



Raised floor – System LIGNA

Environmental product declaration acc. to ISO 14021

Holder of the declaration

Lindner AG
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Germany

Content of the declaration

Product information
Certification system DGNB
Certification system LEED
Certification system BREEAM
General information

Product information

Product description Raised floor LIGNA 38
 Raised floors are a subcategory of system floor constructions for the interior fit-out of buildings which consist of factory-made, industrially pre-finished, modular components (raised floor panel, substructure elements and constructions elements as accessories).

Application area System floors are standardized by substructure raised extension systems for the interior.

The environmental product declaration refers to the raised floor LIGNA 38 with a panel thickness of 38 mm.

Base material

| Base materials per sqm raised floor and construction height 150 mm OKF | | |
|---|-------------------------|-----------------------|
| System components | Material | Weight proportion [%] |
| Chipboard panel | Chipboard | ~ 91 |
| Pedestals* | Steel galvanised | ~ 6,5 |
| Pedestal glue* | Polyurethan / SMP | < 0,5 |
| 1K- Floor sealant emission low | Synthetic dispersion | < 0,5 |
| 2K- Floor sealant* | Epoxy resin | < 0,5 |
| Gaskets* | Ethylenvinylacetat | < 0,5 |
| Locking glue* solvent- free | Synthetic dispersion | < 0,5 |
| Edge sealer* solvent-free | Synthetic dispersion | < 0,5 |
| Wall connection tape* | PE-foam | < 0,5 |
| Factory-made processing | | |
| Glue applications* | Polyacrylics-dispersion | < 0,5 |
| Hot-melt glue* | Ethylene-vinyl-acetate | < 0,5 |
| Edged trim* | PVC / ABS | < 0,5 |
| Humidity protection | PET-aluminum | < 0,5 |
| Covering* | Dependet on covering | < 0,5 |

* data sheet on request

Material explanation

Chipboard panel
 The chipboard panel consists of the base materials wood pulp, water (in the form of wood humidity), glue and hydrophobation.

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), alternatively with formaldehyde-free polyurethane gluing (MDI). Hydrophobation: Paraffin wax emulsion for the improvement of the humidity resistance.

Steel

Steel is a metal alloying which main component is iron and shows a carbon monoxide content between 0.2 % and 2.06%.

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Die Lindner Group ist
Mitglied der

DGNB

Deutsche Gesellschaft für Nachhaltiges Bauen
German Sustainable Building Council

Certification system

Not listed characteristics do not apply to this product.



Environmental Quality

ENV1.1 Life Cycle Impact Assessment

For the eco-balance of the products of the company Lindner eco-balance data can be gathered from the verified EPD's. **

Declaration no.: EPD-LIN-20160235-IAA1-DE

**Furthermore, project-related LCA data can be created promptly. If applicable, an additional expenditure of time and costs must be considered.

ENV1.2 Local Environment Impact

| Component | Weight proportion | VOC | GISCODE / Emicode | Other |
|--------------------|-------------------|----------------------|-------------------|----------------|
| Chipboard panel E1 | 91 % | - | - | Formaldehyd E1 |
| Pedestals | 6,5 % | - | - | - |
| Pedestal Glue | <0,5 % | 0 % | PU 10 | Emicode EC 1 |
| Pedestal Glue SMP | <0,5 % | 0 % | RS 10 | Emicode EC 1 |
| 1K-Floor sealant | <0,5 % | 0 % | M-DF 01 | - |
| 2K-Floor sealant | <0,05 % | 0 % | RE 1 | - |
| Locking glue | <0,5 % | 0 % | M-DF 01 | - |
| Edge sealer | <0,5 % | 0 % | M-DF 00 | - |
| Covering glue | <0,5 % | 0 % | D1 | Emicode EC 1 |
| Total | 100% | < 5µg/m³ * | | |

* Test measures showed a value of < 5 µg/m³ after 28 days. The evaluation limit acc. to AgBB/DIBt is 1mg/m³

ENV1.3 Responsible Procurement

The proportion of PEFC- and FSC-certified wood can be adjusted acc. to wishes of the client and the certificate can be provided.

ENV2.1 Life Cycle Impact Assessment – Primary Energy

For the eco-balance of the products of the company Lindner eco-balance data can be gathered from the verified EPD's. **

In addition project-oriented eco-balance data can be drawn up contemporary.

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Economical Quality

ECO1.1 Life Cycle Cost

Raised floors can be expected to remain durable for up to 50 years (acc. to BBSR table, code no. 353 211, state 11/2011, published by the Federal Institute for Research on Building, Urban Affairs and Spatial Development). If used as suspended raised floor system, no dismantling or costs for demolition incur for this product. Due to the internal return system, it is guaranteed that components are not disposed but flow into the recycling circuit.

ECO2.1 Flexibility and adaptability

Every raised floor panel can be revised, moved or replaced individually.

ECO.2.2 Market ability

The raised floor system is adapted regularly to the current market demands.



Sociocultural & Functional Quality

SOC1.2 Indoor Air Quality

The Chipboard panel meets the requirements according to the Eurofins Indoor Air Comfort Gold Label, Version 3.1.
The measured values fall below the limits of 100 µg/m³ (TVOC < 5 µg/m³) and 10 µg/m³ (Formaldehyde < 3 µg/m³).
Due to the low value, the raised floor system positively contributes to the indoor air quality.

SOC1.3 Acoustic Comfort

The raised floor system LIGNA can contribute to reaching of DGNB- requirements. For the raised floor LIGNA laboratory test with the corresponding sound transfer ways acc. to DIN EN ISO 10140 or rater DIN IN ISO 10848 were executed. According to requested quality level several improvement values with the available panel thicknesses from 30 mm up to 38 mm can be reached, to obey the total sound protection.

SOC2.1 Accessibility

Through the raised floor system, all demands of the general known rules of technique are put into action and support in this way the hired architects or expert in planning and realization.



Technical quality

TEC1.2 Sound insulation

The raised floor system LIGNA can contribute to reaching of DGNB- requirements. For the raised floor LIGNA laboratory test with the corresponding sound transfer ways acc. to DIN EN ISO 10140 or rater DIN IN ISO 10848 were executed. According to requested quality level several improvement values with the available panel thicknesses from 30 mm up to 38 mm can be reached, to obey the total sound protection.

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| | | |
|--------|--------------------------------|--|
| TEC1.5 | Cleaning and Maintenance | The cleaning of the raised floor system depends on the respective laid or rather applied coverings. For the several coverings the cleaning instruction coverings on system floors and the cleaning instruction of the covering producer has to be observed. Through the easy accessibility of the raised floor panels an uncomplicated access to the floor hollow for maintenance of the technical building equipment is possible. |
| TEC1.6 | Deconstruction and Disassembly | Every raised floor panel can be dismantled individually and damage-free and also separated by type. Also the substructure can be dismantled damage-free. The Chipboard panel can be used thermal. A material exploitation of the steel components is possible. |



Process quality

| | | |
|--------|---------------------------------------|--|
| PRO1.5 | Documentation for Facility Management | There are using-, maintenance- and care instructions for the individual products. These are documented and are on disposal for the executing service providers. |
| PRO2.1 | Environmental Impact of Construction | Through the delivery of modular components, which only have to be worked on selectively, the products contribute to a trash-, noise- and dust-free construction site. For the waste of the processing the Lindner intern procedural rules for waste disposal are significant. The packaging of the individual products must be chosen just like as less as possible waste is produced. |
| PRO2.2 | Construction Quality Assurance | If necessary data sheets to the used products and components are available. |

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Certification system



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Sustainable Sites

Construction Activity
Pollution Prevention

Obeying of project-specific requirements of ESC plans is guaranteed by the company-own specialist department. On request it is possible to draw up a whole ESC plan by the specialist department.



Energy and Atmosphere

Fundamental Refrigerant
Management

Water is the only coolant, which is used for Lindner products. It is free of additions.

Enhanced Refrigerant
Management

Water is the only coolant, which is used for Lindner products. It is free of additions.



Materials and Resources

Construction and
Demolition Waste
Management Planning

Waste, which cannot be avoided, is primary given to waste disposal plants to the recycling process. On request, a whole CWM plan can be drawn up and implemented by specialists.

Building Life Cycle
Impact Reduction

The raised floor system LIGNA has a long life in which the calcium sulfate panel can be dismantled and also be reused after less working.

There is an eco-balance acc. to DIN EN 15804 where you can get data for the building balance. You can find the balance on the homepage of the company Lindner.

On demand it is possible to draw up a project-specific eco-balance for the product subject to the counting norms. If applicable, you have to consider a time and cost effort.

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Building Product Disclosure and Optimization – Environmental Product Declaration

For this product you can find an EPD acc. to norm ISO 14025, 14040, 14044 and EN 15804 on the homepage of Lindner.
EPD-LIN-20160235-IAA1-DE

In addition it is possible to draw up a project-specific EPD for the product subject to the counting norms. If applicable, you have to consider a time and cost effort.

Building Product Disclosure and Optimization – Sourcing of Raw Materials

| Components | Weight proportion | Recycling part | | Production site |
|-----------------------|-------------------|----------------|---------------|-----------------|
| | | Pre-Consumer | Post-Consumer | |
| Chipboard panel | ~ 91 % | 60% | 30%* | |
| Raised floor pedestal | ~ 6,5 % | 0% | 30% | Arnstorf |
| Pedestal glue | < 0,5 % | 0% | 0% | Arnstorf |
| Floor sealant | < 0,5 % | 0% | 0% | Arnstorf |
| Gaskets | < 0,5 % | 0% | 0% | Arnstorf |
| Locking glue | < 0,5 % | 0% | 0% | Arnstorf |
| Edge sealer | < 0,5 % | 0% | 0% | Arnstorf |
| Wall connection tape | < 0,5 % | 0% | 0% | Arnstorf |
| Glue application | < 0,5 % | 0% | 0% | Arnstorf |
| Hot-melt glue | < 0,5 % | 0% | 0% | Arnstorf |
| Edge trim | < 0,5 % | 0% | 0% | Arnstorf |
| Humidity protection | < 0,5 % | 0% | 0% | Arnstorf |
| | | 54,6% | 29,25% | |
| Total | 100% | 56,55% | | |

*Der Recyclinganteil kann je nach Kundenwunsch zwischen 30% und 100% betragen

Building Product Disclosure and Optimization – Material Ingredients

The aim of the **REACH** regulation (**R**egistration, **E**valuation and **A**uthorization of **C**hemicals) is to capture materials produced and used in the EU and to determine and record their impact on health and environment.

As manufacturer of products, Lindner fulfils the obligations towards the EU chemical directive "REACH" and created its own REACH declaration.

Construction and Demolition Waste Management

Lindner Floor systems are produced in such a way that they can be installed on site as low-waste as possible. Waste, which cannot be avoided, is primary given to waste disposal plants to the recycling process.

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Indoor Environmental Quality

| | |
|---|---|
| Minimum Acoustic Performance | The raised floor LIGNA fulfils high requests of sound insulation and protects therefore the rooms from entering sound. |
| Low Emitting Materials | <p>The Chipboard panel meets the requirements according to the Eurofins Indoor Air Comfort Gold Label, Version 3.1.</p> <p>The measured values fall below the limits of 100 µg/m³ (TVOC < 5 µg/m³) and 10 µg/m³ (Formaldehyde < 3 µg/m³).</p> <p>Due to the low value, the raised floor system positively contributes to the indoor air quality.</p> |
| Construction Indoor Air Quality Management Plan | The obeying of project-specific requests of an IAQ plan is secured by the company-own specialist department. On request a whole IAQ plan can be drawn up and implemented by expert staff. |
| Indoor Air Quality Assessment | <p>Lindner raised floor systems are produced with low-emission material of for example VOC and formaldehyde. As proof serve test chamber measurements acc. to Eurofins Indoor Air Comfort Gold Label, Version 3.1.</p> <p>It is ensured that the highest request to the measurements of indoor air can be achieved with the raised floor LIGNA.</p> |
| Acoustic Performance | The raised floor system LIGNA can contribute to reaching of LEED- requirements. For the raised floor LIGNA laboratory test with the corresponding sound transfer ways acc. to DIN EN ISO 10140 or rater DIN IN ISO 10848 were executed. According to requested quality level several improvement values with the available panel thicknesses from 30 mm up to 38 mm can be reached, to obey the total sound protection. |

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Certification system



Not listed characteristics do not apply to this product.

bre Management

| | | |
|--------|---|---|
| Man 01 | Sustainable procurement | The proportion of PEFC- and FSC-certified wood can be adjusted acc. to wishes of the client and the certificate can be provided. |
| Man 02 | Responsible construction practices | Basically all company parts of the Lindner Group fulfill the guidelines of the environment management system. For companies in the Lindner Group which are certified acc. to ISO 14001, ISO 50001, SCC** and OHAS further specific environment and safety aims in connection with the yearly management review are defined. The realization of environment protection and all of the relevant legally rules are defined in the Lindner-intern guideline called "environment protection". |
| Man 03 | Construction site impacts | The obeying of project-specific requests regarding trash-, noise- and dust-free construction sites as well as measures for floor and ground water protection is secured by a company-own specialist department. On request a corresponding verification can be drawn up and implemented by expert staff. |
| Man 05 | Life cycle cost and service life planning | <p>Lindner products have a long life cycle. (Due to raw materials, production process and high production quality). In addition some products can be dismantled and can be used again after less working.(C2C)</p> <p>There is an eco-balance for the raised floor system LIGNA acc. to DIN EN 15804 where you can get data for the building balance.</p> <p>Raised floors can be expected to remain durable for up to 50 years (acc. to BBSR table, code no. 353 211, state 11/2011, published by the Federal Institute for Research on Building, Urban Affairs and Spatial Development). Due to the Lindner-intern taking back system it is guaranteed, that the components are not thrown away but get back to the recycling circle.</p> |

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bre Health and Wellbeing

| | | |
|--------|----------------------|--|
| Hea 02 | Indoor Air quality | <p>The Chipboard panel meets the requirements according to the Eurofins Indoor Air Comfort Gold Label, Version 3.1.</p> <p>The measured values fall below the limits of 100 µg/m³ (TVOC < 5 µg/m³) and 10 µg/m³ (Formaldehyde < 3 µg/m³).</p> <p>Due to the low value, the raised floor system positively contributes to the indoor air quality.</p> |
| Hea 05 | Acoustic performance | <p>The raised floor system LIGNA can contribute to reaching of BREEAM- requirements. For the raised floor LIGNA laboratory test with the corresponding sound transfer ways acc. to DIN EN ISO 10140 or rater DIN IN ISO 10848 were executed. According to requested quality level several improvement values with the available panel thicknesses from 30 mm up to 38 mm can be reached, to obey the total sound protection.</p> |

bre Energie

| | | |
|--------|-------------------|--|
| Ene 01 | Energy efficiency | <p>For this product you can find an EPD acc. to norm ISO 14025, 14040, 14044 and EN 15804 on the homepage of Lindner.</p> <p>Data for the LCA can be received from the verified EPD. Declaration number: EPD-LIN-20160235-IAA1-DE</p> <p>Furthermore, project related LCA data can be created promptly. If applicable, an additional expenditure of time and costs must be considered.</p> |
|--------|-------------------|--|

bre Materials

| | | |
|--------|-----------------------------------|--|
| Mat 01 | Life cycle impacts | <p>For this product you can find an EPD acc. to norm ISO 14025, 14040, 14044 and EN 15804 on the homepage of Lindner.</p> <p>Data for the LCA can be received from the verified EPD. Declaration number: EPD-LIN-20160235-IAA1-DE</p> <p>Furthermore, project related LCA data can be created promptly. If applicable, an additional expenditure of time and costs must be considered.</p> |
| Mat 03 | Responsible sourcing of materials | <p>The proportion of PEFC- and FSC-certified wood can be adjusted acc. to wishes of the client and the certificate can be provided.</p> <p>The raised floor system consists of material with high recycling part. Location-based suppliers are preferred. Lindner is certified according to DIN EN ISO 14001.</p> |

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bre Waste

| | | |
|--------|-------------------------------|--|
| Wst 01 | Construction waste management | Lindner raised floor systems are produced in such a way that a low-waste installation on site is possible. Waste, which cannot be avoided, is primary given to waste disposal plants to the recycling process. |
|--------|-------------------------------|--|

bre Umweltverschmutzung

| | | |
|--------|-----------------|---|
| Pol 05 | Noise reduction | The raised floor system LIGNA can contribute to reaching of BREEAM- requirements. For the raised floor LIGNA laboratory test with the corresponding sound transfer ways acc. to DIN EN ISO 10140 or rater DIN IN ISO 10848 were executed. According to requested quality level several improvement values with the available panel thicknesses from 30 mm up to 38 mm can be reached, to obey the total sound protection. |
|--------|-----------------|---|

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General information

CO₂ & Waste

In order to reduce waste from demolition and building measures, waste streams are dedicated to recycling processes. The verification can be done by the company Lindner.

The used transport packaging (timber, cardboard, foils) can be recycled. Where possible, they are collected separately and supplied to a proper recycling (packaging regulation).

Lindner system products are delivered to the construction site in ready-for-assembly condition. This means that no work or possibly minor work has to be done on the product. In this way, only little waste or no waste is generated on site. The used transport packaging can in large part be recycled. Only certified waste management companies are entrusted with the disposal conforming to the law for waste that cannot be avoided.

Vision 2020: Co2 neutral and waste-free location

Less is more. Much less is our aim!

The vision: It is our aim to further develop Lindner production sites in CO₂ neutral and waste-free locations. We derived concrete aims from the vision to make an entrepreneurial contribution to the reduction of CO₂ emissions as well as all commercial waste.

The analysis of major pollutants is of course given top priority.

Environmental Management – Acting sustainably, saving resources

For Lindner, responsibility towards humans and environment is as important as the quality of the products. For this reason, an environmental management system acc. to DIN EN ISO 14001 is established company-wide and largely certified.

Our central environment programme comprises the responsible and sustainable use of resources, the reduction of CO₂ emissions and a continuous improvement process to achieve our environmental objectives. An integrated management system evaluates the production of Lindner products regularly according to ecological aspects and adapts the processes to current standards.

Our principles comprise an active waste management in all business units – from waste prevention concept to waste balance. We also keep an eye on preceding stages of the value added chain. Environmental aspects also play a major role in the selection of our suppliers.

Energy Management

Towards an environmentally friendly future.

The national and international supply situation asks for a targeted and effective use of resources and environmentally friendly forms of energy. At Lindner, an energy management system based on DIN EN ISO 50001 controls the procurement of energy sources centrally for all locations as well as their transformation, delivery and distribution to affiliated companies.

Energy saving and the change of fossil and nuclear energy to ecological sources of energy are the core of all measurements to implement energetic business objectives. Thus, every single employee is aware of its role in sustainable, operative project management. Due to many small improvements, for example the improvement of compressed air loss, the utilisation of waste heat and targeted light control, we could achieve massive energy savings in the last years. Especially at future-oriented investments, for example the installation of new production plants, we pay attention to the implementation of resource-saving solutions.