ENVIRONMENTAL PRODUCT DECLARATION

125 TRI-MAX

THIN-SET

Thin-set mortar consists of materials such as lime, cement, sand, and water mixed together to provide an adhesive to bind two surfaces together

LATICRETE International, a world leader in tile & stone installation material manufacturing, is fully committed to sustainability and providing transparent information for the rapidly growing green building community. LATICRETE currently offers GHS format Safety Data Sheets (SDS), Health Product Declarations (HPD) for all products which LATICRETE International manufactures as well as UL GreenGuard Gold certification for a growing selection of products. LATICRETE is committed to developing innovative, sustainable and low VOC products and to being as transparent as possible to an ever changing world. As such, we continue our global leadership role in transparency and sustainability with the development of Product Specific (Type III) Environmental Product Declarations for a wide and diverse mix of LATICRETE products.

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION UL.COM/EPD

ENVIRONMENTAL PRODUCT DECLARATION

125 TRI-MAX
Thin-set

According to ISO 14025, ISO21930:2017

EPD PROGRAM AND PROGRAM OPERATOR NAME, ADDRESS, LOGO, AND WEBSITE	UL Solutions 333 Pfingsten Rd, Northbrook IL, 60062 www.ul.com www.spot.ul.com
GENERAL PROGRAM INSTRUCTIONS AND VERSION NUMBER	UL Environment Environmental Product Declaration Program, GENERAL PROGRAM INSTRUCTIONS, VERSION 2.7, MARCH 2022
MANUFACTURER NAME AND ADDRESS	LATICRETE International, Inc. 91 Amity Rd Bethany, CT 06524
MANUFACTURER LOCATIONS	Toll manufacturer in Chicago, IL
DECLARATION NUMBER	4787630163.111.1
DECLARED PRODUCT & FUNCTIONAL UNIT	125 TRI-MAX 1 m^2 of installed 450mm x 450mm tile with a 3mm joint width with an assumed reference service life (RSL) of 75 years
REFERENCE PCR AND VERSION NUMBER	Part A: Life Cycle Assessment Calculation Rules and Report Requirements (UL Environment, V4.0, 2022) Part B: Cement-based Grout, Adhesive Mortar and Self-Leveling Underlayment EPD Requirements (UL Environment V1.0, 2022)
DESCRIPTION OF PRODUCT APPLICATION/USE	Thin-set mortar consists of materials such as lime, cement, sand, and water mixed together to provide an adhesive to bind two surfaces together.
PRODUCT RSL DESCRIPTION (IF APPL.)	75 years
MARKETS OF APPLICABILITY	North America
DATE OF ISSUE	April 1, 2024
PERIOD OF VALIDITY	5 Years
EPD TYPE	Product-specific
EPD SCOPE	Cradle to Grave
YEAR(S) OF REPORTED PRIMARY DATA	2019
LCA SOFTWARE & VERSION NUMBER	LCA For Experts 10.7.0.183 (formerly GaBi)
LCI DATABASE(S) & VERSION NUMBER	Managed Life Cycle Content Database 2023.1 (formerly GaBi)
LCIA METHODOLOGY & VERSION NUMBER	TRACI 2.1, IPCC AR5, and CML 2001-Jan 2016

The PCR review was conducted by:	James Mellentine Jack Geibig Thomas Gloria, Ph.D
This declaration was independently verified in accordance with ISO 14025: 2006. ☐ INTERNAL ☒ EXTERNAL	Cooper McCollum Cooper McCollum, UL Solutions
The EPD conforms with:	☒ ISO 21930 ☐ EN 15804:2013+A2:2019
This life cycle assessment was conducted in accordance with ISO 14044 and the reference PCR by:	WAP Sustainability Consulting, LLC
This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:	Lindita Bushi Lindita Bushi, PhD, Athena Sustainable Materials Institute

LIMITATIONS

Environmental product declarations from different EPD programs (ISO 14025) may not be comparable.
Comparison of the environmental performance of Grout, Mortar, and Leveler Product Systems using EPD information shall be based on the product's use and impacts at the construction level.
Full conformance with this PCR allows EPD comparability only when all stages of a life cycle have been considered. See Section 3.9 for additional EPD comparability guidelines.

1. Product Definition and Information

1.1. Description of Company/Organization

LATICRETE is a 3rd generation family-owned, leading manufacturer of globally proven construction solutions for the building industry. LATICRETE offers a broad range of products and systems covering tile & stone installation and care, masonry installation and care, resinous and decorative floor finishes, concrete construction chemicals, and concrete restoration and care including the LATICRETE® SUPERCAP® System.

For over 65 years, LATICRETE has been committed to research and development of innovative installation products, building a reputation for superior quality, performance, and customer service. LATICRETE methods, materials, and technology have been field and laboratory proven by Architects, Engineers, Contractors, and Owners. Offering an array of low VOC and sustainable products, LATICRETE products contribute to LEED certification, exceed commercial/residential VOC building requirements, and are backed by the most comprehensive warranties in the industry.

1.2. Product Description

Product Identification

125 TRI MAX® provides incredible sound isolation protection while simultaneously protecting the tile or stone finish from any cracking by reducing the transmission of stresses in the substrate through to the tile or stone finish. 125 TRI MAX is a single component adhesive mortar which takes the place of costly time consuming anti fracture membrane or mat systems by allowing for faster more effective tile or stone installations. Replace sheet or liquid membrane and thinset combinations for crack isolation and sound reduction with one product saving time, labor and money.

125 TRI MAX is a superior crack prevention and sound reduction adhesive mortar. It prevents the transmission of cracks from the approved substrates to the tile or stone finish when subjected to horizontal in plane movement of cracks up to 1/8" (3 mm) under normal usage. It can be used for thin-bed or medium-bed applications and used with any size tile or stone.

This product falls under CSI division 09 31 00 and UNSPSC 30111504, and the following production codes: ANSI A118.12 and ASTM C267.

Product Average

Results in this LCA are based on the total materials purchased during 2019 based on data availability and weighted by annual production data at the toll manufacturer in Chicago, IL.

1.3. Application

These products are commonly used in a variety of settings including commercial, health care, education, residential, and hotel applications.

1.4. Declaration of Methodological Framework

This LCA follows an attributional approach and is a cradle to grave study.

1.5. Technical Requirements

Table 1. Technical Data

PARAMETER	STANDARDS	125 TRI-MAX
Mass (wet) [kg/m^2] assuming 3/32" thickness (2.38 mm)	-	2.25
Density (wet) [kg/m^3]	-	947
Tensile Bond Strength [MPa] (psi)	ISO 13007-2:, 4.4.4.2	1.4 - 1.5 (203 – 218)
Shear Strength [MPa @ 28 days] (psi @ 28 days)	ANSI A118.12 5.1.5	0.7– 0.9 (100 –135)
Pot Life [hours]	-	2
Open Time [minutes]	-	40
Mixture Proportion [liters liquid/kg powder]	-	0.333–0.377

1.6. Properties of Declared Product as Delivered

This product is packaged in poly bags, which in turn are packaged into carboard boxes. These cardboard boxes are shrink wrapped and loaded onto wooden pallets which are then delivered to the customer or job site.

1.7. Material Composition

Table 2. Material Composition of the Product, by Mass %

MATERIAL	125 TRI-MAX
Limestone	20-28%
Polymer	25-30%
Filler	34-38%
Cement	10-15%
Proprietary Additives	1-3%

Product composition total may not add up to 100% due to rounding.

1.8. Manufacturing

To manufacture all products, LATICRETE weighs and blends the powders. Then, LATICRETE packages the products into bags or cartons and palletizes them.

1.9. Packaging

This product is packaged in a 25 lb bag. A breakdown of packaging materials can be found in the chart below.

Table 3: Packaging Material per kg

INPUT	AMOUNT (KG)
Cardboard	1.76E-04
Poly Bag	8.15E-03
Shrink Wrap	6.15E-05
Wooden Pallet	6.77E-03

1.10. Transportation

The raw materials are delivered to LATICRETE's facility via heavy-duty diesel truck, ship, and rail. Transportation distances from supplier to LATICRETE facilities are based on supplier and facility location.

The product is delivered to the customer via heavy-duty diesel truck. Transport to the installation site is assumed to be 500 km as recommended by the PCR (Part B) for all floor applications.

1.11. Product Installation

LATICRETE provides recommended installation instructions online for each product. Installation equipment is required though not included in the study as these are multi-use tools and the impacts per functional unit are considered negligible. For purposes of the study, the geographical scope of the customer is the United States.

Thin-sets for tile installation are primarily installed by hand, with potential limited use of machines to mix the product prior to application. Due to its material composition, thin-sets are typically quite alkaline and, as such, eye and skin contact should be avoided, especially for prolonged periods and within small spaces. Additionally, precautions should be taken to reduce dust emissions and inhalation during the installation process. The installation safety instructions of the product should be followed during application. During installation, the product is applied at approximately 2.36 kg/m^2 with around 4.5% of the total material lost as waste. Although some of this waste could be recycled, this scrap is modeled as being disposed of in a landfill.

1.12. Use

This product does not have significant use phase inputs, and thus does not need water for cleaning purposes, since this product is concealed behind surface materials such as tile.

1.13. Reference Service Life and Estimated Building Service Life

According to Part A of the PCR, the Estimated Service Life (ESL) of the building is assumed to be 75 years. Thin-sets are expected to last as long as the building itself, the Reference Service Life (RSL) of the product is taken to be 75 years.

1.14. Reuse, Recycling, and Energy Recovery

This product is typically not reused, recovered, and recycled.

1.15. Disposal

This product is bound to surface material, such as tile, during application and is typically disposed with the surface material. At its end-of-life surface material can be reused in multiple applications—for example, clean fill material in land reclamation/contouring projects, base or substrate material for roadways and/or parking lots, replacement for raw materials used in cement or brick kilns, etc.

However, for purposes of this EPD, the analysis adopts the most conservative approach and assumes that 100% of all product waste is disposed of in a landfill.

2. Life Cycle Assessment Background Information

2.1. Functional or Declared Unit

The functional unit for thin-sets according to the UL PCR is 1 m^2 of installed 450mm x 450mm tile with a 3mm joint width with an assumed reference service life (RSL) of 75 years. The reference flow to achieve this functional unit, assuming 3/32” thickness (2.38 mm), is 2.36 kg.

2.2. System Boundary

The LCA is a Cradle-to-Grave study. An overview of the system boundary is shown in Figure 1.

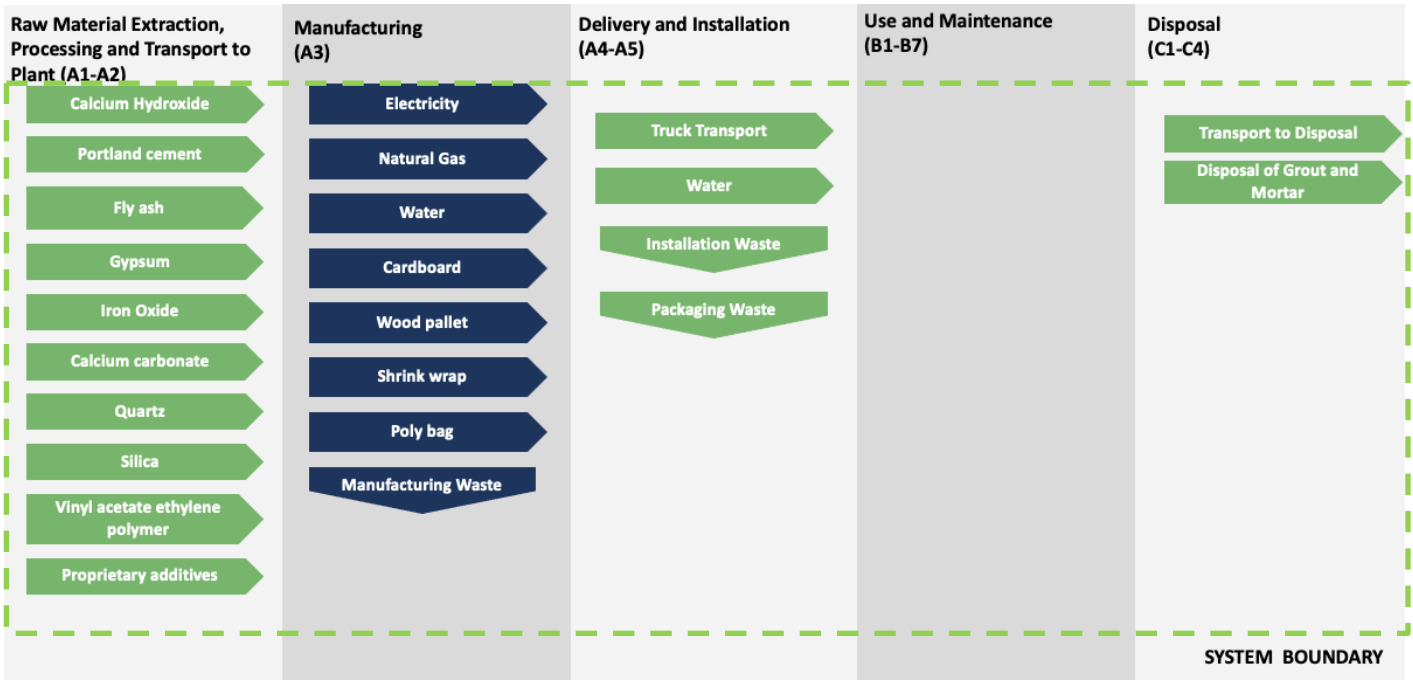

Figure 1. System Boundary Diagram

2.3. Estimates and Assumptions

All estimates and assumptions are within the requirements of ISO 14040/44. Many of the estimations are within the primary data. Assumptions made throughout the study are listed below:

1. Installation tools are used enough times that the per square meter impacts are negligible.
2. For the minor additives that didn't have appropriate secondary datasets in GaBi, the volume of other raw materials was scaled up to meet reference flows per the functional unit. However, these fall well below the cut-off criteria. This method was applied as the most conservative approach rather than excluding unavailable materials.
3. Primary data were used for all manufacturing processes, except for 2 sites that use average manufacturing input and output data from the other 7 LATICRETE sites as a proxy. This modeling choice is evaluated in a sensitivity analysis. This is appropriate since manufacturing steps at the 2 sites are identical to the steps at the other LATICRETE sites.
4. 125 TRI-MAX is made by a toll manufacturer in Chicago, and data from this toll manufacturer is not available. 125 TRI-MAX is modeled using average manufacturing inputs and outputs from all LATICRETE facilities with the appropriate electricity grid for the region (RFCW).

2.4. Cut-off Criteria

Material inputs less than 1% were included if sufficient data was available to warrant inclusion and/or the material input was thought to have significant environmental impact. Cumulative excluded material inputs and environmental impacts are less than 5% based on total weight of the functional unit.

- Natural gas consumption at facilities is used only as building heat source and was excluded as an input to the LCA in the manufacturing stage (A3). The burden of natural gas increases life cycle results for global warming potential by 6% to 29%. However, the manufacturing process only requires electrical energy for blending and mixing materials, in addition to the absence of natural gas consumption at three manufacturing facilities in warmer climates. Natural gas is only used for building heat.
- Some material inputs may have been excluded within the MLC datasets used for this project. All MLC datasets have been critically reviewed and conform to the exclusion requirement of the PCR, Part A: "Calculation Rules for the Life Cycle Assessment and Requirements on the Background Report".

2.5. Data Sources

Primary data were collected by LATICRETE personnel and from utility bills and was used for all manufacturing processes for all participating members. When primary data did not exist, secondary data for raw material production was utilized from Sphera LCA For Experts (formerly GaBi) Version 10.7.0.183, Managed Life Cycle Content Database 2023.1.

2.6. Data Quality

A variety of tests and checks were performed throughout the project to ensure high quality of the completed LCA. Checks included an extensive review of project specific LCA models, as well as the background data used.

Geographic Coverage

The geographical scope of the manufacturing portion of the life cycle is North America. All primary data were collected from the manufacturer. The geographic coverage of primary data is considered excellent.

Temporal Coverage

Primary data were provided by LATICRETE and represent all information for calendar years 2019, based on data availability. Data necessary to model cradle-to-gate unit processes were sourced from Sphera's MLC LCI datasets. Using this data meets the PCR requirements. Time coverage of the GaBi datasets varies from approximately 2012 to present. All datasets rely on at least one 1-year average data. Time coverage of the primary data is considered good.

Technological Coverage

Primary data provided by LATICRETE are specific to the technology they use in manufacturing their products. Data for 7 sites are site-specific and considered of good quality. Primary data was not available for 125 TRI-MAX, which is made by a toll manufacturer. This data gap is addressed by using average manufacturing input and output data from the other 7 LATICRETE sites as a proxy. This is a reasonable proxy because all sites use the same manufacturing process. The data quality for these products is considered fair.

2.7. Period under Review

Primary data were provided by the manufacturers and represent all information for calendar year 2019, based on data availability.

2.8. Allocation

General principles of allocation were based on ISO 14040/44. There are no products other than the product under study in the manufacturing process, and thus no allocation based on co-products were required. To derive a per-unit value for manufacturing inputs such as electricity and water allocation based on total production by mass was adopted. Recycled materials were accounted for via the cut-off method. Under this method, impacts and benefits associated with the previous life of a raw material from recycled stock are excluded from the system boundary.

2.9. Comparability

This study was not completed with the intent that comparative assertions with external objects or public disclosures (i.e., comparative marketing claims) would be made. However, the results from the report will be used as the basis of product optimization documentation and will be used to develop EPDs. The EPDs will be disclosed to the public.

3. Life Cycle Assessment Scenarios

Table 4. Transport to the building site (A4)

NAME	VALUE	UNIT
Fuel type	Diesel	-
Liters of fuel	44.7	L/100km
Vehicle type	US: TRUCK - HEAVY HEAVY-DUTY DIESEL TRUCK / 53,333 LB PAYLOAD	-
Transport distance	500	km
Capacity utilization (including empty runs, mass based	67	%
Weight of products transported	1.76	kg
Capacity utilization volume factor (factor: =1 or <1 or ≥ 1 for compressed or nested packaging products)	1	-

Table 5. Installation into the building (A5)

NAME	VALUE	UNIT
Net freshwater consumption specified by water source and fate (amount evaporated, amount disposed to sewer)	3.71E-04	m^3
Product Wastage	4.5%	%
Plastic Waste	1.43E-02	kg
Pulp Waste	1.21E-02	kg
Waste materials at the construction site before waste processing, generated by product installation	1.28E-01	kg

Biogenic carbon contained in packaging	4.43E-02	kg CO_2

Table 6. Reference Service Life

NAME	VALUE	UNIT
RSL	75	years

Thin-sets do not require maintenance because they are concealed behind surface materials such as tile.

Table 7. End of Life (C1-C4)

NAME		VALUE	UNIT
Distance to Landfill		100	km
Collection process (specified by type)	Collected separately	-	kg
	Collected with mixed construction waste	1.66	kg
Recovery (specified by type)	Reuse	-	kg
	Recycling	-	kg
	Landfill	1.66	kg
	Incineration	-	kg
	Incineration with energy recovery	-	kg
	Energy conversion efficiency rate	-	
Disposal (specified by type)	Product or material for final deposition	1.66	kg
Removals of biogenic carbon (excluding packaging)		7.71E-03	kg CO_2

Note that maintenance (B2), repair (B3), replacement (B4), refurbishment (B5), Operational energy use (B6), Operational water use (B7), and reuse, recovery, and/or recycling potentials (D) has been removed from this section as they are not material to this investigation.

4. Life Cycle Assessment Results

Table 8. 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	Building Operational Water Use During Product	Deconstruction	Transport	Waste processing	Disposal	Reuse, Recovery, Recycling Potential
EPD Type	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	MND

X = declared module; MND = module not declared

4.1. Life Cycle Impact Assessment Results

Table 9. North American Impact Assessment Results, per functional unit

TRACI V2.1, IPCC AR5 GWP_{100}, CML	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
GWP $_{100}$ [kg CO_2 eq]	3.50E+00	7.14E-02	1.89E-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	1.82E-02	0.00E+00	4.84E-02
AP [kg SO_2 eq]	4.89E-03	3.26E-04	2.78E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.03E-05	0.00E+00	2.50E-04
EP [kg N eq]	4.90E-04	2.89E-05	2.91E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.26E-06	0.00E+00	1.10E-05
ODP [kg CFC-11 eq]	1.10E-12	1.82E-16	5.51E-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.65E-17	0.00E+00	2.32E-15
SFP [kg O_3 eq]	1.25E-01	7.54E-03	6.85E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.15E-03	0.00E+00	4.56E-03
ADP_{fossil} [MJ, LHV]	9.46E+01	9.86E-01	4.82E+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	2.52E-01	0.00E+00	7.31E-01

4.2. Life Cycle Inventory Results

Table 10. Carbon Emissions and Uptake, per functional unit

PARAMETER	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
BCRP [kg CO_2]	7.71E-03	0.00E+00	3.85E-04	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
BCEP [kg CO_2]	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	0.00E+00	1.47E-02	0.00E+00
BCRK [kg CO_2]	2.16E-02	0.00E+00	1.08E-03	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
BCEK [kg CO_2]	0.00E+00	0.00E+00	1.78E-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	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	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
CCE [kg CO_2]	1.77E-01	0.00E+00	8.84E-03	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
CCR [kg CO_2]	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	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	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

Table 11. Resource Use, per functional unit

PARAMETER	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
RPRE [MJ, LHV]	3.13E+00	3.96E-02	1.62E-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	1.01E-02	0.00E+00	8.83E-02
RPRM [MJ, LHV]	9.69E-02	0.00E+00	4.85E-03	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
NRPRE [MJ, LHV]	6.77E+01	9.94E-01	3.47E+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	2.54E-01	0.00E+00	7.54E-01
NRPRM [MJ, LHV]	3.51E+01	0.00E+00	1.75E+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	0.00E+00
SM [kg]	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	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	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
NRSF [MJ, LHV]	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	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	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
FW [m3]	2.51E-02	1.36E-04	1.87E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.47E-05	0.00E+00	9.35E-05

Table 12. Output Flows and Waste Categories, per functional unit

PARAMETER	A1-A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
HWD [kg]	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	0.00E+00	0.00E+00	0.00E+00
NHWD [kg]	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	0.00E+00	0.00E+00	0.00E+00
HLRW [kg]	1.22E-06	3.38E-09	6.18E-08	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.63E-10	0.00E+00	9.33E-09
ILLRW [kg]	1.02E-03	2.85E-06	5.18E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.27E-07	0.00E+00	8.34E-06
CRU [kg]	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	0.00E+00	0.00E+00	0.00E+00
MR [kg]	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	0.00E+00	0.00E+00	0.00E+00
MER [kg]	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	0.00E+00	0.00E+00	0.00E+00
EEE [MJ]	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	0.00E+00	0.00E+00	0.00E+00
EET [MJ]	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	0.00E+00	0.00E+00	0.00E+00

5. LCA Interpretation

The product stage (A1-A3) dominated global warming potential (GWP) impacts across the full life cycle of a product, which covers raw material extraction, transport of raw materials to the manufacturing site, and manufacturing of the product. When installed in a building for 75 years, the product stage contributes 78-96% to overall GWP across all LATICRETE products. The main contributors to this stage are raw materials. The raw material driving this contribution is portland cement.

6. Additional Environmental Information

6.1. Environment and Health During Manufacturing

LATICRETE products are governed by federal and local requirements for dust control. Where applicable, dust collection systems are incorporated in processes to optimize material usage and mitigate airborne dust and particulate matter within the factory.

The product does not contain hazardous substances per EPA's Resource Conservation and Recovery Act, as indicated in Section 2.8.6 of the Part A PCR.

125 TRI-MAX has the following environmental certifications. These certifications can be accessed from the product page on LATICRETE's website: https://www.laticrete.com/en/products/125-tri-max

- HPD
- GREENGUARD Gold

6.2. Environment and Health During Installation

Refer to SDS for any PPE requirements. Contact LATICRETE for OSHA Respirable Silica compliance information.

6.3. Extraordinary Effects

Water

Thin-sets are not sensitive to moisture.

Mechanical Destruction

Tile should not be installed until any and all structural damage to the building has been adequately repaired and determined to be code compliant. Surfaces must be structurally sound, stable and rigid enough to support the grout, mortar, and tile, in addition to any other ancillary tile installation products.

6.4. Delayed Emissions

Inherently, cement thin-sets do not emit VOCs. For polymer-modified cement thin-sets, the South Coast Air Quality Management District (SCAQMD) Rule #1168 details VOC thresholds that are most commonly specified. LATICRETE thin-sets for tile installation are in compliance. Additionally, the product covered by this EPD has been engineered to minimize airborne dust or other job-site particulates. When used with tile this product also has built-in mold and mildew protection to complement tile's inherent resistance to mold and mildew growth.

6.5. Environmental Activities and Certifications

Contact manufacturer or visit their website for other certifications or documentation, such as low VOC emission certifications, Health Product Declaration, VOC content data, and other information.

7. Supporting Documentation

Table 13. Acronym Key

Acronym	Text	Acronym	Text
LCA Indicators			
ADP-elements	Abiotic depletion potential for non-fossil resources	GWP	Global warming potential
ADP-fossil	Abiotic depletion potential for fossil resources	OPD	Depletion of stratospheric ozone layer
AP	Acidification potential of soil and water	POCP	Photochemical ozone creation potential
EP	Eutrophication potential	Resources	Depletion of non-renewable fossil fuels
LCI Indicators			
RPR_E	Use of renewable primary energy excluding renewable primary energy resources used as raw materials	RPR_M	Use of renewable primary energy resources used as raw materials
$NRPR_E$	Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials	$NRPR_M$	Use of non-renewable primary energy resources used as raw materials
SM	Use of secondary materials	FW	Net use of fresh water
RSF	Use of renewable secondary fuels	NRSF	Use of non-renewable secondary fuels
HWD	Disposed-of-hazardous waste	MR	Materials for recycling
NHWD	Disposed-of non-hazardous waste	MER	Materials for energy recovery
HLRW	High-level radioactive waste, conditioned, to final repository	ILLRW	Intermediate- and low-level radioactive waste, conditioned, to final repository
CRU	Components for reuse	EE	Exported energy
RE	Recovered Energy		
Biogenic Carbon Indicators			
BCRP	Biogenic Carbon Removal from Product	BCEW	Biogenic Carbon Emission from Combustion of Waste from Renewable Sources Used in Production Processes
BCEP	Biogenic Carbon Emission from Product	CCE	Calcination Carbon Emissions
BCRK	Biogenic Carbon Removal from Packaging	CCR	Carbonation Carbon Removals
BCEK	Biogenic Carbon Emission from Packaging	CWNR	Carbon Emissions from Combustion of Waste from Non- Renewable Sources used in Production Processes

8. References

1. CML - Department of Industrial Ecology. (2016, September 05). CML-IA Characterisation Factors. Retrieved from https://www.universiteitleiden.nl/en/research/research-output/science/cml-ia-characterisation-factors
2. IPCC. (2013). Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge, United Kingdom and New York, NY, USA: Cambridge University Press.
3. ISO. (2006). ISO 14025: Environmental labels and declarations - Type III environmental declarations - Principles and procedures. Geneva: International Organization for Standardization.
4. ISO. (2006). ISO 14040/Amd 1:2020: Environmental management - Life cycle assessment - Principles and framework. Geneva: International Organization for Standardization.
5. ISO. (2006). ISO 14044/Amd 1:2017/Amd 2:2020: Environmental Management - Life cycle assessment - Requirements and Guidelines. Geneva: International Organization for Standardization.
6. ISO. (2017). ISO 21930: Sustainability in buildings and civil engineering works - Core rules for environmental product declarations of construction products and services. Geneva: International Organization for Standardization.
7. UL Environment. (2022). Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL 10010, V4.0.
8. UL Environment. (2022). Part B: Cement-based Grout, Adhesive Mortar and Self-Leveling Underlayment EPD Requirements.
9. US EPA. (2012). TRACI: The Tool for the Reduction and Assessment of Chemical and Other Environmental Impacts. Version 2.1 - User Guide. Retrieved from https://nepis.epa.gov/Adobe/PDF/P100HN53.pdf
10. WAP Sustainabillity. (2024). LCA Report of LATICRETE LATICRETE Thin-Sets, Mortars, Grouts, and SLUs.
11. Sphera Solutions GmbH. (2023). Sphera Managed Life Cycle Content database.