



# LINDNER FACADE SYSTEM – CW85

## SELF-DECLARATION ACC. TO DIN EN ISO 14021

**Holder of the declaration:** Lindner Fassaden GmbH | Georgstraße 2 | 94424 Arnstorf | Deutschland

**Content of the declaration:** Product information  
Certification system DGNB  
Certification system LEED  
Certification system BREEAM  
Circular Economy  
General information

# SELF-DECLARATION

## Lindner Facade system CW85

### PRODUCT INFORMATION

#### Green Building Statement

We already think in closed loops while developing our products. In this context 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 projects.

#### Product description

##### Lindner CW85 unitised facade

Facade system for the construction of a curtain wall as well as its connection to the building for an optimum physical performance.

Both for thermal and sound insulation very good values may be achieved.

In the architects point of view, CW85 system has the advantage to create a slim view of the element frames due to the fully SSG glazed design.

#### Application Area

Construction of a curtain wall with both superior architectural and high technical requirements.

#### Base materials

Base materials per 1sqm = 63 kg*)				
System components	Material	Weight proportions (%)	CO <sub>2</sub> e/kg**)	CO <sub>2</sub> e/m <sup>2</sup>
Glas		44,8	1,11	31,3
Aluminium profiles		19,5	10,68	131,2
Steell sheets	EN 10027 S235 JR	11,9	2,88	21,6
Mineral wool	Stone wool	10,3	1,40	9,1
Aluminium sheets	EN AW 5005	6,0	10,46	39,5
Gaskets	EPDM	1,8	3,62	4,1
Sealing and adhesives	Silicone	1,1	8,09	5,6
Fasteners	Stainless Steel	0,1	3,56	0,22
Brackets	Steel	4,5	2,56	
<b>Total</b>		<b>100</b>		<b>250</b>

\*) calculation is based on an element size of 6 sqm, corresponding with standard dimensions of ca. 1,5 m x 4 m

\*\*\*) The CO<sub>2</sub>e/kg figures are generated in the production phase A1-A3.

\*\*) The CO<sub>2</sub>e/kg data were taken from the Ökobaudat database and the GaBi 9.5 LCA database.

#### Material explanation

##### Glass

Glass is an inorganic product, which is produced in a melting process out of several raw materials. While cooling down, it is more on and more hardening but not crystallizing.

##### Aluminium

Aluminium is quite a soft but tough material existing in natural deposits. In construction it is used in several different alloys.

##### Steel

Metal alloys consisting of iron as main component and a carbon proportion of between 0.2% and 2.06% is defined as steel.

##### Stainless steel

All stainless metal alloys whose main component is iron are named stainless steel.

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### CERTIFICATION SYSTEM DGNB

Not listed characteristics do not apply to this product.

## Environmental quality

### ENV 1.1 Life Cycle Impact Assessment

A product life cycle assessment in the form of an EPD according to ISO 14025 and EN 15804 can be created on request. The LCA data can be taken from the table of the listing of raw materials in the section Product Information on page 2.

### ENV 1.2 Local Environment Impact

Component	VOC	GISCODE
Glass	No impact to local environment	
Aluminium profiles		
Steel sheets		
Mineral wool		
Aluminium sheets		
Gaskets EPDM		
Sealants	25 g/l [LS1]	
Structural Glazing	16,1 g/l	
Membrane adhesive	-	
Gasket adhesive + membranes	1,08%	PU 50
Fasteners	No impact to local environment	
Brackets		

„-“ for “not relevant” according to DGNB 2018

### ENV 1.3 Responsible Procurement

The product CW85 does not contain any timber, timber-based products or timber-based components.

### ENV 2.1 Life Cycle Assessment – Primary Energy

A product life cycle assessment in the form of an EPD according to ISO 14025 and EN 15804 can be created on request. The LCA data can be taken from the table of the listing of raw materials in the section Product Information on page 2.

### ENV 2.2 Potable Water Demand and Waste Water Volume

Potable water may only be used for cleaning the building envelope, albeit in only small quantities. Due to the SSG glazing, no edges hamper the cleaning process like with capped systems. Therefore, less water for cleaning is required.

## Economic Quality

### ECO 1.1 Life Cycle Cost

Lindner facade systems are fabricated in highest international standard. The operating life is up to 25 years. Aluminium, steel and glass may be recycled and reused after professional disposal.

## Sociocultural and Functional Quality

### SOC 1.1 Thermal Comfort

Due to the CW85 system's good thermal insulation a contribution to thermal comfort is achieved.

### SOC 1.2 Indoor Air Quality

Opening elements such as vents may be integrated in the CW85 system.

As at the façade's interior side only coated steel or aluminium sheets are used, emission influencing the indoor air quality can be excluded. IAC guidelines are obeyed.

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### SOC 1.3 Acoustic Comfort

Due to the various design opportunities with different glass types and panels, the desired acoustic performance may be achieved.

### SOC 1.4 Visual Comfort

Glasses and panels in several different options and dimensions may be integrated in the system. Through an enlarged glass proportion, the visual contact to the environment is maximized.

### SOC 1.7 Safety and Security

Through the integration of laminated safety glass in the relevant areas a protection of falling compliant with international technical standards is achieved.



## Technical Quality

### TEC 1.2 Sound Insulation

Due to extensive testing and inferred improvements, a minimum airborne sound insulation of at  $R = 32$  dB is achieved.

### TEC 1.3 Building Envelope Quality

Through the drainage system with EPDM gaskets as well as the element connection principle, no rain or condensation water can enter the building's interior but runs outwards.

### TEC 1.4 Adaptability of Technical Systems

The system is adjusted project-specifically to the individual technical requirements.

### TEC 1.5 Cleaning and Maintenance

CW85 is a SSG glazed system providing a flat surface at both glass and panel areas with no glazing beads required. Hence, cleaning is much simpler compared to other façade systems such as capped ones.

### TEC 1.6 Deconstruction and Disassembly

The unique reglazing method via stainless steel clips as well as the facade's deconstruction after its life period are both fully practical.



## Process quality

### PRO 1.1 Comprehensive Project Brief

The system was developed by experienced in-house engineers and experts. It was continuously improved with the experience of several completed projects. Both guarantee a strong basis.

### PRO 1.3 Design Concept

Existing system components are adjusted and combined for project-specific conditions.

### PRO 1.5 Documentation for Facility Management

Operation and maintenance manuals are provided for the facade itself as well as for integrated opening elements. These are submitted to the responsible service provider.

### PRO 2.1 Environmental Impact of Construction

Lindner CW85 units are delivered on site completely pre-fabricated providing a fast and smooth installation process.

### PRO 2.2 Construction Quality Assurance

The technical documentation contains of all materials and components. When required, safety data sheets of utilized products will be submitted. Highest quality standards are achieved due to the controlled pre-fabrication as well as both in-house (FPC) and on site testing (blower door, hose tests, etc.).

### PRO 2.3 Systematic Commissioning

When desired, an optimization of the building service engineering can be provided by Lindner. This may contain the regulation and adjustment of all plant facilities.

<sup>1</sup> © DGNB GmbH

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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-related requirements of an ESC plan is ensured by specialised in-house departments. A complete ESC plan can be produced and implemented on request by specialised personnel.

### Energy and Atmosphere

#### Renewable Energy Production

Photovoltaic panels may be integrated in order to gain renewable primary energy.

#### Enhanced Refrigerant Management

A utilization of refrigerants is not required.

### Materials and Resources

#### Construction and Demolition Waste Management Planning

Lindner CW85 units are delivered on site completely pre-fabricated providing a fast and smooth installation process.

#### PBT Source Reduction Mercury

Production and installation waste is professionally separated and may be disposed or recycled afterwards.

#### Building Life Cycle Impact Reduction

A product life cycle assessment in the form of an EPD according to ISO 14025 and EN 15804 can be created on request. The LCA data can be taken from the table of the listing of raw materials in the section Product Information on page 2.

#### Building Product Disclosure and Optimization – Sourcing of Raw Materials

Components	Weight proportion (%)	Recycling content (%)		Location	
		Pre-Consumer	Post-Consumer	Mining km	Production site km
Glass	~ 41,32	6			250
Aluminium profiles	~ 23,13	45		100	100
Steel sheets	~ 14,13		25		25
Mineral wool	~ 12,21	1	35		
Aluminium sheets	~ 7,07				25
Gaskets	~ 2,13			400	339
Sealants	~ 1,35				380
Structural Glazing					380
Membrane adhesive					565
Gasket adhesive					1000
Fasteners	0,10				605
Steel brackets	~ 17,00		25		25
Aluminium brackets		100			250
<b>Total</b>	<b>100</b>	<b>%</b>			

The product contains no timber-based materials. Thus, a FSC / PEFC proof is not necessary.



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### Materials and Resources

#### 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 **C**hemicals) is to capture materials produced and used in the EU and to determine and record their impact on health and environment.

Components	CAS-No.
Dow Corning 791	13463-67-7
Dow Corning 993	
Henkel Macroplast 7225 UR	9016-87-9
Sika TF Plus N	1330-20-7

#### Construction and Demolition Waste Management

Production and installation waste is professionally separated and may be disposed or recycled afterwards



### Indoor Environmental Quality

#### Minimum Acoustic Performance

Due to extensive testing and inferred improvements, a minimum airborne sound insulation of at  $R = 32$  dB is achieved.

#### Construction Indoor Air Quality Management Plan

Opening elements such as vents may be integrated in the CW85 system for air exchange.

As at the façade's interior side only coated steel or aluminium sheets are used, emission influencing the indoor air quality can be excluded. IAC guidelines are obeyed.

#### Thermal Comfort

Due to the CW85 system's good thermal insulation a contribution to thermal comfort is achieved.

#### Daylight

Daylight may enter the building through vision parts. Sun blinds may be integrated in the facade system where required.

#### Quality Views

Glasses and panels in several different options and dimensions may be integrated in the system. Through an enlarged glass proportion, the visual contact to the environment is maximized.

#### Acoustic Performance

Due to the various design opportunities with different glass types and panels, the desired acoustic performance may be achieved.

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### ZERTIFIZIERUNGSSYSTEM BREEAM

Not listed characteristics do not apply to this product



#### Management

##### **MAN 01 Sustainable Procurement**

Organisation and process charts can be provided.

##### **Man 02 Responsible construction practices**

The Code of Considerate Practice is obeyed.

##### **Man 03 Construction site impacts**

An annual life-cycle assessment may be provided if required.

##### **Man 05 Life cycle cost and service life planning**

When desired, a cleaning and maintenance contract for the façade may be concluded. Lindner provides a Special Works Team with bright experience in this particular discipline.



#### Health and Wellbeing

##### **Hea 01 Visual comfort**

Glasses and panels in several different options and dimensions may be integrated in the system. Through an enlarged glass proportion, the visual contact to the environment is maximized.

##### **Hea 02 Indoor air quality**

Opening elements such as vents may be integrated in the CW85 system for air exchange.

As at the façade's interior side only coated steel or aluminium sheets are used, emission influencing the indoor air quality can be excluded. IAC guidelines are obeyed.

##### **Hea 03 Thermal comfort**

Due to the CW85 system's good thermal insulation a contribution to thermal comfort is achieved.

##### **Hea 05 Acoustic performance**

Due to the various design opportunities with different glass types and panels, the desired acoustic performance may be achieved. Due to extensive testing and inferred improvements, a minimum airborne sound insulation of at R = 32 dB is achieved.



#### Energy

##### **Ene 01 Energy efficiency**

Energy efficiency calculations may be provided if requested.



#### Materials

##### **Mat 01 Life cycle impacts**

Material evidences and reports may be provided.

##### **Mat 03 Responsible sourcing of materials**

Material evidences and reports may be provided.

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### Waste



#### **Wst 01 Construction waste management**

A product life cycle assessment in the form of an EPD according to ISO 14025 and EN 15804 can be created on request. The LCA data can be taken from the table of the listing of raw materials in the section Product Information on page 2.



### Pollution

#### **Pol 01 Impact of refrigerants**

A utilization of refrigerants is not required.

#### **Pol 05 Noise reduction**

A minimum airborne sound insulation of  $R = 32$  dB is guaranteed.



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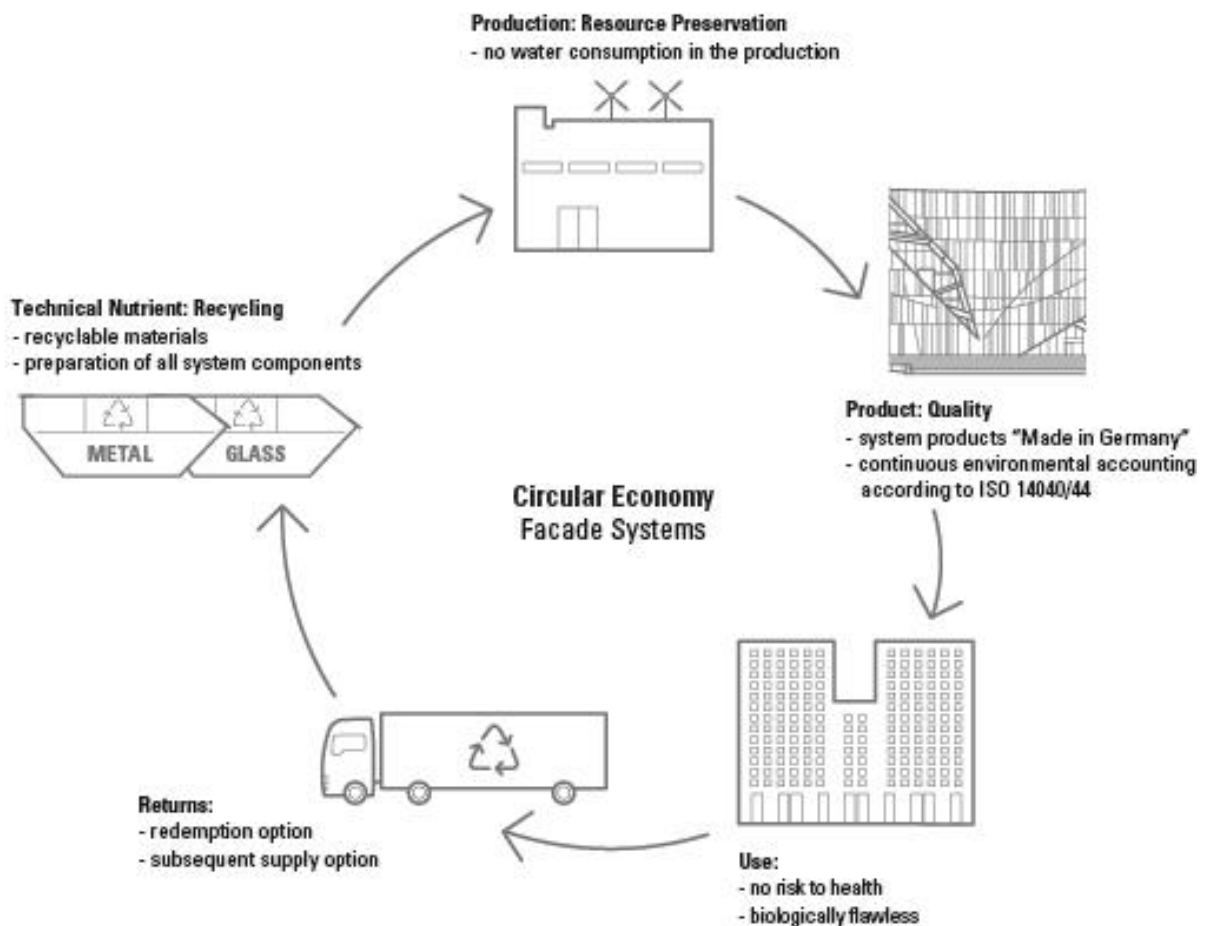


### CIRCULAR ECONOMY

#### 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 Lindner Facade System CW85 have to be secure and easily digestible for health and environment. Lindner develops facade systems which are environmentally friendly and also healthy for the human being from the production up to the usage and reuse. For our ecological products we abstain from chrome (VI) pre-treatment of the aluminium profiles, as well as the use of PVC. 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 Facade System CW85 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. Even during production, we pay attention to generating as little waste as possible and were able to achieve a waste-free rate of 92% in 2017.



### Renewable Energy

Through eco-management certification and our in-house environmental accounting, the whole Lindner Group campaigns for a reduction of the ecological footprint of their own production processes by using less energy. The share of renewable energy is currently around 37 %. Increasing the share of renewable energy in our production sites is an ongoing process. The reduction of energy within the production sites is our main goal.



### Water Stewardship

The concept of water circulation reduces our water consumption systematically. Due to sedimentation and cleaning of the solid matter, the process water can be pursued in a closed loop, so the fresh water consumption is reduced to a minimum.



### Social Fairness

The most important corporate principle is the focus on the individual employee. For this reason the compliance rules "Our Values" for employees were defined. The Lindner Group supports a number of social projects, which are distributed in regional and nationwide areas. Therefore, the charitable "Hans Lindner Stiftung" was founded in 1991. As a responsible manufacturer, Lindner is certified in accordance to the international environmental management standard ISO 14001. This standard supports our further development of managing scarce resources and the environment in general.

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### GENERAL INFORMATION

#### **Vision 2020: CO<sub>2</sub> 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 CO<sub>2</sub> neutral and waste-free locations. We derived concrete aims from the vision to make an entrepreneurial contribution to the reduction of CO<sub>2</sub> 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 program comprises the responsible and sustainable use of resources, the reduction of CO<sub>2</sub> 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 selections 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 improvements of compressed air loss, the utilization 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 new production plants, we pay attention to the implementation of resource-saving solutions.