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France

Test Report No. 57862-A001-FVO-L III

Test objective:	Evaluation according to French VOC- and CMR-regulation
Article designation according to order:	Coala MagForce PVC
Sample/batch according to order:	2205240023
Sampling by:	see sampling sheet
Date of sampling:	10/11/2022
Location of sampling:	Almere, The Netherlands
Date of production:	18/08/2022
Date of report:	01/02/2023
Number of pages of report:	16
Testing laboratory:	eco-INSTITUT Germany GmbH, Köln
Test objective fulfilled:	✓ Class A+

Note:

The test results in the report refer exclusively to the test sample submitted by the manufacturer. The report is not permitted to be used in product and company advertising. The report may be published in full as technical documentation on the Internet with the written consent of eco-INSTITUT Germany GmbH. eco-INSTITUT Germany GmbH has recommended that the manufacturer repeats the test after 3 years at the latest. More information at www.eco-institut.de/en/advertising

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Sample View

Internal sample number (assigned by the laboratory)	Article designation according to order	Sample/batch number according to order	Receipt of sample	Condition upon delivery	Type of sample
57862-A001	Coala MagForce PVC	2205240023	17/11/2022	without objection	Magnetic film



57862-A001

Statement of conformity with VOC- and CMR- regulation

The sample with the internal sample number 57862-A001 has been tested on behalf of **Antalis**. The article description according to the order is **Coala MagForce PVC**.

This evaluation bases on the test criteria of the decree no. 2011-321 of 23rd March 2011 (VOC regulation) and executive decisions of 28th May 2009 and 30th April 2009 (CMR regulation) of the French Ministry of Ecology, Sustainable Development, Transport and Housing.

The results documented in the test report were evaluated as follows.¹

VOC regulation

Emission analysis	Concentration (Test chamber air) [µg/m³]	Class			
Substance	after 28 days	C	B	A	A+
Formaldehyde	< 2	> 120	< 120	< 60	< 10
Acetaldehyde	< 2	> 400	< 400	< 300	< 200
Toluene	3	> 600	< 600	< 450	< 300
Tetrachlorethylene	< 1	> 500	< 500	< 350	< 250
Xylene	< 1	> 400	< 400	< 300	< 200
1,2,4-Trimethylbenzene	< 1	> 2000	< 2000	< 1500	< 1000
1,4-Dichlorbenzene	< 1	> 120	< 120	< 90	< 60
Ethylbenzene	< 1	> 1500	< 1500	< 1000	< 750
2-Butoxyethanol	< 1	> 2000	< 2000	< 1500	< 1000
Styrene	< 1	> 500	< 500	< 350	< 250
TVOC_{tol}	12	> 2000	< 2000	< 1500	< 1000

CMR regulation

Emission analysis	Concentration (Test chamber air) [µg/m³]	Requirement [µg/m³]
Substance	after 28 days	after 28 days
Benzene	< 1	< 1
Trichlorethylene	< 1	< 1
Di(2-ethylhexyl)phthalate (DEHP)	< 1	< 1
Dibutylphthalate (DBP)	< 1	< 1

¹ If a measurement result that slightly exceeds the specification is assessed as “not fulfilled”, this is based on the agreement of the “shared risk of measurement uncertainty (shared risk approach)”. According to this, the probability that the statement is correct is $\geq 50\%$. Similarly, a result slightly below the specification value also only has a probability of $\geq 50\%$ of being compliant. I.e., the risk of making a false negative statement regarding the fulfilment of the specification is just as high as the risk of making a false positive statement (more information at https://www.eco-institut.de/en/2019/07/measurement_uncertainty/).

Summary statement of conformity with VOC- and CMR- regulation

The sample with the internal sample number 57862-A001, article description according to order: **Coala MagForce PVC**, meets the requirements of the **Class A+** of the decree no. 2011-321 of 23rd March 2011 (VOC regulation) and executive decisions of 28th May 2009 and 30th April 2009 (CMR regulation) of the French Ministry of Ecology, Sustainable Development, Transport and Housing.

Cologne, 01/02/2023

A handwritten signature in black ink, appearing to read "Arne Herzog".

Arne Herzog,
(Project management)

Déclaration de conformité avec les critères du COV décret et du CMR arrêté

L'échantillon avec le numéro d'échantillon interne 57862-A001 a été testé sous la responsabilité du **Antalis**. La description de l'article selon la commande est **Coala MagForce PVC**.

Cette évaluation est basée sur les critères du décret n° 2011-321 du 23 mars 2011 (COV décret) et arrêté du 28 mai 2009 et 30 avril 2009 (CMR arrêté) par le Ministère de l'écologie, du développement durable, des transports et du logement.

Les résultats documentés dans le rapport du test sont évalués comme suit.²

COV décret

Analyse des émissions	Concentration (air de la chambre d'essai) [µg/m³]	Classe			
Substance	au bout de 28 jours	C	B	A	A+
Formaldéhyde	< 2	> 120	< 120	< 60	< 10
Acétaldéhyde	< 2	> 400	< 400	< 300	< 200
Toluène	3	> 600	< 600	< 450	< 300
Tétrachloréthylène	< 1	> 500	< 500	< 350	< 250
Xylène	< 1	> 400	< 400	< 300	< 200
1,2,4-Triméthylbenzène	< 1	> 2000	< 2000	< 1500	< 1000
1,4-Dichlorobenzène	< 1	> 120	< 120	< 90	< 60
Ethylbenzène	< 1	> 1500	< 1500	< 1000	< 750
2-Butoxyéthanol	< 1	> 2000	< 2000	< 1500	< 1000
Styrène	< 1	> 500	< 500	< 350	< 250
COV_{tot}	12	> 2000	< 2000	< 1500	< 1000

CMR arrêté

Analyse des émissions	Concentration (air de la chambre d'essai) [µg/m³]	Valeur limite [µg/m³]
Substance	au bout de 28 jours	au bout de 28 jours
Benzène	< 1	< 1
Trichloréthylène	< 1	< 1
Phthalate de bis (2-éthylhexle) (DEHP)	< 1	< 1
Phthalat de dibutyle (DBP)	< 1	< 1

² Si un résultat de mesure dépasse légèrement les exigences et est évalué "non conforme", cette évaluation se base sur l'accord du "risque partagé d'incertitude de mesure (Shared Risk-Ansatz)". La probabilité que la déclaration soit correcte est ensuite $\geq 50\%$. De même, un résultat légèrement inférieur à la valeur requise n'est conforme qu'avec une probabilité de $\geq 50\%$. Cela signifie que le risque de faire une fausse déclaration négative pour satisfaire à l'exigence est aussi élevé que le risque de faire une fausse déclaration positive (plus d'informations sur https://www.eco-nstitut.de/en/2019/07/measurement_uncertainty/).

Résumé de la 7rench7ion7 de conformité

L'échantillon avec le numéro d'échantillon interne 57862-A001, description de l'article selon la commande: **Coala MagForce PVC**, correspond aux exigences de la **classification A+** sur les critères du décret n° 2011-321 du 23 mars 2011 (COV décret) et arrêté du 28 mai 2009 et 30 avril 2009 (CMR arrêté) par le Ministère de l'écologie, du développement durable, des transports et du logement.

Cologne, 01/02/2023

A handwritten signature in black ink, appearing to read "Arne Herzog".

Arne Herzog,
(direction du projet)

Laboratory report

1 Emission analysis

Test method

DIN EN 16516:2020-10	Testing and evaluation of the release of dangerous substances; determination of emissions into indoor air
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A001, Preparation of test sample

Date:	02/12/2022
Sample preparation:	not applicable
Masking of backside:	yes
Masking of edges:	no
Relationship of unmasked edges to surface:	not applicable
Loading reference unit:	m ² (area-specific)
Dimensions:	7.1 cm x 7.0 cm

A001, Test chamber conditions according to DIN EN ISO 16000-9:2008-04

Chamber volume:	0.100 m ³
Temperature:	23 °C ± 1 °C
Relative humidity:	50 % ± 1 %
Air pressure:	normal
Air:	cleaned
Air change rate:	0.5 h ⁻¹
Air velocity:	0.3 m/s
Loading:	0.05 m ² /m ³
Specific air flow rate:	10 m ³ /(m ² · h)
Starting time of the test (t ₀):	02/12/2022
Air sampling:	28 days after test chamber loading

Analytics

Aldehydes and ketones	DIN ISO 16000-3:2013-01
Limit of quantification:	2 µg/m ³
Volatile organic compounds	DIN ISO 16000-6:2022-03
Limit of quantification:	1 µg/m ³ (1,4-Cyclohexanedimethanol, Diethylene glycol, 1,4-Butanediol: 5 µg/m ³)
Note for analysis:	not specified

1.1 Sample A001, Volatile organic compounds after 28 days

Test objective:

Volatile organic compounds according to „Arrêté du 19 avril 2011 relatif à l'étiquetage des produits de construction ou de rénovation de mur ou de sol et des peintures et vernis sur leurs émissions de polluants volatils“ (French VOC-regulation, 10 substances) and „Arrêté du 30 avril 2009 relatif aux conditions de mise sur le marché des produits de construction et de rénovation contenant des substances cancérigènes, mutagènes ou reprotoxiques de catégorie 1 ou 2“ (French CMR-regulation, 2 substances), test chamber, air sampling 28 days after test chamber loading

Test result:

Internal sample number: | 57862-A001

No.	Substance	CAS No.	RT [min]	Concentration+ (test chamber air) substances $\geq 1 \mu\text{g}/\text{m}^3$ after 28 days DNPH $\geq 2 \mu\text{g}/\text{m}^3$ after 28 days [$\mu\text{g}/\text{m}^3$]	Toluene- equivalent substances $\geq 5 \mu\text{g}/\text{m}^3$ after 28 days [$\mu\text{g}/\text{m}^3$]
1	Aromatic hydrocarbons				
1-1	Toluene	108-88-3	7.81	3	< 5
1-2	Ethylbenzene	100-41-4		< 1	< 5
1-3	Xylene, mix of o-, m- and p-Xylene isomers	1330-20-7		< 1	< 5
1-4	p-Xylene (including m-Xylol)	106-42-3		< 1	< 5
1-6	o-Xylene	95-47-6		< 1	< 5
1-11	1,2,4-Trimethylbenzene	95-63-6		< 1	< 5
1-25	Styrene	100-42-5		< 1	< 5
6	Glycols, Glycol ethers, Glycol esters				
6-3	Ethylene glycol monobutyl ether (2-Butoxyethanol)	111-76-2		< 1	< 5
7	Aldehydes				
7-20	Acetaldehyde	75-07-0		< 2	n. d.
7-22	Formaldehyde	50-00-0		< 2	n. d.
13	Other identified substances in addition to LCI list				
	Benzene	71-43-2		< 1	< 5
	1,4-Dichlorobenzene	106-46-7		< 1	< 5
	Trichloroethene	79-01-6		< 1	< 5
	Tetrachloroethene	127-18-4		< 1	< 5

+ identified and calibrated substances, substance specific calculated
 n.d. = not determinable

Remark: It is not permitted to publish extracts of this report and the comments on the first page of this report apply.

TVOC, Total volatile organic compounds	Concentration after 28 days [$\mu\text{g}/\text{m}^3$]	SERa [$\mu\text{g}/(\text{m}^2 \cdot \text{h})$]
Sum of VOC according to ISO 16000-6	12	120

1.2 Phthalates, chamber air analytics

Test parameter:

Phthalates, test chamber, air sampling 28 days after test chamber loading

Test method:

Analytics: | DIN ISO 16000-6:2022-03

Test result:

Internal sample number	Substance	Concentration (test chamber air) [µg/m³]	Limit of quantification (test chamber air) [µg/m³]
57862-A001	Dibutyl phthalate (DBP)	< q.l.	1
	Bis(2-ethylhexyl) phthalate (DEHP)	< q.l.	1

< q.l. = Value below quantification limit

Cologne, 25/01/2023



Michael Stein, Dipl.-Chem.
(Laboratory Management)



Appendix

Sampling sheet

see test report No. 57862-A001-FV0-L dated 24/01/2023

Definition of terms

CAS No. (Chemical Abstracts Service)	International designation standard for chemical substances
CMR	VOCs, VVOCs and SVOCs classified as carcinogenic, mutagenic or toxic for reproduction according to Regulation (EC) No. 1272/2008, TRGS 905, IARC list and DFG (MAK list)
NIK / LCI	Lowest concentration of interest; substance-specific value for health assessment of emissions from products, indicated in $\mu\text{g}/\text{m}^3$
RT (retention time)	Total time required for an analyte to pass the column (time between injection and detection of the analyte)
R value	Sum of quotients of concentration and LCI value for all substances for which a LCI value is derived
R value according to AgBB	R-value for all substances $\geq 5 \mu\text{g}/\text{m}^3$ with LCI value, calculated according to the LCI list of the AgBB scheme
R-value according to Belgian regulation	R-value for all substances $\geq 5 \mu\text{g}/\text{m}^3$ with LCI-value, calculated according to the LCI-list of the Belgian regulation
R value according to eco-INSTITUT-Label	R-value for all substances $\geq 1 \mu\text{g}/\text{m}^3$ with LCI value, calculated according to the LCI list of the AgBB scheme
R value according to EU-LCI	R-value for all substances $\geq 5 \mu\text{g}/\text{m}^3$ with EU-LCI value, calculated according to the EU-LCI list of the European Commission
SER	Specific emission rate (see "Explanation of Specific Emission Rate SER")
Toluene equivalent	Concentration of a substance quantified by the TIC response factor of toluene (calculation of the concentration by comparing the integral of the substance with the integral of toluene)
VOC (volatile organic compound)	Organic compound eluting in the retention range from C6 (n-hexane) to C16 (n-hexadecane)
TVOC	Sum of the concentrations of all identified and unidentified volatile organic compounds eluting in the retention range from C6 (n-hexane) to C16 (n-hexadecane)
TVOC according to DIN EN 16516	Sum of all VOC $\geq 5 \mu\text{g}/\text{m}^3$ in the retention range C6 to C16, calculated as toluene equivalent (used i.a. for M1)
TVOC according to AgBB	Sum of all VOCs with LCI $\geq 5 \mu\text{g}/\text{m}^3$ (quantified substance-specific) and all VOCs without LCI $\geq 5 \mu\text{g}/\text{m}^3$ (as toluene equivalent) (used i.a. for the Blue Angel)
TVOC according to eco-INSTITUT-Label	Sum of all calibrated VOC $\geq 1 \mu\text{g}/\text{m}^3$ (quantified substance-specific) and all non-calibrated VOC $\geq 1 \mu\text{g}/\text{m}^3$ (as toluene equivalent) (used i.a. for natureplus)
TVOC according to ISO 16000-6	Total area of the chromatogram in the retention range C6 – C16 as toluene equivalent according to DIN ISO 16000-6, Annex A.1 item 3 (used i.a. for CDPH, BIFMA and the French VOC regulation)
TVOC without LCI according to AgBB	Sum of all VOCs without LCI $\geq 5 \mu\text{g}/\text{m}^3$ as toluene equivalent
TVOC without LCI according to eco-INSTITUT-Label	Sum of all calibrated VOCs without LCI $\geq 1 \mu\text{g}/\text{m}^3$ (quantified substance-specific) and all non-calibrated VOCs without LCI $\geq 1 \mu\text{g}/\text{m}^3$ (as toluene equivalent)
VVOC (very volatile organic compound)	Organic compound eluting in the retention range $< \text{C6}$ (n-hexane)

TVVOC	Sum of the concentrations of all identified and unidentified very volatile organic compounds eluting in the retention range < C6 (n-hexane)
TVVOC according to AgBB	Sum of all VVOC with LCI $\geq 5 \mu\text{g}/\text{m}^3$ (quantified substance-specific) and all VVOC without LCI $\geq 5 \mu\text{g}/\text{m}^3$ (as toluene equivalent)
TVVOC according to eco-INSTITUT-Label	Sum of all calibrated VVOC $\geq 1 \mu\text{g}/\text{m}^3$ (substance-specific quantified) and all non-calibrated VVOC $\geq 1 \mu\text{g}/\text{m}^3$ (as toluene equivalent)
SVOC (semi volatile organic compound)	Organic compound eluting in the retention range > C16 (n-hexadecane) to C22 (docosane)
TSVOC	Sum of the concentrations of all identified and unidentified semi volatile organic compounds eluting in the retention range > C16 (n-hexadecane) to C22 (docosane)
TSVOC according to DIN EN 16516	Sum of all SVOC $\geq 5 \mu\text{g}/\text{m}^3$ (as toluene equivalent)
TSVOC without LCI according to AgBB	Sum of all SVOC without LCI $\geq 5 \mu\text{g}/\text{m}^3$ (as toluene equivalent)
TSVOC with LCI according to AgBB	Sum of all SVOC with LCI $\geq 5 \mu\text{g}/\text{m}^3$ (quantified substance-specific)
TSVOC without LCI according to eco-INSTITUT label	Sum of all calibrated SVOC without LCI $\geq 1 \mu\text{g}/\text{m}^3$ (quantified substance-specific) and all non-calibrated SVOC without LCI $\geq 1 \mu\text{g}/\text{m}^3$ (as toluene equivalent)
TSVOC with LCI according to eco-INSTITUT-Label	Sum of all SVOC with LCI $\geq 1 \mu\text{g}/\text{m}^3$ (quantified substance-specific)

Commentary on emission analysis

Test method

Measurement of the volatile organic compounds takes place in the test chamber in conditions similar to those applying in practice. Standardized test conditions are defined for the test chamber regarding loading, air exchange, relative humidity, temperature, and incoming air, based on the type of test specimen and the required guideline. These conditions and the underlying standards are to be found in the section on test methods in the laboratory report.

Air samples are taken from the test chamber at defined points in time during the continuously running test. To this end, approximately 5 L of air are collected from the test chamber at an air flow rate of 100 mL/min on Tenax and approx. 100 L at an air flow rate of 0.8 L/min on silica gel coated with DNPH (2,4-dinitrophenylhydrazine).

After thermal desorption, the substances adsorbed on Tenax are analysed using gas chromatographic separation and mass spectrometric determination. The gas chromatographic separation is performed with a slightly polar capillary column of 60 m in length.

The substances derivatized with DNPH for the determination of formaldehyde and other short-chain carbonyl compounds (C1 - C6) are analysed using high-performance liquid chromatography (HPLC).

Over 200 compounds, including volatile organic compounds (C6 - C16), semi-volatile organic compounds (C16 - C22) and – insofar as possible with this method – also very volatile organic compounds (less than C6) are determined and quantified individually.

All other substances – insofar as is possible – are identified through comparison with a library of spectra. The quantification of these substances and non-identified substances is performed through a comparison of their signal area with the signal of toluene.

The determined substance concentrations are corrected using the recovery rate of the internal standard (toluene-d8). Identification and quantification of substances is carried out from a concentration (limit of quantification) of 1 µg per m³ test chamber air or 2 µg/m³ for DNPH-derivatised substances. In the case of highly loaded samples, the evaluation limit of non-calibrated substances is raised in some cases, as it is no longer possible to assign individual, small signals due to the large number of signals.

Quality assurance

The eco-INSTITUT Germany GmbH is granted flexible scope of accreditation pursuant to DIN EN ISO/IEC 17025:2018-03. The accreditation covers the analytical determination of all volatile organic compounds, including the test chamber method.

In each analysis the analytical system is checked using an external standard based on the specifications in standard DIN EN 16516:2020-10. The stability of the analytical systems is documented based on the test standard using control charts.

Laboratory performance is assessed at least once a year in inter-laboratory comparisons by comparing the results with those obtained by other laboratories for identical samples.

A blank is run prior to introducing the test specimen into the test chamber to check for the possible presence of volatile organic compounds.

The expanded measurement uncertainty U for the analytical determination of all volatile organic compounds, including the test chamber method, is estimated to 41.7 %. The calculation is based on DIN ISO 11352:2013-03 (Nordtest).

Explanation of Specific Emission Rate SER

Emission measurements are accomplished in test chambers under defined physical conditions (temperature, relative humidity, room loading, air change rate etc.).

Test chamber measurement results are directly comparable only if the investigations were accomplished under the same basic conditions.

If the differences of the physical conditions refer only to the change of air rate and/or the loading, the "SER" or "specific emission rate" can be used for comparability of the measurement results. The SER indicates how many volatile organic compounds (VOC) are released by the sample for each material unit and hour (h).

The SER can be calculated using the formula below for each proven individual component of the VOC from the data in the test report.

As material units the following are applicable:

l = unit of length (m)	relation between emission and length
a = unit area (m ²)	relation between emission and surface
v = unit volume (m ³)	relation between emission and volume
u = piece unit (unit = piece)	relation between emission and complete unit

From this the different dimensions for SER result:

length-specific	SER _l	in µg/(m·h)
surface-specific	SER _a	in µg/(m ² ·h)
volume-specific	SER _v	in µg/(m ³ ·h)
unit-specific	SER _u	in µg/(u·h)

SER thus represents a product specific rate, which describes the mass of the volatile organic compound, which is emitted by the product per time unit at a certain time after beginning of the examination.

$$SER = q \cdot c$$

q	specific air flow rate (quotient from change of air rate and loading)
c	concentration of the measured substance(s)

The result can be indicated in milligrams (mg) in place of micro grams (µg), whereby 1 mg = 1000 µg.