Fire protection ceiling system - LMD-F30

Self-declaration acc. to DIN EN ISO 14021

Declaration holder: Lindner SE | Bahnhofstraße 29 | 94424 Arnstorf | Germany

Content of the declaration:

Product information
Green Building Information
Production and assembly
Use
Dismantling

DGNB, LEED, PCDS

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Product information

Product description

LMD-F30 hook on swing down slide fire rated metal ceiling
Hook on swing fire rated metal ceiling systems for the interior construction of buildings, which cover a wide variety of technical installations in the ceiling void over their entire surface, as well as protecting them in the event of fire and providing free access for supply and disposal lines, for example.
F30 fire rated hook on ceilings are usually used in escape routes and stairwells so that people can leave the building safely in the event of a fire. Various frieze / connection designs and corridor extensions are possible.
The substructure is suspended directly from the bare ceiling or attached to walls. The front edges of the ceiling elements are suspended or laid on supporting profiles. They can be removed individually or optionally equipped with bearing and locking parts and can therefore be folded down.
Excellent fire resistance, functionality, ease of inspection, sound absorption and non-combustible building materials are important properties.

Scope of application
For use inside buildings with high architectural and technical requirements.

Base materials

Base materials per m²/piece = 38.0 kg*

System components	Material	Weight shares [%]
Metal ceiling panel	Galvanised sheet steel	~ 13.0
	Stainless steel*[1]	~ 13.0
Visible and concealed substructure	Galvanised sheet steel	~ 14.0
Powder coating of the visible substructure and the metal ceiling panel	Polyester powder	< 1.0
Plasterboard	FGD gypsum, cellulose	~ 66.0
Insulation material	Mineral wool	~ 6.0
Acoustic fleece	Flat packs made of glass fibre, polyester fibre, cellulose bound with polyvinyl acetate binder and halogen-free flame retardant salt and carbon black pigment	< 1.0
Sealing tape	Polyolefin foam with flame retardant and laminated siliconized polyethylene film	< 1.0

*Calculation basis: corridor 2.0 x 10 m, panel size 2,000 x 400 mm
[1] *Stainless steel, e.g. for the 3D surfaces TOUCHdesign and TOUCHdesign Lunar

Material explanations

Steel
Steel refers to metallic alloys whose main component is iron and whose carbon content is between 0.02 % and 2.06 %.

Stainless steel
Stainless steel refers to alloyed or unalloyed steels with a particular degree of purity.

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Green Building Information

Green Building Statement

We already think in terms of closed cycles when developing our products. For years, we have been one of the specialists in the field of sustainable building. Accompanied by our internal specialist department "Green Building", we ensure the sustainability goals of your building project. The consideration of the sustainability of the product focusses on the ecological footprint, as well as circular and healthy building.

Carbon footprint

This section shows the amount of carbon dioxide emissions generated during the individual stages of the product's life cycle. The global warming potential (GWP) is expressed as a CO_2 equivalent and describes the contribution of a substance to the warming of the air layers near the ground (greenhouse effect). This is considered in relation to the global warming potential of CO_2. The lower this value is, the lower the associated environmental impact.

A specific life cycle assessment in accordance with DIN EN 14067 is currently being prepared for the LMD-F30 metal ceiling system.

Circular construction

By implementing the closed-loop concept, we avoid waste, toxic substances and environmental pollution. The section presents the following topics: recyclable materials, the use of renewable forms of energy, the responsible use of water, the adaptability of the product during use and also the recyclability after dismantling.

Healthy construction

The chapter presents the aspects of healthy building, from the choice of pollutant- and emission-free materials in the product to the well-being of the user.

Certification systems and verifications

The LMD-F30 fire protection ceiling is suitable for contributing to the requirements of the DGNB, LEED etc. building certifications. In the credits listed, the metal ceiling contributes to achieving the points or required quality levels. Information on recyclability can be found in the "Product Circularity Data Sheet".

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PRODUCTION AND ASSEMBLY

Carbon Footprint

The following table shows the global warming potential for the production stage, which comprises modules A1 (provision of raw materials), A2 (transport) and A3 (production). The construction stage includes transport from the manufacturer to the place of use (A4) and assembly (A5).

Parameters	Unit	A1-A3 Product stage	A4 Transport from the gate to the site*	A5 Assembly
GWP	[kg CO_2 -eq./m²]	N/A	N/A	N/A

*500 km

Circular construction

A water circulation concept systematically reduces water consumption. The necessary process water can circulate due to sedimentation and cleaning of the solids.

Waste that cannot be avoided during production is channeled into recycling processes via specialist disposal companies.

The pre- and post-consumer recycling shares of the components can be seen in the following table.

Components	Weight shares [%]	Recycling share [%]		Production site
		Pre-consumer	Post-consumer	
Metal ceiling panel made of galvanized sheet steel/stainless steel	~ 13.0	0	25	Arnstorf
Visible and concealed substructure made of galvanized sheet steel	~ 14.0	0	25	Arnstorf
Plaster	~ 66.0	95	4.0	
Mineral wool	~ 6.0	11	2.6	
Acoustic fleece	< 1.0	39	0	
Other	~ 2.0	0	0	Arnstorf

Pre-consumer: waste from industrial processing; post-consumer: waste after use by end consumers

Healthy construction

Thanks to its modular design, the metal ceiling system contributes to a low-waste, low-noise and low-dust construction site.

As a manufacturer of products, Lindner fulfils its obligations under the EU chemicals directive "REACH" and has drawn up its own REACH declaration.
The aim of the **REACH Regulation** (Registration, Evaluation and Authorisation of **CHemicals**) is to record substances produced and used in the EU and to determine and record their effects on health and the environment.

Components	Weight percentage [%]	VOC	GISCODE/ EMICODE	Other
Visible and concealed substructure made of galvanized sheet steel	~ 14.0	-	-	Without lead, mercury, Cadmium and chromium (VI) compounds
Powder coating: Polyester powder	< 1.0	-	-	Without lead, mercury, Cadmium and chromium (VI) compounds

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USE

Carbon Footprint

The metal ceiling system **does not** cause any environmental pollution during use in the utilization/application (B1) and maintenance (B2) modules. The ceiling does not require maintenance and no repairs or replacements are to be expected if it is used properly. Therefore, the repair (B3), replacement (B4) and renewal (B5) modules are not relevant. To ensure correct use, the service providers carrying out the work are provided with instructions for use, maintenance and care. The energy use and water use modules for operating the building (B6 & B7) are not declared.

Parameters	**Unit**	**B1** Use	**B2** Maintenance	**B3** Repair	**B4** Replacement	**B5** Refurbishment	**B6** Operational Energy use	**B7** Operational water use
GWP	[kg CO_2 -eq./m²]	N/A	N/A	N/A	N/A	N/A	N/A	N/A

MND = Module not declared; MNR = Module not relevant

Circular construction

The useful life of metal ceilings is more than 50 years (according to BBSR table, code no. 353.211, as of 02/2017, published by the Bauinstitut für Bau-, Stadt- und Raumforschung).

If used correctly, there are no costs for maintenance, repair or replacement during this time. However, each of the ceiling panels can be removed, moved and replaced individually if necessary. The product can be maintained and repaired by trained personnel at the product's place of use. Spare parts are provided by the manufacturer during the service life of the product. The metal ceiling tile is also offered as a "product as a service".

Healthy construction

Test chamber measurements in accordance with the requirements of the Eurofins Indoor Air Comfort® GOLD quality mark (e.g. AgBB measurement scheme):
TVOC (AgBB/DIBt) C_6 - C_{16} : after 28 days 10 µg/m³
Formaldehyde value : after 28 days < 2 µg/m³
Report number: 392-2019-00327602_A_DE_rev1

Suspended ceilings are ideal for improving room acoustics. Depending on the design, sound absorption coefficients of up to α_w = 0.75 and sound absorption class C (highly absorbent) can be achieved by perforating the metal ceiling panels and using acoustically effective inserts.
The values are tested in the reverberation chamber in accordance with ISO 354 and assessed in accordance with DIN EN ISO 11654.
In addition, the noise reduction coefficient (NRC) was determined to be up to 0.8 in accordance with ASTM C 423.
If required, room acoustics class A according to VDI 2569: 2016-02 (draft) can be complied with.

The white (RAL 9016) powder-coated metal ceiling has a light reflection of approx. 82% . Incident daylight can therefore be channeled further into the room.

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DISMANTLING

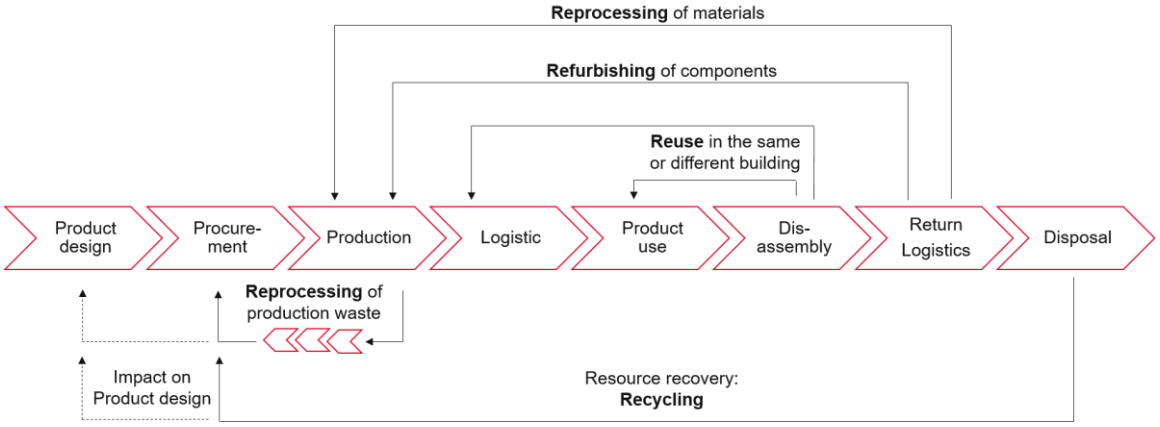
Carbon footprint

The partial footprint for the disposal stage comprises the modules C1-C4. Dismantling and demolition of the product from the building (C1), transport to landfill (C2), waste treatment (C3) and disposal (C4). The potential for reuse, recovery or recycling is considered in Module D.

Parameters	Unit	C1 Deconstruction/ demolition	C2 Transport	C3 Waste treatment	C4 Disposal	D Reuse/ Recovery/ Recycling potential
GWP	[kg CO_2 -eq./m²]	N/A	N/A	N/A	N/A	N/A

Circular construction

The LMD-F30 metal ceiling system is characterized by its recyclability. Our recycling options are the reuse or further utilization of the product or its components, as well as the recovery and recycling of the materials.



Reuse:

By dismantling the metal ceiling individually and non-destructively, the system can be easily reused. The product can then be reused in the same or another building.

Refurbishing:

A leasing system and a return option make it possible to reuse the metal ceilings. The necessary reconditioning takes place in the company's own factory. The colour can be removed and reapplied. If necessary, the substructure can be replaced. The reconditioned ceilings are sold as "ReUsed Products" reintroduced to the market.

Reprocessing:

The LMD-F30 ceiling system is also highly recyclable. Once the components have been separated by type, they can be recycled.

Recycling:

After separation by type, the materials can be fed into an external recycling cycle.

Healthy construction

As the metal ceiling can be dismantled non-destructively, disassembly is reduced in terms of dust and noise.

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BUILDING CERTIFICATION DGNB 2023

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

The certification system of the German Sustainable Building Council is one of the world's leading certification systems in the field of sustainable building. The key paradigms are life cycle assessment, holism and performance orientation.

Environmental quality

ENV 1.2 Local environmental impact

The components of the metal ceiling do not contain lead, mercury, cadmium or chromium (VI) compounds

ENV 1.3 Responsible resource extraction

The metal ceiling does not contain any wood components. FSC™ certification is therefore not required.

Economic quality

ECO 1.1 Life cycle cost

There are no maintenance costs for the metal ceiling system during use.

ECO 2.4 Value stability and adaptability

The metal ceiling system can be individually revised, relocated or replaced.

Socio-cultural & functional quality

SOC 1.2 Indoor air quality

Test chamber measurements (AgBB measurement scheme) are available as proof of emissions, e.g. VOC and formaldehyde.

SOC 1.3 Sound insulation and acoustic comfort

Values for the sound absorption coefficient, tested in accordance with ISO 354 and assessed in accordance with DIN EN ISO 11654, are available for the LMD-F30.

Technical quality

TEC 1.6 Circular construction

Each panel can be dismantled individually and non-destructively. The substructure can also be dismantled non-destructively.

Process quality

PRO 2.1 Construction site / construction process

The metal ceiling is supplied in modules and only selectively processed on the construction site. This contributes to a low-waste, low-noise and low-dust construction site.

PRO 2.5 Preparation for sustainable use

Instructions for use, maintenance and care are available.

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BUILDING CERTIFICATION LEED V4

LEED is a US certification system for ecological building. Various certification levels can be achieved based on a points scale.

Materials and raw materials

MRp2 Construction site waste management planning

A CWM plan can be created and implemented on request.

MRc1 Building Life Cycle impact reduction

The metal ceiling can be reused.

MRc3 Building product disclosure and optimization - sourcing of raw materials

The recycling share (0.5 * pre-consumer + 1.0 * post-consumer) is 24.45%.

MRc4 Building product disclosure and optimization - material ingredients

No substances on the REACH lists "Authorization List - Annex XIV" and "Restriction list - Annex XVII" are used for this product.

MRc5 - Construction and demolition waste management

The metal ceiling can be reused or separated by type for recycling.

Indoor air quality and comfort

IEQc2 Low-emitting materials

Test chamber measurements (AgBB measurement scheme) are available as proof of emissions, e.g. VOC and formaldehyde.

IEQc3 Construction indoor air quality management plan

A complete IAQ plan can be created and implemented by specialized personnel on request.

IEQc9 Acoustic Performance

Values for the sound absorption coefficient, tested in accordance with ISO 354 and assessed in accordance with DIN EN ISO 11654, are available for the LMD-F30.

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PCDS

PCDS, short for "Product Circularity Data Sheet", presents the circularity of a product using a standardized format. The aim is to provide data, improve the exchange of circularity data within the supply chain and improve product performance in terms of the circular economy. The PCDS credits are not verified by third parties.

Composition/ Information on product constituents

Chemical substance threshold

2002 The threshold value for chemical substances is 0.1 % (1000 ppm)

Hazard statements

2301 The product does not contain any substances of very high concern from the REACH candidate list in a concentration a concentration of more than 0.1 per cent by mass

2311 The product does not contain substances classified as CMR 1A or 1B in a concentration above the classification criteria according to CLP - Regulation (EC) No. 1272/2008

2321 The product does not contain restricted substances that could exceed the limit values set out in Annex XVII of the REACH Regulation. that could exceed the limits set out in Annex XVII of the REACH Regulation

2331 The product does not require a warning label according to California Proposition 65

Pre-consumer recycled content

2404 Pre-consumer recycled content: >50 - 75 per cent by mass

2411 All chem. components of the pre-consumer recycled content of more than 1 per cent by mass are known

2420 No hazardous substances in a concentration of more than 0.1 per cent by mass

Post-consumer recycled content

2503 Post-consumer recycled content: >0 - 10 per cent by mass

2511 All chem. components of the post-consumer recycled content of more than 1 per cent by mass are known

2520 No hazardous substances in a concentration of more than 0.1 per cent by mass

Sourcing statements

2600 The product does not contain any renewable substances

Design for better use

Designed for maintenance & repair

3001 Can be serviced and repaired by trained personnel

3002 No maintenance or repair necessary if used correctly

3020 Spare parts are provided by the manufacturer

Designed for safe operation

3100 No release of harmful dispersions or emissions

Design for disassembly

Demounting

4000 The product can be installed and removed using a hook-on connection

Disassembling

4106 >95% of the product can be cleanly separated from the product

Dismantling

4206 >95 % of the materials can be reused after dismantling or recycled for other products recycled for other products

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Design for re-use

Circularity pathways/ scenarios - Product designed for ...

5000	Reuse possible with little or no modification
5001	The product has CE labelling
5010-5020	Reprocessing possible
5035	>75-95% of the product is destined for recycling at the same quality level
5040	Less than 1 % of the product content leaks during the utilization phase
5050	Products are collected for recycling

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