ENVIRONMENTAL PRODUCT DECLARATION
as per *ISO 14025* and *EN 15804+A2*

Owner of the Declaration	SIGA Cover AG
Programme holder	Institut Bauen und Umwelt e.V. (IBU)
Publisher	Institut Bauen und Umwelt e.V. (IBU)
Declaration number	EPD-SIG-20220185-CBA1-EN
Issue date	24/10/2022
Valid to	23/10/2027

Majrex ® 200
SIGA Cover AG

www.ibu-epd.com | https://epd-online.com

SIGA 1966

General Information

SIGA Cover AG

Programme holder
IBU – Institut Bauen und Umwelt e.V.
Panoramastr. 1
10178 Berlin
Germany

Declaration number
EPD-SIG-20220185-CBA1-EN

This declaration is based on the product category rules:
False ceiling and underlay sheeting, 11.2017
(PCR checked and approved by the SVR)

Issue date
24/10/2022

Valid to
23/10/2027

signature

Dipl. Ing. Hans Peters
(chairman of Institut Bauen und Umwelt e.V.)

signature

Dr. Alexander Röder
(Managing Director Institut Bauen und Umwelt e.V.))

Majrex ® 200

Owner of the declaration
SIGA Cover AG
Rütmattstrasse 7
6017 Ruswil
Switzerland

Declared product / declared unit
Majrex ® 200 / 1m²

Scope:
This document applies to SIGA Majrex 200 (Majpell 5 as public annex), a vapour control layer by the SIGA Cover AG. It is manufactured in Austria. The declared unit is 1 m² with a unit weight of 150 g/m². The LCA data were based on production data from the year 2020.

The owner of the declaration shall be liable for the underlying information and evidence; the IBU shall not be liable with respect to manufacturer information, life cycle assessment data and evidences.

The EPD was created according to the specifications of *EN 15804+A2*. In the following, the standard will be simplified as *EN 15804*.

Verification

The standard *EN 15804* serves as the core PCR
Independent verification of the declaration and data according to *ISO 14025:2010*

☐ internally	☒ externally

signature

Vito D'Incognito
(Independent verifier)

Product

Product description/Product definition
SIGA Majrex® is a high-tech vapor control layer with integrated Hygrobrid® technology. Thanks to Hygrobrid®- technology the humidity within the construction is minimized and the moisture transport out of the construction is maximized

For the placing on the market of the product in the European Union/European Free Trade Association (EU/EFTA) (with the exception of Switzerland) *Regulation (EU) No. 305/2011* (CPR) applies. The product needs a declaration of performance taking into consideration EN 13984:2013, Flexible sheets for waterproofing - Plastic and rubber vapour control layers - Definitions and characteristics and the CE-marking. For the application and use the respective national provisions apply.

Application
SIGA Majrex ® can be used in flat roofs, pitched roofs as well as wall constructions. The application is possible in wood construction, metal construction as well as interior wall insulation in solid construction. Majrex ® also ensures even more safety in the timber construction in the event of high building moisture -

after the screed and plaster have been applied or in the event of high moisture exposure during use.

Technical Data

Name	Value	Unit
Length acc. to EN 1848-2	50	m
Width acc. to EN 1848-2	1.5	m
Straightness acc. to EN 1848-2	passed	mm/10m
Grammage acc. to EN 1849-2	0.15	kg/m²
Resistance to water penetration acc. to EN 1928 (class)	W1	-
Water vapor diffusion equivalent air layer thickness acc. to EN 1931	5 -15	m
Resistance to air penetration acc. to EN 12114	0.02	m³/m² h 50Pa
Maximum tensile force acc. to EN 12311-1	300	N/50mm
Elongation acc. to EN 12311-1	35	%
Tear Resistance (nail) acc. to EN 12310-1	150	N/mm
Flexibility at low temperatures acc.	-40	°C

to EN 1109		

Performance data of the product in accordance with the declaration of performance with respect to its essential characteristics according to EN 13984.

Base materials/Ancillary materials

Composition SIGA Majrex 200

Name	Value	Unit
Fleece Polyethylene terephthalate (PET)	25 - 50	%
Coating Polyester copolymer	25 - 50	%
Coating Polyamide 6 (PA6)	10 - 25	%
Coating Polyethylene copolymer	10 - 25	%

This product contains substances listed in *the candidate list* (date: 01.01.2022) exceeding 0.1 percentage by mass: no.

Reference service life
When installed according to the user manual, the service life of the products is equal to the service life of the building element, where the product is a part of (e.g. wall, roof etc.). The Sustainable Building Assessment System *BNB* specifies the service life of the building elements, where the products are used, as equal to or more than 50 years. A reference service life according to *ISO 15686* is not reported.

LCA: Calculation rules

Declared Unit
The declared unit is 1m^2 of Majrex ® 200 with a grammage of 150 g/m^2.

Declared unit

Name	Value	Unit
Declared unit	1	m^2
Grammage	0.15	kg/m^2

System boundary
Type of EPD according to *EN 15804*: "cradle to gate with options, modules C1–C4, and module D". The following modules are declared: A1–A3, C, D and additional modules: A4 + A5.

Production stage - Modules A1-A3
The product stage includes:
- Raw material supply (A1)
- Transport to the manufacturer (A2)
- Manufacturing (A3), including provision of all materials, products and energy, as well as waste processing up to the end-of-waste state.

Construction stage - Modules A4-A5
The construction process stage includes:
- Transport to the construction site (A4)
- Treatment of packaging material (A5)

End-of-life stage– Modules C1-C4 and D
The end-of-life stage includes
- Manual dismantling (C1)
- Transport to EoL (C2)
- Thermal treatment (C3). No disposal or landfill processes (C4)
- Reuse, recovery or recycling potential (D) - beyond system boundary includes credits from thermal treatment (C3) and packaging treatment (A5)

Comparability
Basically, a comparison or an evaluation of EPD data is only possible if all the data sets to be compared were created according to *EN 15804* and the building context, respectively the product-specific characteristics of performance, are taken into account.

Background database: *GaBi* content update package 2021.2

LCA: Scenarios and additional technical information

Characteristic product properties
Information on biogenic Carbon

Information on describing the biogenic Carbon Content at factory gate

Name	Value	Unit
Biogenic Carbon Content in product	0	kg C
Biogenic Carbon Content in accompanying packaging	0.0107	kg C

The following technical scenario information is required for the declared modules and optional for non-declared modules. The following technical information is a basis for the declared modules or can be used for developing specific scenarios in the context of a

building assessment. The values refer to the declared unit of 1 m^2 Majrex ® 200 product.

Transport to the building site (A4)

Name	Value	Unit
Litres of fuel	0.0003	l/100km
Transport distance	100	km
Capacity utilisation (including empty runs)	61	%
Gross unit weight of products transported	0.150	kg/m^2

Installation into the building (A5)

Name	Value	Unit
Waste packaging (PE foil) to incineration	0.00144	kg
Waste packaging (wood) to incineration	0.00935	kg

Waste packaging (Cores carton) to incineration	0.0181	kg

End of life (C1-C4)
For the End-of-Life stage, the product dismantling (C1) is done manually without environmental burden (load free).

The transport to End of Life (C2) is calculated with a distance of 50 km (with 61% utilization).

The Waste processing scenario adopted (C3) is thermal treatment of the Majrex ® 200 product. Its incineration results in benefits, beyond the system boundary, for thermal energy and electricity under European conditions.

Name	Value	Unit
Collected separately (Majrex ® 200)	0.15	kg
Energy recovery	0.15	kg

Reuse, recovery and/or recycling potentials (D), relevant scenario information

Module D includes the credits of the thermal and electrical energy generated in Modules A5 and C3 due to the thermal treatment of packaging and product waste (Majrex ® 200 product).

Avoided burdens have been calculated by the inversion of residual grid mix and thermal energy from natural gas, using European datasets.

A waste incineration plant with R1-value > 0.6 is assumed.

LCA: Results

The following tables display the environmental relevant results according to /EN 15804/ for 1 m² Majrex ® 200.

DESCRIPTION OF THE SYSTEM BOUNDARY (X = INCLUDED IN LCA; ND = MODULE OR INDICATOR NOT DECLARED; MNR = MODULE NOT RELEVANT)

PRODUCT STAGE			CONSTRUCTION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARIES
Raw material supply	Transport	Manufacturing	Transport from the gate to the site	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	ND	ND	MNR	MNR	MNR	ND	ND	X	X	X	X	X

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT according to EN 15804+A2: 1 m² Majrex ® 200

Core Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP-total	[kg CO$_2$-Eq.]	1.17E+0	1.08E-3	5.04E-2	0.00E+0	9.09E-4	3.75E-1	0.00E+0	-2.45E-1
GWP-fossil	[kg CO$_2$-Eq.]	1.21E+0	1.07E-3	5.39E-3	0.00E+0	8.99E-4	3.75E-1	0.00E+0	-2.44E-1
GWP-biogenic	[kg CO$_2$-Eq.]	-3.56E-2	3.06E-6	4.50E-2	0.00E+0	2.57E-6	2.37E-5	0.00E+0	-1.22E-3
GWP-luluc	[kg CO$_2$-Eq.]	4.21E-4	8.80E-6	6.23E-7	0.00E+0	7.38E-6	1.43E-5	0.00E+0	-1.68E-4
ODP	[kg CFC11-Eq.]	2.43E-13	1.37E-19	7.49E-18	0.00E+0	1.15E-19	1.15E-16	0.00E+0	-2.78E-15
AP	[mol H⁺-Eq.]	1.43E-3	1.02E-6	9.97E-6	0.00E+0	8.53E-7	4.80E-5	0.00E+0	-3.19E-4
EP-freshwater	[kg PO$_4$-Eq.]	2.78E-6	3.19E-9	1.24E-9	0.00E+0	2.68E-9	1.78E-8	0.00E+0	-3.18E-7
EP-marine	[kg N-Eq.]	4.93E-4	3.14E-7	3.47E-6	0.00E+0	2.63E-7	1.31E-5	0.00E+0	-9.06E-5
EP-terrestrial	[mol N-Eq.]	5.03E-3	3.77E-6	4.58E-5	0.00E+0	3.16E-6	2.18E-4	0.00E+0	-9.71E-4
POCP	[kg NMVOC-Eq.]	2.04E-3	8.76E-7	9.28E-6	0.00E+0	7.34E-7	3.77E-5	0.00E+0	-2.54E-4
ADPE	[kg Sb-Eq.]	6.51E-7	8.18E-11	1.14E-10	0.00E+0	6.86E-11	1.67E-9	0.00E+0	-4.05E-8
ADPF	[MJ]	2.40E+1	1.43E-2	1.24E-2	0.00E+0	1.20E-2	1.46E-1	0.00E+0	-4.23E+0
WDP	[m³ world-Eq deprived]	3.93E-2	9.34E-6	5.33E-3	0.00E+0	7.83E-6	3.90E-2	0.00E+0	-1.87E-2

Caption	GWP = Global warming potential; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential of land and water; EP = Eutrophication potential; POCP = Formation potential of tropospheric ozone photochemical oxidants; ADPE = Abiotic depletion potential for non-fossil resources; ADPF = Abiotic depletion potential for fossil resources; WDP = Water (user) deprivation potential

RESULTS OF THE LCA - INDICATORS TO DESCRIBE RESOURCE USE according to EN 15804+A2: 1 m² Majrex ® 200

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PERE	[MJ]	1.32E+0	7.99E-4	4.38E-1	0.00E+0	6.70E-4	3.17E-2	0.00E+0	-9.56E-1
PERM	[MJ]	4.35E-1	0.00E+0	-4.35E-1	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
PERT	[MJ]	1.75E+0	7.99E-4	2.37E-3	0.00E+0	6.70E-4	3.17E-2	0.00E+0	-9.56E-1
PENRE	[MJ]	1.94E+1	1.43E-2	7.86E-2	0.00E+0	1.20E-2	4.68E+0	0.00E+0	-4.23E+0
PENRM	[MJ]	4.60E+0	0.00E+0	-6.62E-2	0.00E+0	0.00E+0	-4.53E+0	0.00E+0	0.00E+0
PENRT	[MJ]	2.40E+1	1.43E-2	1.24E-2	0.00E+0	1.20E-2	1.46E-1	0.00E+0	-4.23E+0
SM	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
RSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
NRSF	[MJ]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
FW	[m³]	4.68E-3	9.14E-7	1.26E-4	0.00E+0	7.67E-7	9.25E-4	0.00E+0	-9.34E-4

Caption	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy resources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

RESULTS OF THE LCA – WASTE CATEGORIES AND OUTPUT FLOWS according to EN 15804+A2: 1 m² Majrex ® 200

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
HWD	[kg]	8.84E-9	7.22E-13	2.28E-12	0.00E+0	6.05E-13	2.62E-11	0.00E+0	-9.51E-10
NHWD	[kg]	1.37E-2	2.13E-6	9.43E-4	0.00E+0	1.78E-6	3.62E-2	0.00E+0	-1.99E-3
RWD	[kg]	1.83E-4	1.73E-8	6.50E-7	0.00E+0	1.45E-8	5.70E-6	0.00E+0	-3.08E-4
CRU	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MFR	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
MER	[kg]	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0	0.00E+0
EEE	[MJ]	1.46E-1	0.00E+0	7.28E-2	0.00E+0	0.00E+0	8.30E-1	0.00E+0	0.00E+0
EET	[MJ]	2.76E-1	0.00E+0	1.31E-1	0.00E+0	0.00E+0	1.50E+0	0.00E+0	0.00E+0

Caption	HWD = Hazardous waste disposed; NHWD = Non-hazardous waste disposed; RWD = Radioactive waste disposed; CRU = Components for re-use; MFR = Materials for recycling; MER = Materials for energy recovery; EEE = Exported electrical energy; EET = Exported thermal energy

RESULTS OF THE LCA – additional impact categories according to EN 15804+A2-optional:
1 m² Majrex ® 200

Indicator	Unit	A1-A3	A4	A5	C1	C2	C3	C4	D
PM	[Disease Incidence]	1.24E-8	6.21E-12	5.40E-11	0.00E+0	5.20E-12	6.78E-10	0.00E+0	-2.74E-9
IRP	[kBq U235-Eq.]	2.16E-2	2.48E-6	1.02E-4	0.00E+0	2.08E-6	7.47E-4	0.00E+0	-5.05E-2
ETP-fw	[CTUe]	9.87E+0	1.03E-2	5.67E-3	0.00E+0	8.67E-3	1.05E-1	0.00E+0	-8.86E-1
HTP-c	[CTUh]	4.91E-10	2.09E-13	3.42E-13	0.00E+0	1.75E-13	5.69E-12	0.00E+0	-4.03E-11
HTP-nc	[CTUh]	3.88E-8	1.08E-11	1.39E-11	0.00E+0	9.04E-12	6.12E-10	0.00E+0	-1.59E-9
SQP	[-]	4.28E+0	4.91E-3	3.29E-3	0.00E+0	4.12E-3	3.56E-2	0.00E+0	-6.54E-1
Caption	PM = Potential incidence of disease due to PM emissions; IR = Potential Human exposure efficiency relative to U235; ETP-fw = Potential comparative Toxic Unit for ecosystems; HTP-c = Potential comparative Toxic Unit for humans (cancerogenic); HTP-nc = Potential comparative Toxic Unit for humans (not cancerogenic); SQP = Potential soil quality index								

Disclaimer 1 – for the indicator "Potential Human exposure efficiency relative to U235".
This impact category deals mainly with the eventual impact of low dose ionizing
radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible
nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground
facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not
measured by this indicator.

Disclaimer 2 – for the indicators "abiotic depletion potential for non-fossil resources", "abiotic depletion potential
for fossil resources", "water (user) deprivation potential, deprivation-weighted water consumption", "potential
comparative toxic unit for ecosystems", "potential comparative toxic unit for humans – cancerogenic", "Potential
comparative toxic unit for humans - not cancerogenic", "potential soil quality index".
The results of this environmental impact indicator shall be used with care as the
uncertainties on these results are high or as there is limited experienced with the indicator.

References

Product related standards

Assessment System for Sustainable Building 2014-09
assessment_system_bnb.pdf (bnb-nachhaltigesbauen.de)

EN 1109:2013
Flexible sheets for waterproofing - Bitumen sheets for roof waterproofing - Determination of flexibility at low temperature; German version EN 1109:2013

EN 1848-2:2001
Flexible sheets for waterproofing - Determination of length, width, straightness and flatness - Part 2: Plastic and rubber sheets for roof waterproofing; German version EN 1848-2:2001

EN 1928:2000
Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of watertightness; German version EN 1928:2000

EN 1931:2001
Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of water vapour transmission properties; German version EN 1931:2000

EN 12114:2000
Thermal performances of buildings - Air permeability of building components and building elements - Laboratory test method; German version EN 12114:2000

EN 12310-1:1999
Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; determination of resistance to tearing (nail shank); German version EN 12310-1:1999

EN 12311-1:1999
Flexible sheets for waterproofing - Part 1: Bitumen sheets for roof waterproofing; Determination of tensile properties; German version EN 12311-1:1999

EN 13984:2013
Flexible sheets for waterproofing - Plastic and rubber vapour control layers - Definitions and characteristics; German version EN 13984:2013

ISO 15686-1:2011
Buildings and constructed assets - Service life planning - Part 1: General principles and framework

regulation (EU) No 305/2011
EUR-Lex - 32011R0305 - EN - EUR-Lex (europa.eu)

the candidate list
List of substances of very high concern for authorisation - ECHA (europa.eu)

Standards

EN 15804
EN 15804:2019+A2, Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction products.

ISO 14025
DIN EN ISO 14025:2011-10, Environmental labels and declarations — Type III environmental declarations — Principles and procedures.

Further References

CPR
Regulation No. 305/2011: Construction Products Regulation of the European Parliament and of the European Council, 2011.

GaBi ts
GaBi ts dataset documentation for the software-system and databases, LBP, University of Stuttgart and thinkstep, Leinfelden-Echterdingen, 2021 (https://www.gabi-software.com/support/gabi)

IBU 2021

Institut Bauen und Umwelt e.V.: General Programme Instructions for the Preparation of EPDs at the Institut Bauen und Umwelt e.V. Version 2.0., Berlin: Institut Bauen und Umwelt e.V., 2021

PCR Part A
PCR - Part A: Calculation rules for the Life Cycle Assessment and Requirements on the Background Report, version 2.1, Institut Bauen und Umwelt e.V., 2021, www.bau-umwelt.com

PCR Part B
PCR – Part B: Requirements on the EPD for False ceiling and underlay sheeting, version 1.6, 2017, Institut Bauen und Umwelt e.V., www.bau-umwelt.com