

ENVIRONMENTAL PRODUCT DECLARATION

as per ISO 14025 and EN 15804+A2

Owner of the Declaration	
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
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Amorim Wise Inspire 700 HRT
Amorim Cork Flooring S.A.

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1. General Information

<p>Amorim Cork Flooring, S.A.</p> <hr/> <p>Programme holder IBU – Institut Bauen und Umwelt e.V. Panoramastr. 1 10178 Berlin Germany</p> <hr/> <p>Declaration number EPD-ACF-20210072-ICA1-EN</p> <hr/> <p>This declaration is based on the product category rules: Floor coverings, 02/2018 (PCR checked and approved by the SVR)</p> <hr/> <p>Issue date 14/09/2022</p> <hr/> <p>Valid to 13/09/2027</p> <hr/> <p></p> <hr/> <p>Dipl. Ing. Hans Peters (chairman of Institut Bauen und Umwelt e.V.)</p> <hr/> <p></p> <hr/> <p>Dr. Alexander Röder (Managing Director Institut Bauen und Umwelt e.V.)</p>	<p>Amorim Wise Inspire 700 HRT</p> <hr/> <p>Owner of the declaration Amorim Cork Flooring, S.A. Rua do Ribeirinho, nº 202 Apartado 13 4536 - 907 S. Paio Oleiros Portugal</p> <hr/> <p>Declared product / declared unit 1 m² of Amorim Wise Inspire 700 HRT</p> <hr/> <p>Scope: The data on which the Life Cycle Assessment is based is from the manufacturing process of Amorim Wise Inspire 700 HRT taking place in one industrial unit of Amorim Cork Flooring (Oleiros) and refers to the year 2019. For the construction, use, end-of-life stages and benefits and loads, data were estimated based on background research and Amorim Cork Flooring supply chain downstream activities. Data associated with the product's maintenance was obtained through benchmark research.</p> <p>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.</p> <p>The EPD was created according to the specifications of <i>EN 15804+A2</i>. In the following, the standard will be simplified as <i>EN 15804</i>.</p> <hr/> <p>Verification</p> <table border="1"> <tr> <td colspan="2">The standard <i>EN 15804</i> serves as the core PCR</td> </tr> <tr> <td colspan="2">Independent verification of the declaration and data according to <i>ISO 14025:2010</i></td> </tr> <tr> <td><input type="checkbox"/> internally</td> <td><input checked="" type="checkbox"/> externally</td> </tr> </table> <hr/> <p></p> <hr/> <p>Matthias Klingler (Independent verifier)</p>	The standard <i>EN 15804</i> serves as the core PCR		Independent verification of the declaration and data according to <i>ISO 14025:2010</i>		<input type="checkbox"/> internally	<input checked="" type="checkbox"/> externally
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2. Product

2.1 Information about the enterprise

Amorim Cork Flooring, a subsidiary of Corticeira Amorim, is the world leader in producing and distributing cork-incorporated floor and wall coverings. It has a unique manufacturing technology that combines traditional production methods with cutting-edge technology to develop unique cork products with a large range of applications, in over 70 countries worldwide. The incorporated cork on the different floor and wall products provides a level of comfort that cannot be achieved with any other covering materials, provides a natural thermal insulation, has impact resistance and makes the products adaptable to residential and commercial spaces.

2.2 Product description/Product definition

Amorim Wise Inspire 700 HRT (also branded as "Cortex Plusnatura") is a sustainable waterproof floating floor with an innovative cork hard core, that provides reinforced stability and comfort, and a

cork decorative top layer with varnish finishing. This product is used as a floor covering for domestic or commercial use, providing several physical characteristics to the floor, such as stability, comfort, thermal and noise insulation, among others.

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011 CPR* applies. The product needs a Declaration of Performance taking into consideration *EN 14041: 2004/AC:2006 Resilient, textile and laminate floor coverings - Essential characteristics and the CE-marking*. For the application and use the respective national provisions apply.

2.3 Application

Amorim Wise Inspire 700 HRT fits the most demanding needs for domestic areas. This flooring product meets the requirements of the usage classes 33 for commercial use and 23 for domestic use according to ISO 10874 standard.

2.4 Technical Data

Relevant technical construction data for the product is referred to in the following table.

Constructional data

Name	Value	Unit
Product thickness	7.1	mm
Grammage	6530	g/m ²
Abrasion Class	33	-
Product Form	Plank	-
Total thickness	7.1	mm
Density	919.72	kg/m ³

The Performance data of the product is in accordance with the Declaration of Performance with respect to its Essential Characteristics according to EN 14041:2004/AC:2006 Resilient, textile and laminate floor coverings - Essential characteristics.

2.5 Delivery status

The dimensions of rectangular panels of Amorim Wise Inspire 700 HRT are declared in the following table.

Dimensions of panels (ISO 24337)	Specification
Dimensions	1225 x 190 mm x 7,1mm
Variation width	≤ 0,20 mm
Variation length	≤ 0,5 mm

The layers composing Amorim Wise Inspire 700 HRT are shown in the following table.

Components	Value	Unit
Decorative cork layer	0,3	mm
Superior cork layer	1,0	mm
Cork hard core	4,8	mm
Backing cork layer	1,0	mm

2.6 Base materials/Ancillary materials

Components

The primary product components and materials of the product are indicated as a percentage mass in the following table.

Name	Value	Unit
Recycled high-density polyethylene (HDPE)	56,50	%
Granulated cork	21,67	%
Natural fibres	7,49	%
Other components	7,05	%
High-density polyethylene (HDPE)	6,05	%
Resin	1,24	%

The products include partial articles which contain substances listed in the candidate list of REACH Regulation 1907/2006/EC (date: 19.01.2021) exceeding 0.1 percentage by mass: no

This product/article/at least one partial article contains other carcinogenic, mutagenic, reprotoxic (CMR) substances in categories 1A or 1B which are not on the candidate list, exceeding 0.1 percentage by mass: no.

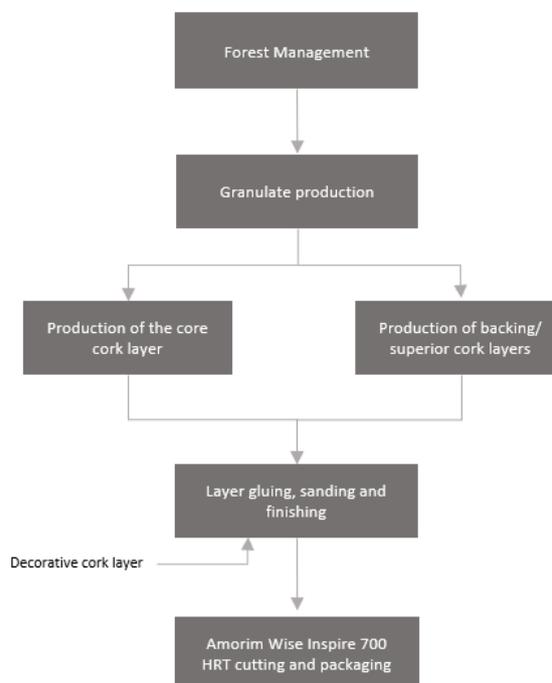
Biocide products were added to this construction product or it has been treated with biocide products (this then concerns a treated product as defined by the (EU) Ordinance on Biocide Products No. 528/2012): no.

2.7 Manufacture

The manufacturing process of Amorim Wise Inspire 700 HRT begins with cork granulate production, using cork that was previously treated at Amorim Florestal. Cork granulate is blended into a mixture with resin to produce the backing and superior cork agglomerated layers. These layers go through cutting and sanding, to fit the requirements, before they are shipped to the same industrial unit as the core layer, for assembly.

The cork agglomerated core layer is produced by binding and mixing granulated cork together with natural fibres, soy oil, high-density polyethylene (HDPE) and recycled HDPE. The core layer is pre-sanded and stabilized for the glueing process.

The different layers, that compose the final product structure are glued together using glue and adhesives as binding agents. A cork decorative finishing layer is applied to the top of the product, followed by a top coat varnish finishing. Then follows a pressure and heat process, before going through sanding and the final cut of the pieces. The product is then packed and stored in the warehouse, ready for shipment.



2.8 Environment and health during manufacturing

During the production process, the environmental and health aspects are considered.

Air: The emission of particles and pollutants are collected in filter systems and the levels are below the permissible limits.

Water: The product requires a low water consumption that is (totally) treated in an Industrial Waste Water Treatment Plant (IWWTP).

Noise: Noise resulting from operation during the production process is below the permissible limits.

2.9 Product processing/Installation

Amorim Wise Inspire 700 HRT can be installed on top of most hard surfaces such as resilient floor coverings and ceramic tiles which are sufficiently fixed, completely levelled and have no loose areas.

Soft subfloors such as carpets and similar must be removed. For the product installation, no underlay is required. Old resilient floor coverings (like pvc, linoleum, cork...) must be glued without loose areas.

For radiant-heated subfloors, the temperature of the subfloor must not exceed 28°C (82°F). All types of concrete, and ceramic subfloors must be even, and dry, variations should not exceed 5mm in 2m (0.20" in 6.6 feet) and flat.

2.10 Packaging

Resilient floor coverings are delivered in packages designed to protect the corners, edges and surfaces of the product, under normal conditions of transport and handling (compliant with EN16511).

Product planks are laid in cardboard boxes, wrapped in packaging film and placed on wooden pallets, secured by plastic straps.

These packaging materials can be collected separately and recycled.

Pallets can either be re-used (Euro pallets) or recycled as wood.

2.11 Condition of use

Amorim Wise Inspire HRT flooring products have in their composition a significant amount of natural renewable raw materials, meaning that they have stored about 3,1 kg CO₂/m² of product resulting from photosynthesis.

2.12 Environment and health during use

The following table indicates the information about safety properties.

Safety properties - EN 14041	Standard- Test Method	Unit	Specification
Fire resistance	EN ISO 11925-2 + EN ISO 9239-1 (classification according to EN 13501-1)	Class	Cfl-S1
Slip resistance	EN 13893	Class	DS
Formaldehyde emission	EN 717-1	Class	E1
Content pentachlorophenol (PCP)	EN 12673	% mg/kg	Undetectable

2.13 Reference service life

The expected service life of the product was determined based on empirical experience of the manufacturer, considering the different use classes,

according to ISO 10874. The following table indicates the expected service life for domestic, commercial and industrial uses.

Application area	Class	Expected service life
Domestic	23	25 years
Commercial	33	15 years

2.14 Extraordinary effects

Fire

Fire performance according to EN 13501 – 1 (building products) of Amorim Wise Inspire 700 HRT is Cfl-S1.

Water

There are no environmental impacts on water identified in the use stage of the product since the product is mainly composed of natural materials that are not hazardous to water masses.

Mechanical destruction

There is no potential harm to health and environment known resulting from mechanical destruction of the product.

2.15 Re-use phase

The product is mainly composed of cork, wood and HDPE. They can be shredded, granulated or powdered and then re-melted to make a secondary input material. Waste from the product can be reused in the process as a replacement for some of the raw materials. This type of flooring can also be reused, although its service life is expected to be less than the original warranty from the manufacturer. Regarding energy recovery, wood, cork and HDPE can be incinerated in order to produce thermal energy or electricity.

2.16 Disposal

According to the *European Waste Catalogue* the used floor covering can be classified in the main category "17 Construction and Demolition Waste (including road construction)". Considering the specific constitution of this floor covering, and assuming that the layers cannot be separated at the end of life, the waste code applied is the following: 17 09 04 Mixed construction and demolition waste other than those mentioned in 17 09 01, 17 09 02 and 17 09 03.

These types of waste materials can be recovered according to the *European Waste Framework Directive*.

2.17 Further information

Other information can be found on the website of the product Amorim Wise Inspire 700 HRT: <https://www.amorimwise.com/products/cork/inspire-700-76>

3. LCA: Calculation rules

3.1 Declared Unit

The declared unit is 1 m² of floor covering with the following characteristics (average of both industrial units):

Declared unit

Name	Value	Unit
Declared unit	1	m ²
Grammage	6.85	kg/m ²

3.2 System boundary

Type of EPD: cradle to grave

Modules A1-A3 Production: Include processes that provide materials, transport of the material to the manufacturing site, energy supply, product

manufacturing and transport processes up to the factory gate, as well as waste processing. Biogenic carbon contained in the product and the packaging materials is included in this module.

Module A4 Transport: Transport of the floor covering from the factory gate to the place of installation.

Module A5 Installation: Includes material losses (offcuts) during the installation of the floor covering, disposal of offcuts and recycling of packaging material.

Module B2 Maintenance: includes provision of energy, for vacuum cleaning one time per week, cleaning agent and water consumption, for wet cleaning two times per year of the cleaning of the floor covering.

The LCA results in this EPD are declared for a one-year usage.

Module C1 De-construction: The floor covering is deconstructed manually and no additional environmental impact is caused.

Module C2 Transport: Includes transportation of the postconsumer waste to the waste incineration plant, to Amorim Cork Flooring industrial site for recycling or to a landfill.

Module C3 Waste processing and Module C4 Disposal, end-of-life scenarios are declared for:

- 20 % recycling in Amorim Cork Flooring and reincorporation in the agglomeration process in Amorim Cork Flooring (Scenario 1)
- 10 % incineration in a waste incineration plant (WIP) (Scenario 2)
- 70 % landfilling (Scenario 3)

Module D Benefits and Loads: Declares potential benefits from all net flows given in module A5 (packaging material recycling), C3 (for recycling, and related material substitution) and C4 (for incineration, and related energy substitution) that leave the product boundary system after having passed the end-of-waste state.

Module D is declared for each scenario separately.

3.3 Estimates and assumptions

CO₂ intake due to photosynthesis associated to cork and wood was considered. Recycled materials used in the product's manufacture enter the system with no environmental burdens from its production, due to the Polluter Pays (PP) allocation method. Information on components and the average weight percentage of adhesives was obtained from their technical data sheets.

3.4 Cut-off criteria

All input and output flows have been considered at 100%, including all available data associated directly to the manufacture of the product were included in the LCA (i.e. all raw materials, electric and thermal power consumed, transports). Hence, the study complies with the cut-off criteria of 1 % of renewable and non-renewable primary energy usage and 1 % of the total mass of that unit process.

3.5 Background data

Specific data was used based on the average production in 2019. For processes in which the producer has no influence or specific information, like the extraction of raw materials, end-of-life treatment and generic data from the following main sources were considered:

- *Ecoinvent 3.5*
- *PRé Consultants*

3.6 Data quality

Specific data is referred to the production of 2019. Data sets of processes from *Ecoinvent* database are less than 3 years old. Data sets are based on literature and average data from specific industrial units. Regarding geography coverage, whenever possible average European data and Portugal-specific energy mix were used. In cases where no average European data was available, the most approximate data set was used. Considering these aspects, the data used in this study is considered of high quality.

3.7 Period under review

The specific data collected from the manufacturer refer to the year of 2019.

3.8 Allocation

Energy, raw materials, water, wastewater and air emissions were allocated to this product using mass allocation (i.e. allocation based on the proportional mass of each of the products), when no further subdivision of unit processes was deemed feasible.

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.

. Background data are taken from the *SimaPro software (version 9.1)* and from the *ecoinvent 3.5* database, 2018.

4. LCA: Scenarios and additional technical information

Characteristic product properties

Information on biogenic Carbon

The product is composed of 29,16 % of materials that contain biogenic carbon. Packaging material, which represents 6 % of the packed finished product, also containing biogenic carbon is accounted for in this section.

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in product	0.848	kg C
Biogenic Carbon Content in accompanying packaging	0.118	kg C

Note: 1 kg biogenic Carbon is equivalent to 44/12 kg of CO₂.

The following information refers to the declared modules and is the basis for calculations or can be used for further calculations. The indicated values refer to the declared unit.

Transport to the construction site (A4)

Name	Value	Unit
Transport distance (by lorry 16-32 metric tons)	230	km
Transport distance (by lorry 3.5-7.5 metric tons)	5.00	km
Transport distance (by ship)	2000	km

Installation in the building (A5)

Name	Value	Unit
Auxiliary	-	kg
Material loss	4.5	%

Packaging waste is considered to be recycled and installation waste are considered to be disposed in a landfill.

Maintenance (B2)

Name	Value	Unit
Maintenance cycle (wet cleaning)	2	a
Maintenance cycle (vacuum cleaning)	52	a
Electricity consumption	0.1	kWh
Water consumption	0.001	m ³
Auxiliary (cleaning agent)	0.02	kg

An average service lifetime of 20 years was considered, due to the application area of the product being domestic, as well as commercial.

Reference service life

Name	Value	Unit
Reference service life (for domestic use, according to ISO 15686)	25	a
Reference service life (for commercial use, according to ISO 15686)	15	a

End of Life (C1-C4)

Name	Value	Unit
Transportation from the construction site (C2/1) (for the recycling EoL - by lorry 16-32 metric tons)	235	km
Transportation from the construction site (C2/1) (for the recycling EoL - by ship)	2000	km
Transportation from the construction site (C2/2) (for the incineration EoL - by lorry 16-32 metric tons)	50	km
Transportation from the construction site (C2/3) (for the landfilling EoL - by lorry 16-32 metric tons)	50	km
Energy recovery	0.69	kg
Recycling	1.37	kg
Landfilling	4.8	kg

For module C1, is considered that the floorcovering is de-constructed manually with no additional environmental impacts.

Reuse, recovery and/or recycling potentials (D), relevant scenario information

For module D the potential benefits given in modules A5, C3 and C4 are declared, considering the recycling of packaging material waste (applicable to all EoL scenarios), energy benefits (incineration EoL) and raw material flows and transportation (recycling EoL). For waste incineration combustion in a WIP ($R1 < 0.6$) with energy recuperation is considered.

For the recycling scenario, the benefits are obtained through the reincorporation of the end-of-life product to the production of Amorim Wise Inspire SRT, replacing 1 % of the granulated cork and 3 % of the recycled HDPE, that are used as raw materials, avoiding the production of granulated cork and transportation of these materials.

Biogenic carbon incorporated in the product is released as CO₂ emissions in the end of life.

5. LCA: Results

The results for module B2 refer to a period of one year. For the calculation of the impact of B2 for a certain service life the values for B2 have to be multiplied by the estimated service life in years.

For modules C2, C3 and C4 the results are presented considering:

- Scenario 1 applies to 20 % recycling
- Scenario 2 applies to 10 % incineration
- Scenario 3 applies to 70 % landfilling

Results for modules C2/1, C2/2, C2/3, C3/1, C4/2, C4/3, D/1, D/2 and D/3 the results are presented for 100 % of each scenario.

Information on un-declared modules:

Modules B3 - B7 are not declared, since the use stage is declared for 1 year

Disclaimer: EP-freshwater: This indicator has been calculated as "kg P eq" as required in the characterization model (EUTREND model, Struijs et al., 2009b, as implemented in ReCiPe; <http://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>)

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

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	ND	X	MNR	MNR	MNR	ND	ND	X	X	X	X	X	

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m2 Amorim Wise Inspire 700 HRT

Core Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C2/1	C2/2	C2/3	C3	C3/1	C4	C4/2	C4/3	D	D/1	D/2	D/3
GWP-total	[kg CO ₂ -Eq.]	7.23E-1	4.56E-1	1.97E-1	1.50E-1	0.00E+0	1.30E-1	4.23E-1	5.67E-2	5.67E-2	7.53E-1	3.76E+0	4.29E+0	1.70E+1	7.28E-1	-8.74E-1	-4.21E-1	-9.23E+0	1.82E-1
GWP-fossil	[kg CO ₂ -Eq.]	3.96E+0	4.55E-1	1.83E-1	1.42E-1	0.00E+0	1.30E-1	4.23E-1	5.66E-2	5.66E-2	1.57E-1	7.84E-1	1.91E+0	1.40E+1	7.28E-1	1.31E+0	8.70E-1	-9.65E+0	2.51E-1
GWP-biogenic	[kg CO ₂ -Eq.]	3.54E+0	2.07E-4	5.73E-1	5.53E-3	0.00E+0	5.07E-5	1.99E-4	1.35E-5	1.35E-5	5.94E-1	2.97E+0	2.38E+0	2.97E+0	2.97E+0	4.40E-1	4.58E-1	4.43E-1	4.34E-1
GWP-luluc	[kg CO ₂ -Eq.]	3.03E-1	1.86E-4	1.36E-2	8.02E-3	0.00E+0	4.85E-5	1.71E-4	1.80E-5	1.80E-5	2.03E-3	1.02E-2	3.32E-5	3.46E-5	4.26E-5	-4.42E-3	-9.19E-3	-1.87E-2	-1.01E-3
ODP	[kg CFC11-Eq.]	3.19E-7	9.90E-8	1.55E-8	5.61E-9	0.00E+0	2.89E-8	9.21E-8	1.31E-8	1.31E-8	8.60E-9	4.30E-8	2.00E-8	1.81E-8	2.60E-8	8.71E-8	1.18E-7	4.33E-7	2.88E-8
AP	[mol H ⁺ -Eq.]	2.53E-2	5.60E-3	1.16E-3	6.72E-4	0.00E+0	1.29E-3	5.29E-3	2.86E-4	2.86E-4	1.32E-3	6.61E-3	7.42E-4	2.31E-3	7.30E-4	7.31E-3	5.92E-3	4.98E-3	1.64E-3
EP-freshwater	[kg PO ₄ -Eq.]	9.95E-4	4.56E-5	4.52E-5	5.80E-5	0.00E+0	1.20E-5	4.21E-5	4.49E-6	4.49E-6	6.05E-5	3.03E-4	2.27E-5	5.33E-5	2.48E-5	6.38E-4	2.36E-4	5.23E-3	9.64E-5
EP-marine	[kg N-Eq.]	6.43E-3	1.31E-3	2.98E-4	1.71E-4	0.00E+0	3.24E-4	1.23E-3	9.69E-5	9.69E-5	2.42E-4	1.21E-3	2.51E-3	1.16E-3	3.42E-3	1.58E-3	1.86E-3	9.37E-3	3.82E-4
EP-terrestrial	[mol N-Eq.]	5.26E-2	1.45E-2	2.46E-3	1.36E-3	0.00E+0	3.58E-3	1.37E-2	1.06E-3	1.06E-3	2.12E-3	1.06E-2	2.91E-3	1.16E-2	2.51E-3	1.58E-2	1.59E-2	9.53E-2	4.46E-3
POCP	[kg NMVOC-Eq.]	1.94E-2	3.94E-3	8.99E-4	4.70E-4	0.00E+0	9.83E-4	3.71E-3	3.01E-4	3.01E-4	6.90E-4	3.45E-3	9.83E-4	2.80E-3	1.00E-3	4.74E-3	6.63E-3	2.51E-2	1.28E-3
ADPE	[kg Sb-Eq.]	6.96E-6	8.94E-7	3.27E-7	2.68E-7	0.00E+0	2.83E-7	7.81E-7	1.58E-7	1.58E-7	9.96E-8	4.98E-7	1.24E-7	4.61E-7	1.12E-7	1.76E-6	2.30E-6	4.31E-6	1.24E-6
ADPF	[MJ]	7.83E+1	6.77E+0	3.60E+0	2.43E+0	0.00E+0	1.95E+0	6.30E+0	8.65E+1	8.65E+1	2.01E+0	1.01E+1	1.58E+0	1.76E+0	2.00E+0	1.80E+1	1.26E+1	1.27E+2	4.01E+0
WDP	[m ³ world-Eq deprived]	2.87E+0	4.61E-2	1.30E-1	8.44E-2	0.00E+0	1.33E-2	4.27E-2	5.97E-3	5.97E-3	8.12E-2	4.06E-1	6.50E-2	6.03E-2	8.43E-2	4.52E-1	4.56E-1	1.85E+0	2.51E-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; WDP = Water (user) deprivation potential
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RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Amorim Wise Inspire 700 HRT

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C2/1	C2/2	C2/3	C3	C3/1	C4	C4/2	C4/3	D	D/1	D/2	D/3
PERE	[MJ]	8.79E+1	1.04E-1	3.78E+0	1.03E+1	0.00E+0	2.73E-2	9.65E-2	9.96E-3	9.96E-3	2.12E+0	1.06E+1	4.09E+0	4.06E+1	3.82E-2	-	-	-	-
PERM	[MJ]	4.06E+1	0.00E+0	7.44E-1	7.16E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	8.12E+0	4.06E+1	4.06E+0	4.06E+1	0.00E+0	2.38E+0	7.95E+0	7.94E+0	0.00E+0
PERT	[MJ]	1.29E+2	1.04E-1	4.52E+0	1.74E-1	0.00E+0	2.73E-2	9.65E-2	9.96E-3	9.96E-3	6.00E+0	3.00E+1	3.04E-2	3.69E-2	3.82E-2	1.04E+1	1.40E+1	2.07E+1	7.94E+0
PENRE	[MJ]	2.88E+1	6.77E+0	1.32E+0	9.89E-1	0.00E+0	1.99E+0	6.30E+0	9.08E-1	9.08E-1	2.01E+0	1.01E+1	7.00E+0	5.60E+1	2.01E+0	1.69E+1	8.42E+0	1.23E+2	4.20E+0
PENRM	[MJ]	5.42E+1	0.00E+0	2.33E+0	1.45E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	1.08E+1	5.42E+1	5.42E+0	5.42E+1	0.00E+0	1.26E+0	4.21E+0	4.20E+0	0.00E+0
PENRT	[MJ]	8.30E+1	6.77E+0	3.64E+0	2.43E+0	0.00E+0	1.99E+0	6.30E+0	9.08E-1	9.08E-1	8.83E+0	4.41E+1	1.58E+0	1.76E+0	2.01E+0	1.81E+1	1.26E+1	1.27E+2	4.20E+0
SM	[kg]	3.92E+0	0.00E+0	1.37E+0	6.85E+0	0.00E+0	0.00E+0												
RSF	[MJ]	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														
FW	[m ³]	2.45E-1	6.57E-3	1.06E-2	2.06E-1	0.00E+0	1.74E-3	6.11E-3	6.44E-4	6.44E-4	8.95E-3	4.47E-2	3.74E-3	9.92E-3	3.93E-3	-1.01E-1	-4.65E-2	-7.37E-1	-2.61E-2

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
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RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Amorim Wise Inspire 700 HRT

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C2/1	C2/2	C2/3	C3	C3/1	C4	C4/2	C4/3	D	D/1	D/2	D/3
HWD	[kg]	3.78E-5	4.00E-6	1.67E-6	2.09E-6	0.00E+0	1.14E-6	3.67E-6	5.04E-7	5.04E-7	1.18E-6	5.91E-6	2.98E-6	1.59E-5	1.98E-6	-2.67E-5	-1.82E-5	-1.83E-4	-6.79E-6
NHWD	[kg]	7.09E-1	2.09E-1	6.67E-1	2.67E-2	0.00E+0	7.19E-2	1.96E-2	4.09E-2	4.09E-2	8.61E-3	4.30E-2	5.07E+0	4.19E+0	7.19E+0	-1.55E-1	-2.62E-1	-6.73E-1	-5.03E-2
RWD	[kg]	1.63E-4	4.53E-5	7.52E-6	4.55E-6	0.00E+0	1.31E-5	4.21E-5	5.86E-6	5.86E-6	4.97E-6	2.49E-5	8.78E-6	4.06E-6	1.20E-5	-6.24E-5	-5.51E-5	-4.17E-4	-1.39E-5
CRU	[kg]	8.90E-2	0.00E+0	0.00E+0	0.00E+0	0.00E+0													
MFR	[kg]	4.75E-2	0.00E+0	3.25E-1	0.00E+0	1.69E+0	7.17E+0	3.25E-1	3.25E-1										
MER	[kg]	2.47E-3	0.00E+0	6.85E-0	0.00E+0	6.85E+0	0.00E+0												
EEE	[MJ]	0.00E+0	2.81E+0	2.81E+0	0.00E+0	4.53E+0	0.00E+0	4.53E+0	0.00E+0										
EET	[MJ]	0.00E+0	5.44E+0	5.44E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	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
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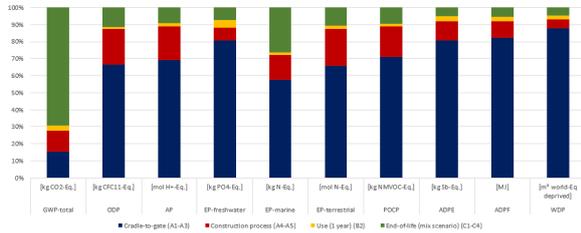
RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional: 1 m² Amorim Wise Inspire 700 HRT

Indicator	Unit	A1-A3	A4	A5	B2	C1	C2	C2/1	C2/2	C2/3	C3	C3/1	C4	C4/2	C4/3	D	D/1	D/2	D/3
PM	[Disease Incidence]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
IR	[kBq U235-Eq]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ETP-fw	[CTUe]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-c	[CTUh]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HTP-nc	[CTUh]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SQP	[-]	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index
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6. LCA: Interpretation

This chapter contains an interpretation of the Life Cycle Impact Assessment categories. When expressed as a percentage, the impact refers to its magnitude expressed as a percentage of total product impact across all modules, with the exception of module D.



The product stage (A1-A3) of Amorim Wise Inspire 700 HRT has the highest impacts for all impact categories assessed, while the use stage (B2), considering a

lifetime of 1 year, has low impacts for all the impact categories, when compared with other stages.

The high impacts of the product stage of Amorim Wise Inspire 700 HRT, show the relevance of the manufacturing processes, which are mostly related to the use of resources such as chemical products, raw materials such as high-density polyethylene (HDPE) and electricity consumption, whose production and use generate emissions of diverse pollutants to the atmosphere and discharges of sludge waste and wastewater.

Amorim Wise Inspire 700 HRT end of life (mix scenario) (C1-C4) and construction stage (A4-A5) also carry relevant potential impacts overall. The end-of-life stage's highest contribution is in the Global Warming Potential (GWP) – Total category, representing 75 % of the result, followed by 27 % of the result in the Eutrophication potential (EP) - marine impact category.

7. Requisite evidence

Blue Angel Ecolabel

The requirements for the award of the *Blue Angel* ecolabel refer to both the substances and materials used during the manufacturing process and the period of use and the disposal of used floor coverings as well as to the transportation packaging for new floor coverings.

The products must not contain as constituents any substances that are identified as particularly alarming according to the Chemicals Regulation *REACH* (EC/1907/2006) and which have been incorporated into the list drawn up in accordance with Article 59 (1) of the *REACH* Regulation (so-called "list of candidates"), as amended at the time of application. Emission requirements:

Compound or Substance	3 rd Day	Final Value (28 th Day)
Total organic compounds within the retention range C ₆ – C ₁₆ (TVOC)	≤ 1000 µg/m ³	≤ 300 µg/m ³
Total organic compounds within the retention range > C ₁₆ – C ₂₂ (TSVOC)	-	≤ 30 µg/m ³
Carcinogenic substances ¹²	≤ 10 µg/m ³ total	≤ 1 µg/m ³ per single value
Total VOC without LCI ¹³	-	≤ 100 µg/m ³
R value ¹⁴	-	< 1
Formaldehyde	-	≤ 60 µg/m ³ (0.05 ppm)

GREENGUARD Certification

This product has been certified according to the *GREENGUARD* Gold Certification Criteria for Building Products and Interior Finishes. The *GREENGUARD* Gold label certifies that products have been independently tested and verified to meet rigorous standards for chemical emissions and volatile organic compounds (VOCs), such as formaldehyde or phthalates.

TÜV Certification

This product is TÜV certification product. *Tüv-Proficert*, that is a transnational certificate for voc-emission and air quality, certifying that a product complies with different national regulations and emissions thresholds of the following regulations:

AgBB 2018
A+ for French Mark
Belgian VOC regulation
BREEM Exemplary Level

LEED V4 (outside North America) MVV TB ABG Annex 8

Amorim Wise Inspires 700 HRT was subjected to tests in order to determine the VOC and formaldehyde emission according to criteria for the allocation of the TÜV PROFICERT- product Interior brand Version 1.2 dated 2019-03-01 in the framework of a supervision test.

Name of the testing institute	Entwicklungs- und Prüflabor Holztechnologie GmbH
Number of test report	2117110/2018/6
Testing methods	The test piece was placed into a test chamber - lying on the bottom - under specific conditions, according to ISO 16000-9. Analysis of results according to ISO 16000-3 and ISO 16000-6.
Certification program	TÜV PROFICERT

Results

Concentration limits after 3, 7 and 28 days of exposure are presented in the following tables:

Quality standard

Parameter	TÜV PROFICERT-product Interior Standard					Compliance of requirements
	Requirements [µg/m ³]		Results [µg/m ³]			
	3 days	28 days	3 days	7 days	28 days	
Total volatile organic compounds TVOC (AgBB)	< 10,000	≤ 1,000	148	185	98	Yes
Total of semi-volatile organic compounds TSVOC		≤ 100	< 5	< 5	5	Yes
Total VOC without LCI (D)		≤ 100	8	< 5	< 5	Yes
R-Value (LCI (D)) *		≤ 1	0.281	0.372	0.222	Yes
Formaldehyde		< 60	< 6	< 6	< 6	Yes
Acetaldehyde		≤ 200	4	3	4	Yes
Toluene		≤ 300	4	4	2	Yes
Tetrachloroethylene		< 350	n.d.	n.d.	n.d.	Yes
Xylene		< 300	n.d.	n.d.	n.d.	Yes
1,4-Dichlorobenzene		< 90	n.d.	n.d.	n.d.	Yes
Styrene		< 350	n.d.	n.d.	n.d.	Yes
Trichloroethylene		≤ 1	n.d.	n.d.	n.d.	Yes
DEHP		≤ 1	n.d.	n.d.	n.d.	Yes
DBP		≤ 1	n.d.	n.d.	n.d.	Yes
Carcinogenic, mutagenic substances and substances toxic to reproduction ¹		Σ ≤ 10	≤ 1 each	n.d.	n.d.	Yes
Ammonia ²		≤ 149	-	-	-	-
Nitrosamines ²		≤ 0.2	-	-	-	-

Quality PREMIUM

Parameter	TÜV PROFICERT-product Interior PREMIUM					Compliance of Requirements	
	Requirements [$\mu\text{g}/\text{m}^3$]		Results [$\mu\text{g}/\text{m}^3$]				
	3 days	28 days	3 days	7 days	28 days		
Total volatile organic compounds TVOC (AgBB)	< 1,000	≤ 160	49	26	10	yes	
Total of semi-volatile organic compounds TSVOC		≤ 100	< 5	< 5	< 5	yes	
Total VOC without LCI (D)		≤ 100	< 5	< 5	< 5	yes	
R-Value (LCI (D)) *		≤ 1.0	0.121	0.086	0.008	yes	
Formaldehyde		< 10	8	6	< 6	yes	
1,4-Dichlorobenzene		< 60	n.d.	n.d.	n.d.	yes	
Trichloroethylene		≤ 1	n.d.	n.d.	n.d.	yes	
DEHP		≤ 1	n.d.	n.d.	n.d.	yes	
DBP		≤ 1	n.d.	n.d.	n.d.	yes	
Carcinogenic, mutagenic substances and substances toxic to reproduction ¹		$\Sigma \leq 10$	≤ 1 each	n.d.	n.d.	n.d.	yes
Ammonia ²		≤ 24	-	-	-	-	
Nitrosamines ²		≤ 0.2	-	-	-	-	

The results have not exceeded the concentration limits corresponding to the certification requirements.

8. References

ISO 14025

DIN EN ISO 14025:2011-10: Environmental labels and declarations — Type III environmental declarations — Principles and procedures

EN 15804

EN 15804:2012-04+A2 2019: Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products

ISO 10874

ISO 10874:2009 - Resilient, textile and laminate floor coverings -- Classification

ISO 16000-6

ISO 16000-6:2011 - Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent, thermal desorption and gas chromatography using MS or MS-FID

ISO 16000-9

ISO 16000-9:2006 - Indoor air - Part 9: Determination of the emission of volatile organic compounds from building products and furnishing -- Emission test chamber method

ISO 23997

ISO 23997:2007- Resilient floor coverings -- Determination of mass per unit area

ISO 24336

ISO 24336:2005 - Laminate floor coverings - Determination of thickness swelling after partial immersion in water

ISO 24342

ISO 24342:2007 - Resilient and textile floor-coverings - Determination of side length, edge straightness and squareness of tiles

ISO 24343 – 1

ISO 24343-1:2007 - Resilient and laminate floor coverings -- Determination of indentation and residual indentation -- Part 1: Residual indentation

EN 13329

EN 13329:2000 - Laminate floor coverings. Specifications, requirements and test methods

EN 13501-1

EN13501-1:2007:Fire classification of construction products and building elements-Part1: Classification using data from reaction to fire tests

EN 13893

EN 13893:2002 - Resilient, laminate and textile floor coverings. Measurement of dynamic coefficient of friction on dry floor surfaces

EN 14041

EN 14041:2004 - Resilient, textile and laminate floor coverings – Essential characteristics

EN 14085

EN 14085:2010 - Resilient floor coverings - Specification for floor panels for loose laying

DIN EN 717-1

DIN EN 717-1:2005 - Wood-based panels - Determination of formaldehyde release - Part 1: Formaldehyde emission by the chamber method

ISO 105-B02

ISO 105-B02:2013 - Textiles -- Tests for colour fastness -- Part B02: Colour fastness to artificial light: Xenon arc fading lamp test

ISO 4918

ISO 4918:2009 - Resilient, textile and laminate floor coverings -- Castor chair test

ISO 16581

ISO 16581:2014 - Resilient and laminate floor coverings -- Determination of the effect of simulated movement of a furniture leg

BS EN 12667

BS EN 12667:2001 - Thermal performance of building materials and products. Determination of thermal resistance by means of guarded hot plate and heat flow meter methods. Products of high and medium thermal resistance

European Waste Catalogue

European Waste Catalogue (EWC) (Commission Decision 94/3/EC)

European List of Waste

European List of Waste (ELW) (Commission Decision 2000/532/EC)

European Waste Framework Directive

Waste Framework Directive (WFD) (2008/98/EC)

UL 2818 - 2013

UL 2818 - 2013 Standard for Chemical Emissions for Building Materials, Finishes and Furnishings

Institut Bauen und Umwelt

General Instructions for the EPD programme of Institut Bauen und Umwelt e.V. Version 2.0, Berlin: Institut Bauen und Umwelt e.V., 2021. www.ibu-epd.com

Institut Bauen und Umwelt e.V., Berlin (pub.): Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part A: Calculation Rules for the Life Cycle Assessment and Requirements on the Project Report according to EN 15804+A2:2019. August 2020 (www.bau-umwelt.de)

PCR Part B

Product Category Rules for Construction Products from the range of Environmental Product Declarations of Institut Bauen und Umwelt (IBU), Part B: Requirements on the EPD for floor coverings, V1.2, Berlin: Institut Bauen und Umwelt e.V. (IBU), February 2018

PCR Part A+A2, version 1.0

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