Raised floor – System LIGNA

Self-declaration acc.to DIN EN ISO 14021

Holder of the declaration: Lindner SE | Bahnhofstraße 29 | 94424 Arnstorf | Germany

Content of the declaration:
Product information
Certification system DGNB
Certification system LEED
Certification system BREEAM
Product certification Cradle to Cradle®

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Product information

Green Building Statement
We already think in closed cycles while developing our products. In this connection we act as one of the specialists within the range of sustainable building since many years. Supported by our internal technical department „Green Building“ we ensure the sustainability target of your building project.

Product description

Raised floor LIGNA 38
Raised floors are a sub construction type of system floor constructions for the interior fit-out of buildings that consist of factory-made industrial prefabricated modular components (raised floor panels, substructure elements and building elements as accessories).

Application area
System floors are standardized support systems for the interior fit-out that are raised by means of a sub construction.
The environmental product declaration is related to the raised floor system LIGNA 38 with a panel thickness of 38 mm.

Base materials

Base material per m² raised floor and a construction height of 150 mm FFL

System components	Material	Weight proportion (%)
Chipboard panel*	Chipboard panel	~ 91,0
Pedestals*	Galvanised steel	~ 6,5
Pedestal glue*	Polyurethane / SMP	< 0,5
1C floor sealant*	Synthetic resin dispersion	< 0,5
2C floor sealant *	Epoxy resin	< 0,5
Gaskets*	PE/PP	< 0,5
Locking glue* solvent-free	Synthetic resin dispersion	< 0,5
Edge sealant* solvent-free	Synthetic resin dispersion	< 0,5
Wall connection tape*	PE foam	< 0,5
Factory-made processing		
Glue application*	Polyacrylate dispersion	< 0,5
Hot-melt glue*	Ethylene vinyl acetate	< 0,5
Edge trim*	PVC / ABS	< 0,5
Humidity protection*	PET-aluminium	< 0,5
Covering*	Depending on covering	< 0,5

*Data sheets available on request

Material explanation

Chipboard panel
The chipboard panel consists of the base materials wood pulp, water (in form of wood humidity), glue and hydrophobisation.
Wood pulp: Fresh wood out of the forest which is stripped of bark, wood from sawmills and non-polluted used wood.
Glue: Consisting of urea formaldehyde resin (UF glue).
Hydrophobisation: Paraffin wax emulsion for the improvement of the humidity resistance.

Steel
Steel is a metal alloy with steel as main component and a carbon monoxide content between 0.02 % and 2.06 %.

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Die Lindner Group ist Mitglied der DGNB[1]
Deutsche Gesellschaft für Nachhaltiges Bauen
German Sustainable Building Council

CERTIFICATION SYSTEM DGNB
Not listed characteristics do not apply to this product.´

Environmental Quality

ENV 1.1 Life Cycle Assessment of the Building
For the eco-balance of the Lindner products eco-balance data from the available verified EPD's can be taken.
Declaration number: EPD-LIN-20160235-IAA1-EN
Furthermore, project-specific eco-balance data can be issued contemporary.
In this context an additional expenditure of time and cost shall be considered if applicable.

ENV 1.2 Local Environment Impact

Components	Weight proportion (%)	VOC (%)	GISCODE / EMICODE	Other
Chipboard panel E1	~ 91,0	-	-	Formaldehyde E1**
Pedestals	~ 6,5	-	-	-
Pedestal glue	~ 0,5	< 0.01 %	PU10 / EC 1 plus R	-
Pedestal glue SMP	< 0,5	< 0.01 %	PS10 / EC 1 plus R	-
1C floor sealant	< 0,5	< 1 g/l	BSW 20	-
2C floor sealant	< 0,5	< 1 g/l	RE 1	-
Locking glue	< 0,5	~ 5 g/l	BSW10	-
Edge sealant	< 0,5	< 1 g/l	BSW20	-
Covering glue	< 0,5	-	D1 / EC 1	-
Total	**100**	**< 82 µg/m³ ***		

*) Test measures showed a value of 82 µg/m³ = 0,082 mg/m³ after 28 days. Testing according to AgBB/DIBt.
„-" for „not relevant" according to DGNB 2018
** Emission class according to EN 16516

It can be maintained up to quality level 4.

ENV 1.3 Verantwortungsbewusste Ressourcengewinnung
Our LIGNA raised floor panels (Chipboard panels) can optionally be delivered FSC™ Mix-certified.
Certificate number: TUEV-COC-000515
Licence number: FSC-C119815

Economical Quality

ECO 1.1 Life Cycle Costs
The useful life of raised floors is up to 50 years (acc. to BBSR table, code no. 352.911, issue 02/2017, published by the Federal Institute for Building, Urban Affairs and Spatial Development). For raised floor systems no costs for dismantling or demolition incur. By means of the internal return system it is guaranteed that the components are not disposed but flown into the recycling circuit.

ECO 2.1 Flexibility and Adaptability
Every raised floor panel can be revised, moved or replaced individually.

ECO 2.2 Market Ability
The raised floor system is continuously adapted to the current market demands.

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Sociocultural & Functional Quality

SOC 1.2 Indoor Air Quality
Lindner raised floor systems are made of materials that are nearly free of any emission as for example VOC and formaldehyde. Test chamber measurements according to the requirements of the quality mark Indoor Air Comfort GOLD® (e. g. AgBB measurement scheme) are available as proof.
TVOC (AgBB/DIBt): after 28 days 82 µg/m³
Formaldehyde value: after 28 days 8.8 µg/m³
Report no.: 392-2018-00244003_A_EN

SOC 1.3 Acoustic Comfort
The raised floor system LIGNA can contribute to achieve the DGNB requirements.
For the raised floor LIGNA laboratory tests according to DIN EN ISO 10140 respectively DIN IN ISO 10848 were executed corresponding to the required sound transmission paths. Depending on the required quality level different improvement values for reaching the total sound protection can be achieved with the panel thickness of 28 mm to 38 mm.

SOC 2.1 Accessibility
With the raised floor system all requirements of the generally accepted rules of technology are implemented. This supports the instructed architects or experts during planning and execution.

Technical Quality

TEC 1.2 Sound Insulation
The raised floor system LIGNA can contribute to achieve the DGNB requirements.
For the raised floor LIGNA laboratory tests according to DIN EN ISO 10140 respectively DIN IN ISO 10848 were executed corresponding to the required sound transmission paths. Depending on the required quality level different improvement values for reaching the total sound protection can be achieved with the panel thickness of 28 mm to 38 mm.

TEC 1.5 Cleanability
The cleaning of the raised floor system depends on the respective laid or rather applied coverings. For the different coverings the cleaning instruction for coverings on system floors as well as the cleaning instructions of the covering manufacturer have to be considered.

TEC 1.6 Deconstruction and Disassembly
A material exploitation of the calcium sulphate panels and the steel components is possible.

Process quality

PRO 1.5 Documentation for Facility Management
User, maintenance and care guidelines for the individual products are available. These are documented and provided to the executing service providers.

PRO 2.1 Environmental Impact of Construction
As the products are delivered in modular components that only have to be modified punctually, they contribute to a low-waste, low-noise and low-dust building site. For the waste of the processing the Lindner intern procedural rules for waste disposal are decisive. The packing for the individual products is chosen in a way that as less waste as possible is caused.

PRO 2.2 Construction Quality Assurance
If required, data sheets for the used products and components can be provided

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CERTIFICATION SYSTEM LEED
Not listed credits do not apply for this product.

Sustainable Site

Construction Activity Pollution Prevention
The compliance with project-specific requirements of an ESC plan is guaranteed by the in-house specialist departments. A complete ESC plan can be issued and implemented by the specialists on request.

Materials and Resources

Construction and Demolition Waste Management Planning
Waste that cannot be avoided on site will be preferentially returned to recycling processes via waste management companies. A complete CWM plan can be issued and implemented by the specialists on request.

Building Life Cycle Impact Reduction
The useful life of raised floors is up to 50 years (acc. to BBSR table, code no. 352.911, issue 02/2017, published by the Federal Institute for Building, Urban Affairs and Spatial Development). By means of the internal return system it is guaranteed that the components are not disposed but flown into the recycling circuit.
For this product a project-specific eco-balance can be issued on request in compliance with the applicable regulations. An additional expenditure of time and costs need to be considered if applicable.

Building Product Disclosure and Optimization – Environmental Product Declaration
For the eco-balance of the Lindner products eco-balance data from the available verified EPD's can be taken.
Declaration number: EPD-LIN-20160235-IAA1-EN
Furthermore, project-specific eco-balance data can be issued contemporary.
In this context an additional expenditure of time and cost shall be considered if applicable.

Building Product Disclosure and Optimization – Sourcing of Raw Materials

Components	Weight proportion (%)	Recycling part (%)		Production site
		Pre-Consumer	Post-Consumer	
Chipboard panel	~ 91.0	60*	30*	
Raised floor pedestal	~ 6.5	0	30	Arnstorf
Pedestal glue	< 0.5	0	0	Arnstorf
Floor sealant	< 0.5		0	Arnstorf
Gaskets	< 0.5	0	0	Arnstorf
Locking glue	< 0.5	0	0	Arnstorf
Edge sealant	< 0.5	0	0	Arnstorf
Wall connection tape	< 0.5	0	0	Arnstorf
Glue application	< 0.5	0	0	Arnstorf
Holt-melt glue	< 0.5	0	0	Arnstorf
Edge trim	< 0.5	0	0	Arnstorf
Humidity protection	< 0.5	0	0	Arnstorf
Total	**100**	**56.55**		

***The recycling part can vary from 30% up to 100% according to customer requirements.**

Our LIGNA raised floor panels (Chipboard panels) can optionally be delivered FSC™ Mix-certified.
Certificate number: TUEV-COC-000515
Licence number: FSC-C119815

Building Product Disclosure and Optimization – Material Ingredients
As manufacturer of products Lindner fulfils the obligations towards the EU chemical directive „REACH" and created its own REACH declaration.
The aim of the **REACH** regulation (**R**egistration, **E**valuation and **A**uthorization of **CH**emicals) is to capture materials produced and used in the EU and to determine and record their impact on health and environment.

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Materials and Resources

Construction and Demolition Waste Management
The compliance with project-specific requirements with regards to a low-waste, low-noise and low-dust building site as well as measures for ground and groundwater protection is guaranteed by our in-house specialist department. A corresponding proof can be issued and implemented on request by the specialists. Due to the delivery of ready-made floor elements that do not need to be treated on site, our product contributes to a low-noise and low-dust building site. The packing for the individual products is chosen in a way that as less waste as possible is caused.

Indoor Environmental Quality

Minimum Acoustic Performance
The raised floor LIGNA fulfils high sound insulation requirements and therefore protects the rooms from incoming sounds.

Low Emitting Materials
Lindner raised floor systems are made of materials that are nearly free of any emission as for example VOC and formaldehyde. Test chamber measurements according to the requirements of the quality mark Indoor Air Comfort GOLD® (e. g. AgBB measurement scheme) are available as proof. For the used timber could be deployed kind of wood which have little or no formaldehyde concentrations (“E0.5” or “E0”).
TVOC (AgBB/DIBt): after 28 days 82 µg/m³
Formaldehyde value: after 28 days 8.8 µg/m³
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Construction Indoor Air Quality Management Plan
The compliance with project-specific requirements of an IAQ plan is guaranteed by our in-house specialist departments. A complete IAQ plan can be issued and implemented by the specialists on request.

Indoor Air Quality Assessment
Lindner raised floor systems are made of materials that are nearly free of any emission as for example VOC and formaldehyde. Test chamber measurements according to the requirements of the quality mark Indoor Air Comfort GOLD® (e. g. AgBB measurement scheme) are available as proof.
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Acoustic Performance
The raised floor system LIGNA can contribute to achieve the LEED requirements.
For the raised floor LIGNA laboratory tests according to DIN EN ISO 10140 respectively DIN IN ISO 10848 were executed corresponding to the required sound transmission paths. Depending on the required quality level different improvement values for reaching the total sound protection can be achieved with the panel thickness of 28 mm to 38 mm.

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BREEAM®

ZERTIFIZIERUNGSSYSTEM BREEAM
Not listed characteristics do not apply for this product

Management

Man 02 Life cycle cost and service life planning
Lindner products have a long lifetime in consequence of the raw materials, the manufacturing processes as well as the high production quality. Furthermore, certain products can be dismantled controlled and reused after minor treatment (Circular Economy). The useful life of raised floors is up to 50 years (acc. to BBSR table, code no. 352.911, issue 02/2017, published by the Federal Institute for Building, Urban Affairs and Spatial Development). By means of the internal return system it is guaranteed that the components are not disposed but flown into the recycling circuit.

Man 03 Responsible construction practices
All companies of the Lindner Group comply with the requirements of the environmental management system. For companies within the Lindner Group which are certified according to ISO 14001, ISO 50001, SCC** and OHAS further specific environmental and safety aims are defined in connection with the yearly management review. The realization of environmental protection and all of relevant statutory rules are defined in the Lindner-intern guideline called “environmental protection”.

Health and Wellbeing

Hea 02 Indoor air quality
Lindner raised floor systems are made of materials that are nearly free of any emission as for example VOC and formaldehyde. Test chamber measurements according to the requirements of the quality mark Indoor Air Comfort GOLD® (e. g. AgBB measurement scheme) are available as proof.
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Hea 05 Acoustic performance
The raised floor system LIGNA can contribute to achieve the BREEAM requirements.
For the raised floor LIGNA laboratory tests according to DIN EN ISO 10140 respectively DIN IN ISO 10848 were executed corresponding to the required sound transmission paths. Depending on the required quality level different improvement values for reaching the total sound protection can be achieved with the panel thickness of 28 mm to 38 mm.

Hea 18 Volatile organic compounds (In-Use only)
Lindner raised floor systems are made of materials that are nearly free of any emission as for example VOC and formaldehyde. Test chamber measurements according to the requirements of the quality mark Indoor Air Comfort GOLD® (e. g. AgBB measurement scheme) are available as proof.
TVOC (AgBB/DIBt): after 28 days 82 µg/m³
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BREEAM®

Materials

Mat 01 Life cycle impacts
For the balance of the building we can provide product-specific information. Due to the longevity of the raised floor systems Lindner guarantees a reuse of the products for the whole useful time.

Mat 03 Responsible sourcing of construction products
The raised floor system consists of materials with high recycling part. The chipboard panel (main part of the system) is 60 % recyclable (pre-consumer). The scrap iron part of the steel pedestals is about 30% (post-consumer). Close suppliers are preferred.
Our LIGNA raised floor panels (Chipboard panels) can optionally be delivered FSC™ Mix-certified.
Certificate number: TUEV-COC-000515
Licence number: FSC-C119815
The company Lindner is certified according to DIN EN ISO 14001.

Mat 06 Material efficiency
Lindner raised floor systems are produced project-specific so that they can be installed on site as low-waste as possible. Waste that cannot be avoided on site will be preferentially returned to recycling processes via waste management companies.

Waste

Wst 01 Construction waste management
Lindner raised floor systems are produced project-specific so that they can be installed on site as low-waste as possible. Waste that cannot be avoided on site will be preferentially returned to recycling processes via waste management companies.
Due to the controlled assembly in the factory, unnecessary sources of error can be avoided.
A complete CWM plan can be issued and implemented by the specialists on request.

Wst 06 Functional adaptability (non-residential only)
Lindner products have a long lifetime. The useful life of raised floors is up to 50 years (acc. to BBSR table, code no. 352.911, issue 02/2017, published by the Federal Institute for Building, Urban Affairs and Spatial Development). The raised floor LIGNA is a product with optimum reuse and further utilization possibilities.
With leasing systems and redemption guarantees all materials can be integrated in our production cycles. In this context complete material components can be reused or made available as raw material by means of recycling.
The raised floor system consists of materials with high recycling part. The chipboard panel (main part of the system) is 60 % recyclable (pre-consumer). The scrap iron part of the steel pedestals is about 30% (post-consumer). Lindner products are designed in a way that they can be easily dismantled without any damages what enables to easy changes of the use of the building.

Pollution

Pol 05 Reduction of noise pollution
The raised floor system LIGNA can contribute to achieve the BREEAM requirements.
For the raised floor LIGNA laboratory tests according to DIN EN ISO 10140 respectively DIN IN ISO 10848 were executed corresponding to the required sound transmission paths. Depending on the required quality level different improvement values for reaching the total sound protection can be achieved with the panel thickness of 28 mm to 38 mm.

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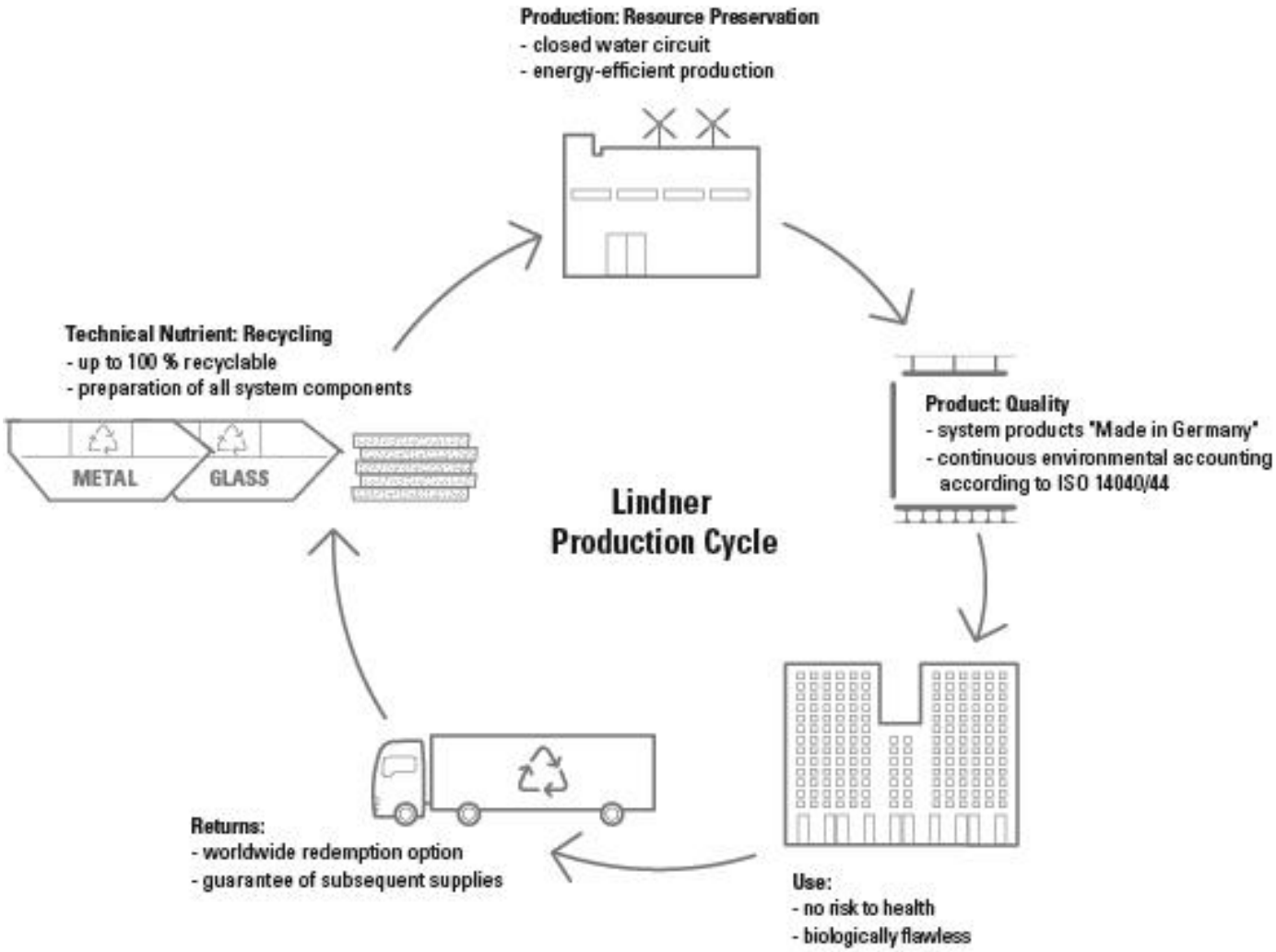
CIRCULAR ECONOMY

Information on Circular Economy

Due to the transfer of the Circular Economy thoughts we avoid waste, toxic substances and pollution. The 100 % technical cycle, we are striving for, allows a separation of types and nearly a whole reuse of all materials. Environmental aspects already play a primary role when choosing our suppliers. Responsibility towards people and environment is as important for Lindner as the quality of the products. Due to this reason an environmental management system according to
DIN EN ISO 14001 is established and mostly certified through the whole Lindner Group.

- Protection of prospective generations and eco systems through care of natural resources
- Security by choosing high-quality and contaminant-free materials
- Healthiness as supreme asset of human being
- Safe environment for all building user



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Material Health

The parts of the raised floor system LIGNA have to be secure and easily digestible for health and environment. Lindner develops raised floor systems which are environmentally friendly and also healthy for the human being from the production up to the usage and reuse.
We know the chemical components of the material our products are made of and we are still optimizing to develop even safer materials. To fulfil several criteria of environmental tolerance and also the human health, system components were modified and also replaced.
Emission tests according to national and international standards (e. g. AgBB scheme) assure low-emission and harmless materials.

Material Reutilization

The raised floor system LIGNA is a product with optimal reuse and further utilization possibilities.
In this context whole material components can be reused or made available again as raw material by means of recycling.

Renewable Energy

With certified environment management and in-house eco-balancing, the whole Lindner Group takes a stand for e.g. energy reduction to reduce their ecological footprint of their production process.
Currently the part of sustainable energy is 37 %.
We are still working on an increase of the share of sustainable energy in our production. Our prioritized aim is it, to save energy in all of our production processes.

Water Stewardship

A water cycle concept systematically reduces our water consumption.
Due to sedimentation and cleaning of the solid matter, the necessary process water can stay in the water cycle. In this way the fresh water consumption is reduced to a minimum.

Social Fairness

The most important principle of the company is that the employee is the middle of the company. For this reason the compliance rules for employees were defined: “Our values”.
The Lindner Group is involved in several social projects which are oriented regional and also national.
In 1991 the “Hans Lindner Stiftung” was founded which is a benefit to the public.
As we are a responsible producer, we are certified acc. to the international environment management norm ISO 14001. It serves the further development of our management for low resources and the further environment.

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