Environmental Product Declaration

In accordance with
EN 15 804
ISO 14 025

CLIMA GLASS®-W

Alternative products:	
Manufactured by:	CIUR a.s.
EPD programme:	Národní program environmentálního značení
Declaration number:	3013EPD-16-0541
Issued:	1.12.2016
Valid until:	30.11.2021
Verified by:	Building Research Institute - Certification company Ltd. Accredited third party verifier

CIUR a.s.

General Information

CIUR a.s.

Manufacturer	CIUR a.s.
Official address	Malé náměstí 142/3, 110 00 Prague 1, Czech Republic
Manufacturing site	Pražská 1012, 250 01 Brandýs nad Labem, Czech Republic
About	CIUR a.s. is a manufacturing company with a (history) of producing blown insulation products from secondary materials since 1991.
Website	www.ciur.cz; www.climatizer.com
e-mail	info@ciur.cz
Phone	00420 326 901 411
VAT	CZ40612724
Product	**Climglass® - W**
Alternative names	
Description	**Climaglass® - W** is a unique thermal and acoustic insulation free from formaldehyde, which is made from glass wool. The production method is based on shredding of composition melt. The mineral fibre is then shaped into in-situ formed loose-fill mineral wool products on the production line. The entire fibre surface is hydrophobic, however, it is necessary to suitably protect the insulation from the elements (avoiding contact with rain water).
Product code (HS)	70193900
EPD	Environmental Product Declaration
EPD Programme	Národní program environmentálního značení (National programme of environmental labelling), CENIA, the Czech Environmental Information Agency. Litevská 1174/8, 100 05 Praha 10
Declaration number	3013EPD-16-0541
Registration date	1. 12. 2016
Valid until	30. 11. 2021
General PCR	EN 15 804
Prepared by	Jan Weinzettel, Charles University, Environment Centre (e-mail: weinzettel@seznam.cz)
Based on	Weinzettel J. and D. Kapitulčinová, LCA studie vybraných produktů firmy CIUR a.s. (LCA study of selected CIUR products), CIUR, 2016
Verified by	Barbora Vlasatá, Bulding Research Institute – Certification Company Ltd. (e-mail: vlasata@vups.cz)
Accredited by	Czech Accreditation Institute (a national accreditation body)

Product Description

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Climaglass®-W is used for thermal and acoustic insulation in external and internal structures - pitched roofs, loft attics, ceilings, floors between joists or pillars, partition walls, ceilings and other construction elements which have acoustic requirements.

Application is carried out under dry conditions by using blowing machinery, open blowing (for example, in lofts), or more commonly injection filling into prepared cavity walls, roofs or ceilings. The system enables very easy penetration into the smallest corners and hence provides a full fill installation without any air gaps. Blowing technology ensures quick and easy installation.

When using the open blowing application is necessary to apply a settlement value of about from 5% to 10% (during the application the thickness increases by 5%, after which time no further settlement occurs).

For dry cavity injection, the manufacturer installation instructions regarding minimum required installed density should be followed, in order to avoid any settlement.

Density ranges:

- Open blowing in open horizontal surfaces: 14-28 kg/m^3
- Injection filling in horizontal, pitched or vertical structures: 28 -50 kg/m^3

Choose Climaglass®-W insulation over other types of insulation for

- Very low density
- Easy application
- Low diffusion resistance allowing the easy permeability to water vapour
- Ecological and hygienic – pure, white, non-irritating formaldehyde-free
- Highest reaction to fire class A1

Table 1 Technical parameters.

Parameter	Measured Value	Unit	Harmonized Technical Specification
THERMAL PROPERTIES			
Declared thermal conductivity λ_D (at density of 12-45 kg·m^{-3})	0,039	W·m^{-1}·K^{-1}	CSN EN 12667
Declared thermal conductivity λ_D (at density of 18-45 kg·m^{-3})	0,036	W·m^{-1}·K^{-1}	CSN EN 12667
Declared thermal conductivity λ_D (at density of 28-50 kg·m^{-3})	0,034	W·m^{-1}·K^{-1}	CSN EN 12667
Specific heat capacity	840	J.kg^{-1}.K^{-1}	CSN 730540-3
PHYSICAL PROPERTIES			
Settlement (open blowing on horizontal surface)	S3**	%	-
Settlement (volume filling – ceilings, roofs, partitions)	S1***	%	-
FIRE PROPERTIES			
Reaction to fire	A1	-	CSN EN 13501-1
Flame spread index i_s	0,00	mm·min^{-1}	CSN 73 0863
Maximum in use exposure temperature	200	°C	-
Melting point	<1000	°C	-
OTHER PROPERTIES			
Moisture diffusion resistance factor μ	1	-	CSN EN 12086

* Parameter on the final product after application.
** S3 = (>5 %) a (≤ 10 %) according to CSN EN 14064-1 at density of 14-28 kg·m^{-3}
*** S1 = settlement is not measurable (≤1 %) according to CSN EN 14064-1 at density above of 28 kg·m^{-3}

EPD Details

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Function and declared unit

The main function of **Climaglass®-W** is to provide thermal insulation. The declared unit is a provision of the thermic isolation of $1m^2$ structure with a thermal resistance of $1m^2KW^{-1}$ for a non-loadbearing panel located under a waterproof surface, during 50 years.

Reference flow

The amount of the product to fulfill the declared unit depends on application type and the corresponding density. Therefore, the results are provided for the boundary combinations of density and thermal conductivity:

- 0.468 kg for density of 12 $kg.m^{-3}$ a lambda 0,039 W/m.K
- 1.755 kg pro hustotu 45 $kg.m^{-3}$ a lambdu 0,039 W/m.K

As the overall results are determined by the reference flow, three sets of results are reported, one for each amount of the reference flow. In addition, results per 1 kg of the product are reported as well.

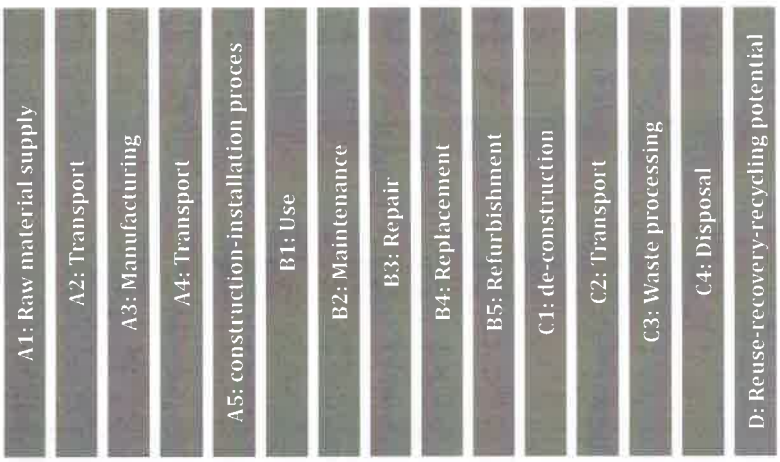

Figure 1 Overview of life cycle modules.

Reference service life

The reference service life is assumed to be 50 years.

Life cycle stages

The life cycle stages covered by this EPD include modules A1-A4, C2-C4, i.e. A1 – raw material supply, A2 – transport of raw materials, A3 – manufacturing, A4 – transport from the manufacturing site, C2 – transport for disposal, C3 – waste processing and C4 – disposal.

EPD-type

Cradle to gate with options – modules B1-B5 are not relevant for this product and are not part of this EPD.

Comparability of EPD

EPD of construction products may not be comparable if they do not comply with EN 15 804.

Key assumptions

Environmental impacts of upstream processes of all secondary materials are excluded, however, the transport processes to the manufacturing site of the distance of 50 km are included in the assessment.

Due to inert chemical properties of the product, landfilling is assumed as the final product disposal.

EPD Details

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Electricity mix

Electricity mix used in LCA is the Ecoinvent 3 process Electricity, medium voltage {CZ}| market for | Alloc Def, U with these inputs:

Electricity, high voltage {CZ}| electricity production, nuclear, pressure water reactor | Alloc Def, U	**31%**
Electricity, high voltage {CZ}| electricity production, lignite | Alloc Def, U	30%
Electricity, high voltage {CZ}| import from PL | Alloc Def, U	**9,8%**
Electricity, high voltage {CZ}| heat and power co-generation, lignite | Alloc Def, U	9,5%
Electricity, high voltage {CZ}| import from DE | Alloc Def, U	**2,9%**
Electricity, high voltage {CZ}| heat and power co-generation, hard coal | Alloc Def, U	2,6%
Electricity, high voltage {CZ}| treatment of blast furnace gas, in power plant | Alloc Def, U	**2,4%**
Electricity, high voltage {CZ}| electricity production, hard coal | Alloc Def, U	2,3%
Electricity, high voltage {CZ}| heat and power co-generation, wood chips, 6667 kW, state-of-the-art 2014 | Alloc Def, U	**2,0%**
Electricity, high voltage {CZ}| electricity production, hydro, run-of-river | Alloc Def, U	1,7%
Electricity, high voltage {CZ}| heat and power co-generation, biogas, gas engine | Alloc Def, U	**1,6%**
Electricity, high voltage {CZ}| heat and power co-generation, natural gas, conventional power plant, 100MW electrical | Alloc Def, U	1,2%
Electricity, high voltage {CZ}| electricity production, hydro, pumped storage | Alloc Def, U	**0,80%**
Electricity, high voltage {CZ}| electricity production, hydro, reservoir, non-alpine region | Alloc Def, U	0,58%
Electricity, high voltage {CZ}| electricity production, wind, 1-3MW turbine, onshore | Alloc Def, U	**0,40%**
Electricity, high voltage {CZ}| treatment of coal gas, in power plant | Alloc Def, U	0,27%
Electricity, high voltage {CZ}| heat and power co-generation, oil | Alloc Def, U	**0,07%**
Electricity, high voltage {CZ}| import from AT | Alloc Def, U	0,06%
Electricity, high voltage {CZ}| electricity production, wind, <1MW turbine, onshore | Alloc Def, U	**0,05%**
Electricity, high voltage {CZ}| electricity production, natural gas, conventional power plant | Alloc Def, U	0,04%
Electricity, high voltage {CZ}| import from SK | Alloc Def, U	**0,03%**
Electricity, high voltage {CZ}| electricity production, oil | Alloc Def, U	0,02%
Electricity, high voltage {CZ}| electricity production, natural gas, combined cycle power plant | Alloc Def, U	**0,01%**

Allocation

Mass allocation is applied on the processes within the manufacturing site.

System boundaries

Secondary materials are assumed with zero environmental impacts at their production site, just the transport is included for input materials and no impacts are allocated to waste for reuse generated at the production site. Complete production chains are included for other input products and materials.

Reference year and geographical scope

The EPD is based on data collected for year 2015. The geographical scope is global, however, the EPD is only relevant to products manufactured at the specified production site at Brandýs nad Labem, Czech Republic.

Content Declaration

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Climaglass® - W is composed of those materials:

Material	Content
Waste glass wool	>99%

The main component of **Climaglass®** is waste glass wool which is a secondary material obtained mainly from the production of glass wool.

Environmental Performance

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Resource use

Table 2 Use of resources per 1 kg of product and per declared unit (2 values of reference flow displayed)

Indicator	Unit	1kg	0.468 kg	1.755 kg
Use of renewable primary energy excluding renewable energy used as raw materials	MJ, net calorific value	0.26	0.12	0.46
Use of renewable primary energy resources used as raw materials	MJ, net calorific value	0.00	0.00	0.00
Total use of renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	0.26	0.12	0.46
Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	MJ, net calorific value	6.37	2.98	11.17
Use of non-renewable primary energy resources used as raw materials	MJ, net calorific value	0.00	0.00	0.00
Total use of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials)	MJ, net calorific value	6.37	2.98	11.17
Use of secondary material	kg	1.00	0.47	1.76
Use of renewable secondary fuels	MJ, net calorific value	0.00	0.00	0.00
Use of non renewable secondary fuels	MJ, net calorific value	0.00	0.00	0.00
Use of net fresh water	m^3	0.00	0.00	0.00

Potential environmental impacts

Table 3 Potential environmental impacts per 1 kg of product.

Impact category	Unit	Total	A1-A3	A4	C2	C3-C4
Abiotic depletion	kg Sb_{eq}	$5.5*10^{-7}$	$2.2*10^{-8}$	$4.3*10^{-7}$	$8.8*10^{-8}$	$5.5*10^{-9}$
Abiotic depletion (fossil fuels)	MJ	5.1	0.13	4.3	0.54	0.16
Global warming (GWP100a)	kg CO_{2eq}	0.33	$8.2*10^{-3}$	0.29	$3.3*10^{-2}$	$5.3*10^{-3}$
Ozone layer depletion (ODP)	kg CFC-11 $_{eq}$	$3.2*10^{-8}$	$1.5*10^{-9}$	$2.2*10^{-8}$	$6.2*10^{-9}$	$1.8*10^{-9}$
Photochemical oxidation	kg C_2H_{4eq}	$5.6*10^{-5}$	$1.3*10^{-6}$	$4.7*10^{-5}$	$6.3*10^{-6}$	$1.9*10^{-6}$
Acidification	kg SO_{2eq}	$1.3*10^{-3}$	$2.1*10^{-5}$	$1.1*10^{-3}$	$1.7*10^{-4}$	$4.0*10^{-5}$
Eutrophication	kg PO_4^{---} $_{eq}$	$9.7*10^{-4}$	$4.3*10^{-6}$	$9.1*10^{-4}$	$4.0*10^{-5}$	$8.5*10^{-6}$

Table 4 Potential environmental impacts per declared unit for reference flow of 0.468kg (density of 12 kg.m^{-3}, lambda 0.039 W*m^{-1}*K^{-1}))

Impact category	Unit	Total	A1-A3	A4	C2	C3-C4
Abiotic depletion	kg Sb_{eq}	$2.6*10^{-7}$	$1.0*10^{-8}$	$2.0*10^{-7}$	$4.1*10^{-8}$	$2.6*10^{-9}$
Abiotic depletion (fossil fuels)	MJ	2.4	$6.1*10^{-2}$	2.0	0.25	$7.5*10^{-2}$
Global warming (GWP100a)	kg CO_{2eq}	0.16	$3.8*10^{-3}$	0.13	$1.6*10^{-2}$	$2.5*10^{-3}$
Ozone layer depletion (ODP)	kg CFC-11 $_{eq}$	$1.5*10^{-8}$	$7.1*10^{-10}$	$1.0*10^{-8}$	$2.9*10^{-9}$	$8.4*10^{-10}$
Photochemical oxidation	kg C_2H_{4eq}	$2.6*10^{-5}$	$6.0*10^{-7}$	$2.2*10^{-5}$	$3.0*10^{-6}$	$9.1*10^{-7}$
Acidification	kg SO_{2eq}	$6.1*10^{-4}$	$9.6*10^{-6}$	$5.0*10^{-4}$	$8.1*10^{-5}$	$1.9*10^{-5}$
Eutrophication	kg PO_4^{---} $_{eq}$	$4.5*10^{-4}$	$2.0*10^{-6}$	$4.3*10^{-4}$	$1.9*10^{-5}$	$4.0*10^{-6}$

Environmental Performance

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Table 5 Potential environmental impacts per declared unit for reference flow of 1.755kg (density of 45 kg.m^{-3}, lambda 0.039 W*m^{-1}*K^{-1}))

Impact category	Unit	Total	A1-A3	A4	C2	C3-C4
Abiotic depletion	kg Sb_{eq}	$9.6*10^{-7}$	$3.9*10^{-8}$	$7.6*10^{-7}$	$1.5*10^{-7}$	$9.7*10^{-9}$
Abiotic depletion (fossil fuels)	MJ	9.0	0.23	7.5	0.94	0.28
Global warming (GWP100a)	kg CO_{2eq}	0.59	$1.4*10^{-2}$	0.50	$5.9*10^{-2}$	$9.3*10^{-3}$
Ozone layer depletion (ODP)	kg CFC-11 $_{eq}$	$5.6*10^{-8}$	$2.7*10^{-9}$	$3.9*10^{-8}$	$1.1*10^{-8}$	$3.1*10^{-9}$
Photochemical oxidation	kg C_2H_{4eq}	$9.9*10^{-5}$	$2.3*10^{-6}$	$8.2*10^{-5}$	$1.1*10^{-5}$	$3.4*10^{-6}$
Acidification	kg SO_{2eq}	$2.3*10^{-3}$	$3.6*10^{-5}$	$1.9*10^{-3}$	$3.0*10^{-4}$	$7.0*10^{-5}$
Eutrophication	kg PO_4^{---} $_{eq}$	$1.7*10^{-3}$	$7.5*10^{-6}$	$1.6*10^{-3}$	$7.1*10^{-5}$	$1.5*10^{-5}$

Waste generation

Table 6 Waste generation per 1 kg of product and per declared unit (2 values of reference flow displayed)

Waste type	Unit	1kg	0.468 kg	1.755 kg
Hazardous waste disposed	kg	$5*10^{-6}$	$2.34*10^{-6}$	$8.78*10^{-6}$
Non hazardous waste disposed	kg	0,026	0.012	0.046
Radioactive waste disposed	kg	-	-	-

Other environmental information describing output flows

Table 7 Other environmental information describing output flows

Parameter	Unit	Amount
Components for re-use	kg	0
Materials for recycling	kg	0
Materials for energy recovery	kg	0
Exported energy	MJper energy carrier	0

Transport to the building site

Table 8 Information describing transport to the building site.

Parameter	Unit	Value
Vehicle type	European Emission Standard	Euro 3 (Lorry 16-32 metric ton)
Distance	km	200
Capacity utilization (including empty returns)	%	~50%
Bulk density of transported products	kg/m^3	125
Volume capacity utilization factor	-	1

End of life

Table 9 End of life information.

Processes	Unit	Amount
Collection process specified by type	kg collected separately	100%
	kg collected with mixed construction waste	0
Recovery system specified by type	kg for re-use	0
	kg for recycling	0
	kg for energy recovery	0
Disposal specified by type	kg product or material for final deposition	100%
Assumptions for scenario development, e.g. transportation	-	It is assumed that the product will be collected separately and land-filled.

Verification

CEN standard EN 15804 serves as the core PCR (product category rules)

Independent verification of the declaration and data, according to EN ISO 14025:2010

☐ internal ☒ external

Third party verifier:

Building Research Institute - Certification company Ltd.

Additional information

CIUR a.s. was certified according to ISO 9001:2008 (Quality Management), ISO14001:2004 (Environmental Management) and OHSAS 18001:2007 (Occupational Health and Safety Management).

References

Weinzettel, J., D. Kapitulčinová, LCA studie vybraných produktů firmy CIUR a.s. (LCA study of selected products manufactured by CIUR a.s.), CIUR, 2016.

EN 15804:2012+A1:2013 Sustainability of construction works – Environmental product declarations – Core rules for the product category of construction products

ISO 14 025:2006 Environmental labels and declarations -- Type III environmental declarations -- Principles and procedures