ENVIRONMENTAL PRODUCT DECLARATION

INSULATED VINYL SIDING INDUSTRY AVERAGE

Insulated vinyl siding is produced in a variety of profiles, shapes, and colors.

VINYL SIDING INSTITUTE™

The Vinyl Siding Institute, Inc. (VSI) is the trade association for manufacturers of vinyl and other polymeric siding and suppliers to the industry. VSI focuses on factual data and science, like Life Cycle Assessment, to ensure true material understanding/evaluation and actual impact on the environment.

Led by VSI, the industry's commitment to sustainability has resulted in durable, long-life products that offer excellent overall environmental performance compared to other exterior cladding, with recognized environmental benefits to help make and keep homes green.

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

VINYL SIDING INSTITUTE

Industry Averaged Insulated Vinyl Siding (0.040" Double 4.5")

According to ISO 14025 and ISO 21930:2007

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025 and ISO 21930. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. 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, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable. Comparison of the environmental performance of CLADDING PRODUCT SYSTEMS using EPD information shall be based on the product's use and impacts at the building level, and therefore EPDs may not be used for comparability purposes when not considering the building energy use phase as instructed under this PCR. Full conformance with the PCR for North American CLADDING PRODUCT SYSTEMS allows EPD comparability only when all stages of a CLADDING PRODUCT SYSTEM'S life cycle have been considered. However, variations and deviations are possible.

PROGRAM OPERATOR	UL Environment	
DECLARATION HOLDER	Vinyl Siding Institute	
DECLARATION NUMBER	4787108620.101.1	
DECLARED PRODUCT	Insulated Vinyl Siding	
REFERENCE PCR	PCR for EPDs: Cladding System Products 2015	
DATE OF ISSUE	July 25, 2016	
PERIOD OF VALIDITY	5 years	
CONTENTS OF THE DECLARATION	Product definition and information about building physics	
	Information about basic material and the material's origin	
	Description of the product's manufacture	
	Indication of product processing	
	Information about the in-use conditions	
	Life cycle assessment results	
	Testing results and verifications	
The PCR review was conducted by:		Environment and Development Foundation
		PCR Addendum: UL Environment
This declaration was independently verified in accordance with ISO 14025 by Underwriters Laboratories		
☐ INTERNAL ☒ EXTERNAL		Wade Stout, ULE EPM
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:		
		Brad McAllister, WAP Sustainability Consulting

This EPD conforms with ISO 21930:2007

ENVIRONMENTAL PRODUCT DECLARATION

VINYL SIDING INSTITUTE

Industry Averaged Insulated Vinyl Siding (0.040" Double 4.5")

According to ISO 14025

Product Description

In this declaration, an industry-wide average of horizontal insulated vinyl siding using a vinyl siding 0.04" thickness and rigid foam insulation adhered to the cladding back, with an R-2 insulation value is documented. A 50/50 ratio of PVC/ASA capstock for the vinyl siding is assumed. The following manufacturers have participated in this study.

- Associated Materials, Inc.
- CertainTeed Corporation
- Ply Gem Siding Group
- ProVia Products
- Royal Building Products
- Progressive Foam Technologies, Inc.

The results in this declaration are representative for the United States and Canada. The declared unit for this study is 100 square feet (or one square) of installed insulated vinyl siding with an R-3.2 value of rigid foam insulation.

Product Description

Insulated vinyl siding is an exterior cladding product offered in a diverse selection of profiles and colors to assist remodelers, builders, designers and architects in customizing their new construction and renovation designs while providing thermal optimization. Manufacturers have increased the availability of darker colors (and lighter ones, too) with improved color retention. With the ability to withstand high winds and resist heat, cold and moisture, and decrease energy loss, insulated vinyl siding retains the original appearance and performance capabilities over time.

Delivered with easy-to-recycle packaging, such as on wood pallet frames with cardboard or plastic wrap, insulated vinyl siding is purchased ready for installation. Installation only requires nails or screws and is easy to install as long as the contractor is trained in proper installation techniques using the VSI Vinyl Siding Installation Manual and follows the manufacturer's instructions.

Technical Information

Insulated vinyl siding produced by VSI member companies are produced according to ASTM D7793 Standard Specification for Insulated Vinyl Siding.The following information applies to insulated vinyl siding:

Table 1 – Insulated Vinyl Siding Technical Information

Name	Value	Unit
Length	12	ft
Width	0.75	ft
Thickness	1.5	in
Density	89.27 (vinyl siding) 1.0 (EPS foam)	lb/ft3
U-value of assembly including interruptions to insulation	0.31	BTU/(h F ft2)
R value of typical material where continuous	3.2	ft2*F*hr/BTU

VINYL SIDING INSTITUTE™

Industry Averaged Insulated Vinyl Siding (0.040" Double 4.5")

According to ISO 14025

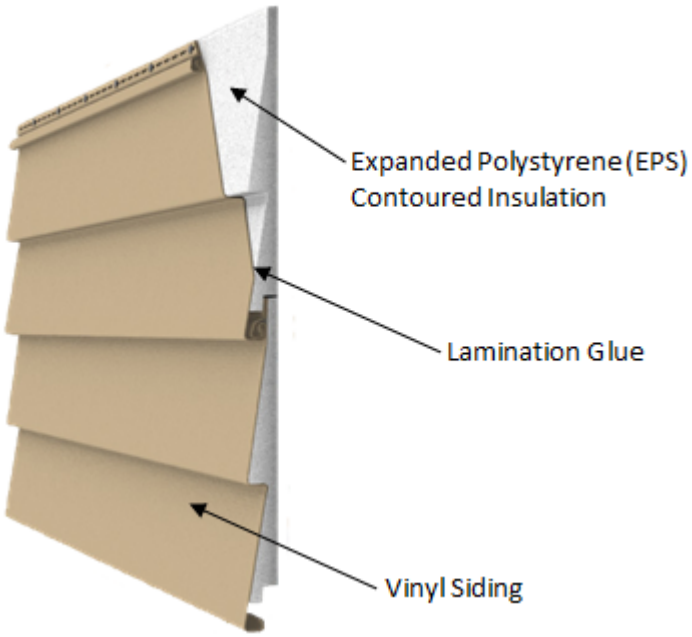
Market Placement / Installation Requirements

Insulated vinyl siding is produced according to the following standards:

- ASTM D7856-15a Standard Specification for Color and Appearance Retention of Solid and Variegated Color Plastic Siding Products using CIELab Color Space (optional)
- ASTM D7793-13 Standard Specification for Insulated Vinyl Siding
- ASTM C1363 Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus

Base Materials / Ancillary Materials

Vinyl, also known as PVC or polyvinyl chloride, starts with two simple building blocks: chlorine (57%) from common salt, one of the Earth's most common compounds, and ethylene (43%), which is produced from natural gas. Chlorine is manufactured from salt predominately through diaphragm/membrane cell electrolysis. The use of this technology, compared to previous mercury cell process technology, significantly reduces energy consumption and emissions, and significantly reduces hazardous waste. In the United States and Canada, over 99% of PVC resin is produced from vinyl chloride monomer that is manufactured using diaphragm/membrane cell electrolysis.



Insulated vinyl siding manufactured in the United States and Canada has never contained plasticizers such as DEHP and phthalates. The North American vinyl siding industry uses a tin-based heat stabilizer for siding and does not use lead stabilizers, as tested according to ASTM E1753. Very small quantities of stabilizers are used in PVC products to facilitate processing at the high extrusion temperatures during manufacturing. These raw materials were considered in this LCA study.

Insulated vinyl siding also contains a layer of rigid insulation foam, which serves as an insulating layer, increasing the building envelope's thermal performance. This foam is produced from expanded polystyrene and is adhered with high performance glues to the back of the vinyl siding profile. Both the PVC and ASA capstock insulated vinyl siding formulations by mass percentage are provided in the following table:

Table 2 – Insulated Vinyl Siding Formulation

Component	Weight (lb/100sf)	% of product
Vinyl Siding	42.4	86%
Foam Insulation	6.2	13%
Glue	0.73	1%
Constituent	% in Siding with PVC Capstock	% in Siding with ASA Capstock
PVC	80%	70%
ASA	--	11%
Calcium Carbonate	11%	11%
Impact Modifier	2%	2%
Titanium Dioxide	1.5%	1%
Acrylic Filler	1%	1%
Other Additives	4.5%	4%

The product analyzed in this declaration does not contain recycled content; however, a few VSI manufacturers do offer insulated vinyl siding options that integrate pre- and post-consumer recycled content into their products to increase resource efficiency manufacturing practices up and down the life cycle of the product.

Manufacturing

Vinyl siding manufacturing is an extremely efficient extrusion process requiring relatively low inputs of energy and water and, the ability to immediately return scrap and off-specification materials (regrind) directly into the manufacturing process results in virtually no manufacturing waste. Water is not one of the constituents of vinyl and is only used for cooling the siding after it has been extruded. Modern technology in the manufacturing phase allows for vinyl siding to be co-extruded with a substrate and a capstock. Co-extrusion allows for a more durable product, enabling colors and textures to retain its original appearance and performance capabilities over time.

Polystyrene resin is expanded into foam from a pentane expanding agent and molded into profiles that are adhered to the vinyl siding. The insulated vinyl siding is then packaged and ready for distribution.

Environmental and Health Considerations during Manufacturing

In recent years many vinyl siding manufacturers have integrated closed loop water systems which save millions of gallons of water each year per facility. Additionally, emissions controls have been in place to reduce emissions during manfuacturing of PVC resin at supplier facilities.

Packaging

Vinyl siding is commonly packaged using wood pallets to protect the siding in transport. Some industry-members use cardboard cartons to protect the siding until installation. Cardboard is recyclable in most infrastructure recycling networks throughout North America.

Product Installation

Installation of siding is done primarily by manual labor. Nails or screws can be used to install the siding; nails are more common and would typically be the type installed with a gun. The energy required to operate compressors to power air guns is assumed to be small and is not included in the analysis. Installation is modeled for nails placed 41 cm (16 in) on center; nail use is 0.0024 kg (0.0053 lb) per 0.09 m2 (per ft2) of siding. Installation waste with a mass fraction of 5% is assumed, and this waste is assumed to go to a landfill.

VSI has developed a certification program for vinyl siding installers. VSI Certified Installers have at least two years of installation experience and have demonstrated knowledge of proper installation techniques. This program follows the ASTM D4756 standard for the Standard Practice for Installation of Rigid Poly(Vinyl Chloride) (PVC) Siding and Soffit.

Insulated vinyl siding is an exterior cladding product so weather resistive barriers, and other ancillary materials, are required to complete the exterior wall system. These materials are not included in the system boundaries.

Use Considerations

No routine maintenance is required to prolong the lifetime of the product, although cleaning is recommended to maintain appearance. Cleaning would normally be done with water and household cleaners.

Insulated vinyl siding can contribute to significant energy savings when installed on a home. To assess the magnitue of these energy savings, energy modeling was conducted by the NAHB Research Center, showing the maximum energy savings that can be expected from the installation of insulated vinyl siding. These models represent older two-story homes constructed without any wall insulation, and analyze the benefit of installing insulated vinyl siding with an R-value of 3.5. The following table shows the energy savings that can be expected in various climate zones using these assumptions.

Table 3 – Insulated Vinyl Siding Energy Savings

Climate Zone	Energy Savings (MMBTU)	Energy Savings (%)
Zone 2	10	15%
Zone 3	16	17%
Zone 4	18	15%
Zone 5	31	14%
Zone 6	46	16%

These use phase benefits are not modeled directly in these results as each climate zone and building project may vary. However, it is important to note the use phase benefits compared to the cradle-to-gate life cycle results.

VINYL SIDING INSTITUTE™

Industry Averaged Insulated Vinyl Siding (0.040" Double 4.5")

According to ISO 14025

Environmental and Health Considerations during Use

Insulated vinyl siding does not require painting, staining, nor caulking during installation or during the use of the project.

Reference Service Life

This product is assumed to have a useful life of 50 years as many manufacturers provide warranties of 50 years or longer.

Recycling and Energy Recovery

The foam layer component of insulated vinyl siding prevents this product from being fully recyclable; however, waste-to-heat energy recovery can also utilize vinyl siding at the end of its useful service life to produce electricity. Using this material in waste-to-energy facilities with regulated temperature controls can be used to reduce waste at the end of the product's waste.

Disposal

Recycling opportunities for insulated vinyl siding are limited; therefore, vinyl siding is most commonly disposed of in municipal solid waste streams at the end of the product's service life. This study assumes that 20% of the products get incinerated in waste-to-heat energy recovery facilities and the remaining 80% are landfilled.

Additional Information

For more information, please visit www.vinylsiding.org or contact the Vinyl Siding Institute at vsiinfo@vinylsiding.org or 202-587-5100.

Life Cycle Assessment

Declared Unit / Functional Unit

The declared unit of this product is 100 square feet of a 0.040 inch thick vinyl external cladding with a double 4.5 inch profile with an R-3 value rigid foam layer adhered to the profile. The reference service life is 50 years.

System Boundary

The system boundary is cradle-to-grave with all life cycle stages through Modules A to C have been considered.

Table 4 – Description of the System Boundary

Description of the system boundary																		
Product			Construction Installation		Use							End-of-Life				Benefits of Loads Beyond the System Boundary		
Raw Material Extraction and Processing	Transport	Manufacturing	Transport	Construction/ Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction/ Demolition	Transport	Waste Processing	Disposal	Reuse	Recovery	Recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND	MND	MND

Estimates and Assumptions

The product is assumed to have a useful life of 50 years as many manufacturers provide warranties of 50 years or longer. This study assumes 5% scrap is generated during installation and that 20% of the products at the end of life are incinerated in waste-to-heat energy recovery facilities and the remaining 80% are landfilled.

Cut-off Criteria

This EPD is in compliance with the cut-off criteria. No components and materials were omitted from the LCA.

Software and Background Data

SimaPro v8.02 Software System for Life Cycle Engineering, an internationally recognized LCA modeling software program, was used for life cycle impact assessment modeling. Background and secondary datasets were modeled using the US LCI database, developed by the National Renewable Energy Laboratory, as well as the ecoinvent v3 database, which is developed by the Swiss Centre for Life Cycle Inventories. Secondary data on PVC resin was used from the latest update of the US LCI database, which includes primary PVC manufacturing data collected in 2011 and finalized in 2012 by Franklin Associates.

Data Quality

Data used for this study is as current as possible. Data sets used for calculations are within the last 10 years for generic data and within the last calendar year for manufacturer-specific primary data. All data sets is representative of the US and Canada, where appropriate. The national US electricity grid and Canadian electricity grid have been modeled using a weighted average based on production and location of vinyl siding facilities. This data is considered representative of the entire North American industry average for insulated vinyl siding.

Period under Consideration

Primary data for this study was collected for the calendar year 2015. Primary data includes formulations, manufacturing energy and water consumption as well as waste generation. Water treatment chemicals, cooling tower treatment chemicals and other ancillary materials are included in the scope of this study.

Allocation

Allocation was conducted per total production by mass at each particiapting facility for the period under consideration. A weighted average based on production totals between manufacturers was conducted.

LCA Results

Report results based on characterization factors from the US EPA Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI 2.1 impact categories). Impact categories taken from the University of Leiden (CML) methodology are optional and shall only be reported for EPDs used outside of North America.

Table 5 – Insulated Vinyl Siding LCA Results

Description of the system boundary																		
Product			Construction Installation		Use							End-of-Life				Benefits of Loads Beyond the System Boundary		
Raw Material Extraction and Processing	Transport	Manufacturing	Transport	Construction/ Installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-Construction/ Demolition	Transport	Waste Processing	Disposal	Reuse	Recovery	Recycling
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	D	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND	MND	MND

Table 6 – Life Cycle Impact Assessment Results

Part B- **Life Cycle Impact Assessment** Results												
Functional Unit: 100 square feet												
TRACI 2.1		**A1**	**A2**	**A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**Units**
GWP	Global warming potential	4.92E+01	1.46E+00	4.47E+00	9.50E-01	7.76E-01	4.79E-01	0.00E+00	3.62E-02	0.00E+00	9.85E+00	kg CO2 Eq.
ODP	Depletion potential of the stratospheric ozone layer	2.89E-06	6.66E-08	1.29E-07	3.62E-11	5.46E-08	2.90E-08	0.00E+00	1.38E-12	0.00E+00	2.69E-07	kg CFC 11 Eq.
AP	Acidification potential	2.72E-01	1.26E-02	3.44E-02	5.67E-03	4.24E-03	2.46E-03	0.00E+00	2.16E-04	0.00E+00	2.36E-02	kg SO2 Eq.
EP	Eutrophication potential	4.73E-02	1.22E-03	4.81E-03	3.16E-04	3.35E-03	2.08E-03	0.00E+00	1.20E-05	0.00E+00	1.55E-02	kg N Eq.
POCP	Photochemical ozone creation potential	2.12E+00	3.58E-01	2.81E-01	1.55E-01	3.66E-02	2.93E-02	0.00E+00	5.91E-03	0.00E+00	2.39E-01	kg O3 Eq.
ADPF	Abiotic depletion potential for fossil resources	1.55E+02	2.58E+00	4.78E+00	1.71E+00	6.79E-01	3.63E-01	0.00E+00	6.52E-02	0.00E+00	2.72E+00	MJ surplus energy
CML		**A1**	**A2**	**A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**Units**
GWP	Global warming potential	5.30E+01	1.58E+00	4.81E+00	1.02E+00	7.78E-01	4.79E-01	0.00E+00	3.89E-02	0.00E+00	1.06E+01	kg CO_2 Eq.
ODP	Depletion potential of stratospheric ozone layer	2.84E-06	5.36E-08	1.10E-07	3.87E-11	4.21E-08	2.22E-08	0.00E+00	1.47E-12	0.00E+00	2.05E-07	kg CFC-11 Eq.
AP	Acidification potential	3.17E-01	1.10E-02	3.93E-02	5.04E-03	4.47E-03	2.31E-03	0.00E+00	1.92E-04	0.00E+00	2.60E-02	kg SO_2 Eq.
EP	Eutrophication potential	3.15E-02	2.25E-03	3.54E-03	8.93E-04	1.60E-03	1.14E-03	0.00E+00	3.40E-05	0.00E+00	7.97E-03	kg $(PO_4)3-$ Eq.
POCP	Photochemical ozone creation potential	1.80E-02	3.90E-04	2.34E-03	2.32E-04	2.75E-04	7.57E-04	0.00E+00	8.85E-06	0.00E+00	1.07E-03	kg ethane Eq.

All use phase stages have been considered and only maintenance (B2) contains non-zero environmental impacts, which is reported above.

Table 7 – Use of Resources

Part C- Use of Resources													
Part C Resource Use		**A1**	**A2**	**A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**Total**	**Units**
PERE	Use of RENEWABLE primary energy excluding the RENEWABLE primary energy used as raw materials	9.56E+02	2.19E+01	7.39E+01	1.40E+01	1.11E+01	5.41E+00	0.00E+00	5.31E-01	0.00E+00	5.85E+01	1.14E+03	MJ (LHV)
PERM	Use of RENEWABLE primary energy resources used as raw materials	2.74E+02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.74E+02	MJ
PERT	Use of NON-RENEWABLE primary energy excluding the NON-RENEWABLE primary energy resources used as raw materials	1.23E+03	2.19E+01	7.39E+01	1.40E+01	1.11E+01	5.41E+00	0.00E+00	5.31E-01	0.00E+00	5.85E+01	1.42E+03	MJ
PENRE	Use of NON-RENEWABLE primary energy excluding the NON-RENEWABLE primary energy resources used as raw materials	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MJ
PENRM	Use of NON-RENEWABLE primary energy as raw materials	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MJ
PENRM	Total use of NON-RENEWABLE primary energy	2.09E+01	7.44E-02	1.28E+01	0.00E+00	3.40E-01	1.09E+01	0.00E+00	0.00E+00	0.00E+00	2.17E+00	4.72E+01	MJ
SM	Use of secondary materials	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	kg
RSF	Renewable secondary fuels	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MJ
NRSF	Use of NON-RENEWABLE secondary fuels	1.88E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.88E-01	MJ
FW	Use of fresh water resources	7.21E+01	4.94E-01	2.04E+00	0.00E+00	2.45E+00	6.60E-01	0.00E+00	0.00E+00	0.00E+00	1.37E+01	9.15E+01	m^3

All use phase stages have been considered and only maintenance (B2) contains non-zero environmental impacts,

which is reported above.

Table 8 – Output Flows and Wastes

Part D – Output Flows and Waste Categories													
Part D Waste		**A1**	**A2**	**A3**	**A4**	**A5**	**B2**	**C1**	**C2**	**C3**	**C4**	**Total**	**Units**
HWD	Disposed-of-hazardous WASTE	1.38E-01	9.93E-06	5.33E-03	0.00E+00	2.90E-05	9.25E-06	0.00E+00	0.00E+00	0.00E+00	2.58E-04	1.43E-01	kg
NHWD	Disposed-of non-hazardous WASTE	1.02E+00	5.02E-02	8.77E-01	0.00E+00	3.41E+00	6.11E-02	0.00E+00	0.00E+00	0.00E+00	1.75E+01	2.29E+01	kg
RWD	Disposed-of Radioactive WASTE	1.07E-04	2.66E-06	1.76E-05	0.00E+00	1.26E-05	4.90E-06	0.00E+00	0.00E+00	0.00E+00	1.24E-04	2.69E-04	kg
CRU	Components for reuse	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	kg
MFR	Materials for recycling	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	kg
MET	Materials for energy recovery	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	kg
EEE	Exported electrical energy (waste to energy)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MJ
EET	Exported thermal energy (waste to energy)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	MJ

All use phase stages have been considered and only maintenance (B2) contains non-zero environmental impacts, which is reported above.

LCA Interpretation

The production stage (raw materials through manufacturing) is the largest driver of the life cycle of insulated vinyl siding. The raw materials stage is the primary driver of the production stage. Maintenance and end-of-life stages of insulated vinyl siding have very minimal influences on the overall life cycle.

Other Required Evidence

The testing for products containing no lead stabilizers is conducted to the standard ASTM E1753, *Standard Practice for Use of Qualitative Chemical Spot Test Kits for Detection of Lead in Dry Paint Films* and detects substances down to the 5,000 ppm limit.

References

- ISO 21930: Sustainability in building construction – Environmental declaration of building products
- EPA, Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts (TRACI)
- FTC Part 260, Green guides
- (ILCD, 2010) Joint Research Commission, 2010, ILCD Handbook: General Guide for Life Cycle Assessment
- Intergovernmental Panel on Climate Change (IPCC)
- 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*
- ASTM C1363 *Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.* 2005
- ASTM D7856-15a *Standard Specification for Color and Appearance Retention of Solid and Variegated Color Plastic Siding Products using CIELab Color Space*. 2015 (optional)
- ASTM D4756-15 *Standard Practice for Installation of Rigid Poly(Vinyl Chloride) (PVC) Siding and Soffit*. 2015
- ASTM D7793-13 Standard Specification for Insulated Vinyl Siding
- *Modeled Energy Performance of Insulated Siding Installed on New and Existing Houses in Five Climate Zones.* NAHB Research Center. August 2010.

LCA Development

This EPD and corresponding LCA were prepared by Sustainable Solutions Corporation of Royersford, Pennsylvania.

SustainableSolutions CORPORATION

Contact VSI

For more information, please visit www.vinylsiding.org or contact the Vinyl Siding Institute at vsiinfo@vinylsiding.org or 202-587-5100.