eco-INSTITUT Germany GmbH
Laborprüfung
Laboratory testing

NMC s.a.
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4731 Eynatten
Belgien

Test Report No. B57762-A001-FVO-L

This test report replaces the test report no. 57762-A001-FVO-L dated 24/11/2022.
(Correction: article designation changed from "nomafloor" to "nomafloor")

Test objective:	**Evaluation according to French VOC- and CMR-regulation**
Article designation according to order:	**nomafloor M80** **Tested as a representative for:** - **nmc HDPS skirtings in FINISHED WHITE, COLOURS (RAL/NCS)**
Sample/batch according to order:	**6000032138**
Sampling by:	Zoé Van Rey
Date of sampling:	10/10/2022
Location of sampling:	no information
Date of production:	07/10/2022
Date of report:	15/12/2022
Number of pages of report:	15
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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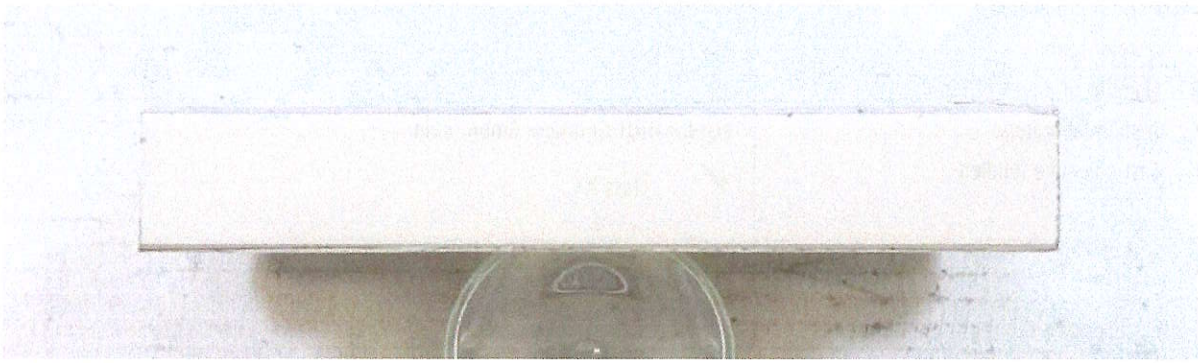
Sample View

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
57762-A001	nomafloor M80	6000032138	13/10/2022	without objection	Skirting



57762-A001

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Statement of conformity with VOC- and CMR- regulation

The sample with the internal sample number 57762-A001 has been tested on behalf of **NMC s.a.**. The article description according to the order is **nomafloor M80**.

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	< 1	> 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
$TVOC_{tol}$	10	**> 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
Bis(2-ethylhexyl) phthalate (DEHP)	< 1	< 1
Dibutyl phthalate (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 ≥ 50 %. Similarly, a result slightly below the specification value also only has a probability of ≥ 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/).

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Summary statement of conformity with VOC- and CMR- regulation

The sample with the internal sample number 57762-A001, article description according to order: **nomafloor M80**, 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, 15/12/2022

M.-A. Dobaj

Marc-Anton Dobaj, M.Sc. Crystalline Materials
(Project management)

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

L'échantillon avec le numéro d'échantillon interne 57762-A001 a été testé sous la responsabilité du **NMC s.a.**. La description de l'article selon la commande est **nomafloor M80**.

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	< 1	> 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
$COVT_{tot}$	10	**> 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-éthylhexyle) (DEHP)	< 1	< 1
Phthalate 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 ≥ 50 %. De même, un résultat légèrement inférieur à la valeur requise n'est conforme qu'avec une probabilité de ≥ 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/).

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Résumé de la déclaration de conformité

L'échantillon avec le numéro d'échantillon interne 57762-A001, description de l'article selon la commande: **nomafloor M80**, 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, 15/12/2022

M.-A. Dobaj

Marc-Anton Dobaj, M.Sc. Crystalline Materials
(direction du projet)

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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

A001, Preparation of test sample

Date:	21/10/2022
Sample preparation:	not applicable
Masking of backside:	yes
Masking of edges:	yes, 100 %
Relationship of unmasked edges to surface:	not applicable
Loading:	related to area
Dimensions:	8.75 cm x 1 cm

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

Chamber volume:	0.125 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:	0.007 m^2/m^3
Specific air flow rate:	71.4 $m^3/(m^2 \cdot h)$
Starting time of the test (t0):	21/10/2022
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

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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 revêtement 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 décoration 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:	57762-A001

No.	Substance	CAS No.	RT [min]	Concentration+ (test chamber air) substances ≥ 1 µg/m³ after 28 days DNPH ≥ 2 µg/m³ after 28 days [µg/m³]	Toluene-equivalent substances ≥ 5 µg/m³ after 28 days [µg/m³]
1	**Aromatic hydrocarbons**				
1-1	Toluene	108-88-3		< 1	< 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

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TVOC, Total volatile organic compounds	Concentration after 28 days [µg/m³]	SERa [µg/(m² • h)]
Sum of VOC according to DIN ISO 16000-6	10	710

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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]
57762-A001	Dibutyl phthalate (DBP)	< q.l.	1
	Bis(2-ethylhexyl) phthalate (DEHP)	< q.l.	1

< q.l. = Value below quantification limit

Cologne, 24/11/2022

M. Stein

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

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Appendix

Sampling sheet

eco
Laborprüfung

Probenahmebegleitblatt

*Bitte möglichst alle Felder ausfüllen. Sind die mit einem * gekennzeichneten Felder nicht ausgefüllt, können die Prüfstücke nicht zur Laborprüfung angenommen werden.*

57762-001

Bitte pro Probe ein Probenahmebegleitblatt ausfüllen! Die Probenahmeanleitung ist unbedingt einzuhalten!

Auftragserteilung durch* Katharina STAS

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X **Name des Herstellerbetriebes** NMC SA
Gert-Noel-Straße
4731 Eynatten
BELGIEN

Name des Vertriebs (wenn abweichend vom Herstellerbetrieb)

Probenahme durch* (Name, Firma, Telefon)

Probennahmeort*

Prüfstück-/ Artikelbezeichnung* nomafloor M80

Probeart (z.B. Holzwerkstoff, Bodenbelag) Sockelleiste

Artikel-Nr. 3044915

Proben-/ Chargen-Nr.* 6000032138

Modell / Programm / Serie nomafloor - Skirtings

Produktionsdatum der Charge* 7/10/2022

Wo wurde die Probe vor Probenahme gelagert? X Fertigung
Lager
Sonstiges

Datum der Probennahme* 10/10/2022

Wie wurde das Produkt vor Probennahme gelagert? X offen
verpackt

Lagerort

Verpackungsmaterial

ggf. zusätzliche Angaben / Besonderheiten zur Probennahme /
Unklarheiten, Fragen, mögliche negative Einflüsse durch Emissionen am Probenahmeort - z.B. Kontaminationen während der Produktion/Lagerung

Bestätigung*
Hiermit wird durch die Unterzeichnung **(Probenahme)** die Richtigkeit der oben gemachten Angaben bestätigt.

Datum (dd/mm/yyyy) 10/10/2022

Unterschrift

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

Definition of terms

VOC (volatile organic compounds)	All individual compounds with a concentration ≥ 1 µg/m³ in the retention range C_6 (n-Hexane) to C_{16} (n-Hexadecane)
TVOC	Total volatile organic compounds
TVOC according to DIN EN 16516	Sum of all VOC ≥ 5 µg/m³ in the retention range C_6 to C_{16}, calculated as toluene equivalent (used, among others, with M1)
TVOC according to AgBB	Sum of all identified and calibrated VOC ≥ 5 µg/m³ with LCI and not calibrated VOC ≥ 5 µg/m³ calculated as toluene equivalent (also used, among others, for the Blue Angel)
TVOC according to eco-INSTITUT-Label	Sum of all identified and calibrated VOC ≥ 1 µg/m³ and not calibrated VOC ≥ 1 µg/m³ calculated as toluene equivalent (also used for natureplus)
TVOC according to DIN ISO 16000-6	Total area of chromatogram in the retention range C_6 to C_{16}, calculated as toluene equivalent (used, among others, by CDPH, BIFMA or the French VOC Regulation)
TVOC without LCI according to AgBB	Sum of all VOC without NIK ≥ 5 µg/m³ in the retention range C_6 to C_{16}
TVOC without LCI according to eco-INSTITUT-Label	Sum of all VOC without NIK ≥ 1 µg/m³ in the retention range C_6 to C_{16}
CMR-VOC (carcinogenic, mutagenic, reproduction-toxic VOC, VVOC and SVOC)	All individual substances with the following categories: Regulation (EC) No. 1272/2008: Category Car.1A and 1B, Muta. 1A and 1B, Repr. 1A and 1B TRGS 905: K1A, K1B, M1A, M1B, R1A, R1B IARC: Group 1 and 2A DFG (MAK lists): Category III1and III2
VVOC (very volatile organic compounds)	All individual substances with a concentration ≥ 1 µg/m³ in the retention range < C_6
TVVOC	Total very volatile organic compounds
TVVOC according to AgBB	Sum of all identified and calibrated VVOC ≥ 5 µg/m³ with LCI
TVVOC according to eco-INSTITUT-Label	Sum of all identified and calibrated VVOC ≥ 1 µg/m³ with LCI
SVOC (semi volatile organic compounds)	All individual substances ≥ 1 µg/m³ in the retention range C_{16} (n-hexadecane) to C_{22} (docosane)
TSVOC	Total semi volatile organic compounds
TSVOC according to DIN EN 16516	Sum of all SVOC in the retention range C_{16} to C_{22}, calculated as toluene equivalent
TSVOC without LCI according to AgBB	Sum of all SVOC ≥ 5 µg/m³ without LCI
TSVOC without LCI according to eco-INSTITUT-Label	Sum of all SVOC ≥ 1 µg/m³ without LCI
TSVOC with LCI according to AgBB	Sum of all substance-specific calibrated and SVOC ≥ 5 µg/m³ with LCI
SER	Specific emission rate (see "Explanation of Specific Emission Rate SER")
LCI value	Lowest Concentration of Interest; calculated value for the evaluation of VOC, established by the Committee for Health-related Evaluation of Building Products (Ausschuss zur gesundheitlichen Bewertung von Bauprodukten - AgBB)

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R value	The quotient of the concentration and the LCI value is generated for every substance which is detected in the test chamber air. The sum of the calculated quotients results in the R value.
R value according to eco-INSTITUT-Label	R value for all identified substances ≥ 1 µg/m³ with LCI, established by the AgBB
R value according to AgBB	R value for all identified substances ≥ 5 µg/m³ with LCI, established by the AgBB
R value according to Belgian regulation	R value for all identified substances ≥ 5 µg/m³ with LCI, established by the Belgian regulation
R value according to EU-LCI	R value for all identified substances ≥ 5 µg/m³ with EU-LCI value, established by the European Commission
RT (retention time)	Time for a particular analyte to pass through the system (from the column inlet to the detector)
CAS No. (Chemical Abstracts Service)	International unique numerical identifier for a chemical substance
Toluene equivalent	Concentration of the substance detected in the test chamber air for which the quantification was carried out with regard to toluene.

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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).

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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.

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