Roof system - standing seam profile

Self-declaration according to DIN EN ISO 14021

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

Content of the declaration:
Product information
Green Building Information
Production and installation
Use
Disassembly

DGNB, LEED, PCDS

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Product information

Product description

BEMO standing seam aluminium system with GFK-thermal halter
BEMO standing seam N65-400/1.0mm is a metallic roof covering which is used from a roof pitch of 1.5° and is approved by building authorities. The height of the seam is 65 mm and the width 400 mm. The lengths are produced project- and customer-specific. The associated GFK-thermal halters are available in different heights / dimensions, depending on the building physics demands / requirements.

Area of application
The roof covering can be used on any roof with a pitch of 1.5° or more. The shape of the roof and the roof structure can be completely individual for each application. There is the right solution for almost every demand / requirement. Thus, the product is suitable for public buildings, for stadiums, airports, office and administrative buildings, as well as for any industrial and logistics centers. Residential buildings, hotels and sports and event centers can also be covered with it.

Basic materials

Basic materials per 1 m² standing seam system with material thickness 1.0 mm

System components	Material	Weight fractions [%]
Standing seam	Aluminium	~ 90.0
Halter	Glass fiber reinforced plastic	~ 9.5
Screw	Stainless steel	~ 0.5
Coating	Polyester/PVDF, HDP or BEMO-FLON, anodised or powder-coated	< 0.1
Aluminium alloy	PETP foil with acrylic adhesive	< 0.1
Sealing washers	TPE	< 0.1

*) Data sheets on request (standing seam 65-400/1.0mm with GFK halter 225/80, 1.5 pcs./m²)

Material explanation

Aluminium
Aluminium in different thicknesses. Here specifically 1.0mm.
Coating: Natural aluminium (also stuccated), coated with polyester, PVDF, HDP or BEMO-FLON, anodised or powder-coated. Thicknesses 3 µm to max. approx. 50 µm.

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Green Building Information

Green Building Statement

Exceptional metallic building envelopes thanks to innovative products around the globe - that's something we're proud of. But that is not our only claim: Every day, we as a company ask ourselves how we can create an environment worth living in for ourselves and future generations. In doing so, we pursue the same strategy as with our products and services: a little better every day. The consideration of the sustainability of the product focuses on the ecological footprint, as well as circular and healthy building.

CO_2 -footprint

Under this section, the amount of carbon dioxide emissions generated during each stage of the product's life is presented. The Global Warming Potential (GWP) is given as 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, the lower the associated environmental impact.

A specific life cycle assessment according to DIN EN 14067 is available for the standing seam profile.
The calculated CO_2 figures refer to 1 m², consisting of standing seam profile and BEMO GFK-thermal halter 225/80 with a total weight of 4.205 kg. The share of secondary material in aluminum is approx. 20% (industry average).
System boundary: Cradle to gate
The preparation of an environmental product declaration type III according to ISO 14025 and EN 15804+A2 is currently in progress.

Circular construction

By implementing the closed-loop concept, we avoid waste and environmental pollution. The section presents the following topics: recyclable materials, the inset of regenerative 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 construction, from the choice of materials free of pollutants and emissions in the product to the well-being of the user.

Certification systems and evidence

The roof system - standing seam profile is suitable to contribute to the demands / requirements of the building certifications DGNB, LEED etc.. In the listed credits, the roofing contributes to the achievement of the points or required quality levels.
Information on circularity can be found in the "Product Circularity Data Sheet".

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PRODUCTION AND INSTALLATION

CO_2 -footprint

The following table shows the Global Warming Potential for the production stage, which includes modules A1 (raw material supply), A2 (transport) and A3 (manufacturing). The construction process stage includes transport from the manufacturer to the place of use (A4) and assembly (A5).

Parameter	**Unit**	**A1-A3** Product stage	**A4** Transport from the gate to the site	**A5** Assembly
GWP	[kg CO_2 -eq./m²]	15.5	0.0349	0.880

Circular construction

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

No water is needed in the production of standing seam profiles.
Photovoltaic modules are installed on the roof surface of the production hall. The electricity generated here is fed directly into production or administration. The aim is to increase the proportion of renewable energies in the production plants. The primary goal is to save even more energy in all production processes and to prevent downtimes and "idle times".

The pre- and post-consumer recycling shares of the components can be seen in the following table. The recycled content of the standing seam profile depends on the alloy required by the customer.

Components		**Weight fraction [%]**	**Recycling share [%]**		**Production site**
			Pre-Consumer	**Post-Consumer**	
Standing seam	AW 3005	~ 90.0	undefined	undefined	Ilshofen
	AW 3005 A (40)		43.80	40	
	AW 3005 A (75)		4.7	75	
Other		~ 10.0	0	0	Ilshofen

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

Healthy construction

By delivering modular components that only require punctual editing on the building site, the product contributes to a waste-, noise- and dust-free building site.

There are no REACH substances included. As a manufacturer of articles, BEMO fulfills the obligations towards the EU chemicals directive "REACH" and has drawn up a REACH declaration together with its suppliers.
The aim of the REACH regulation (Registration, Evaluation and Authorization of CHemicals) is to ensure that substances produced and used in the EU are recorded and their effect on health and the environment is determined and recorded.

The components of the standing seam profile do not contain lead, cadmium and chromium VI compounds.

The chemical constituents of all materials in the products are known and continue to be optimized in order to develop even safer materials. System components have been modified and also substituted to meet various environmental compatibility and human health criteria. Continuous development ensures a sustainable building envelope.

Short supply chains and materials from European production are focused on. The supply share of primary materials from Asia is < 5% of the total material consumption.

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USE

CO_2 -footprint

The roof system does not require maintenance and, if used properly, no repairs or replacements are expected. To ensure correct usage, usage, maintenance and care instructions are provided to the executing service providers. The modules B1 to B7 are not declared.

Parameter	Unit	B1 Use	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy use	B7 Water use
GWP	[kg CO_2 -eq./m²]	MND	MND	MND	MND	MND	MND	MND

MND = Module not declared

Circular construction

The service life of roofing made of aluminium is ≥ 50 years (according to BBSR table, code no. 363.514, as of 02/2017, published by the Bauinstitut für Bau-, Stadt- und Raumforschung).

If used properly, there are no costs for maintenance, repair or replacement during this time. If necessary, the product can be serviced and repaired by trained personnel at the place of use of the product. Spare parts are provided by the manufacturer during the service life of the product.

Healthy construction

The standing seam profile is located on the exterior building layer and therefore has no impact on indoor air quality.

The BEMO system with the various roof structures can provide significantly improved interior acoustics in combination with perforated inner shells. In addition, the transit sound can be reduced by up to 50 dB and more, depending on the superstructure.

Thanks to its low heat conductivity (0.17 W/mK) and the special thermal ridges, the GFRP thermal mount ensures very low U-values and thus significantly lower energy requirements for buildings. Savings of up to 70% compared to other systems available on the market are possible.

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DISASSEMBLY

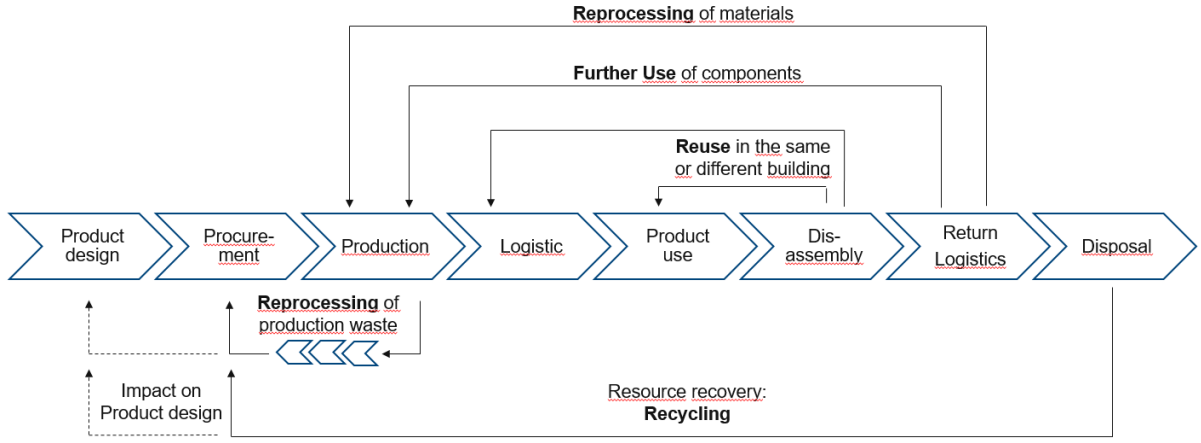
CO_2 -footprint

The partial footprint for the end of life stage includes modules C1-C4. Deconstruction and demolition of the product from the building (C1), transportation to landfill (C2), waste processing (C3), and disposal (C4). The potential for reuse, recovery, or recycling is considered in module D.

Parameter	Unit	C1 Deconstruction/ demolition	C2 Transport	C3 Waste processing	C4 Disposal	D Reuse potential
GWP	[kg CO_2 -eq./m²]	0.00	0.0312	0.754	0.00	-27.7

Circular construction

The standing seam profile is characterized by its recyclability. The recycling possibilities are the reuse of the product or its components, as well as the recovery and recycling of the materials.



Reuse:

Due to the durability of the standing seam profiles, reuse is possible. The standing seam sheets can be unfolded, covered and then reused in another construction project.

Reprocessing:

Production waste is returned to the recycling loop. When procuring materials, attention is paid to a high proportion of secondary raw materials.

Recycling:

The recycling system guarantees that the aluminium is returned to the recycling loop.

Healthy construction

Since the aluminum profiles can be dismantled non-destructively, dismantling is dust and noise reduced.

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

BUILDING CERTIFICATION DGNB 2023

The certification system of the German Sustainable Building Council is a worldwide leading certification system in the division of sustainable building. Key paradigms are life cycle consideration, holism and performance orientation.

Ecological quality

ENV 1.1 Life cycle assessment of the building

The preparation of an environmental product declaration type III according to ISO 14025 and EN 15804+A2 is currently in progress.

ENV 1.2 Risks to the local environment

The components of the roof system do not contain lead, mercury, cadmium and chromium (VI) compounds.

ENV 1.3 Responsible resource extraction

The roof system does not contain any components made of wood. Therefore, an FSC™ certificate is not required. The materials are mainly sourced from other European countries.

Economic quality

ECO 1.1 Building-related costs in the life cycle

There are no maintenance costs during use.

Socio-cultural & functional quality

SOC 1.1 Thermal comfort

As an individual component, the BEMO standing seam product can only make a minor contribution to thermal comfort. As an entire system including thermal insulation, it naturally has a high influence on winter and summer thermal protection.

SOC 1.3 Sound protection and acoustic comfort

The roof system can provide improved room acoustics in combination with perforated inner shells.

Technical quality

TEC 1.3 Quality of the building envelope

The BEMO standing seam roof is suitable for the installation of PV systems (BEMO SMOOTH & SOLAR). The standing seam roof remains completely free of penetration and the tightness is maintained. Replacement of the system at the end of its useful life is possible and does not affect the useful life of the standing seam profiles (≥50 years). The application of a green roof is possible without any problems (BEMO VERT).

TEC 1.6 Circular construction

The standing seam sheets can be deconstructed, processed if necessary and reused elsewhere or 100% recycled.

Process quality

PRO 1.4 Ensuring sustainability aspects in tendering and contract awarding

The surface of the aluminum profiles can be cleaned easily and simply using neutral water and light water pressure. Slight mechanical stress with a sponge or cloth, if necessary, is admissible. With the BEMO-FLON coating in combination with a special cleaner, even graffiti and other chemical pollution can be washed off.

PRO 2.1 Building site / construction process

The profiles are delivered in modules and are only punctually processed on the building site. This contributes to a low-waste, low-noise and low-dust building site.

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BUILDING CERTIFICATION LEED V4

LEED is a US American certification system for ecological building. Based on a point scale, different certification levels can be achieved.

Materials and resources

MRp2 Construction and demolition waste management planning

A CWM - Plan can be created and implemented upon request.

MRc1 Building life-cycle impact reduction

The standing seam profile can be reused.

MRc2 Building product disclosure and optimization – environmental product declaration

The preparation of an environmental product declaration type III according to ISO 14025 and EN 15804+A2 is currently in progress.

MRc3 Building product disclosure and optimization – sourcing of raw material

The recycling share (0.5 * pre-consumer + 1.0 * post-consumer) ranges between 37.98% and 55.71%.

MRc4 Building product disclosure and optimization – material ingredients

For this product no substances of the REACH lists "Authorization List - Annex XIV" and "Restriction list -Annex XVII" are used.

MRc5 - Construction and demolition waste management

The standing seam profile can be reused or separated by type for recycling.

Indoor air quality and comfort

IEQc3 Construction indoor air quality management plan

A complete IAQ plan can be created and implemented by professional staff upon request.

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PCDS

PCDS short for "Product Circularity Data Sheet" represents the circularity of a product using a standardized format. The aim is to provide data, improve the exchange of circularity data within supply chains, 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

2001 The chemical substance threshold used for disclosing the product composition is 0.1 % (1000 ppm)

Product composition disclosure

2100 The product composition disclosed at the defined threshold is publicly available

Chemical composition

2207 The weight fraction of all disclosed chemical substances is >99%

Hazard Statements

2301 The product does not contain any substances of very high concern from the REACH Candidate list in c in concentration above 0.1 by weight

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

2321 The product does not contain any restricted substances that could exceed limits defined in Annex XVII of REACH, related tot he specific use which is relevant for this product

2331 The product does not require a warning under California Proposition 65.

Pre-consumer recycled content

2403 Pre-consumer recycled content: between 25 and 50 percent by weight (depending on alloy)

2411 Any chemical substance present in the pre-consumer recycled content above 1 % by weight is disclosed

2420 The pre-consumer recycled content does not contain any hazardous substance in concentration above 0.1% by weight of pre-consumer recycled content

Post-consumer recycled content

2504 Post-consumer recycled content: between 50 and 75 percent by mass (depending on alloy)

2511 Any chemical substance present in the post-consumer recycled content above 1 % by weight is disclosed

2520 The post-consumer recycled content does not contain any hazardous substance in concentration above 0.1% by weight of post-consumer recycled content

Sourcing statements

2600 The product does not contain renewable substances

Design for better use

Designed for maintenance & repair

3001 Can be maintained and repaired by trained personnel

3002 No maintenance or repair necessary if the intended use oft he product is followed

3020 Spare parts are made avaiable by the manufacturer

Designed for safe operation

3100 No leakage of harmful dispersions or emissions

Design for disassembly

Demounting

4000 The product can be installed and demounted with the help of a folding joint

Disassembling

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

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Dismantling

4205 >75-95% of the product is designed to be dismantled to the level of materials that can be reused or recycled for other products

Design for re-use

Circularity pathways/ scenarios - Product designed for ...

5000 The product is designed for re-use as-is or with minimal modification

5001 The product has CE mark

5035 >75-95% of the product content is designed for recycling at the same level of quality

5040 Less than 1 % of the product content is anticipated to become leakage during the use phase

5050 A dedicated collection system is in place to gather and deliver product for recycling

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