# USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD

Baltimore, MD

#### **Features and Benefits**

- Ideal for use as a cover board in roof system applications
- Water-durable, mold-resistant substrate
- · Will not rot, warp, delaminate or disintegrate
- · Easy to cut and fasten
- Noncombustible



#### TRACI v2.1 (Environmental Impacts) (A1-A3): Cradle-to-Gate Functional Unit – 1 square meter (10.8 square feet) roof board

	1/2"	5/8"
Global Warming Potential (kg CO2 eq.),excl. biogenic carbon	9.03E+00	9.97E+00
Global Warming Potential (kg CO2 eq.),incl. biogenic carbon	8.46E+00	9.28E+00
Ozone Depletion Potential (kg CFC 11 eq.)	3.70E-07	3.70E-07
Acidification Potential (kg SO2 eq.)	2.57E-02	2.82E-02
Eutrophication Potential (kg N eq.)	1.54E-03	1.67E-03
Photochemical Ozone Creation Potential (kg O3 eq.)	4.43E-01	4.91E-01
Abiotic Resource Depletion Potential Fossil Fuels (MJ, LHV)	2.43E+01	2.52E+01





## USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD Baltimore, MD

This declaration is an Environmental Product Declaration (EPD) in accordance with ISO 14025:2006 and ISO 21930:2017. 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.

USG Corporation has sole ownership, liability, and responsibility for this EPD. The owner of the declaration shall be liable for the underlying information and evidence; ASTM, or its affiliates, shall not be liable with respect to manufacturer information, life cycle assessment data, and evidence.

Environmental declarations from different programs (ISO 14025) may not be comparable. Comparison of the environmental performance of products using EPD information shall be based on the product's use and impacts at the building or construction works level, and therefore EPDs may not be used for comparability purposes when not considering the whole building life cycle. EPD comparability is only possible 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 in results upstream or downstream of the life cycle stages declared.

DECLARATION NUMBER	EPD 950				
EPD TYPE	Product specific, facility specific E	PD			
PROGRAM OPERATOR	ASTM International – 100 Barr Harbor Drive, West Conshohocken, PA USA www.astm.org				
DECLARATION HOLDER	USG Corporation - 550 W. Adams St., Chicago, IL USA				
EPD Type	Type III Declaration per ISO 14025:2006				
DECLARED PRODUCT	USG Securock <sup>®</sup> Brand Cement Roof Board				
DATE OF ISSUE PERIOD OF VALIDITY	04/01/25 5 Years				
REFERENCE PCR	Product Category Rules (PCR) Guidance for Building Related Products and Services Part B: Roof Cover Protection Board EPD Requirements, UL 10010-36 UI Environment, Version 1.0, Nov. 2, 2021				
ACLCA PCR OPEN STANDARD CONFORMANCE	Transparency				
ACLCA PCR OPEN STANDARD VERSION	Version 1.0   May 25, 2022				
This declaration was independently verifie and ISO 21930:2017 INTERNAL	ed in accordance with ISO 14025 ⊠ EXTERNAL	Tim Brooke, ASTM International			
This life cycle assessment was independe ISO 14044 and the reference PCR by:	ently verified in accordance with	Thomas P. Gloria, Industrial Ecology Consultants			





### USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD

Baltimore, MD

## 1. Description of Organization

USG is the leader in manufacturing high-quality building materials designed to drive efficiency and innovation across the construction industry worldwide. We help our global customers more easily, safely, and affordably create sustainable and accessible spaces for all. Our wall, ceiling, joint treatment, flooring, sheathing, and roof products are used to build many of the world's most iconic structures as well as airports, hospitals, schools, offices, and the places people call home.

### 2. Product System Documentation

#### 2.1 Product Description and Product Identification

Roof cover boards are part of a roof system (inclusive of membrane, insulation and edge finishing materials) that provides a weatherproof barrier and are positioned under the weathering surface/waterproof layer. Roof cover boards add strength, protection and impact resistance to the roof system and can enhance the roof's performance in a variety of ways including limiting external fire spread, reducing wind uplift, and contributing to the thermal and vapor barrier. Roof cover boards can be comprised of a variety of materials including but not limited to, plywood, gypsum glass-mat, cement, polyiso, urethane foam (high density) composite materials or other suitable materials.

USG Securock<sup>®</sup> Brand Cement Roof Board is a high-performance roof board for use in low-slope roof systems. It enhances the whole roof system as a cover board, and as fire or thermal barrier roof board. It can be used with a variety of membranes and systems including most adhered and mechanically attached systems. It is ideal for applications such as liquid-applied membranes and cold mastic-modified bitumen. Because this product is cement-based, it provides superior compressive strength, water durability, and mold resistance.

USG Securock<sup>®</sup> Brand Cement Roof Board is manufactured at the USG Baltimore, MD plant.

USG Securock<sup>®</sup> Brand Cement Roof Board is formed in a continuous process combining an aggregated Portland cement slurry with a polymer-coated, glass-fiber mesh completely encompoassing the edges and both surfaces, which enhances bond strength of membrane systems and gives excellent rersistance to delamination.

USG Securock<sup>®</sup> Brand Cement Roof Board is nominally 1/2" (12.7 mm), or 5/8" (15.9mm) thick. The panel size is 4 ft. × 4 ft. (1,220 mm × 1,220 mm) or 4 ft. × 8 ft. (1,220 mm × 2,440 mm).

USG Securock<sup>®</sup> Brand Cement Roof Board conforms to ASTM C1325 "Standards for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units."

USG Securock<sup>®</sup> Brand Cement Roof Board is engineered to provide superior wind-uplift performance for a wide variety of roof assemblies. It meets Factory Mutual Global (FMG) Class 1 and Underwriters Laboratories (UL) Class A fire ratings for unlimited slope in fire-barrier applications per UL 790 (CAN/ULC-S107). The panel scores a maximum "10" for mold resistance when tested in accordance with ASTM D3273 and is highly water durable. The product can be used as a component in single-ply, fluid-applied, spray foam, metal and cold-applied modified bitumen roof.

The classification number according to the UNSPSC classification system (see <u>https://usa.databasesets.com/</u>) is 30151500.

#### 2.2 Designated Application

Refer to roof system manufacturer's written instructions, local code requirements and Factory Mutual Global (FMG) and/or Underwriters Laboratories (UL) requirements for proper installation techniques.

Use fasteners specified in accordance with the above requirements. Install approved fasteners with plates into the USG Securock® Brand Cement Roof Board, flush with the surface. Fasteners should be installed in strict compliance with roof system manufacturer's installation recommendations and FMG Loss Prevention Data Sheet 1-29. A qualified architect/engineer should review and approve calculations, framing, and fastener spacing for all projects.





For vertical parapet applications, the maximum stud spacing is 16" (406 mm) o.c., and the maximum fastener spacing is 8" (203 mm) o.c. for wood and steel framing. Always consult a design professional for actual spacing.

The panels are cut and trimmed with a utility knife or hand saw to minimize dust levels.

### 2.3 Product Technical Data

Properties	Unit of Measure	ASTM Test Method	1/2" (12.7 mm) Panel	5/8" (15.9 mm) Panel
Weight	kg/m² (psf)	C473	12.7 (2.6)	14.6 (3.0)
Flexural strength, parallel	MPa (psi)	C947	>5.2 (750)	>3.3 (480)
Compressive strength	MPa (psi)	C473	>6.9 (1,000)	> 8.6 (1,250)
Flute spanability	in	E661	12	12
Surface-burning characteristics	Flame/smoke	E84	0/0	0/0
Permeance	Perms	E96	5.84	5.84
R value	°F-ft²-h/Btu	C518	0.39	0.49
Coefficient of thermal expansion	Inches/inch/°F	E831	4.5×10 <sup>-6</sup>	4.5×10 <sup>-6</sup>
Linear variation with change in moisture	%	D1037	<0.07	<0.07
Water absorption	%	D473	<15	<15
Mold resistance		D3273	10 No Growth	10 No Growth
Minimum bending radius	ft.		6	6

 Table 1: Performance Data

The product is noncombustible when tested in accordance with ASTM E136-12 (CAN/ULC-S114). The panel meets Class A unlimited slope in accordance with UL790 (CAN/ULC-S107). See the *UL Building Materials Directory* for more information. USG Securock® Brand Cement Roof Board can be used in roof systems that comply with the requirements of FM4450 and FM4470. The system meets FM class 1 requirement.





#### USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD

Baltimore, MD

#### 2.4 Placing on the Market/Application Rules

USG Securock<sup>®</sup> Brand Cement Roof Board is engineered to perform within a properly designed roof system. The use of USG Securock<sup>®</sup> Brand Cement Roof Board as a roof component is the responsibility of the design professional.

Consult roof manufacturers for specific instructions on the application of their products to USG Securock<sup>®</sup> Brand Cement Roof Board. For fully adhered fiberglass reinforced membranes, consult the membrane manufacturer.

#### 2.5 Delivery Status

USG Securock<sup>®</sup> Brand Cement Roof Board typically comes as the following sizes and packaging. The panels are put on wooden pallets and secured with plastic banding.

Size (thickness × width × length)	Units (pcs)
1/2 in. x 4 ft. x 4 ft. (12.7 mm x 1,220 mm x 1,220 mm)	60
1/2 in. x 4 ft. x 8 ft. (12.7 mm x 1,220 mm x 2,440 mm)	30
5/8 in. x 4 ft. x 4 ft. (15.9 mm x 1,220 mm x 1,220 mm)	50
5/8 in. x 4 ft. x 8 ft. (15.9 mm x 1,220 mm x 2,440 mm)	24

#### Table 2: Product Data: Sizes and Packaging

#### 2.6 Product Composition

#### **Table 3: Product Formula**

Material	Value
Portland cement	>50%
Fly ash	<15%
Calcium sulfate dihydrate	<10%
Perlite	<10%
Glass-fiber mesh	<5%
Total	100%

#### 2.7 Product Manufacturing

The manufacturing of Securock<sup>®</sup> Brand Cement Roof Board starts with the blending of the dry ingredients in a screw conveyor, feeding of this dry ingredient mixture into a mixer where they are mixed with water and wet additives. Glass-fiber mesh is used as the reinforcement on the top and the bottom of the slurry. The resulting slurry is formed into a panel and allowed to hydrate at ambient conditions. The finished product is stacked on a wooden pallet and secured with plastic banding for shipment.

Waste material from manufacturing goes to landfill.





### USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD

Baltimore, MD

#### 2.8 Environment and Health During Manufacturing

USG and CGC lead the building sector in developing and supplying sustainable construction materials. Today, sustainability is integrated into the design and manufacturing of every wall, ceiling, and flooring product. In the manufacturing of our products, we review and select each material with consideration of environmental protection, health, and safety. Raw materials used in our products are carefully selected and go through a qualification procedure. Raw materials are tested for contaminants by an internal lab and third-party labs.

#### 2.9 Packaging

USG Securock<sup>®</sup> Brand Cement Roof Boards are put on wooden pallets and secured with plastic banding for shipping. The production and transportation of these packaging materials were modeled in this LCA study.

#### 2.10 Conditions of Use

Keep USG Securock<sup>®</sup> Brand Cement Roof Board panels dry before, during and after installation. USG Securock<sup>®</sup> Brand Cement Roof Board should not be installed during rain, heavy fog and any other conditions that deposit moisture on the surface of the board. Apply only as much USG Securock<sup>®</sup> Brand Cement Roof Board that can be covered by final roof membrane system in the same day. Avoid exposure to moisture from leaks or condensation.

USG Securock<sup>®</sup> Brand Cement Roof Board should be stored flat and off the ground with protection from the weather. The preferred storage location is an enclosed shelter providing protection from the elements. However, if stored outdoors, a breathable waterproof covering should be used.

When applying solvent-based adhesives or primers, allow sufficient time for the solvent to evaporate to avoid damage to roof components.

USG recommends a maximum asphalt application temperature for Type III asphalt of 450°F when using USG Securock<sup>®</sup> Brand Cement Roof Board. Application temperatures above these recommended temperatures may adversely affect roof system performance. USG does not recommend applying direct heat to Securock<sup>®</sup> Brand Cement Roof Board when torching a membrane.

#### 2.11 Environment and Health During Use Stage

This product is not expected to produce any unusual hazards during normal use.

#### 2.12 Reference Service Life

The reference service life (RSL) is 40 years according to the PCR. The building estimated service life (ESL) is 75 years in accordance with ASHRAE 189.1 (2020, Section 9.5.1). The number of replacements of product expected during the building ESL of 75 years is reported as 0.9. The replacement products and ancillary materials have been incorporated into the LCA study.

#### 2.13 Replacement Phase

This phase includes the production and transportation of the panels and fasteners (& plates) used for replacement. It also includes transportation and end of life processes of any waste from the replacement processes, including the panels and fasteners (& plates) removed.

#### 2.14 Re-Use Phase

USG Securock® Brand Cement Roof Boards (including packaging) cannot generally be re-used at the end of life.

#### 2.15 End-of-Life Disposal

USG Securock® Brand Cement Roof Boards (including packaging) are put in landfill at the end of life.





# USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD

Baltimore, MD

# 3. LCA Calculation Methodology

#### 3.1 Functional Unit

The functional unit is defined as 1 square meter (10.8 square feet) of installed roof board. 7% installation waste is included in the modeling according to the PCR.

Name	1/2" Panel	5/8" Panel
Functional Unit	1 m <sup>2</sup> (10.8 ft <sup>2</sup> )	1 m <sup>2</sup> (10.8 ft <sup>2</sup> )
Thickness	0.5 in (12.7 mm)	0.625 in (15.9 mm)
Density	64.5 lb/ft <sup>3</sup> (1030 kg/m <sup>3</sup> )	60.0 lb/ft <sup>3</sup> (960 kg/m <sup>3</sup> )
Surface weight per functional unit	2.6 lb/ft <sup>2</sup> (12.7 kg/m <sup>2</sup> )	3.0 lb/ft <sup>2</sup> (14.6 kg/m <sup>2</sup> )

#### **Table 4: Functional Unit**

## 4. System Boundary

This EPD represents a "cradle-to-gate" with options LCA analysis for USG Securock<sup>®</sup> Brand Cement Roof Board. It covers the production stage (A1 to A3), transport to jobsite (A4), installation (A5), replacement (B4), and end-of-life (C2 transport & C4 disposal).

A1 (raw material supply) includes the extraction and processing of raw materials for the roof cover board.

A2 (transport to factory) includes the transport of raw materials to the manufacturing facility.

A3 (manufacturing) includes the manufacturing of roof cover board and packaging materials, as well as the transport of the manufacturing waste to landfill.

A4 (transport to jobsite) includes the transport of products and packaging to the jobsite. The actual transportation modes & the actual average distances are used in the analysis.

A5 (installation) includes 7% wastage of products covering the production processes (A1-A3) and transport to site (A4) to account for the material lost from wastage of products. It also includes the manufacturing and transport of the fasteners. For roof board installation, fasteners are always used together with plates, and both are modeled in this study. Typical fastener (with plate) and fastening pattern are used in the analysis. Impacts from the installation of the product are assumed negligible with hand tools used for the installation. Transportation of the Installation waste (including the packaging) to landfill is included in this phase, and the distance is assumed to be 50 miles.

According to the PCR, use phase modules B1 (use), B2 (maintenance), B3 (repair), B5 (refurbishment), B6 (operational energy use), B7 (operational water use) are assumed to have zero impact for this product category.

B4 (replacement) includes the materials and energy required for the replacement of the product over the 75-year ESL. It also includes the transportation of the demolished board and the installation waste (including the packaging) to landfill, and the distance is assumed to be 50 miles.

C1 (deconstruction) is conducted with hand tools and has zero impact.

C2 (transport to waste processing) includes the transportation of the demolished board to landfill at the end of life, and the distance is assumed to be 50 miles.

C4 models the landfill of the demolished board at the end of life.

The infrastructure/capital goods are excluded for upstream, core, and downstream processes in the LCA report and in the EPD. Heating and cooling of the manufacturing facility are included in the analysis.







#### 4.1 Estimates and Assumptions

Primary energy and raw material input data were collected from the Baltimore, MD plant for the 2023 calendar year. Data collection of energy and raw material inputs was aided by the presence of an extensive computer monitoring system which tracked product formulas by product type. Additional data limitations include the use of proxy processes rather than actual supplier generated primary data. This would include such processes as Portland cement, which is representative of Portland cement but may not necessarily be representative of USG's particular supplier. In addition, the data is limited in that the primary data was collected during the 2023 year, and changes in operations may increase/decrease impacts in the future. Other data limitations include the use of secondary data sets instead of primary data for upstream and downstream processes, local impacts vs. global impacts, possible impacts vs. actual impacts, inherent uncertainty in the data sets, accuracy and precision of impact assessment methodology, etc.

#### 4.2 Cut-off Criteria

The requirements for the exclusion of inputs and outputs (cut-off rules) shall follow the guidance in ISO 21930 Section 7.1.8.

#### 4.3 Background Data

All background data was sourced from critically reviewed LCA for Experts databases from Sphera.

#### 4.4 Data Requirements and Data Sources

The LCA model was created using LCA for Experts software (version 10.9.0.31) from Sphera. Specific comments related to data quality requirements cited in ISO 14025 Section 4.2.3.6.2 include the following.

**Temporal**: In the case of USG Securock<sup>®</sup> Brand Cement Roof Boards production, the LCI data was collected from the manufacturing plant for the 2023 production year.

Geographical: Where possible, all processes were chosen as being representative of US manufacturing processes.





# USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD

Baltimore, MD

**Technical**: The data selected for this study is specific to the technology used in the preparation of the various raw materials.

**Precision**: The raw material usage amounts were derived from plant quality data on finished products and product formulas.

**Completeness**: Virtually all the significant raw material flows (> 99%) in USG Securock<sup>®</sup> Cement Roof Board production have been modeled.

**Representative**: Where possible all the data sets were selected to be representative of US-based production, are less than 10 years in age and are representative of the technology being employed.

**Consistency**: All the manufacturing processes were modeled in a consistent manner throughout this study in accordance with the goal and scope definitions.

**Reproducibility**: The information contained in this study, including raw material, energy, and transportation distance inputs, have been fully documented in the LCA report.

**Sources of Data**: The sources for the processes used in this study have been fully provided in the LCA report and are representative of the material and energy sources used in actual production.

**Uncertainty**: The relative uncertainty associated with this study has been minimized. No significant assumptions have been made.

#### 4.5 Allocation

The production condition is relatively consistent for different products manufactured on the line. Energy inputs were allocated based on the production line speed of each product. The energy usages are inversely proportional to the line speed for each product.





## 5. LCA: Scenarios and Additional Technical Information

The actual transportation modes and the average distances for A4 are listed below. Both rail and truck are used for the distribution of the product.

Name	1/2"	5/8"	UNIT
Vehicle type	US Truck	US Truck	—
Fuel type	Diesel	Diesel	—
Liters of fuel (including packaging)	3.64E-02	4.19E-02	l/100km
Transport distance	640	640	km
Capacity utilization	0.65	0.65	—
Vehicle type	Rail	Rail	—
Fuel type	Diesel	Diesel	—
Liters of fuel (including packaging)	7.93E-03	9.14E-03	l/100km
Transport distance	300	300	km
Capacity utilization	0.40	0.40	—
Gross density of products transported (assembly only)	64.5	60.0	pcf
Gross density of products transported (assembly only)	1030	960	kg/m³

#### Table 5: Transport to the Building Site (A4)





Name	1/2"	5/8"	Unit				
Ancillary materials	0.16	0.16	kg				
Net freshwater consumption specified by water source and fate	0	0	m <sup>3</sup>				
Other resources	0	0	kg				
Electricity consumption	0	0	kWh				
Other energy carriers	0	0	MJ				
Product loss per functional unit	8.89E-01	1.02E+00	kg				
Waste materials at the construction site before waste processing, generated by product installation	8.89E-01	1.02E+00	kg				
Output materials resulting from on-site waste processing	0	0	kg				
Mass of packaging waste, wooden pallet	3.00E-01	3.75E-01	kg				
Mass of packaging waste, plastic band	5.27E-05	5.27E-05	kg				
Biogenic carbon contained in packaging	4.22E-01	5.28E-01	kg CO <sub>2</sub>				
Direct emission to ambient air, soil, and water	~ 0	~ 0	kg				
VOC emissions	N/A	N/A	µg/m³				

Table 6: Installation Into the Building (A5)

# According to the PCR, there is assumed to be no energy, material, or water input required during the use phase (B1) of the roof cover protection board.

Roof cover panels shall be assumed to not need maintenance (B2), repair (B3), or refurbishment (B5) during the product RSL over the building ESL.

Roof cover panels shall be assumed to have zero impact from building operational energy use (B6) and building operational water use (B7).







Name	Value	Unit					
RSL	40	years					
Replacement cycle	0.9						
Energy input	0	kWh					
Net freshwater consumption specified by water source and fate	0	m <sup>3</sup>					
Ancillary material specified by type and amount	0.15 (corrosion resistant fasteners)	kg					
Replacement of worn parts, specify parts/materials	0	kg					
Direct emissions to ambient air, soil, and water	0	kg					
Further assumptions for scenario development	NA						

#### Table 7. Replacement of the Installed Product (B4)

#### Table 8: End of Life (C1-C4)

Name		1/2"	5/8"	Unit
Collection process	Collected separately	0	0	kg
(specified by type)	Collected with mixed construction waste	1.14E+01	1.31E+01	kg
	Reuse	0	0	kg
	Recycling	0	0	kg
Recovery	Landfill	1.14E+01	1.31E+01	kg
(specified by type)	Incineration	0	0	kg
	Incineration with energy recovery	0	0	kg
	Energy conversion efficiency rate	N/A	N/A	-
Disposal Product or material for final deposition		1.14E+01	1.31E+01	kg
Removal of bioger	nic carbon (excluding packaging)	0	0	kg CO <sub>2</sub>





# 6. Life Cycle Assessment Results

Prod	uction	Stage	Constr Sta	uction ige		Use Stage				End-of-Life Stage					
Raw Material Supply	Transport to factory	Manufacturing	Transport to jobsite	Construction/Installation Process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	De-construction/Demolition	Transport	Waste Processing	Disposal
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
Х	Х	Х	Х	Х	MND	MND	MND	Х	MND	MND	MND	MND	Х	MND	Х

Figure 2: System Boundary



ASTM INTERNATIONAL WWW.ASTM.ORG COPYRIGHT ©2014



#### 6.1 LCA Results

# Table 9: North American LCA Environmental Impacts – 1 Square Meter (10.8 Square Feet) of USG 1/2" Securock<sup>®</sup> Brand Cement Roof Board (A1-A3) with Options

Impact Category	Units	A1-A3	A4	A5	B4	C2	C4
Global Warming Potential, excl. biogenic carbon (GWP)	kg CO2 eq.	9.03E+00	9.09E-01	1.19E+00	1.00E+01	1.81E-01	2.08E-01
Global Warming Potential, incl. biogenic carbon (GWP)	kg CO2 eq.	8.46E+00	9.09E-01	1.16E+00	9.45E+00	1.81E-01	2.06E-01
Ozone Depletion Potential (ODP)	kg CFC 11eq.	3.70E-07	2.71E-15	2.59E-08	3.56E-07	5.40E-16	1.14E-14
Acidification Potential (AP)	kg SO2 eq.	2.57E-02	1.95E-03	3.02E-03	2.76E-02	3.32E-04	1.29E-03
Eutrophication Potential (EP)	kg N eq.	1.54E-03	2.30E-04	1.95E-04	1.77E-03	4.24E-05	5.74E-05
Photochemical Ozone Creation Potential (POCP)	kg O3 eq.	4.43E-01	5.11E-02	5.38E-02	4.91E-01	7.40E-03	2.42E-02
Abiotic Depletion Potential (ADP) fossil fuels	MJ, LHV	2.43E+01	1.73E+00	2.09E+00	2.53E+01	3.44E-01	3.54E-01



ASTM INTERNATIONAL WWW.ASTM.ORG COPYRIGHT ©2014



# USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD

Baltimore, MD

# Table 10: Resource and Waste Flows for 1 Square Meter (10.8 Square Feet) of USG 1/2" Securock<sup>®</sup> Brand Cement Roof Board (A1-A3) with Options

Use of Primary Resources	Units	A1-A3	A4	A5	B4	C2	C4
Renewable primary resources used as an energy carrier (RPRE)	MJ, NCV	1.59E+01	5.38E-01	2.42E+00	1.70E+01	1.07E-01	4.83E-01
Renewable primary resources with energy content used as material (RPRM)	MJ, NCV	1.27E+00	0.00E+00	8.89E-02	1.23E+00	0.00E+00	0.00E+00
Non-renewable primary resources used as an energy carrier (NRPRE)	MJ, NCV	8.27E+01	1.22E+01	1.19E+01	9.57E+01	2.42E+00	2.77E+00
Non-renewable primary resources with energy content used as material (NRPRM) $% \left( \left( NRPRM\right) \right) \right) =0.011$	MJ, NCV	2.16E+00	0.00E+00	1.52E-01	2.08E+00	0.00E+00	0.00E+00
Secondary material, fuel, and recovered energy	Units	A1-A3	A4	A5	B4	C2	C4
Secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuel (RSF)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuel (NRSF)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy (RE)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Consumption of fresh water (FW)	m3	2.28E-02	1.79E-03	2.82E-03	2.45E-02	3.56E-04	7.30E-04
Emissions inventory parameters for transparency	Units	A1-A3	A4	A5	B4	C2	C4
Biogenic carbon content of product	kg CO2 eq.	-1.47E-01	0.00E+00	-1.03E-02	-1.42E-01	0.00E+00	1.42E-01
Calcination uptake from carbonation	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon of bio-based packaging	kg CO2 eq.	-4.22E-01	0.00E+00	4.22E-01	0.00E+00	0.00E+00	0.00E+00
Land use change	kg CO2 eq.	2.68E-03	5.16E-04	5.01E-04	3.24E-03	1.03E-04	1.26E-03
Combustion of waste from renewable sources used in production	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Combustion of waste from non-renewable sources used in production	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indicators describing waste	Units	A1-A3	A4	A5	B4	C2	C4
Hazardous waste disposed (HWD)	kg	2.12E-02	1.64E-09	1.49E-03	2.05E-02	6.93E-10	3.27E-10
Non-hazardous waste disposed (NHWD)	kg	8.13E-01	1.22E-03	1.00E+00	8.02E-01	1.40E+01	2.41E-04
High-level radioactive waste (RWD)	kg	1.68E-03	3.67E-05	2.40E-04	1.75E-03	2.85E-05	7.31E-06
Intermediate and low-level waste	kg	N/A	N/A	N/A	N/A	N/A	N/A
Assignments of output flows at the end-of-life	Units	A1-A3	A4	A5	B4	C2	C4
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MR)	kg	3.23E-03	0.00E+00	2.26E-04	3.11E-03	0.00E+00	0.00E+00
Materials for energy recovery (MER)	kg	2.15E-03	0.00E+00	1.51E-04	2.07E-03	0.00E+00	0.00E+00
Recovered energy exported (EE)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00







# Table 11: North American LCA Environmental Impacts – 1 Square Meter (10.8 Square Feet) of USG 5/8" Securock<sup>®</sup> Brand Cement Roof Board (A1-A3) with Options

Impact Category	Units	A1-A3	A4	A5	B4	C2	C4
Global Warming Potential, excl. biogenic carbon (GWP)	kg CO2 eq.	9.97E+00	1.06E+00	1.28E+00	1.11E+01	2.12E-01	2.42E-01
Global Warming Potential, incl. biogenic carbon (GWP)	kg CO2 eq.	9.28E+00	1.06E+00	1.23E+00	1.04E+01	2.12E-01	2.40E-01
Ozone Depletion Potential (ODP)	kg CFC 11eq.	3.70E-07	3.15E-15	2.59E-08	3.57E-07	6.33E-16	1.32E-14
Acidification Potential (AP)	kg SO2 eq.	2.82E-02	2.26E-03	3.24E-03	3.02E-02	3.88E-04	1.52E-03
Eutrophication Potential (EP)	kg N eq.	1.67E-03	2.68E-04	2.08E-04	1.93E-03	4.95E-05	6.71E-05
Photochemical Ozone Creation Potential (POCP)	kg O3 eq.	4.91E-01	5.94E-02	5.81E-02	5.46E-01	8.64E-03	2.83E-02
Abiotic Depletion Potential (ADP) fossil fuels	MJ, LHV	2.52E+01	2.01E+00	2.17E+00	2.64E+01	4.04E-01	4.14E-01



ASTM INTERNATIONAL WWW.ASTM.ORG COPYRIGHT ©2014



# USG SECUROCK® BRAND CEMENT ROOF BOARD

Baltimore, MD

# Table 12: Resource and Waste Flows for 1 Square Meter (10.8 Square Feet) of USG 5/8" Securock<sup>®</sup> Brand Cement Roof Board (A1-A3) with Options

Use of Primary Resources	Units	A1-A3	A4	A5	B4	C2	C4
Renewable primary resources used as an energy carrier (RPRE)	MJ, NCV	1.83E+01	6.26E-01	2.60E+00	1.94E+01	1.26E-01	5.65E-01
Renewable primary resources with energy content used as material (RPRM)	MJ, NCV	1.27E+00	0.00E+00	8.89E-02	1.23E+00	0.00E+00	0.00E+00
Non-renewable primary resources used as an energy carrier (NRPRE)	MJ, NCV	9.12E+01	1.41E+01	1.27E+01	1.06E+02	2.83E+00	3.23E+00
Non-renewable primary resources with energy content used as material (NRPRM) $% \left( \left( NRPRM\right) \right) \right) =0.011$	MJ, NCV	2.16E+00	0.00E+00	1.52E-01	2.09E+00	0.00E+00	0.00E+00
Secondary material, fuel, and recovered energy	Units	A1-A3	A4	A5	B4	C2	C4
Secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuel (RSF)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuel (NRSF)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Recovered energy (RE)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Consumption of fresh water (FW)	m3	2.48E-02	2.08E-03	2.99E-03	2.68E-02	4.17E-04	8.55E-04
Emissions inventory parameters for transparency	Units	A1-A3	A4	A5	B4	C2	C4
Biogenic carbon content of product	kg CO2 eq.	-1.61E-01	0.00E+00	-1.13E-02	-1.55E-01	0.00E+00	1.55E-01
Calcination uptake from carbonation	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Biogenic carbon of bio-based packaging	kg CO2 eq.	-5.29E-01	0.00E+00	5.29E-01	0.00E+00	0.00E+00	0.00E+00
Land use change	kg CO2 eq.	3.09E-03	5.98E-04	5.51E-04	3.72E-03	1.19E-04	1.47E-03
Combustion of waste from renewable sources used in production	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Combustion of waste from non-renewable sources used in production	kg CO2 eq.	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Indicators describing waste	Units	A1-A3	A4	A5	B4	C2	C4
Hazardous waste disposed (HWD)	kg	2.12E-02	1.91E-09	1.49E-03	2.05E-02	3.82E-10	8.11E-10
Non-hazardous waste disposed (NHWD)	kg	9.05E-01	1.41E-03	1.17E+00	8.92E-01	2.84E-04	1.64E+01
High-level radioactive waste (RWD)	kg	1.88E-03	4.26E-05	2.56E-04	1.97E-03	8.55E-06	3.34E-05
Intermediate and low-level waste	kg	N/A	N/A	N/A	N/A	N/A	N/A
Assignments of output flows at the end-of-life	Units	A1-A3	A4	A5	B4	C2	C4
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MR)	kg	3.23E-03	0.00E+00	2.26E-04	3.11E-03	0.00E+00	0.00E+00
Materials for energy recovery (MER)	kg	2.15E-03	0.00E+00	1.51E-04	2.07E-03	0.00E+00	0.00E+00
Recovered energy exported (EE)	MJ, NCV	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00







## USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD Baltimore, MD

Comparisons cannot be made between product-specific or industry average EPDs at the design stage of a project, before a building or construction works has been specified. Comparisons may be made between product-specific or industry average EPDs at the time of product purchase only when performance and specifications for product or construction works have been established and serve as a functional unit for comparison.

Environmental impact results shall be converted to a functional unit basis before any comparison is attempted. Any comparison of EPDs shall be subject to the requirements of ISO 21930 or EN 15804. EPDs are not comparative assertions and are either not comparable or have limited comparability when they have different system boundaries, are based on different product category rules or are missing relevant environmental impacts. Such comparisons can be inaccurate and could lead to erroneous selection of materials or products that have higher impact, at least in some impact categories.

#### 6.2 LCA Interpretation

The LCA results for the production of USG Securock<sup>®</sup> Brand Cement Roof Board were dominated by raw materials, primarily Portland cement and glass-fiber mesh. Figure 3-4 shows the A1-A3 results for GWP (excluding biogenic carbon) for 1/2" and 5/8" panel.

Figure 3: Process Dominance Analysis for A1-A3 GWP excl. biogenic carbon for the Production of 1 Square Meter (10.8 Square Feet) of 1/2" USG Securock<sup>®</sup> Brand Cement Roof Board







# Environmental Product Declaration USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD Baltimore, MD

Figure 4: Process Dominance Analysis for A1-A3 GWP excl. biogenic carbon for the Production of 1 Square Meter (10.8 Square Feet) of 5/8" USG Securock<sup>®</sup> Brand Cement Roof Board







USG SECUROCK<sup>®</sup> BRAND CEMENT ROOF BOARD Baltimore, MD

#### 7. References

#### LCA Report

A Cradle-to-Gate with Options Life Cycle Assessment of USG Securock<sup>®</sup> Brand Cement Roof Board, 04/01/25. USG (Confidential)

#### Product PCR

Product Category Rules for Building-Related Products and Services Part A: Life Cycle Assessment Calculation Rules and Report Requirements, UL Environment, Standard 10010, Version 4.0, published March 28, 2022

Product Category Rules Guidance for Building-Related Products and Services Part B: Roof Cover Protection Board EPD Requirements, UL Environment, Standard 10010-36, Version 1.0, published November 2, 2021

#### Sustainability Reporting Standards

EN 15804:2012-04 - Sustainability of construction works — Environmental Product Declarations — Core rules for the product category of construction product

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

ISO 14040:2006/Amended 1:2020 - Environmental management – Life cycle assessment – Principles and framework

ISO 14044:2006/amended 2:2020 - Environmental management - Life cycle assessment - Requirements and guidelines

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

ISO 15392:2008 - Sustainability in building construction- General principles

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

ISO 15686-2:2008 - Buildings and constructed assets- Service life planning Part 2: Service life prediction procedures

ISO 15686-7:2008 - Buildings and constructed assets- Service life planning Part 7: Performance evaluation for feedback of service life data from practice

ISO 15686-8:2008 - Buildings and constructed assets- Service life planning Part 8: Reference service life and service life estimation

ISO 21930:2017 - Sustainability in buildings and civil engineering works — Core rules for environmental product declarations of construction products and services

ASTM General Program Instructions, v8.0, 4/29/2020, ASTM International



