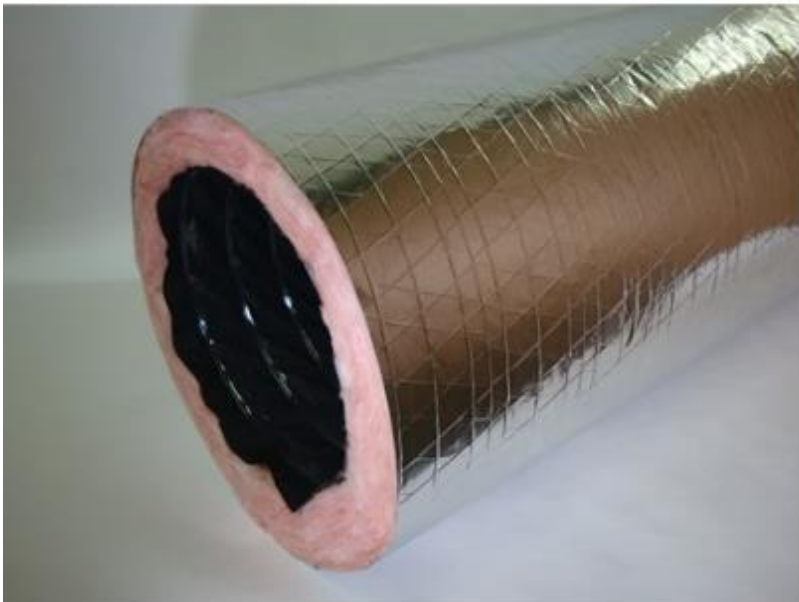


ENVIRONMENTAL PRODUCT DECLARATION

ECO TOUCH[®] INSULATION FOR FLEXIBLE DUCT



EcoTouch[®] Insulation for Flexible Duct



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




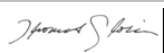
ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct

According to ISO 14025,
EN 15804, and ISO 21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Environment 333 Pfingsten Road Northbrook, IL 60611 https://www.ul.com/ https://spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	General Program Instructions v.2.4 July 2018
MANUFACTURER NAME AND ADDRESS	Owens Corning, One Owens Corning Parkway, Toledo, OH, USA
DECLARATION NUMBER	4788986648.103.1
DECLARED PRODUCT & FUNCTIONAL UNIT OR DECLARED UNIT	EcoTouch® Insulation for Flexible Duct; 1 m ² insulation at R _{SI} =1
REFERENCE PCR AND VERSION NUMBER	Part B: Mechanical, Specialty, Thermal, and Acoustic Insulation Product EPD Requirements, UL 10010-03, version 1.0
DESCRIPTION OF PRODUCT APPLICATION/USE	EcoTouch® Insulation for Flexible Duct is insulation material designed for use by manufacturers of flexible air ducts.
PRODUCT RSL DESCRIPTION (IF APPL.)	75 years
MARKETS OF APPLICABILITY	Building Applications
DATE OF ISSUE	January 1, 2020
PERIOD OF VALIDITY	5 Years
EPD TYPE	Product-Specific
RANGE OF DATASET VARIABILITY	N/A
EPD SCOPE	Cradle to gate with options (A4, A5, C2, C4)
YEAR(S) OF REPORTED PRIMARY DATA	2014
LCA SOFTWARE & VERSION NUMBER	SimaPro 9.0.0.30
LCI DATABASE(S) & VERSION NUMBER	ecoinvent 3.5
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1 v1.05; CML I-A baseline v4.7; Cumulative Energy Demand (LHV) v1.00

This PCR review was conducted by:	UL Environment
	PCR Review Panel
	epd@ulenvironment.com
This declaration was independently verified in accordance with ISO 14025: 2006. <input type="checkbox"/> INTERNAL <input checked="" type="checkbox"/> EXTERNAL	
	Grant R. Martin, UL Environment
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.

ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
EN 15804 and ISO 21930:2017

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 locations:

Fairburn Plant Fairburn, GA 30123
Waxahachie Plant Waxahachie, TX 75165

All varieties of product described are not produced at all locations listed.

1.2. Product Description

Product Identification

Owens Corning® EcoTouch® Insulation for Flexible Duct is a lightweight, flexible, resilient thermal and acoustical insulation made of inorganic fibers bonded with a thermosetting resin. It reduces equipment and air movement noise and has excellent thermal performance.

Product Specification

Table 1. Physical Properties of EcoTouch® Insulation for Flexible Duct

PROPERTY	TEST METHOD	VALUE
Thermal conductivity (k) (Btu • in/ft ² • hr • °F) @ 75°F mean temperature	ASTM C177	0.29
Fire hazard classification ¹	UL723 ASTM E 84	Flame spread index ≤25 Smoke developed index ≤50
Mold resistance	UL 181	Meets requirements
Noise reduction coefficient	ASTM C423 Mounting A	0.65

¹The surface burning characteristics of this product have been determined in accordance with UL 723 (ASTM E84). This 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 five rating.



ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct

According to ISO 14025,
EN 15804 and ISO 21930:2017

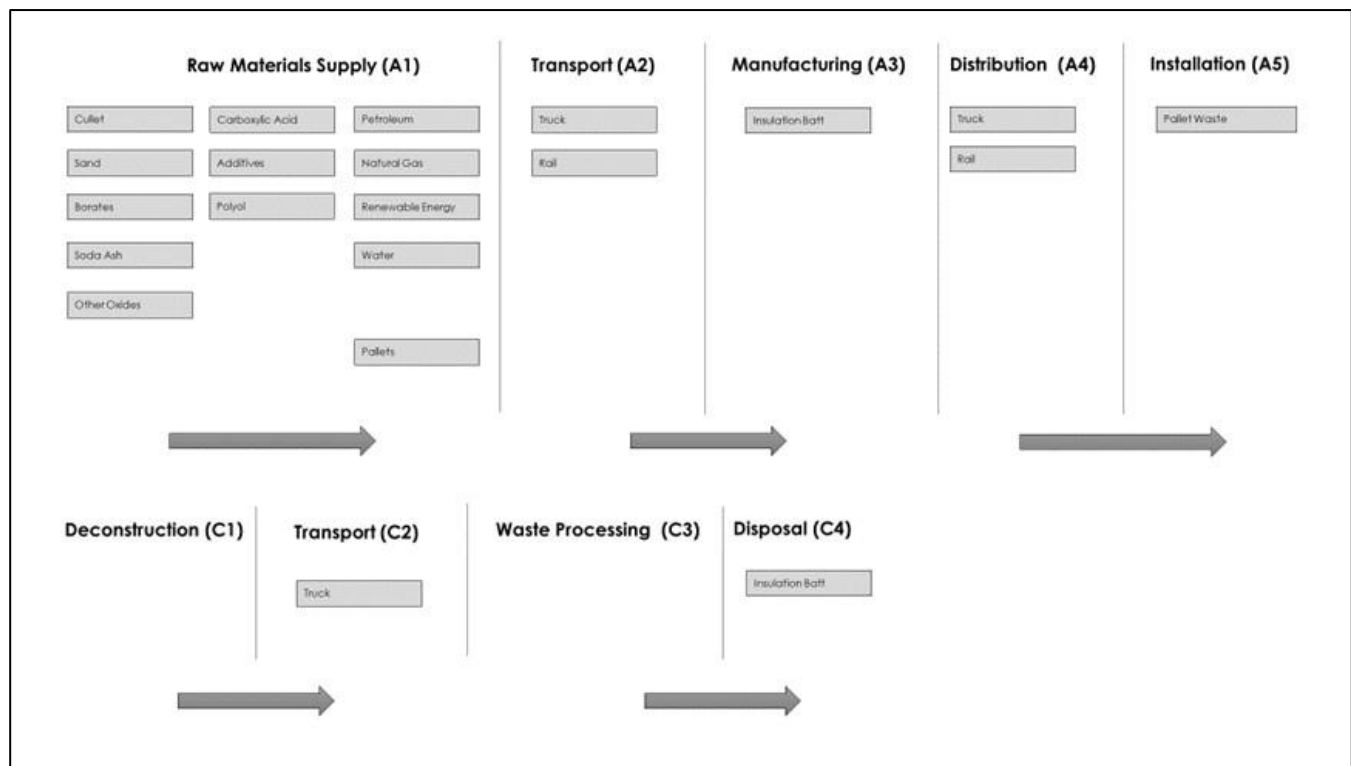
Availability

Table 2. Availability of EcoTouch® Insulation for Flexible Duct

DIMENSIONS	R-VALUE	OUT OF PACKAGE	MIN. INSTALLED USE	INSTALLED K-VALUE
Thickness (inches)	R 4.2	1 1/4"	1 1/8"	0.26
	R 6	2"	1 5/8"	0.27
	R 8	2 3/8"	2 1/4"	0.28
	R 13 ¹	4"	3 3/4"	0.28
Standard widths	Available for each duct size by R value			
Length (feet)	R 4.2	300' (2 x 150)'		
	R 6	250' (2 x 125)'		
	R 8	200' (2 x 100)'		
	R 13 ¹	125'		
Packaging	Compression packaged			

¹To achieve R13, use two layers of R6

Flow Diagram





Product Average

The results of this declaration represent an average performance for the listed products and manufacturing locations. 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

EcoTouch® Insulation for Flexible Duct is the insulation material designed specifically for use by manufacturers of flexible air ducts. Its resiliency allows it to be shaped around small diameter cores smoothly and without buckling.

EcoTouch® Insulation for Flexible Duct is intended to be wrapped around an inner core and held in place by an external jacketing material. Best thermal performance at all air velocities is provided by an impervious inner air barrier film.

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, pallets 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® Insulation for Flexible Duct complies with the property requirements of ASTM C553, Type I.

1.6. Properties of Declared Product as Delivered

Owens Corning recommends that EcoTouch® Insulation for Flexible Duct be held in compressed roll form for no more than six (6) months from production date to achieve optimal performance

While EcoTouch® Insulation for Flexible Duct carries the UL recognized component label for air ducts, this does not guarantee that the finished flexible duct composite product will meet UL 181 air duct material requirements for such a product. EcoTouch® Insulation for Flexible Duct is a component of a product, and UL 181 measures the performance of the complete assembly

To meet thermal and performance properties of the finished duct, Owens Corning recommends that the ducts be packaged in a length compression less than a 12:1 ratio.





EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
EN 15804 and ISO 21930:2017

1.7. Material Composition

EcoTouch® Insulation for Flexible Duct consists of two major components, the glass fiber and the binder system. The glass fiber is made from various inorganic materials, which are referred to as batch chemicals. The binder system consists of organic materials.

Table 3. Material Content for EcoTouch® Insulation for Flexible Duct

MATERIALS	FUNCTION	QUANTITY (% BY MASS)
Cullet	Glass Batch	25-75%
Sand	Glass Batch	5-50%
Borates	Glass Batch	10-30%
Soda Ash	Glass Batch	<15%
Silicates	Glass Batch	<10%
Oxides	Glass Batch	<1%
Carboxylic Acid	Binder	<5%
Polyol	Binder	<5%
Additives	Binder	<5%

1.8. Manufacturing

Owens Corning North American Insulation manufacturing locations can be found across the United States.

Fairburn Plant ^a Fairburn, GA 30123
Waxahachie Plant Waxahachie, TX 75165

^aManufacturing location was not included in product LCA.



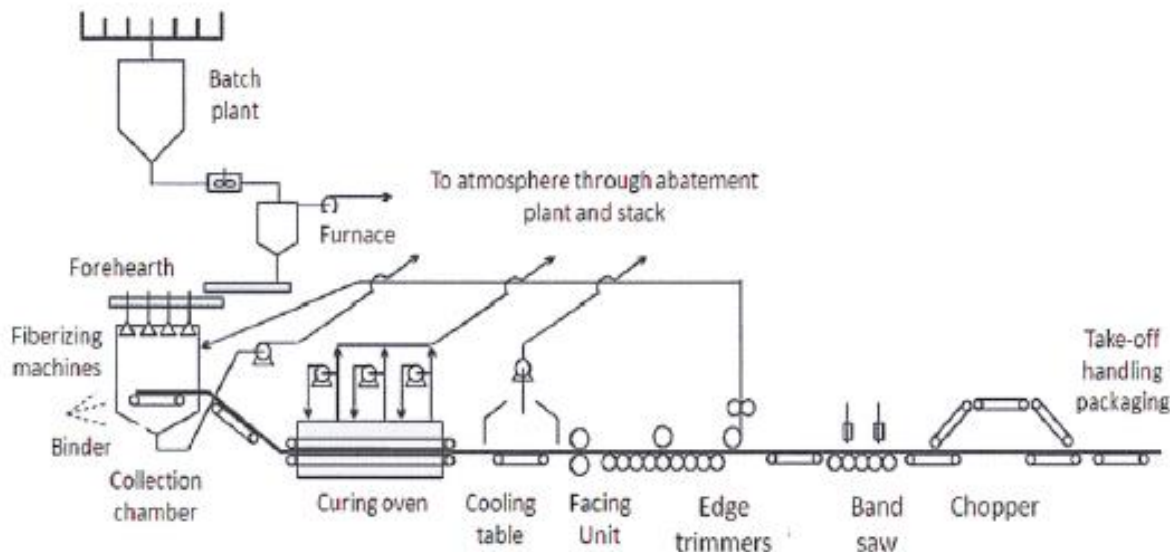
ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
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The diagram above is representative for the manufacturing of bonded fiberglass insulation product. There are no significant process differences between locations.

1.9. Packaging

Packaging in the form of pallets was included in the analysis as a part of the overhead calculation. The weight of the other packaging materials is non-significant compared to the weight of the final product. As such, it has been excluded to reduce data collection efforts.

1.10. Transportation

The outbound transportation or distribution includes the transportation of the final product to fabrication customers by a combination of diesel semi-truck and rail. The weighted average distance from the manufacturing site to the customer is 1191 km by truck and 2474 km by rail.

1.11. Product Installation

EcoTouch® Insulation for Flexible Duct is intended to be wrapped around an inner core and held in place by an external jacketing material. The thermal performance is achieved at all air velocities with both an interior and exterior air barrier film. This film also acts to keep the insulation out of the air stream, reducing the possibility of air friction loss. For installation instructions, please consult the manufacturer of the flexible duct.

For additional ASTM product specification and other physical and technical information please refer to <https://www.owenscorning.com/insulation/commercial/air-distribution>

1.12. Use

Insulation is a passive device that requires no extra utilities 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

EcoTouch® Insulation for Flexible Duct can be reused if remains clean and dry. Recycling programs do not currently exist for fiberglass insulation. Small amounts of organic material are available from the binder chemicals and could be recovered for energy.

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 as the average distance to landfill.

2. Life Cycle Assessment Background Information

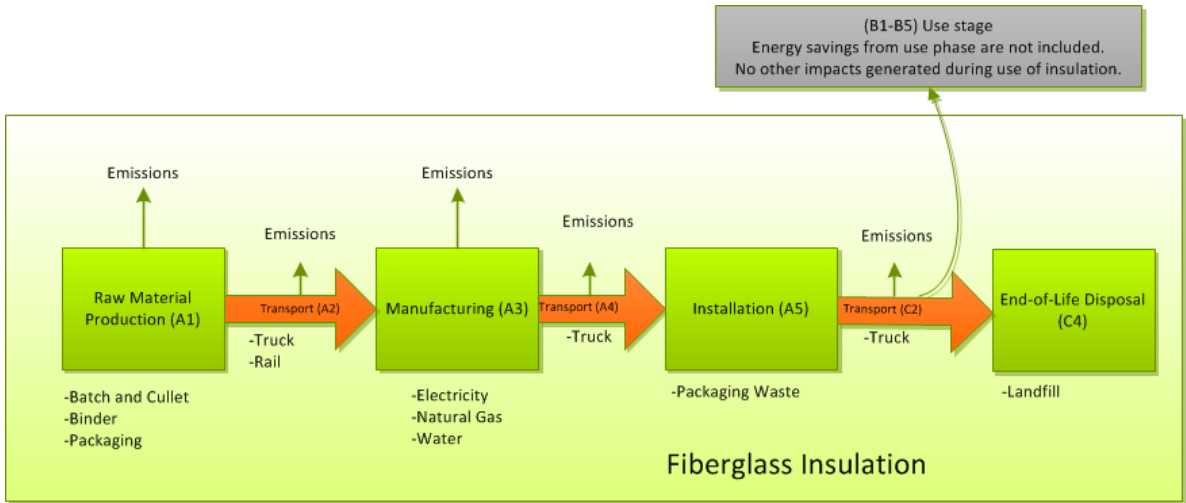
2.1. Functional Unit

Table 4. Functional Unit

NAME	VALUE	UNIT
Functional Unit	1 m ² of insulation material with a thickness that gives an average thermal resistance R _{SI} =1 m ² K/W	
Mass	3.78E-01	kg
Thickness to achieve Functional Unit	4.10E-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.

Packaging in the form of pallets was included in the analysis as a part of the overhead calculation. The weight of the packaging materials is not significant compared to the weight of the final product, and previous studies of insulation products have shown the impact from the plastic packaging is not significant to the overall result. As such, it has been excluded to reduce data collection efforts.

2.5. Data Sources

Primary manufacturing data was collected from the included manufacturing locations listed in the Manufacturing section. Secondary data primarily references the ecoinvent 3.5 database and the US-LCI database.

2.6. Data Quality

Primary data was based on measured and calculated data from the Owens Corning Waxahachie plant which produced most of the product in calendar year 2014. It meets requirements for completeness along with temporal, geographical and technological representativeness. Background data was taken from the ecoinvent and US-LCI databases which are on the approved database list in the PCR.

2.7. Period under Review

Owens Corning manufacturing data is for calendar year 2014. Ecoinvent datasets were valid through 2018.

2.8. Allocation

Where it was not possible to avoid allocation, allocation was made based on production machine hours. Due to the variety of products produced at these plants, this method of allocation was deemed more appropriate by the plant engineers than allocation by product mass which is suggested by the PCR.

ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
EN 15804 and ISO 21930:2017

3. Life Cycle Assessment Scenarios

For part of the transport to the building site, some products included truck and rail components as noted in Table 5.

Table 5. Transport to the building site (A4)

NAME	VALUE	UNIT
Fuel type	Low-sulfur diesel	
Liters of fuel	1.69E-03 [4.77E-04] ^R	l/100km
Vehicle type	EURO3, 16-32 metric ton lorry [US diesel freight train] ^R	
Transport distance	1.19E+03 [2.47E+03] ^R	km
Capacity utilization (including empty runs, mass based)	50	%
Gross density of products transported	9.24E+00	kg/m ³
Weight of products transported (if gross density not reported)	3.78E-01	kg
Volume of products transported (if gross density not reported)	4.09E-02	m ³
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	1	-

^R[Rail component of transport]

Table 6. Installation into the building (A5)

NAME	VALUE	UNIT
Ancillary materials	0.00E+00	kg
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	0.00E+00	m ³
Other resources	0.00E+00	kg
Electricity consumption	0.00E+00	kWh
Other energy carriers	0.00E+00	MJ
Product loss per functional unit	0.00E+00	kg
Waste materials at the construction site before waste processing, generated by product installation	1.09E-05	kg
Output materials resulting from on-site waste processing (specified by route; e.g. for recycling, energy recovery and/or disposal)	0.00E+00	kg
Biogenic carbon contained in packaging	0.00E+00	kg CO ₂
Direct emissions to ambient air, soil and water	0.00E+00	kg
VOC content	None detected	µg/m ³



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EcoTouch® Insulation for Flexible Duct

According to ISO 14025,
EN 15804 and ISO 21930:2017

Table 7. Reference Service Life

NAME	VALUE	UNIT
RSL	75	years
Declared product properties (at the gate) and finishes, etc.	Insulation properties require installation into a building	
Design application parameters (if instructed by the manufacturer), including references to the appropriate practices and application codes)	Install per product instructions	
An assumed quality of work, when installed in accordance with the manufacturer's instructions	Will meet R-value. Installer should install per manufacturer instructions	
Outdoor environment, (if relevant for outdoor applications), e.g. weathering, pollutants, UV and wind exposure, building orientation, shading, temperature	Not applicable – indoor application	
Indoor environment, (if relevant for indoor applications), e.g. temperature, moisture, chemical exposure)	Product should be kept dry	
Use conditions, e.g. frequency of use, mechanical exposure.	Insulation is a passive product which is not used directly	
Maintenance, e.g. required frequency, type and quality of replacement components	None needed	

Table 8. End of life (C2)

NAME		VALUE	UNIT
Although reuse and recycling of fiberglass insulation at its end of life are possible, there are no formal programs for collection and transport. It is assumed that all product is sent to landfill at end of life.			
Collection process (specified by type)	Collected separately	0.00E+00	kg
	Collected with mixed construction waste	3.78E-01	kg
Recovery (specified by type)	Reuse	0.00E+00	kg
	Recycling	0.00E+00	kg
	Landfill	0.00E+00	kg
	Incineration	0.00E+00	kg
	Incineration with energy recovery	0.00E+00	kg
	Energy conversion efficiency rate	0.00E+00	
Disposal (specified by type)	Product or material for final deposition	0.00E+00	kg
Removals of biogenic carbon (excluding packaging)		0.00E+00	kg CO ₂



ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
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Table 9. End of life (C4)

NAME		VALUE	UNIT
Although reuse and recycling of fiberglass insulation at its end of life are possible, there are no formal programs for collection and transport. It is assumed that all product is sent to landfill at end of life.			
Collection process (specified by type)	Collected separately	0.00E+00	kg
	Collected with mixed construction waste	0.00E+00	kg
Recovery (specified by type)	Reuse	0.00E+00	kg
	Recycling	0.00E+00	kg
	Landfill	0.00E+00	kg
	Incineration	0.00E+00	kg
	Incineration with energy recovery	0.00E+00	kg
	Energy conversion efficiency rate	0.00E+00	
Disposal (specified by type)	Product or material for final deposition	3.78E-01	kg
Removals of biogenic carbon (excluding packaging)		0.00E+00	kg CO ₂

4. Life Cycle Assessment Results

Table 10. Description of the system boundary modules

	PRODUCT STAGE			CONSTRUCTION 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	X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	MND	X	MND	X	MND

MND – Module Not Declared



ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
EN 15804 and ISO 21930:2017

4.1. Life Cycle Impact Assessment Results

Table 11. North American Impact Assessment Results for 1 m² EcoTouch® Insulation for Flexible Duct at R_{SI} = 1

TRACI v2.1	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
GWP 100 [kg CO ₂ eq]	8.91E-01	1.27E-01	5.06E-05	MND	MND	1.00E-02	MND	2.84E-03
ODP [kg CFC-11 eq]	5.87E-08	2.89E-08	4.75E-12	MND	MND	2.48E-09	MND	1.07E-09
AP [kg SO ₂ eq]	2.61E-03	9.89E-04	5.23E-07	MND	MND	6.25E-05	MND	2.06E-05
EP [kg N eq]	4.22E-03	2.01E-04	1.09E-06	MND	MND	1.25E-05	MND	3.13E-06
POCP [kg O ₃ eq]	3.04E-02	2.78E-02	1.62E-05	MND	MND	1.69E-03	MND	5.81E-04
ADP _{fossil} [MJ, LHV]	1.17E+00	2.60E-01	6.33E-05	MND	MND	2.23E-02	MND	1.03E-02

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

Table 12. EU Impact Assessment Results for 1 m² EcoTouch® Insulation for Flexible Duct at R_{SI} = 1

CML v4.7	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
GWP 100 [kg CO ₂ eq]	9.05E-01	1.28E-01	4.94E-05	MND	MND	1.01E-02	MND	2.88E-03
ODP [kg CFC-11 eq]	4.52E-08	2.17E-08	3.83E-12	MND	MND	1.86E-09	MND	7.98E-10
AP [kg SO ₂ eq]	2.57E-03	7.99E-04	3.99E-07	MND	MND	5.14E-05	MND	1.66E-05
EP [kg PO ₄ ⁻³ eq]	1.93E-03	2.03E-04	4.54E-07	MND	MND	1.23E-05	MND	3.78E-06
POCP [kg ethene eq]	1.60E-04	2.76E-05	1.40E-08	MND	MND	1.87E-06	MND	6.23E-07
ADP _{element} [kg Sb-eq]	6.92E-07	2.95E-07	6.46E-11	MND	MND	3.00E-08	MND	2.91E-09
ADP _{fossil} [MJ, LHV]	1.06E+01	1.85E+00	4.61E-04	MND	MND	1.53E-01	MND	6.92E-02

[GWP – Global Warming Potential, ODP – Depletion potential of the stratospheric ozone layer, AP – Acidification Potential of soil and water, EP – Eutrophication Potential, POCP – Photochemical Oxidant Creation Potential, ADP_{element} – Abiotic depletion potential (ADP-Elements) for non-fossil resources, ADP_{fossil} – Abiotic Depletion Potential (ADP-fossil fuels) for fossil resources]



ENVIRONMENTAL PRODUCT DECLARATION



EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
EN 15804 and ISO 21930:2017

4.2. Life Cycle Inventory Results

Table 13. Resource Use for 1 m² EcoTouch® Insulation for Flexible Duct at R_{SI} = 1

PARAMETER	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
RPR _E [MJ, LHV]	5.58E-01	2.95E-02	9.72E-06	MND	MND	1.53E-03	MND	3.18E-04
RPR _M [MJ, LHV]	4.40E-01	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
NRPR _E [MJ, LHV]	1.17E+01	1.88E+00	4.70E-04	MND	MND	1.55E-01	MND	7.08E-02
NRPR _M [MJ, LHV]	1.76E-03	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
SM [kg]	2.97E-01	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
RSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
NRSF [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
RE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
FW [m ³]	5.78E-03	3.97E-04	-7.17E-07	MND	MND	2.77E-05	MND	7.84E-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 14. Output Flows and Waste Categories for 1 m² EcoTouch® Insulation for Flexible Duct at R_{SI} = 1

PARAMETER	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
HWD [kg]	6.19E-06	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
NHWD [kg]	5.40E-02	0.00E+00	1.09E-05	MND	MND	0.00E+00	MND	3.78E-01
HLRW [kg] or [m ³]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
ILLRW [kg] or [m ³]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
CRU [kg]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
R [kg]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
MER [kg]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
EE [MJ, LHV]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	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]



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EcoTouch® Insulation for Flexible Duct

According to ISO 14025,
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Table 15. Carbon Emissions and Removals for 1 m² EcoTouch® Insulation for Flexible Duct at R_{SI} = 1

PARAMETER	A1-A3	A4	A5	B1-B7	C1	C2	C3	C4
BCRP [kg CO ₂]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
BCEP [kg CO ₂]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
BCRK [kg CO ₂]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
BCEK [kg CO ₂]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
BCEW [kg CO ₂]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
CCE [kg CO ₂]	6.38E-06	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
CCR [kg CO ₂]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	0.00E+00
CWNR [kg CO ₂]	0.00E+00	0.00E+00	0.00E+00	MND	MND	0.00E+00	MND	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. Environmental Impact Values for “R” Values other than the Functional Unit

Table 16. Total impact category values for 1 m² EcoTouch® Insulation for Flexible Duct material at various R-values

Thickness (in)	1.1	1.8	2.3
Thickness (m)	2.86E-02	4.45E-02	5.72E-02
R _{SI} m ² K/W	0.74	1.06	1.41
GWP 100 [kg CO ₂ eq]	8.45E-01	1.31E+00	1.69E+00
ODP [kg CFC-11 eq]	7.46E-08	1.16E-07	1.49E-07
AP [kg SO ₂ eq]	3.02E-03	4.69E-03	6.03E-03
EP [kg N eq]	3.63E-03	5.65E-03	7.26E-03
POCP [kg O ₃ eq]	4.95E-02	7.70E-02	9.90E-02
ADP _{fossil} [MJ, LHV]	1.20E+00	1.86E+00	2.39E+00



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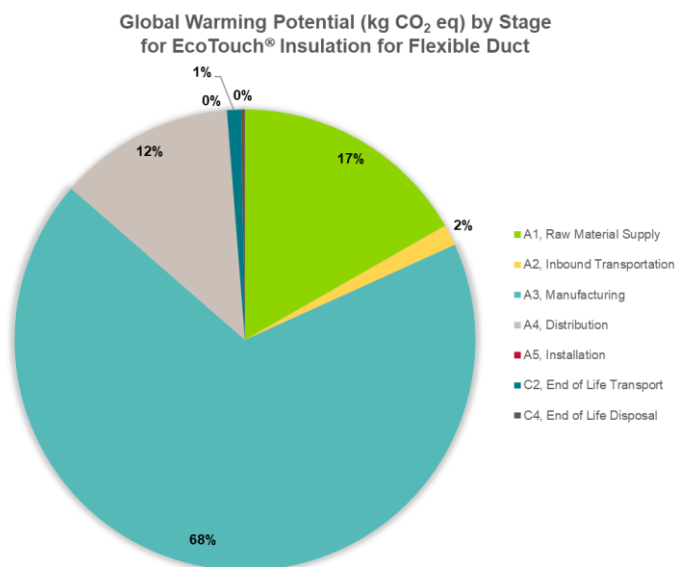
EcoTouch® Insulation for Flexible Duct



According to ISO 14025,
EN 15804 and ISO 21930:2017

5. LCA Interpretation

The manufacturing stage drives most of the environmental impact categories, although ozone depletion potential and smog potential are also highly influenced by the distribution stage. Manufacturing impacts are primarily driven by energy use (electricity and natural gas) for glass melting.



6. Additional Environmental Information

6.1. Environment and Health During Manufacturing

Depending on the plant facility, the following environmental equipment may be used to control emissions: electrostatic precipitator, incinerator, scrubber and/or fabric filter (baghouse).

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.



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According to ISO 14025,
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The product's Safe Use Instruction Sheet includes exposure guidelines, engineering controls and individual protection measures. The following individual protection measures can be considered:

- Eye/face protection – Wear safety glasses with side shields (or goggles)
- Skin and body protection – Wear protective gloves, long-sleeved shirt and long pants
- Respiratory protection – When facing airborne/dust concentration above the exposure limits, use an appropriate certified respirator. A properly fitted NIOSH approved disposable N 95 type dust respirator or better is recommended.
- General hygiene considerations – Wash hands before breaks and immediately after handling products. Remove and wash contaminated clothing before re-use.

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 a minimum of 53% recycled glass content, 31% pre-consumer and 22% post-consumer.
- GREENGUARD Gold: Certified products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage.
- Validated Formaldehyde-free
- Declare (Unfaced EcoTouch® Insulation)
- Health Product Declaration



Declare.



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According to ISO 14025,
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Made with Wind Energy and Reduced Carbon Footprint

EcoTouch® Insulation for Flexible Duct products are available upon request in the US with SCS Global Services certification for “Made with Wind Energy” and “Reduced Carbon Footprint”. The updated environmental impacts for the products by matching the amount of electricity used in manufacturing with wind energy produced as part of Owens Corning’s Power Purchase Agreement were calculated and can be found in the table below. The values for life cycle stages A1-A3 below reflect calculations based on the electricity impacts per the SimaPro implementation of the ecoinvent versions of the NERC power grids. Certificates published on the SCS Global Services website are based on calculations using updated NERC and eGrid power grid data and updated manufacturing production data per the certification guideline, so variation between the values is expected.

TRACI v2.1	A1-A3 Standard Product	A1-A3 Certified Product	% Change
GWP 100 [kg CO ₂ eq]	8.91E-01	4.46E-01	-50%
ODP [kg CFC-11 eq]	5.87E-08	2.48E-08	-58%
AP [kg SO ₂ eq]	2.61E-03	1.37E-03	-47%
EP [kg N eq]	4.22E-03	9.68E-04	-77%
POCP [kg O ₃ eq]	3.04E-02	2.10E-02	-31%
ADP _{fossil} [MJ, LHV]	1.17E+00	7.36E-01	-37%

6.6. Further Information

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

7. References

Part A: Life Cycle Assessment Calculation Rules and Report Requirements UL Environment (December 12, 2018, version 3.2)

Part B: Mechanical, Specialty, Thermal and Acoustic Insulation EPD Requirements, UL Environment, UL 10010-03 (September 3, 2019, version 1.0)

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

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



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

ASTM C423, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method

ASTM C553, Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications

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

UL181, Standard for Factory-Made Air Ducts and Air Connectors

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

SCS Global Services Guideline for Claims of "Made with Renewable Energy" or "Reduced Carbon Footprint" Based on Power Purchase Agreement, February 2018

