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Short Report

Calculation of the life cycle assessment for facade elements
Litho-Glass

Project no:	EAL-23-0393
Order no:	EAL-00205-23
Declaration holder:	Lithodecor Fassaden GmbH Mylauer Straße 08491 Netzschkau
Project manager:	B. Sc. Bastian Bartsch

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Objective of the study and implementation

Lithodecor Fassaden GmbH wants to fulfill its ecological responsibility and aims to make its production processes more sustainable. Furthermore *Lithodecor Fassaden GmbH* is receiving more and more requests from customers to show their products in terms of their ecological balance. The life cycle assessments of these products should also be used to participate in tenders.

Declared unit

The declared unit of the study is 1 m^2 of *Litho-Glass* facade element from production at Netzschkau.

Product description

The *Litho-Glass* facade element is a lightweight construction element consisting of a lightweight concrete panel with aluminum brackets, which is glued to a safety glass pane for a visual finish.

System limit

The present study is a cradle-to-gate analysis.

Electricity mix

To represent the electrical energy flow the electricity mix for Germany relevant to the reference year 2020 was used.

Cut-off criteria

The ceramic holders were not taken into account in the study due to the small amount used and the fact that no suitable data set could be found in the modeling software.

Allocations

No allocation method was used in the life cycle assessment study under consideration.

Data quality

The data quality can generally be described as very good and meets the requirements of the objective of the present study.

Calculation method, evaluation method

The data collected in the study was processed using the *LCA for experts software* of the provider *Sphera.*

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The *EN15804+A2* method was used for the quantitative aggregation of the life cycle inventory data with regard to their environmental impacts.

Results of the LCA

category	unit	raw materials A1	transport A2	production A3	total
Environmental impact indicators					
Climate change - total	kg CO_2-equiv.	33,02	0,51	17,40	50,93
Climate change - fossil	kg CO_2-equiv.	32,85	0,51	17,28	50,64
Climate change - biogen	kg CO_2-equiv.	0,16	-1,91E-03	0,12	0,28
Climate change, land use and land use change	kg CO_2-equiv.	7,59E-03	2,04E-03	1,61E-03	1,12E-02
Ozone depletion potential	kg CFC-11-equiv.	8,09E-11	8,56E-14	2,43E-10	3,24E-10
Acidification potential	Mol H+-equiv.	0,24	1,81E-03	1,72E-02	0,26
Eutrophication, fresh water	kg P- equiv.	4,84E-05	8,93E-07	4,45E-05	9,38E-05
Eutrophication, marine ecosystems	kg N- equiv.	5,52E-02	7,95E-04	6,42E-03	6,24E-02
Eutrophication, terrestrial ecosystems	Mol N-equiv.	0,63	9,30E-03	6,84E-02	0,71
Photochemical ozone formation potential, human Health	kg NMVOC-equiv.	0,12	1,65E-03	1,66E-02	0,13
Resource consumption, minerals and metals	kg Sb-equiv.	1,35E-06	2,28E-08	1,56E-06	2,93E-06
Resource consumption, fossil	MJ	445,18	6,95	275,80	727,93
Water use	m^3 world-equiv.	1,67	2,40E-03	0,23	1,91
Resource usage indicators					
Consumption of renewable primary energy (PERE)	MJ	48,94	0,29	109,89	159,12

Primary energy for material use (PERM)	MJ	0,00	0,00	0,00	0,00
Total consumption of renewable primary energy (PERT)	MJ	48,94	0,29	109,89	159,12
Consumption of non-renewable primary energy (PENRE)	MJ	445,49	6,96	275,84	728,29
Use of non-renewable primary energy resources as raw materials (PENRM)	MJ	0,00	0,00	0,00	0,00
Total consumption of non-renewable primary energy (PENRT)	MJ	445,49	6,96	275,84	728,29
Input of secondary materials (SM)	kg	0,00	0,00	0,00	0,00
Consumption of secondary fuels (RSF)	MJ	0,00	0,00	0,00	0,00
Consumption of non-renewable secondary fuels (NRSF)	MJ	0,00	0,00	0,00	0,00
Fresh water consumption (FW)	m^3	6,30E-02	2,74E-04	3,43E-02	0,10
Output flows and waste categories					
Hazardous Waste for Disposal (HWD)	kg	3,83E-08	2,94E-11	1,79E-08	5,63E-08
Non-hazardous waste for disposal (NHWD)	kg	2,62	9,09E-04	2,05	4,67
radioactive waste for disposal (RWD)	kg	8,26E-03	7,46E-06	9,92E-03	1,82E-02
Components for reuse (CRU)	kg	0,00	0,00	0,00	0,00
Materials for recycling (MFR)	kg	0,00	0,00	0,00	0,00
Materials for energy recovery (MER)	kg	0,00	0,00	0,00	0,00

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Exported energy electrical (EEE)	MJ	0,00	0,00	0,00	0,00
Exported energy thermal (EET)	MJ	0,00	0,00	0,00	0,00

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