Environmental Product Declaration

EcoTouch® Insulation for Metal Building

ECOTOUCH® CERTIFIED R METAL BUILDING INSULATION, ECOTOUCH® MBI PLUS FILLER BLANKET, ECOTOUCH® UTILITY BLANKET METAL BUILDING INSULATION

Owens Corning® EcoTouch® Insulation for Metal Building products are light-density fibrous glass blankets, designed for use in metal buildings.

Owens Corning, and its family of companies, are a leading global producer of residential and commercial building materials, glass fiber reinforcements, and engineered materials for composite systems. It uses a decision framework for managing the company as a sustainable enterprise. It is the foundation of the company's strategy of building market-leading businesses, global in scope – human in scale, and reflects the company's purpose: our people and products make the world a better place.

Owens Corning is committed to balancing economic growth with social progress and sustainable solutions to its building materials and composite customers around the world.

This Environmental Product Declaration is a component of our stated goal to provide life cycle information on all core products.

sustainability.owenscorning.com

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

EcoTouch® Insulation for Metal Building
EcoTouch® Certified R Metal Building Insulation, EcoTouch® MBI Plus Filler Blanket, EcoTouch® Utility Blanket Metal Building Insulation

According to ISO 14025, EN 15804, and ISO21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL ENVIRONMENT 333 PFINGSTEN RD, NORTHBROOK, IL 60062 WWW.UL.COM WWW.SPOT.UL.COM
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	Program Operator Rules v 2.7 2022
MANUFACTURER NAME AND ADDRESS	Owens Corning, One Owens Corning Parkway, Toledo, OH, USA
DECLARATION NUMBER	4790365982.103.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	1 m^2 insulation at R_{SI}=1
REFERENCE PCR AND VERSION NUMBER	Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010–1, version 2.0
DESCRIPTION OF PRODUCT APPLICATION/USE	EcoTouch® Insulation for Metal Building products are for use in thermal applications in metal budiling roofs and walls.
PRODUCT RSL DESCRIPTION (IF APPL.)	75 years
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	December 1, 2022
PERIOD OF VALIDITY	5 Years
EPD TYPE	Product-specific
RANGE OF DATASET VARIABILITY	NA
EPD SCOPE	Cradle to gate with options (A1-A3, A4, A5, C2, C4)
YEAR(S) OF REPORTED PRIMARY DATA	2021-2022
LCA SOFTWARE & VERSION NUMBER	SimaPro 9.4
LCI DATABASE(S) & VERSION NUMBER	ecoinvent 3.8
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1 v1.05; CML I-A baseline v4.7, IPCC (2021)

The PCR review was conducted by:	UL Environment PCR Review Panel epd@ul.com
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Cooper McC Cooper McCollum, UL Environment
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	Aspire Sustainability
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Thomas P. Gloria, Industrial Ecology Consultants

LIMITATIONS

Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc.

Accuracy of Results: EPDs regularly rely on estimations of impacts; the level of accuracy in estimation of effect differs for any particular product line and reported impact.

Comparability: EPDs from different programs may not be comparable. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible". Example of variations: Different LCA software and background LCI datasets may lead to differences results for upstream or downstream of the life cycle stages declared.

1. Product Definition and Information

1.1. Description of Company/Organization

Founded in 1938, Owens Corning is a leader in insulation, roofing and fiberglass composites. It has a global presence with 20,000 people in 33 countries. Product covered by this Environmental Product Declaration was produced in the following location:

Newark Plant Newark, OH 43058

1.2. Product Description

Product Identification

Owens Corning® Metal Building Insulation products within the scope of this EPD are formaldehyde-free, light-density fibrous glass blankets with excellent recovery, designed for use in metal building roofs and walls. They are available in a variety of densities, thicknesses, R-values and laminating capabilities to meet a variety of building needs and code requirements. Finished MBI products have an average total recycled content of 65%.

EcoTouch® Certified R Metal Building Insulation

Owens Corning® EcoTouch® Certified R Metal Building Insulation is a light density fibrous glass blanket designed to be laminated with a variety of appropriate facings and are certified according to NAIMA 202-96 to meet the intended R-value after lamination. EcoTouch® Certified R is labeled with both a pre-laminated and post-laminated R-value. Standard roll widths are 36”, 48”, 60” and 72”. Made-to-order widths are also available in 2” increments.

EcoTouch® MBI Plus Filler Blanket

Owens Corning® EcoTouch® Insulation for MBI Plus Filler Blanket is a light density fibrous glass blanket designed for use in metal building roofs and walls. The product is intended for installation at the job site and is not designed for lamination. EcoTouch® Insulation for MBI Plus Filler Blanket is available in standard R-values of 10, 11, 13, 16, 19, 25 and 30. Standard roll widths are 48", 60" and 72". The product has ink jet printing on the surface: “MBI PLUS RXX - NOT INTENDED TO BE FACED - DATE-TIME-MACHINE” for easy identification on the project.

EcoTouch® Utility Blanket Metal Building Insulation

Owens Corning® EcoTouch® Utility Blanket Metal Building Insulation is an unfaced light density fibrous glass blanket. The product is designed to be laminated with a variety of facings and is used for condensation and noise control in metal buildings. The product is available in a standard R-value of 8. Standard roll widths are 36", 48" and 72" at a nominal product thickness of 2.25".

Product Specification

Table 1. Physical Properties of EcoTouch® Certified R Metal Building Insulation

PROPERTY	TEST METHOD	VALUE		
Thermal Resistance	ASTM C 518	Thickness	Pre-lam.	Post-lam.
		3.4”	R-10.8	R-10
		3.7”	R-11.9	R-11
		4.3”	R-14.1	R-13
		5.3”	R-17.3	R-16
		6.3”	R-20.6	R-19
		6.5”	R-21.7	R-20
		8.0”	R-27.1	R-25
		9.25”	R-32.5	R-30
Surface Burning[1]	ASTM E 84 / UL723[2] CAN/ULC S102	Flame spread index <25 Smoke developed index <50		
Combustion Characteristics[3]	ASTM E136 CAN/ULC S114	Non-combustible		
Water Vapor Sorption	ASTM C 1104 / C 1104M	<0.2% by volume		
Fungi Resistance	ASTM C 1338	Passes		
Corrosiveness	ASTM C665, part 13.8	Passes		
Odor Emission	ASTM C 1304	Passes		
Dimensional Tolerances	ASTM C 167	Minimum length is label length Width, - ¼” / + ¼”		

[1]This test was conducted using unfaced product.

[2]The surface burning characteristics of these products have been determined in accordance with UL 723. The standard should be used to measure and describe the properties of materials, products or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest 5 rating.

[3]This test was conducted using unfaced product.

Table 2. Physical Properties of EcoTouch® MBI Plus Filler Blanket

PROPERTY	TEST METHOD	VALUE	
Thermal Resistance	ASTM C 518	Product R-value	Thickness
		R-10	3”
		R-11	3.5”
		R-13	4”
		R-16	5”
		R-19	6”
		R-25	8”
		R-30	9”
Surface Burning Characteristics[1]	ASTM E 84 / UL723[2] CAN/ULC S102	Flame spread index <25 Smoke developed index <50	
Combustibility Characteristics[3]	ASTM E136	Non-combustible	
Water Vapor Sorption	ASTM C 1104	<0.2% by volume	
Fungi Resistance	ASTM C 1338	Passes	
Corrosion to Copper and Aluminum	ASTM C665	Passes – both metals	
Corrosion to Steel	ASTM C1617	Passes	
Odor Emission	ASTM C 1304	Passes	

[1]This test was conducted using unfaced product.

[2]The surface burning characteristics of these products have been determined in accordance with UL 723. The standard should be used to measure and describe the properties of materials, products or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest 5 rating.

[3]This test was conducted using unfaced product.

Table 3. Physical Properties of EcoTouch® Utility Blanket Metal Building Insulation

PROPERTY	TEST METHOD	VALUE
Thermal Resistance 2.25” (51mm)	ASTM C 518	Product R-value[1] 8.0, RSI Value[1] 1.41
Combustibility[2]	ASTM E136, CAN/ULC S114	Noncombustible
Surface Burning Characteristics[3]	ASTM E 84 / UL 723[4], CAN/ULC S102	Flame spread index <25 Smoke developed index <50
Water Vapor Sorption	ASTM C 1104	<5% by weight
Fungi Resistance	ASTM C 1338	Passes (does not support fungi growth)
Odor Emission	ASTM C 1304	Passes (no detectable odor)
Corrosiveness	ASTM C665, section 13.8	Passes

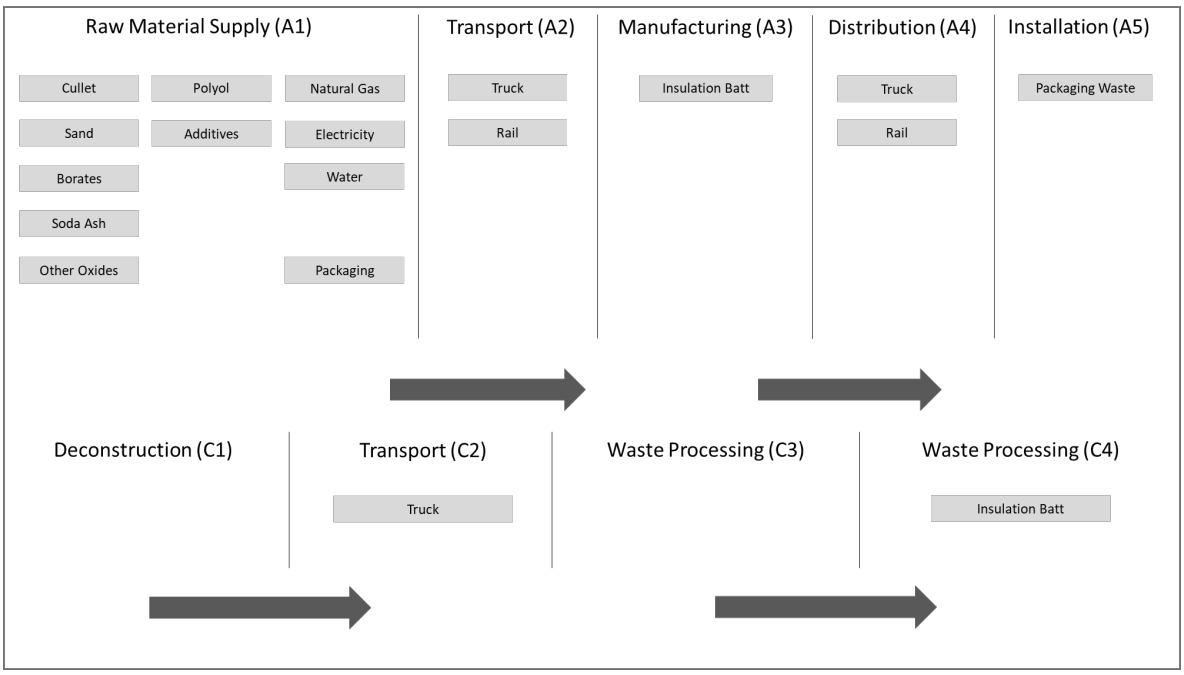
[1]Pre-lamination values

[2]This test was conducted using unfaced product.

[3]This test was conducted using unfaced product.

[4]The surface burning characteristics of these products have been determined in accordance with UL 723. The standard should be used to measure and describe the properties of materials, products or assemblies in response to heat and flame under controlled laboratory conditions and should not be used to describe or appraise the fire hazard or fire risk of materials, products or assemblies under actual fire conditions. However, results of this test may be used as elements of a fire risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard of a particular end use. Values are reported to the nearest 5 rating.

Flow Diagram



Product Average

The results of this declaration represent an average performance for the listed products. Reported area weights for included products and production locations were taken from quality control data to create a weighted average which was used to determine the functional unit mass for the LCA.

1.3. Application

Owens Corning® EcoTouch®Certified R Metal Building Insulation is used as part of the insulation system in the roofs and side walls of metal buildings. It is designed to be laminated with a variety of facings to provide attractive interior finishes, abuse resistance, and assistance in control of moisture.

Owens Corning® EcoTouch® MBI Plus Filler Blanket is used when unfaced insulation is required in various metal building roof or wall systems. EcoTouch® MBI Plus Filler Blanket is not designed for lamination and is generally shipped directly to a job site.

Owens Corning® EcoTouch® Utility Blanket Metal Building Insulation product is laminated with an appropriate facing, the insulation is typically installed in a single layer between the structural members (purlins for roofs and girts for walls) and the exterior panels. In most cases, the product is installed over and perpendicular to the structural members with the facing towards the interior of the structure.

1.4. Declaration of Methodological Framework

This declaration is a product-specific EPD. It is cradle-to-gate with modules A1-A5 and end-of-life included. The LCA study included the following:

- Raw materials including extraction, production, packaging and recycle cullet
- Transportation of raw materials to the manufacturing facility
- Fiberglass manufacturing
- Finished goods transportation
- Installation in the building
- End-of-life, including transport to landfill and landfill disposal

No known flows are deliberately excluded from this EPD.

The product is expected to last for at least the 75 years reference service life if it remains clean and dry in its installed state.

1.5. Technical Requirements

Compliance

EcoTouch® Certified R Metal Building Insulation

- ASTM C991-08, Standard Specification for Flexible Fibrous Glass Insulation for Metal Buildings; Type I
- NAAIMA 202-96 (Rev. 2000) Standard for Flexible Fiber Glass Insulation to be Laminated for Use in Metal Buildings
- Complies to the Class A or Class 1 Rating for Surface Burning per ASTM E84 or UL 723.

EcoTouch® MBI Plus Filler Blanket

- Manufactured in compliance with ASTM C991, Type I
- Complies to the Class A or Class 1 Rating for Surface Burning per ASTM E84 or UL 723.

EcoTouch® Utility Blanket Metal Building Insulation

- ASTM C665 – Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction; Type 1.
- Complies to the Class A or Class 1 Rating for Surface Burning per ASTM E84 or UL 723.

1.6. Properties of Declared Product as Delivered

Metal Building Insulation is delivered in compression packaged rolls. Once removed from the packaging, the product will recover to the needed thickness to deliver the advertised R-value. Laminating a facing to the insulation can impact the R-value as shown in the product properties table.

1.7. Material Composition

Metal Building Insulation products consist of two major components: fiberglass (nominally ≥ 85%) and the remainder being the add-on chemcials for binder. The fiberglass is made from various inorganic minerals, which are referred to as batch chemcials. The binder system consists of organic materials.

The Metal Building Insulation products included in this study use an acrylic resin binder.

The Certified R and Utility Blanket may be laminated with a facing material by customers. To that end, the environmental impact of potential facing materials for Certified R and Utility Blanket are not included in the LCA or this EPD.

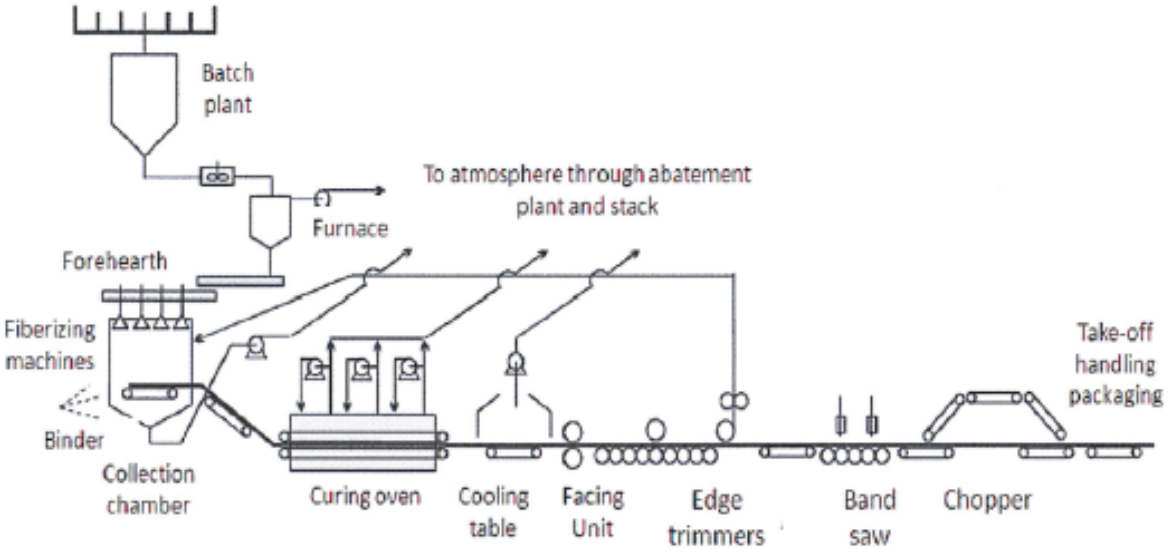
Table 4. Material Content for EcoTouch® Insulation for Metal Building

MATERIALS	FUNCTION	CERTIFIED R QUANTITY (% BY MASS)	MBI PLUS QUANTITY (% BY MASS)	UTILITY BLANKET QUANTITY (% BY MASS)
Cullet	Glass Batch	25-75%	25-75%	25-75%
Sand	Glass Batch	5-50%	5-50%	5-50%
Borates	Glass Batch	5-30%	5-30%	5-30%
Polyacrylic Acid	Binder	<10%	<10%	<10%
Polyvinyl Alcohol	Binder	<5%	<5%	<5%
Polyol	Binder	<5%	<5%	<5%
Additives	Binder	<5%	<5%	<5%

1.8. Manufacturing

Owens Corning North American Insulation manufacturing locations can be found across the United States. However, the scope of this study includes only Metal Building Insulation products manufactured at the following location:

Newark Plant
Newark, OH 43058



The diagram above is representative for the manufacturing of bonded fiberglass insulation product. There are no significant process differences between locations.

1.9. Packaging

EcoTouch® Metal Building Insulation products are packaged in sleeves made from polyethylene. All products include a kraft paper overwrap. The following packaging disposal scenarios are assumed, in accordance with the PCR.

Table 5. Packaging Material Disposal Scenarios (North America)

Country/Region	Material Type	Recycling Rate	Landfill Rate	Incineration Rate
United States	Plastics	15%	68%	17%
	Metals	57%	34%	9%
	Pulp (cardboard, paper)	75%	20%	5%

1.10. Transportation

The outbound transportation or distribution includes the transportation of the finished product to customers primarily by diesel semi-truck. The weighted average distance from the manufacturing site to the customer is 1,150 km by truck.

1.11. Product Installation

EcoTouch® Certified R Metal Building Insulation

Several methods are used to insulate metal buildings. The usual method is to apply the insulation over the structural members (purlins and girts) and inside the exterior panels. This method generally accommodates single layer installations. Methods are also available to apply a second layer of insulation between purlins to provide greater insulation thicknesses and better thermal performance, compared to single layer.

EcoTouch® MBI Plus Filler Blanket

EcoTouch® Insulation for MBI Plus is applied between or over the purlins or girts when unfaced insulation is required in the installation process. In a typical double layer roof system, EcoTouch® Insulation for MBI Plus will be applied as the second layer of material between the purlins after installing a laminated layer of EcoTouch® Insulation for Certified R Metal Building Insulation over the purlins. These double layer roof systems accommodate greater insulation thicknesses and provide additional thermal performance. EcoTouch® Insulation for MBI Plus can also be used in any filled cavity insulation system that does not require the insulation to be laminated to a vapor retarder facing.

EcoTouch® Utility Blanket Metal Building Insulation

After EcoTouch® Utility Blanket Metal Building Insulation is laminated with an appropriate facing, the insulation is typically installed in a single layer between the structural members (purlins for roofs and girts for walls) and the exterior panels. In most cases, the product is installed over and perpendicular to the structural members with the facing towards the interior of the structure. All seams should be sealed to help maintain a continuous vapor retarder. EcoTouch® Utility Blanket Metal Building Insulation can also be used over the purlins in roof systems that utilize a primary layer of insulation between the purlins.

1.12. Use

Insulation is a passive device that requires no extra utlities or maintenance to operate over its useful life.

1.13. Reference Service Life and Estimated Building Service Life

The product is assumed to remain in service for the life of the building, 75 years.

1.14. Reuse, Recycling, and Energy Recovery

Metal Building Insulation can be reused if remains clean and dry. Recycling programs do not currently exist for fiberglass insulation.

1.15. Disposal

It was assumed that all materials removed from the decommissioning of a building were taken to a local construction waste landfill, using 100 miles (or 161 km) as the average distance to landfill.

2. Life Cycle Assessment Background Information

2.1. Functional or Declared Unit

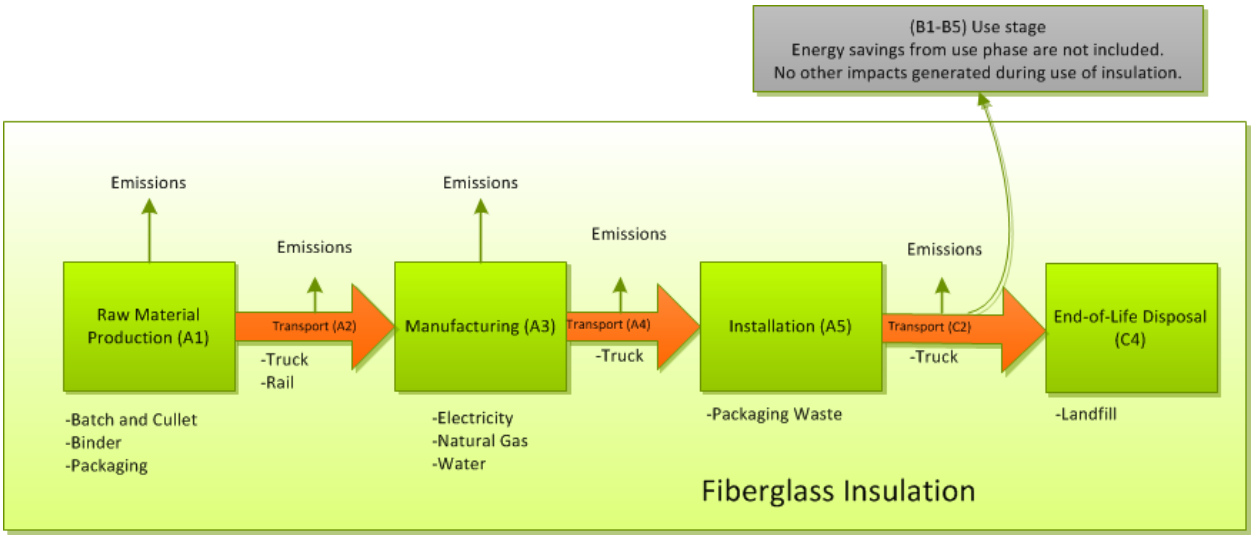
The functional unit is 1 m^2 of insulation material with a thickness that gives an average thermal resistance R_{SI}=1 m^2K/W and with a building service life of 75 years.

Table 6. Functional Unit

NAME	CERTIFIED R	MBI PLUS	UTILITY BLANKET	UNIT
Functional Unit	1 m^2 of insulation material with a thickness that gives an average thermal resistance R_{SI}=1 m^2K/W			
Mass	4.29E-01	4.14E-01	3.75E-01	kg
Thickness to achieve Functional Unit	4.24E-02	4.24E-02	3.30E-02	m

2.2. System Boundary

This EPD is cradle-to-installation with end-of-life. Details of the system boundaries may be found in the diagram below.



2.3. Estimates and Assumptions

Since insulation is a passive device, it is assumed that no utility source or maintenance is needed during the use stage.

2.4. Cut-off Criteria

This LCA is in compliance with the cutoff criteria specified in the PCR. Due to the long lifetime of equipment, capital goods and infrastructure flows were excluded as having a negligible impact on the conclusions of the LCA.

2.5. Data Sources

Primary manufacturing data was collected from the included manufacturing location listed in the Manufacturing section. Secondary data primarily references the ecoinvent 3.8 database.

2.6. Data Quality

Primary data was based on measured and calculated data from the Newark, Ohio Owens Corning plant, and reflects production of the included products between April 1, 2021 and March 31, 2022. It meets requirements for completeness along with temporal, geographical and technological representativeness. Background data was taken primarily from the ecoinvent 3.8 database, which is on the approved database list in the PCR. As much as reasonable, selected background datasets represent the situation in 2021 and 2022 and are no more than ten years old. In practice, older data have been used where more recent data were not available. In such cases the datasets were evalutated for reasonableness and deemed suitable for this LCA study given that technology advances have likely not occurred for these specific materials and processes.

2.7. Period under Review

Owens Corning manufacturing data reflects production of the included products between April 1, 2021 and March 31, 2022.

2.8. Allocation

Where it was not possible to avoid allocation, allocation was made based on product mass.

3. Life Cycle Assessment Scenarios

Table 7. Transport to the building site (A4)

NAME	CERTIFIED R	MBI PLUS	UTILITY BLANKET	UNIT
Fuel type	Low-sulfur diesel			
Liters of fuel	1.86E-03	1.80E-03	1.63E-03	l/100km
Vehicle type	Transport, freight, lorry >32 metric ton, EURO5 {RoW}| transport, freight, lorry >32 metric ton, EURO5			
Transport distance	1.15E+03	1.15E+03	1.15E+03	km
Capacity utilization (including empty runs, mass based	63			%
Gross density of products transported	1.01E+01	9.76E+00	1.14E+01	kg/m^3
Weight of products transported (if gross density not reported)	4.29E-01	4.14E-01	3.75E-01	kg
Volume of products transported (if gross density not reported)	4.24E-02	4.24E-02	3.30E-02	m^3
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	1	1	1	-

Table 8. Installation into the building (A5)

NAME	CERTIFIED R	MBI PLUS	UTILITY BLANKET	UNIT
Ancillary materials	0.00E+00	0.00E+00	0.00E+00	kg
Net freshwater consumption	0.00E+00	0.00E+00	0.00E+00	m^3
Other resources	0.00E+00	0.00E+00	0.00E+00	kg
Electricity consumption	0.00E+00	0.00E+00	0.00E+00	kWh
Other energy carriers	0.00E+00	0.00E+00	0.00E+00	MJ
Product loss per functional unit	0.00E+00	0.00E+00	0.00E+00	kg
Waste materials at the construction site before waste processing, generated by product installation	9.45E-03	1.06E-03	5.19E-03	kg
Output materials resulting from on-site waste processing	0.00E+00	0.00E+00	0.00E+00	kg
Biogenic carbon contained in packaging	0.00E+00	0.00E+00	0.00E+00	kg CO_2
Direct emissions to ambient air, soil and water	0.00E+00	0.00E+00	0.00E+00	kg
VOC content*	None detected	None detected	None detected	$\mu g/m^3$

*VOC content determined in accordance to "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources using Environmental Chambers – version 1.2." CA Specification 01350.

Table 9. Reference Service Life for Metal Building Insulation products

Reference Service Life	Value	Unit	Comment
RSL	75	years	
Declared product properties (at gate) and finishes, etc.	Not applicable		Insulation properties require installation.
Design application parameters	Install per instructions		
An assumed quality of work, when installed in accordance with manufacturer's instructions	Will meet R-value		Installer should install per manufacturer instructions
Outdoor environment	Not applicable		Indoor application
Indoor environment	Product should be kept dry		
Use conditions	Not applicable		Insulation is a passive product which is not used directly during life
Maintenance	None needed		Insulation does not need maintenance during its use

Table 10. End of Life Transport (C2) and Landfill Disposal (C4) of Insulation Products

End of Life (C2, C4)		CertifiedR MBI Newark	MBI Plus Newark	Utility Blanket Newark	Unit
Collection process (specified by type)	Collected separately	0.00E+00	0.00E+00	0.00E+00	kg
	Collected with mixed construction waste	4.29E-01	4.14E-01	3.75E-01	kg
Disposal (Landfill)	Product or material for final deposition	4.29E-01	4.14E-01	3.75E-01	kg
Transport to Disposal	Diesel Powered Truck	1.61E+02	1.61E+02	1.61E+02	km
Removals of biogenic carbon (excluding packaging)		0.00E+00	0.00E+00	0.00E+00	kg CO_2 eq

4. Life Cycle Assessment Results

Table 11. Description of the system boundary modules

	PRODUCT STAGE			CONSTRUCT-ION PROCESS STAGE		USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw material supply	Transport	Manufacturing	Transport from gate to site	Assembly/Install	Use	Maintenance	Repair	Replacement	Refurbishment	Building Operational Energy Use During Product Use	Building Operational Water Use During Product Use	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
EPD Type: Cradle to Installation with End of Life	X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	MND

MND – Module Not Declared

4.1. Life Cycle Impact Assessment Results

LCIA results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks.

These six impact categories are globally deemed mature enough to be included in Type III environmental declarations.

Table 12. North American Impact Assessment Results for 1 m² EcoTouch® Certified R Metal Building Insulation at R_{SI} = 1

NORTH AMERICA	A1 - C4	A1 - A3	A4	A5	C2	C4
GWP 100 [kg CO_2 eq][1]	2.19E+00	1.87E+00	3.58E-02	8.28E-03	5.01E-03	2.66E-01
ADP_{fossil} [MJ, LHV]	2.35E+01	2.29E+01	4.98E-01	4.99E-03	6.97E-02	6.04E-02
ODP [kg CFC-11 eq]	1.65E-07	1.54E-07	8.62E-09	7.82E-11	1.21E-09	5.51E-10
AP [kg SO_2 eq]	6.88E-03	6.70E-03	1.09E-04	2.65E-06	1.53E-05	5.97E-05
EP [kg N eq]	3.03E-03	2.42E-03	1.60E-05	5.17E-06	2.24E-06	5.84E-04
SFP [kg O_3 eq]	6.89E-02	6.51E-02	2.45E-03	6.04E-05	3.43E-04	8.66E-04
IPCC GWP 100a (2021) [kg CO_2e][2]	2.18E+00	1.87E+00	3.58E-02	8.21E-03	5.01E-03	2.61E-01

[GWP – Global Warming Potential, ADP_{fossil} – Abiotic Depletion Potential of Non-renewable (fossil) energy resources, ODP – Ozone Depletion Potential, AP – Acifdification Potential, EP – Eutrophication Potential, SFP – Smog Formation Potential,]

[1]The GWP 100 impacts from TRACI v2.1 (July 2012) are based on 100-year time horizon GWP factors provided by the IPCC 2007 Fourth Assessment Report (AR4).
[2]100-year time horizon GWP factors as provided by the Fifth Assessment Report (AR5) shall be used for conformance with ISO 21930, Section 7.3.

Table 13. North American Impact Assessment Results for 1 m² EcoTouch® MBI Plus Filler Blanket at R_{SI} = 1

NORTH AMERICA	A1 - C4	A1 - A3	A4	A5	C2	C4
GWP 100 [kg CO_2 eq][1]	2.11E+00	1.81E+00	3.46E-02	9.28E-03	4.84E-03	2.56E-01
ADP_{fossil} [MJ, LHV]	2.27E+01	2.21E+01	4.81E-01	5.60E-03	6.72E-02	5.83E-02
ODP [kg CFC-11 eq]	1.58E-07	1.48E-07	8.32E-09	8.77E-11	1.16E-09	5.32E-10
AP [kg SO_2 eq]	6.65E-03	6.47E-03	1.05E-04	2.96E-06	1.47E-05	5.77E-05
EP [kg N eq]	2.90E-03	2.31E-03	1.55E-05	5.83E-06	2.16E-06	5.64E-04
SFP [kg O_3 eq]	6.66E-02	6.30E-02	2.36E-03	6.76E-05	3.31E-04	8.35E-04
IPCC GWP 100a (2021) [kg CO_2e][2]	2.11E+00	1.81E+00	3.46E-02	9.19E-03	4.84E-03	2.52E-01

[GWP – Global Warming Potential, ADP_{fossil} – Abiotic Depletion Potential of Non-renewable (fossil) energy resources, ODP – Ozone Depletion Potential, AP – Acifdification Potential, EP – Eutrophication Potential, SFP – Smog Formation Potential,]

[1]The GWP 100 impacts from TRACI v2.1 (July 2012) are based on 100-year time horizon GWP factors provided by the IPCC 2007 Fourth Assessment Report (AR4).
[2]100-year time horizon GWP factors as provided by the Fifth Assessment Report (AR5) shall be used for conformance with ISO 21930, Section 7.3.

Table 14. North American Impact Assessment Results for 1 m² EcoTouch® Utility Blanket Metal Building Insulation at R_{SI} = 1

NORTH AMERICA	A1 - C4	A1 - A3	A4	A5	C2	C4
GWP 100 [kg CO_2 eq]	1.92E+00	1.65E+00	3.14E-02	6.53E-03	4.39E-03	2.33E-01
ADP_{fossil} [MJ, LHV]	2.06E+01	2.01E+01	4.36E-01	3.92E-03	6.10E-02	5.29E-02
ODP [kg CFC-11 eq]	1.47E-07	1.38E-07	7.55E-09	6.14E-11	1.06E-09	4.83E-10
AP [kg SO_2 eq]	6.04E-03	5.88E-03	9.55E-05	2.09E-06	1.34E-05	5.23E-05
EP [kg N eq]	2.59E-03	2.06E-03	1.40E-05	3.86E-06	1.96E-06	5.12E-04
SFP [kg O_3 eq]	6.08E-02	5.75E-02	2.15E-03	4.86E-05	3.00E-04	7.58E-04
IPCC GWP 100a (2021) [kg CO_2e]	1.91E+00	1.64E+00	3.14E-02	6.48E-03	4.39E-03	2.28E-01

[GWP – Global Warming Potential, ADP_{fossil} – Abiotic Depletion Potential of Non-renewable (fossil) energy resources, ODP – Ozone Depletion Potential, AP – Acifdification Potential, EP – Eutrophication Potential, SFP – Smog Formation Potential,]

[1]The GWP 100 impacts from TRACI v2.1 (July 2012) are based on 100-year time horizon GWP factors provided by the IPCC 2007 Fourth Assessment Report (AR4).
[2]100-year time horizon GWP factors as provided by the Fifth Assessment Report (AR5) shall be used for conformance with ISO 21930, Section 7.3.

4.2. Life Cycle Inventory Results

Table 15. Resource Use Indicator Results for 1 m² EcoTouch® Certified R Metal Building Insulation at R_{SI} = 1

Resource Use	A1 – A3	A4	A5	C2	C4
RPR_E [MJ, LHV]	1.44E+00	6.45E-04	8.35E-05	9.03E-05	5.16E-03
RPR_M [MJ, LHV]	5.83E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$NRPR_E$ [MJ, LHV]	3.07E+01	4.99E-01	5.09E-03	6.97E-02	6.77E-02
$NRPR_M$ [MJ, LHV]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SM [kg]	2.86E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW [m^3]	1.05E-02	1.01E-05	7.01E-06	1.41E-06	2.47E-05

[RPR_E – Renewable primary energy used as energy carrier (fuel), RPR_M – Renewable primary resources with energy content used as material, $NRPR_E$ – Non-renewable primary energy used as energy carrier (fuel), $NRPR_M$ – Non-renewable primary resources with energy content used as material, SM – Secondary materials, RSF – Renewable secondary fuels, NRSF – Non-renewable secondary fuels, RE – Recovered energy, FW – Use of net fresh water resources]

Table 16. Waste and Output Flow Indicator Results for 1 m² EcoTouch® Certified R Metal Building Insulation at R_{SI} = 1

Outputs & Wastes	A1 – A3	A4	A5	C2	C4
HWD [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD [kg]	9.73E-02	0.00E+00	5.17E-03	0.00E+00	4.29E-01
HLRW [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ILLRW [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR [kg]	0.00E+00	0.00E+00	4.27E-03	0.00E+00	0.00E+00
MER [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

[HWD – Hazardous waste disposed, NHWD – Non-hazardous waste disposed, HLRW – High-level radioactive waste, conditioned, to final repository, ILLRW – Intermediate- and low-level radioactive waste, conditioned, to final repository, CRU – Components for re-use, R – Materials for recycling, MER – Materials for energy recovery, EE – Exported energy]

Table 17. Resource Use Indicator Results for 1 EcoTouch® MBI Plus Filler Blanket at R_{SI} = 1

Resource Use	A1 - A3	A4	A5	C2	C4
RPR_E [MJ, LHV]	1.44E+00	6.23E-04	9.37E-05	8.71E-05	4.98E-03
RPR_M [MJ, LHV]	9.27E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$NRPR_E$ [MJ, LHV]	2.97E+01	4.81E-01	5.71E-03	6.73E-02	6.54E-02
$NRPR_M$ [MJ, LHV]	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SM [kg]	2.76E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW [m^3]	1.02E-02	9.74E-06	7.82E-06	1.36E-06	2.38E-05

[RPR_E – Renewable primary energy used as energy carrier (fuel), RPR_M – Renewable primary resources with energy content used as material, $NRPR_E$ – Non-renewable primary energy used as energy carrier (fuel), $NRPR_M$ – Non-renewable primary resources with energy content used as material, SM – Secondary materials, RSF – Renewable secondary fuels, NRSF – Non-renewable secondary fuels, RE – Recovered energy, FW – Use of net fresh water resources]

Table 18. Waste and Output Flow Indicator Results for 1 EcoTouch® MBI Plus Filler Blanket at R_{SI} = 1

OUTPUTS & WASTES	A1 - A3	A4	A5	C2	C4
HWD [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD [kg]	9.39E-02	0.00E+00	5.78E-03	0.00E+00	4.14E-01
HLRW [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ILLRW [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR [kg]	0.00E+00	0.00E+00	4.83E-03	0.00E+00	0.00E+00
MER [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

[HWD – Hazardous waste disposed, NHWD – Non-hazardous waste disposed, HLRW – High-level radioactive waste, conditioned, to final repository, ILLRW – Intermediate- and low-level radioactive waste, conditioned, to final repository, CRU – Components for re-use, R – Materials for recycling, MER – Materials for energy recovery, EE – Exported energy]

Table 19. Resource Use Indicator Results for 1 m² EcoTouch® Utility Blanket Metal Building Insulation at R_{SI} = 1

RESOURCE USE	A1 - A3	A4	A5	C2	C4
RPR_E [MJ, LHV]	1.18E+00	5.65E-04	6.51E-05	7.90E-05	4.52E-03
RPR_M [MJ, LHV]	8.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00
$NRPR_E$ [MJ, LHV]	2.69E+01	4.37E-01	4.00E-03	6.11E-02	5.93E-02
$NRPR_M$ [MJ, LHV]	1.06E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
SM [kg]	2.50E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NRSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
RE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FW [m^3]	9.05E-03	8.84E-06	5.76E-06	1.24E-06	2.16E-05

[RPR_E – Renewable primary energy used as energy carrier (fuel), RPR_M – Renewable primary resources with energy content used as material, $NRPR_E$ – Non-renewable primary energy used as energy carrier (fuel), $NRPR_M$ – Non-renewable primary resources with energy content used as material, SM – Secondary materials, RSF – Renewable secondary fuels, NRSF – Non-renewable secondary fuels, RE – Recovered energy, FW – Use of net fresh water resources]

Table 20. Waste and Output Flow Indicator Results for 1 m² EcoTouch® Utility Blanket Metal Building Insulation at R_{SI} = 1

OUTPUTS & WASTES	A1 - A3	A4	A5	C2	C4
HWD [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
NHWD [kg]	8.52E-02	0.00E+00	4.18E-03	0.00E+00	3.75E-01
HLRW [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
ILLRW [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MR [kg]	0.00E+00	0.00E+00	3.16E-03	0.00E+00	0.00E+00
MER [kg]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
EE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

[HWD – Hazardous waste disposed, NHWD – Non-hazardous waste disposed, HLRW – High-level radioactive waste, conditioned, to final repository, ILLRW – Intermediate- and low-level radioactive waste, conditioned, to final repository, CRU – Components for re-use, R – Materials for recycling, MER – Materials for energy recovery, EE – Exported energy]

Table 21. Carbon Emissions and Removal Indicator Results for 1 m² EcoTouch® Certified R Metal Building Insulation, EcoTouch® Utility Blanket Metal Building Insulation, and EcoTouch® MBI Plus Filler Blanket at R_{SI} = 1

CERTIFIEDR NEWARK	A1 - A3	A4	A5	C2	C4
BCRP [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE [kg CO_2]	5.38E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
MBI PLUS NEWARK	**A3**	**A4**	**A5**	**C2**	**C4**
BCRP [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE [kg CO_2]	5.20E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
UTILITY BLANKET NEWARK	**A3**	**A4**	**A5**	**C2**	**C4**
BCRP [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEP [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCRK [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEK [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
BCEW [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCE [kg CO_2]	9.74E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CCR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
CWNR [kg CO_2]	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

[BCRP – Biogenic Carbon Removal from Product, BCEP – Biogenic Carbon Emission from Product, BCRK – Biogenic Carbon Removal from Packaging, BCEK – Biogenic Carbon Emission from Packaging, BCEW – Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes, CCE – Calcination Carbon Emissions, CCR – Calcination Carbon Removals, CWNR – Carbon Emissions from Combustion of Waste from Non-Renewable Sources used in Production Processes]

4.3. Calculating Impact Category Results for Products Other Than the Reference Version

The environmental impact assessment results have been calculated for a reference product for EcoTouch® Certified R Metal Building Insulation (R-13) and EcoTouch® Insulation for MBI Plus Filler Blanket (R-13). EcoTouch® Utility Blanket Metal Building Insulation is only manufactured in an R-8 version at the Newark, Ohio plant.

Functional Unit Scaling Factors for Metal Building Insulation products

Functional Unit scaling factors have been provided in Table 22 to assist in understanding the impacts for the individual products being produced at Newark, Ohio at the functional unit of 1 m^2 of product at R_{SI} = 1. The scaling factor can be multiplied by the results for any of the impact categories to convert the results to the chosen product at the functional unit of 1 m^2 of product at R_{SI} = 1.

Product Scaling Factors for Metal Building Insulation products

The At Listed R-Value scaling factors in Table 22 below can be multiplied by the results for any of the impact categories to convert the results from the reported functional unit to 1 m^2 of the chosen product and thickness.

Sample Functional Unit scaling calculation using EcoTouch® Certified R

Scaling Factors[a]				Impact Category Data for Reference Product[b]			Result Calculated for R-30 EcoTouch® Certified R at R_{SI} = 1	
Product	R-value	Functional Unit Scaling Factor 1m^2 at R_{SI} = 1		North America	A1 - C4		North America	A1 - C4
EcoTouch® Certified R	R-30	**1.12**	X	GWP 100 [kg CO2 eq]	**2.19E+00**	=	GWP 100 [kg CO2 eq]	**2.45E+00**
				ADP_{fossil} [MJ, LHV]	**2.35E+01**		ADP_{fossil} [MJ, LHV]	**2.63E+01**
				ODP [kg CFC-11 eq]	**1.65E-07**		ODP [kg CFC-11 eq]	**1.85E-07**
				AP [kg SO2 eq]	**6.88E-03**		AP [kg SO2 eq]	**7.71E-03**
				EP [kg N eq]	**3.03E-03**		EP [kg N eq]	**3.39E-03**
				SFP [kg O3 eq]	**6.89E-02**		SFP [kg O3 eq]	**7.72E-02**

Notes:

a) **Scaling Factor** found in Table 22
b) **Environmental Impact Category Data for Reference Product** found in Table 12

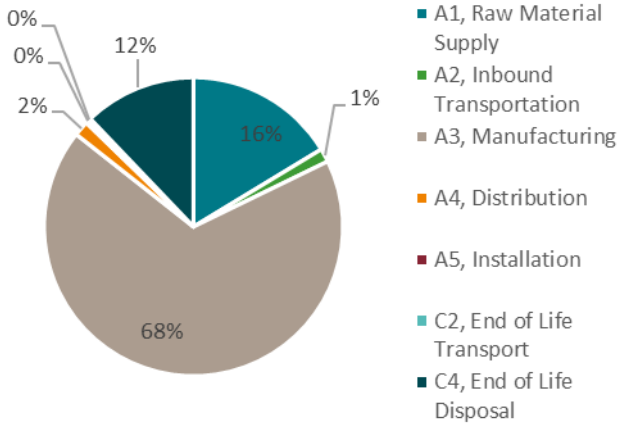
Table 22. Functional Unit Scaling Factors for EcoTouch® Certified R, EcoTouch® MBI Plus Filler Blanket, and EcoTouch® Utility Blanket

PRODUCT	R-VALUE	SCALING FACTOR 1 M^2 AT R_{SI} = 1	SCALING FACTOR FOR 1 M^2 AT LISTED R-VALUE
EcoTouch® Certified R	R-10	1.03	2.00
	R-11	1.10	2.24
	R-13	1.00	2.58
	R-16	0.97	3.27
	R-19	1.07	3.95
	R-21	1.12	4.26
	R-25	1.04	5.39
	R-30	1.12	6.94
EcoTouch® MBI Plus Filler Blanket	R-10	1.10	1.89
	R-11	1.11	2.15
	R-13	1.00	2.40
	R-16	1.03	3.30
	R-19	1.03	3.60
	R-25	1.04	5.41
	R-30	1.10	6.62
EcoTouch® Utility Blanket	R-8	1.00	1.73

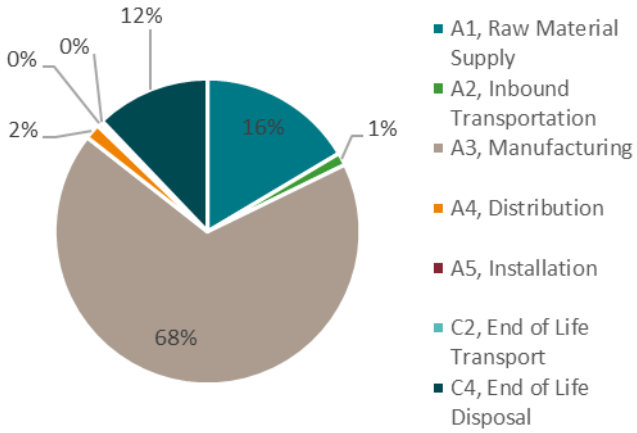
5. LCA Interpretation

The manufacturing stage drives almost all of the environmental impact categories, although eutrophication potential is also highly influenced by the raw materials stage and end of life disposal. Manufacturing impacts are primarily driven by energy use (electricity and natural gas) for glass melting.

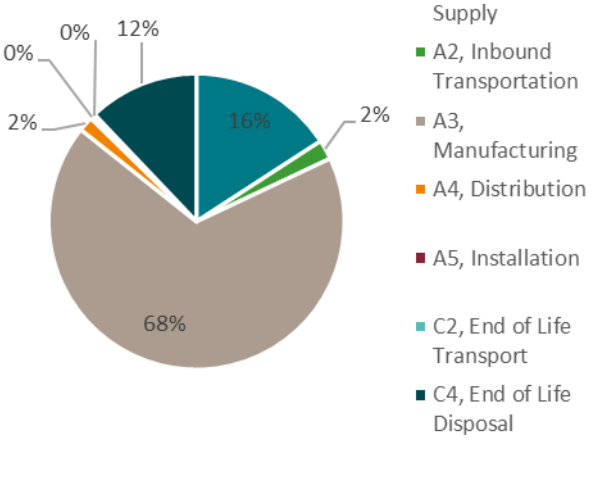
Global Warming Potential (kg CO_2 eq) by Stage
EcoTouch® Certified R Metal Building Insulation



Global Warming Potential (kg CO_2 eq) by Stage
EcoTouch® Insulation for MBI Plus



Global Warming Potential (kg CO_2 eq) by Stage
EcoTouch® Utility Blanket Metal Building Insulation



6. Additional Environmental Information

6.1. Environment and Health During Manufacturing

Owens Corning manufacturing facilities of EcoTouch® Metal Building Insulation products maintain quality management systems.

6.2. Environment and Health During Installation

This product is considered an article. 29 CFR 1910.1200(c) definition of an article is as follows: "Article" means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees.

Manufactured articles which meet the definition of the Canadian Hazardous Products Act (any article that is formed to a specific shape or design during manufacture, the intended use of which when in that form is dependent in whole or in part on its shape or design, and that, when being installed, if the intended use of the article requires it to be installed, and under normal conditions of use, will not release or otherwise cause an individual to be exposed to a hazardous product) are not regulated by the Canadian Hazardous Products Regulation SOR/2015-17.

6.3. Extraordinary Effects

No extraordinary effects or environmental impacts are expected due to destruction of the product by fire, water or mechanical means.

6.4. Delayed Emissions

No delayed emissions are expected from this product.

6.5. Environmental Activities and Certifications

Certifications and Sustainable Features

- Certified by SCS Global Services to contain an average 65% recycled glass content, 18% pre-consumer and 47% post-consumer.
- GREENGUARD Gold: Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage.

6.6. Further Information

Additional information may be found at www.owenscorning.com.

7. References

Product Category Rules for Building-Related Products and Services – Part A: Life Cycle Assessment Calculation Rules and Report Requirements, Standard 10010, Version 3.2, UL Environment, December 12, 2018.

Product Category Rules (PCR) Guidance for Building-Related Products and Services - Part B: Building Envelope Thermal Insulation EPD Requirements, UL 10010-1 Version 2.0, UL Environment, April 10, 2018.

ISO 14025: 2006, Environmental labels and declarations — Type III environmental declarations — Principles and procedures

ISO 14040: 2006, Environmental management – Life cycle assessment – Principles and framework

ISO 14044:2006, Environmental management – Life cycle assessment – Requirements and guidelines

ISO 14046:2013, Environmental management- Water footprint- Principles, requirements and guidelines

ISO 21930: 2017, Sustainability in building construction -- Environmental declaration of building products

EN 15804, Sustainability of construction works, Environmental product declarations, Core rules for the product category of construction products

ASTM C665-17, Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

ASTM C177, Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded Hot-Plate Apparatus

ASTM C167, Standard Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations

ASTM C518, Standard Test Method for Stead-State Thermal Transmission Properties by Means of the heat Flow Meter Apparatus

ASTM E136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750C

ASTM C1104/C1104M, Standard Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation

ASTM C1338, Standard Test Method for Determining Fungi Resistance of Insulation Materials and Facings

ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials

ASTM C1304, Standard Test Method for Assessing the Odor Emission of Thermal Insulation Materials

UL723, Standard for Test for Surface Burning Characteristics of Building Materials

CAN/ULC S102, Standard Method for Test of Surface Burning Characteristics of Building Materials and Assemblies

CAN/ULC S114, Standard Method of Test for Determination of Non-Combustibility in Building Materials

NAIMA 202-96® (Rev.2000) STANDARD, For Flexible Fiber Glass Insulation to be Laminated for Use in Metal Buildings