited unless mentioned. The scope of accreditation COFRAC number 1364 is available on www.cofrac.fr for the results accredited in the WESSLING laboratory of Lyon. The tests performed by the German laboratories are accredited by the DAKKS under the number D-PL-14162-01-00 (www.as.dakks.de). This report can only be reproduced in its globality and under the authorization of WESSLING laboratories (EN ISO 17025).

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1 Introduction

The Company BIOFA FRANCE ordered WESSLING Laboratories company to conduct analysis in flow chamber for 28 days, in order to determine the emission of compounds volatile organic (VOC's) and aldehydes on the product "**CIRE DURE 2060**".

At customer request, the trial was limited to a test at 28 days and molecules affected by the 19 April 2011 order on the labelling of construction and decorating products with respect characteristics of volatile pollutant emission.

The test flow chamber technique was performed following the protocol set by the NF EN ISO 16000-9 and NF EN ISO 16000-11. The sampling follows the prerogatives of NF ISO 16000-3 and NF ISO 16000-6 and the loading of the flow chamber was made according to the "**WALL**" scenario.

WESSLING France is accredited to EN 17025 by COFRAC and to NF EN ISO 16000-9 and 11, and to NF ISO 16000-3 and 6.

WESSLING Germany is accredited to EN 17025 by German Accreditation (DAkkS, reach No. D-PL-14162-01-00 – recognized as equivalent by COFRAC) to NF EN ISO 16000-3/ -6/ -9. WESSLING Germany is certified by the German administration (DIBt) and by the German Ministry of Environment ("Umweltbundesamt") for carrying out these tests in flow chambers.

WESSLING is known for getting the highest number of environmental European volunteers labels.

2 Test data

2.1 Test Method

The sample preparation carefully follows the guidelines of NF EN ISO 16000-11 depending on the chosen scenario.

The test chambers are installed in a room under controlled atmosphere thanks to an autonomous ventilation.

The air provided to the chamber come from two compressors. The air is purified by a Prévost Micro-air active charcoal cartridge type.

The chambers whose sealing is controlled by 2 rotameters, one for the inlet, the second for the outlet are equipped with Hygrosens sensor which measures temperature and relative humidity. These sensors are connected to a PC which records datas every ten minutes. The sample remains in the chamber during all the test.

Samplings are performed thanks to Sensidyne pumps on Markes Tenax tubes and SKC DNPH tubes with reference 226-119A.

For the determination of the volatile organic compounds (VOCs) in indoor air according to the standard NF EN ISO 16000-6, the Tenax tube is thermally desorbed and any volatile substances released are identified and quantified by GC / MS.

For the determination of aldehydes in indoor air from the NF EN ISO 16000-3, an adsorption medium (2,4-dinitrophenylhydrazine : DNPH) is used. After elution of the tube with acetonitrile, a qualitative and quantitative analysis is performed by HPLC. Analyses of samples were performed by the WESSLING Laboratory in Saint Quentin Fallavier.

2.2 Sample description

Product identification	CIRE DURE 2060
Batch number	Lot No : 130205.5
Date of arrival in our office	11/06/2013
Production date	01/02/2013
Period of test	02/07/2013 – 29/07/2013
Packaging	200 ml aluminium box

2.3 Test chamber specification

Type of test chamber	Stainless steel	
Chamber volume	110	L
Temperature (average)	22,46 ± 0,08	°C
Relative humidity of the air (average)	50,51 ± 2,23	%
Air change rate	0,5	h ⁻¹
Airflow	917	ml/min
Air speed	0,28	m/s
Loading factor	1,0	m ² /m ³
Rate of specific air exchange	0,5	m ³ /m ² h

2.4 Sample preparation

Surface of the test specimen	0,110 m ²
Mass of the sample applied	3,63 g
Date/time of unpacking	02/07/2013 à 15H00
Date of introduction into the test chamber	02/07/2013
Time of introduction into the test chamber	15H20

2.5 Sampling

Measurement in the test chamber takes place after 28 days after the beginning of the test. It is thus conducted on a sampling on Tenax TA and DNPH tube. These samples and the corresponding blank of the chamber are analyzed with research of VOC (Volatile Organic Compounds) and aldehydes.

Date and duration of the air sampling

	Duration (min.)	Flow (l/min)	Volume (l)
29/07/2013	Tenax: 50	0,10	5,14
	DNPH: 85	0,61	51,54

3 Results

3.1 VOC

The estimated concentrations are the average value of two samplings.

Parameter	CAS n°	Concentration in the chamber Blank (µg/m³)	Concentration at J= 28 (µg/m3) Blank deducted
Toluene	108-88-3	<2	<5
Tetrachlorethylene	127-18-4	<2	<5
Xylene	1330-20-7	<2	<5
Trimethylbenzene	95-63-6	<2	<5
1,4-dichlorobenzene	106-46-7	<2	<5
Ethylbenzene	100-41-4	<2	<5
2-Butoxyethanol	111-76-2	<2	<5
Styrene	100-42-5	<2	<5
TVOC (C6-C16) toluene Eq		19	<20

3.2 Aldehydes

The estimated concentrations are the average value of two samplings.

Parameter	CAS n°	Concentration in the chamber Blank (µg/m³)	Concentration at J= 28 (µg/m3) Blank deducted
Formaldehyde	50-00-0	<2	<3
Acetaldehyde	75-07-0	<2	<3,2*

* Determination limit increased cause of interference.

4 Evaluation

4.1 Classification

The 19 april 2011 decree on the labelling of decorating and construction products with respect to their emission characteristics of volatile pollutant emission limits fixed as follow:

Substances	C ($\mu\text{g}/\text{m}^3$)	B ($\mu\text{g}/\text{m}^3$)	A($\mu\text{g}/\text{m}^3$)	A+($\mu\text{g}/\text{m}^3$)	Results ($\mu\text{g}/\text{m}^3$)
Formaldehyde	>120	<120	<60	<10	<3
Acetaldehyde	>400	<400	<300	<200	<3,2
Toluene	>600	<600	<450	<300	<5
Tetrachloroethene	>500	<500	<350	<250	<5
Xylene	>400	<400	<300	<200	<5
Trimethylbenzene	>2000	<2000	<1500	<1000	<5
1,4-Dichlorobenzene	>120	<120	<90	<60	<5
Ethylbenzene	>1500	<1500	<1000	<750	<5
2-Butoxyethanol	>2000	<2000	<1500	<1000	<5
Styrene	>500	<500	<350	<250	<5
TVOC	>2000	<2000	<1500	<1000	<20

The product " CIRE DURE 2060" batch n° 130205.5 corresponds to the A+ classification criterion.

5 Conclusion

The company BIOFA FRANCE ordered the company "WESSLING laboratories" to conduct analyses in a test chamber for 28 days on the product "CIRE DURE 2060" to know the emission of volatile organic compounds (VOC's) and aldehydes.


The exploitation of results takes place according to the 19 April 2011 decree on the labelling of decorating and construction products with regard to their characteristics of volatile pollutant emissions.

The sample "CIRE DURE 2060" batch number 130205.5 fulfills the criteria of the A+ classification after 28 days of test.

Standards used:

Determination of formaldehyde	NF ISO 16000-3 (A)
Determination of volatile organic compounds in the test chamber	NF ISO 16000-6 (A)
VOC emissions – Method of the test chamber	NF EN ISO 16000-9 (A)
VOC emissions – Sampling and test preparation	NF EN ISO 16000-11 (A)

Tested by  **WESSLING**


Hugues FACINE

Responsable Chambres d'émission

6 Annex

6.1 Recovery test

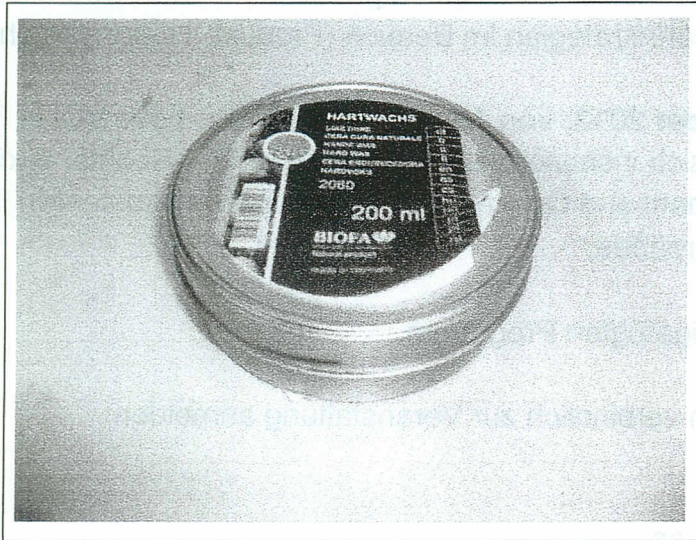
Toluene	108,7%
Dodecane	94.4%

6.2 Detection limits and measurement uncertainties

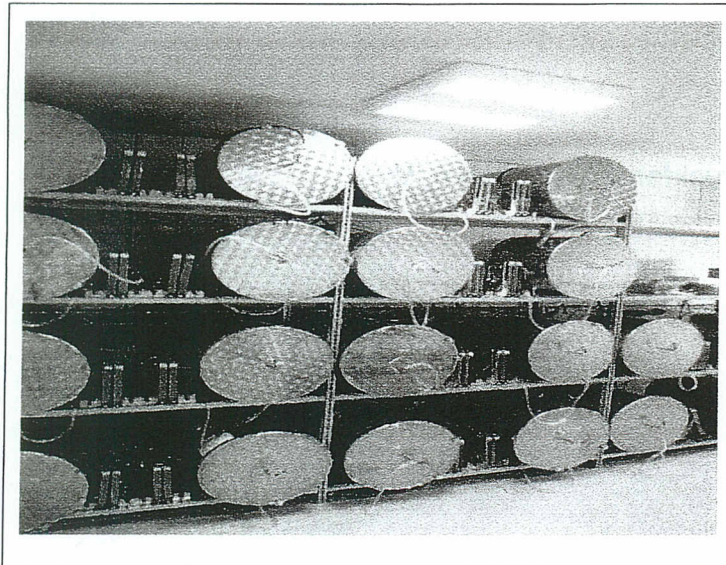
Substances	LD	Uncertainty#
Toluene	0,33 ng absolute	21-27%
Tetrachlorethylene	0,33 ng absolute	19-26%
m,p-Xylene	0,33 ng absolute	19-24%
o-Xylene	0,33 ng absolute	19-21%
Trimethylbenzene	0,33 ng absolute	19-21%
1,4-dichlorobenzene	0,33 ng absolute	19-21%
Ethylbenzene	0,33 ng absolute	19-20%
2-Butoxyethanol	0,33 ng absolute	28-33%
Styrene	0,33 ng absolute	22-24%
Formaldehyde	0,01 ng absolute	18-19%
Acetaldehyde	0,08 ng absolute	21-23%

The uncertainties have been calculated according to the GUM method and consider the analysis and the sampling.

Documentation:



tested Sample



Test chambers