ENVIRONMENTAL PRODUCT DECLARATION

as per /ISO 14025/ and /EN 15804/

Owner of the Declaration	nora systems GmbH
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Issue date	06.12.2018
Valid to	05.12.2023

norament® 926, resilient floor covering from rubber – according to EN 12199 (Resilient floor coverings – Specifications for homogeneous and heterogeneous relief rubber floor coverings)

nora systems GmbH

Institut Bauen und Umwelt e.V.

ECO PLATFORM EPD EN 15804 VERIFIED

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1. General Information

nora systems GmbH	norament® 926
Programme holder IBU - Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany	**Owner of the declaration** nora systems GmbH Höhnerweg 2-4 69469 Weinheim (Bergstrasse) Germany
Declaration number EPD-NOR-20180126-IBA1-EN	**Declared product / declared unit** 1m² resilient floor covering (A1-A3: 1m² produced, A1-A5: 1m² installed)
This declaration is based on the product category rules: Floor coverings, 02/2018 (PCR checked and approved by the SVR)	**Scope:** Product line norament® 926 High-pressure pressed homogeneous floor coverings made from rubber in various colours and designs. This declaration is an Environmental Product Declaration according to ISO 14025 describing the specific environmental performance of the mentioned construction products produced in Germany (Weinheim/Bergstraße). The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.
Issue date 06.12.2018	**Verification** The standard /EN 15804/ serves as the core PCR Independent verification of the declaration and data according to /ISO 14025:2010/ ☐ internally ☒ externally
Valid to 05.12.2023	
Prof. Dr.-Ing. Horst J. Bossenmayer (President of Institut Bauen und Umwelt e.V.)	Dr. Frank Werner (Independent verifier appointed by SVR)
Dipl. Ing. Hans Peters (Head of Board IBU)	

2. Product

2.1 Product description / Product definition

In this Environmental Product Declaration (EPD), resilient rubber floor coverings of the nora systems GmbH product line norament® 926 are modelled.

Specific characteristics of the norament® 926 coverings include:

- manufacturing method: high-pressure pressed in tiles
- covering structure: single-layer, homogeneous
- composition: synthetic rubber, minerals from natural sources, colour pigments, and processing aids

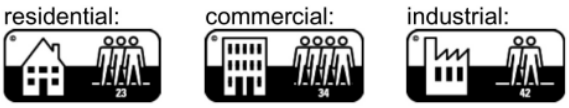
norament® 926 are placed on the market in the EU/EFTA (with the exception of Switzerland) according Regulation (EU) No. 305/2011 (CPR). The products have a declaration of performance taking into consideration /EN 14041/: Resilient, textile, laminate and modular multilayer floor coverings - Essential characteristics and the CE-marking.

For the product line norament® 926 further standards apply:

- /DIN EN 12199/: Resilient floor coverings - Specifications for homogeneous and heterogeneous relief rubber floor coverings and depending on design /DIN EN 1817/: Resilient floor coverings -Specification for homogeneous and heterogeneous smooth rubber floor coverings
- /DIN EN ISO 10874/: Resilient, textile and laminate floor coverings - Classification

2.2 Application

For this application and use the specific national provisions apply.
Floor coverings are classified according to /DIN EN ISO 10874/.
Floor coverings for high performance in domestic and professional use:



2.3 Technical Data

Excerpt of technical data sheets: (available at www.nora.com)

Bautechnische Daten

Name	Value	Unit
Product thickness /DIN EN ISO 24346/	3.5	mm
Product Form	tiles	-
Type of manufacture	pressing	-
Hardness /DIN ISO 7619/	82	Shore A
Abrasion resistance at 5 N load /DIN ISO 4649/ (Verfahren A)	115	mm³
Improvement in footfall sosund absorption /DIN EN ISO 10140-3/	10	dB
Anti-slip properties /DIN 51130/	R9 bzw. R10	dependend on surface structure
Grammage /DIN EN ISO 23997/	5.4	kg/m²

Beside the declared floor covering with 3.5 mm thickness, it is also available with 4.0 mm. For this product version the improvement in footfall sound absorption /EN ISO 10140-3/ is 12 dB.

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to /EN 14041/**:** Resilient, textile, laminate and modular multilayer floor coverings - Essential characteristics

2.4 Delivery status

The delivery takes place as tiles of up to ~ 1004 x 1004 mm, loose on pallets (semi-finished products). The backs of the coverings are sanded over their entire surface and have arrows indicating the installation direction.

2.5 Base materials / Ancillary materials

Simplified formulation of norament® 926

Polymers (synthetic rubber): 39%
Minerals (siliceous earth/silicic acid): 46%
Titanium dioxide and various other pigments: 8%
Auxiliary substances and vulcanisation system: 7%

The auxiliary substances used are waxes and antioxidants; the vulcanisation system is based on sulphur as cross linking agent, vulcanisation accelerators and zinc compounds.

1) This product contains substances listed in the cadidate list (/REACh/ 16.11.2018) exceeding 0.1 percentage by mass: no

2) This product contains other CMR substances in categories 1A or 1B which are not in the candidate list, exceeding 0.1 percentage by maxx: no

3) For the manufacturing of the declared product biocides, flame retardants or plasticisers are not used.

2.6 Manufacture

After weighing and mixing of the rubber compounds of the different components, the blanks undergo moulding on the calender. Vulcanisation (cross-linking with sulphur) is done in high-pressure multi presses with a pressing power of approximately 1.200 tonnes and at a temperature of 170 ºC. Due to the high pressure, a dense, closed vulcanisation skin is formed on the surface. The vulcanised tiles are sanded over their entire rear surface and die-cut to the exact final dimensions.The resulting product is tiles of one square metre and a weight of 5.40 kg

The quality and energy management of nora systems GmbH is certified according to /DIN EN ISO 9001/ and /DIN EN ISO 50001/.

2.7 Environment and health during manufacturing

Regular measurements prove that all binding occupational exposure limit values for chemicals are consistently met, or rather, considerably under-run. In the high noise identified areas of heavy machines, hearing protection is used. The lifting of loads (raw materials) is facilitated in many ways through appropriate lifting assistances.

Since 2000, the environmental management system (existing since 1996) is certified to /ISO 14001/.

2.8 Product processing/Installation

The installation of the floor covering is based on the technical regulations of /DIN 18365/: Construction contract procedures (VOB) - Part C: General technical specifications in construction contracts (ATV) – Flooring work. Suitable subfloors are made of screed – according to VOB Part C, /DIN 18365/: Floorcovering Work, hard poured asphalt according to /DIN 18354/: Asphalt flooring work, chipboards, plywood, etc. Before installing rubber floor coverings, the subfloor generally has to be levelled.

The application of the adhesives over the entire surface is done in accordance with the installation recommendations of the nora systems GmbH, using adhesives and further auxiliary material approved and suitable for norament® 926 rubber floor coverings (available e.g. at www.nora.com).

When selecting the installation materials the requirements of the basic award criteria of the Blue Angel – “Low-Emission Floor Covering Adhesive and other Installation Materials” (/RAL-UZ 113/) should be observed, alternatively GEV-EMICODE EC1plus. These specifications ensure excellent health protection due to minimised emissions.
In addition, the instructions of the laying material manufacturers are generally to be followed.When working with laying auxiliary material, the latest version of the German standard /TRGS 610/ applies.
Cuttings should be used for energy recovery.

Initial cleaning and initial polishing may only be carried

out after the bonding phase of the adhesive, i.e. at the earliest 48 hours after installation.

2.9 Packaging
Delivery on wooden europool pallets (exchange system), sealed in recyclable polyethylene foil.

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2.10 Condition of use
Because of their dense and closed surface and the “nora cleanguard® ” finish, norament® 926 floor coverings usually don't need to be coated. The coverings are permanently resilient, they remain dimensionally stable when bonded and have good ergonomic properties.

2.11 Environment and health during use
Because of their dense surface, norament® 926 rubber floor coverings don't have to be coated during the entire period of use.

nora floor coverings meet the requirements of the German “Blue Angel" according to the Basic Award Criteria (/RAL-UZ 120/) for resilient floor coverings and the Finnish /M1 - Emission Classification/ of Building Materials.
In particular, the requirements on emissions of the AgBB scheme and the significant stricter requirementsof the Blue Angel ensure to avoid any impact on health due to emissions of norament® 926.

2.12 Reference service life
A calculation of the reference service life according to /ISO 15686/ is not possible.
According to manufacturers' estimation a technical service life of at least 40 years is possible.
Due to their very high abrasion resistance and their single-layer structure (rubber through and through), the floor coverings hardly wear down even when extensively used. When used in the designated areas of application and under the usage conditions commonly associated, they stay fully functional and visually appealing during the indicated useful life.

2.13 Extraordinary effects

Fire
norament® 926 is according /DIN EN 13501-1/ hardly inflammable (Cfl -s1, bonded Bfl -s1) and toxicologically safe in the event of fire according to /DIN 53436-1/ und /DIN 53436-2/.

Fire protection

Name	Value
Building material class /DIN EN 13501-1/	Cfl-s1
Building material class (bonded) /DIN EN 13501-1/	Bfl-s1

Water
Resistant to water exposure to the extent to what is typical for indoor use. Not suitable for real wet areas (e.g. showers, wading pools, etc.)

Mechanical destruction
not relevant

2.14 Re-use phase
For norament® rubber floor coverings there are basically the following options for a re-use phase:

- Material recycling (e.g. granulating and processing into landing mats, industrial or stable mats, and coverings of sports areas or silent asphalt)
- Thermal recycling (e.g. use as substitute fuel in thermal power plants)
- full material and thermal recycling for energy recovery in the cement industry. Use of stored thermal energy as well as use of mineral filler as raw material.

2.15 Disposal
The manufacturer recommends introducing the products after their use stage into thermal recycling (secondary fuel for waste incineration) or utilization as secondary fuel and secondary raw material (mineral fillers) in the cement industry (material and thermal recycling). /EWC-No./ e.g. 17 02 03.

2.16 Further information
Further information under www.nora.com

3. LCA: Calculation rules

3.1 Declared Unit
The reference unit is 1 m² of floor covering. The values of module A1-A3 refer to 1 m² produced. This EPD represents a product declaration, i.e. the production and disposal of off-cuts during installation stage are assigned to module A5. The combined modules A1-A3, A4 and A5 refer to a reference unit of 1 m² installed.

The material for subfloor preparation and adhesive bonding, needed during installation, is not considered. Information on the complete floor structure can be found in Environmental Product Declarations based to the PCR „Dispersion adhesives and primers for floor coverings“ and „Mineral factory-made mortar”.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Conversion factor to 1 kg	0.185	-

3.2 System boundary

Type of EPD: from cradle to gate with options

The analysis of the product life cycle includes the following stages:

- Production stage A1-A3: Consideration of production of the basic materials and the manufacturing of the floor covering incl. packaging material
- Transport A4: Assumption for the transport of the products to the construction site
- Installation A5: Production, transport and incineration of the off-cut material (gained energy is declared in D as avoided environmental burden), disposal of the packaging (incineration of PE-film). The pretreatment of the underground surface (prime coat, levelling comoound, adhesive) is not considered. This treatment depends on the building and the application and need to be specified for the particular case
- Use stage B2: Scenario for maintenance/ cleaning according to the manufacturer's recommendation (see 4.)
- End-of-Life stage C1, C2, C3: Scenario for the incineration of the floor covering incl. removal from the building and transport to the waste incineration plant (gained energy is declared in D as avoided environmental burden).
- Benefits for the next product system D: Extgraction for electrical and thermal energy from the waste incineration process of the product, the off-cuts and the packaging material.

Contributions of waste flows are considered in the modules where they occur.

3.3 Estimates and assumptions

The datasets for the upstream chain of the basic material production are taken from the /GaBi database/. Inventories of some materials are not completely available and so are partly approximated by datasets on similar chemicals or estimated by consolidation of existing datasets and literature research.

The assumptions about the cleaning scenario are described in chapter 4. scenarios.

3.4 Cut-off criteria

All data from the production data acquisition, i.e. on all raw material used as per formulation, are considered.

Transport expenditures are taken into account for all essential basic materials, the dispatch of the products and the end-of-life scenario. Transport processes for packaging materials are neglected.
With the LCA calculation, the production waste resulting directly from production, the electrical and thermal energy needed, and the packaging materials, are taken into account.

Machines, facilities and infrastructure used in the manufacture are ignored.
Thus, even material and energy flows with a proportion of less than 1% are considered.
Thus, no input or output flows are neglected, which may contribute to the impact assessment significantly.

3.5 Background data

For life cycle modelling of the considered products, the /GaBi 8/ Software System for Life Cycle Engineering, developed by thinkstep AG, is used. Upstream data specific Information that is not available are taken from the /GaBi 8/ database.

3.6 Data quality

The primary data collected from the manufacturer are based on annual quantities, or are projected from measurements on the specific facilities of the year 2017.

The /GaBi 6/ database contains datasets for some of the basic materials used in the respective formulations. Last update of the database was 2018.

Further datasets on the upstream chain of the basic material production are approximated with datasets on similar chemicals or are estimated by consolidation of existing datasets and literature information.

The requirements on technological, geographical and temporal representativeness are fullfilled.

nora systems GmbH purchases the total electrical energy for production and administration at the site Weinheim from renewable energy sources of the Ørsted Offshore-Windparks in the Danish North and Baltic sea. Respective evidence is available at IBU.

Thermal energy is generated centrally and in heating boilers from natural gas.

3.7 Period under review

The collection of manufacturing data from 2017 serves as the data basis.

3.8 Allocation

Allocation of upstream data

For all refinery products, allocation by mass and net calorific value has been applied. The manufacturing route of every refinery product is modelled and the product-specific effort associated with their production is calculated. For other materials' inventory used in the production process calculation the most suitable allocation rules are applied. Information on single LCIs is documented on http://www.gabi-software.com/support/gabi/gabi-database-2018-lci-documentation/professional-database-2018/

Allocation in the foreground data

The production process does not deliver any co-products. The applied software model does not contain any allocation.
The total production of nora systems GmbH include further products beside the declared product family. The values for thermal and electrical energy as well as for operating materials are assigned respectively while data collection on the site. Allocation keys are mass, area, pieces or retention time in the plant.

Allocation for waste materials
Production waste is fed into an energy recovery process. The energy gained is looped back in the module A1-A3. The quality of the thermal energy can be considered equal to the thermal energy needed for production processes.
The calculation of emissions from the waste incineration plant follows a partial stream consideration for the combustion process, according to the specific composition of the incinerated material.
A waste incineration plant with an R1-value lower than 0.6 is assumed. The environmental burdens of the incineration process of installation off-cut and the product in the end-of-life scenario are assigned to the system (A5, C3); resulting energy gain for thermal and electrical energy are declared in module D.

The avoided environmental burdens are considered according to European average data for electrical and thermal energy generated from natural gas.

3.9 Comparability

Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to /EN 15804/ and the building context, respectively the product-specific characteristics of performance, are taken into account.

The used background database has to be mentioned. The software /GaBi 8/ is used. As database for background data the /GaBi database service pack 36/ is applied.

4. LCA: Scenarios and additional technical information

The following technical information serves as basis for the declared modules. The values refer to the declared unit of 1m².

Transport to the construction site (A4)

Name	Value	Unit
Litres of fuel (truck)	0.01064	l/100km
Transport distance (truck)	1000	km
Litres of fuel (boat)	0,00217	l/100km
Transport distance (boat)	500	km

Installation (A5)

Name	Value	Unit
Material loss	5	%

Maintenance (B2)
Dependend on use area based on /EN ISO 10874/, dependend on the manufacturers' technical service life and the expected stress for the flooring, the service life can be determined case specifically. The effects on module B2 need to be calculated according to the actual service life, in order to achieve the total enviromental impact.

Cleaning of the floor covering depends on the use of the premises. For a typical application (e.g. school building), the following manufacturer's recommendations are considered in this declaration:

- Intensive machine cleaning (single-disc machine with a suitable red pad / soft brush and an aqua-vacuum cleaner), once a year, with a suitable cleaning agent. The surface of the floor covering must be free of any dirt residues.
- In order to achieve a uniform and compact protective film, the floor covering should be polished once a month with a suitable polishing pad or polishing brush.
- Routine cleaning should be done manually, thrice weekly, with suitable microfibre covers and suitable wash polishes.

Further cleaning recommendations are available at www.nora.com.
Cleaning agents with a pH-value higher than 12 should not be used.

The following values refer to a cleaning scenario of 1 year.

Name	Value	Unit
Information on maintenance (see chapter 2.10)	-	-
Electricity consumption	0.074	kWh
Water consumption	16	l
Cleaning agent	181	g

Reference Service Life

Name	Value	Unit
Reference service life	40	a

End-of-life (C1-C4)

Name	Value	Unit
Energy recovery	5.4	kg

Re-use, Recyclingpotential (D), relevant data for scenarios
Module D covers the energy gain of the incineration processes form A5 (off-cut of flooring installation, packaging waste) and C3 (incineration of the floor covering). A waste incineration plant with an R1-value > 0.6 is assumed.

5. LCA: Results

The characterisation factors of the publication of CML in the version April 2013 apply. The characterisation factors comply with the requirements of /EN 15804+A1/.

The values of the indicators in module B2 "Maintenance" refer to a time period of 1 year.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; MND = MODULE NOT DECLARED)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	MND	X	MNR	MNR	MNR	MND	MND	X	X	X	MND	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT: 1 m² norament®926

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	D
GWP	[kg CO_2-Eq.]	1.72E+1	2.92E-1	1.21E+0	3.99E-1	4.15E-2	1.27E-2	5.41E+0	-2.08E+0
ODP	[kg CFC11-Eq.]	3.28E-8	1.13E-14	1.64E-9	5.07E-11	1.84E-13	5.26E-16	7.94E-14	-4.56E-12
AP	[kg SO_2-Eq.]	4.71E-2	1.71E-3	2.47E-3	9.41E-4	1.08E-4	2.78E-5	3.54E-4	-3.27E-3
EP	[kg $(PO_4)^{3-}$-Eq.]	6.11E-3	2.51E-4	3.23E-4	1.89E-4	1.07E-5	6.67E-6	7.54E-5	-3.68E-4
POCP	[kg ethene-Eq.]	4.36E-3	-1.17E-4	2.15E-4	2.97E-4	7.38E-6	-8.97E-6	3.40E-5	-2.75E-4
ADPE	[kg Sb-Eq.]	2.65E-4	2.16E-8	1.33E-5	7.14E-8	2.11E-8	1.03E-9	1.24E-8	-5.68E-7
ADPF	[MJ]	3.31E+2	3.90E+0	1.68E+1	7.54E+0	4.42E-1	1.72E-1	7.20E-1	-2.86E+1

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources

RESULTS OF THE LCA - RESOURCE USE: 1 m² norament®926

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	D
PERE	[MJ]	4.19E+1	1.82E-1	2.17E+0	4.22E-1	2.85E-1	9.02E-3	1.22E+0	-7.08E+0
PERM	[MJ]	1.08E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-1.08E+0	0.00E+0
PERT	[MJ]	4.30E+1	1.82E-1	2.17E+0	4.22E-1	2.85E-1	9.02E-3	1.43E-1	-7.08E+0
PENRE	[MJ]	2.51E+2	3.92E+0	1.72E+1	8.09E+0	7.58E-1	1.73E-1	8.89E+1	-3.65E+1
PENRM	[MJ]	8.80E+1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	-8.80E+1	0.00E+0
PENRT	[MJ]	3.39E+2	3.92E+0	1.73E+1	8.09E+0	7.58E-1	1.73E-1	8.59E-1	-3.65E+1
SM	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m^3]	4.69E-2	3.35E-4	3.24E-3	2.09E-3	3.88E-4	1.66E-5	1.09E-2	-9.65E-3

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – OUTPUT FLOWS AND WASTE CATEGORIES: 1 m² norament®926

Parameter	Unit	A1-A3	A4	A5	B2	C1	C2	C3	D
HWD	[kg]	4.13E-5	1.82E-7	2.08E-6	4.14E-4	3.56E-10	9.12E-9	2.49E-9	-1.49E-8
NHWD	[kg]	3.70E+0	2.81E-4	1.93E-1	2.78E-2	5.34E-4	1.39E-5	1.44E-1	-1.57E-2
RWD	[kg]	3.24E-3	7.78E-6	1.66E-4	2.22E-4	1.26E-4	3.61E-7	5.54E-5	-3.11E-3
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	0.00E+0	0.00E+0	5.21E-1	0.00E+0	0.00E+0	0.00E+0	8.39E+0	0.00E+0
EET	[MJ]	0.00E+0	0.00E+0	9.33E-1	0.00E+0	0.00E+0	0.00E+0	1.50E+1	0.00E+0

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EEE = Exported thermal energy

The product contains renewable raw materials. In themanufacturing of the declared unit of 1m² of the product norament®926 0.08 kg CO_2 are sequestered. This bound carbon is emitted in the EoL as CO_2 emission.

6. LCA: Interpretation

The environmental impact of the life cycle of nora floor coverings is mainly determined by the production of the basic materials (A1).
The impact of the manufacturing at nora system referring to the category GWP is significant; else the influence on the total production phase is low.

Beside, the maintenance referring to the total use stage is an important factor. The calculation depends strongly on the assumption for the cleaning scenario.

The negative values in module D describe the energy gain of the incineration of packaging material (A5), the off-cuts of the installation (A5) and the product in the end-of-life scenario (C3).

This EPD is an update of the EPD from the year 2013. The results are tending to be lower. This is based on various factors:
- updated and new generated background data
- increase of the production yield at nora systems
- purchase of electrical energy for production and administration at the site Weinheim from the Ørsted Offshore-Windparks in the Danish North and Baltic sea.

Compared to the GPW of the EPD from the year 2013, a significant reduction in module A1-A3 could be achieved, due to the above mentioned reasons.

7. Requisite evidence

7.1 VOC emissions - Germany
The product has been audited for emissions at the approved test house Eurofins Product Testing A/S, Galten, Denmark (test report nor. G5678) and at SGS Institut Fresnius GmbH, Taunusstein, in respect to volatile N-nitrosamines (test report no. 2028015-01).

www.blauer-engel.de/uz120

The product complies with the Basic Award Criteria for the Blue Angel /RAL-UZ 120/ for resilient floor coverings with the following requirments on emissions:

Compound or Substance	3rd Day	Final Value (28th Day)
Total organic compounds within the retention range C_6 – C_{16} (TVOC)	< 1000 µg/m³	< 300 µg/m³
Total organic compounds within the retention range > C_{16} – C_{22} (TSVOC)	-	< 30 µg/m³
Carcinogenic substances[12]	< 10 µg/m³ **total**	< 1 µg/m³ **per single value**
Total VOC without LCI[13]	-	< 100 µg/m³
R value[14]	-	< 1
Formaldehyde	-	< 60 µg/m³ (0.05 ppm)

7.2 VOC emissions - Finland
norament® 926 floorcoverings comply also with the Finnish /M1 - Emission Classification/ of Building Materials (tested by Työterveyslaitos, Helsinki, Finland, test report no. 348406).

7.3 VOC emissions - IRK
Additionally the following relevant values are met, derived from the guidelines values for indoor air, according to the German Indoor Air Hygiene Commission (IRK):
- styrene ≤ 30 µg/m³
- naphthaline ≤ 2 µg/m

(Eurofins Product Testing A/S, Galten, Denmark, test report no. 392-2018-00178307_B_DE)

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