Environmental Product Declaration

1/2 in. (12.7 mm) Regular glass-mat panels with moisture and mold resistance

- Feature a noncombustible, moisture-resistant gypsum core encased in a fiberglass mats face and back that shed water
- Suitable for use in pre dry-in and similar applications of panels before the building envelope is fully enclosed
- Quick score-and-snap, no sawing or special tools required
- Comply with ASTM C1658, Standard Specification for Glass Mat Gypsum Panels, for 1/2 in. (12.7 mm) Regular glass-mat water-resistant gypsum panel
- Score a "10" when tested in accordance with ASTM D3273, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- Can be exposed to weather for up to 12 months and are guaranteed three years against manufacturing defects
- Underwriters Laboratories Inc. (UL) Classification as to surface-burning characteristics and noncombustibility. Achieved GREENGUARD Gold Certification and qualifies as a low VOC emitting material (meets CA 01350)

### TRACI V2.1 ENVIRONMENTAL IMPACTS (CRADLE-TO-GRAVE)

<table>
<thead>
<tr>
<th>Functional Unit – 1,000 sf (92.9 m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Warming Potential (kg CO₂ eq.)</td>
</tr>
<tr>
<td>Ozone Depletion Potential (kg CFC-11 eq.)</td>
</tr>
<tr>
<td>Acidification Potential (kg SO₂ eq.)</td>
</tr>
<tr>
<td>Eutrophication Potential (kg N eq.)</td>
</tr>
<tr>
<td>Photochemical Ozone Creation Potential (kg O₃ eq.)</td>
</tr>
<tr>
<td>Abiotic Resource Depletion Potential Fossil Fuels (MJ, LHV)</td>
</tr>
</tbody>
</table>

For over a century, sustainable practices have naturally been an inherent part of our business at USG and CGC. Today, they help shape the innovative products that become the homes where we live, the buildings where we work and the arenas where we play. From the product formulations we choose, to the processes we employ, USG and CGC are committed to designing, manufacturing, and distributing products that minimize overall environmental impacts and contribute toward a healthier living space. We believe that transparency of product information is essential for our stakeholders and Environmental Product Declarations (EPDs) are the next step toward an even more transparent USG and CGC. For additional information, visit usg.com, cgcinc.com and usg.ecomedes.com.
This declaration is an Environmental Product Declaration (EPD) in accordance with ISO 14025 and ISO 21930; 2007. 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.

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**DECLARATION NUMBER** EPD 258

**PROGRAM OPERATOR** ASTM International – 100 Barr Harbor Drive, West Conshohocken, PA USA [www.astm.org](http://www.astm.org)

**DECLARATION HOLDER** USG Corporation - 550 W. Adams St., Chicago, IL USA

**DECLARED PRODUCT** 1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough® and 1/2 in. (12.7 mm) Durock™ Brand Glass-Mat Tile Backerboard

**REFERENCE PCR** NSF, Product Category Rules for Gypsum Panel Products, v1.1, April 2020

**DATE OF ISSUE** 10/8/21

**PERIOD OF VALIDITY** 5 Years

**CONTENTS OF THE DECLARATION**

This EPD is complete and contains the following:

- Product System Documentation
- Life Cycle Calculation Rules
- Life Cycle Assessment Results
- Further Information
- References

This declaration was independently verified in accordance with ISO 14025 and ISO 21930:2017

☐ INTERNAL  ☒ EXTERNAL

Tim Brooke, ASTM International

This life cycle assessment was independently verified in accordance with ISO 14044 and the reference PCR by:

Thomas P. Gloria, Industrial Ecology Consultants
1. Product System Documentation

1.1 Product Description and Product Identification (Sheetrock® Brand Glass-Mat Panels Mold Tough®)

1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough® feature a noncombustible, moisture-resistant gypsum core that is encased in a fiberglass mat on the face and back that shed water. When tested in accordance with ASTM D3273, Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber, the panels score a “10” (highest). The fiberglass face is folded around the long edges to reinforce and protect the core, and the ends are cut square and even. The long edges of the panels are tapered, allowing joints to be reinforced and concealed with USG Sheetrock® Brand joint treatment systems.

1.2 Designated Applications (Sheetrock® Brand Glass-Mat Panels Mold Tough®)

- Commercial or residential applications where 1/2 in. (12.7 mm) Regular panels with moisture and mold resistance are required
- Areas where glass-mat panels are desired
- New or repair and remodel construction
- Protected exterior soffit and ceiling applications
- Non-fire-rated wall and ceiling applications

1.3 Product Description and Product Identification (Durock™ Brand Glass-Mat Tile Backerboard)

Durock™ Brand Glass-Mat Tile Backerboard is a water- and mold-resistant coated glassmat tile backerboard. The face of the panel is treated with a proprietary coating for moisture resistance and enhanced tile bond, making it ideal as a tile substrate for dry and/or wet areas Res 1 (Residential dry), Res 2 (Residential limited water exposure), Res 3 (Residential wet), Com1 (Commercial dry), Com2 (Commercial limited water exposure), Com3 (Commercial wet) as defined by the Tile Council of North America Handbook 2018.

1.4 Designated Applications (Durock™ Brand Glass-Mat Tile Backerboard)

- Lightweight and easy to score, snap and fasten
- Moisture- and mold-resistant substrate
- Scores the highest achievable rating (10 out of 10) for mold resistance according to ASTM D3273
- Proprietary coating provides exceptional tile bond performance wall and ceiling applications
### 1.5 Product Technical Data

**Table 1: Summary of the technical data (1/2 in. Sheetrock® Brand Glass-Mat Panels Mold Tough®)**

<table>
<thead>
<tr>
<th>Technical Data</th>
<th>ASTM Test Method</th>
<th>Requirement</th>
<th>Acceptance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Data Sheet – Yes/No</td>
<td></td>
<td>Yes</td>
<td>usg.com and cgcinc.com</td>
</tr>
<tr>
<td>Noncombustibility</td>
<td>E136</td>
<td>Noncombustible</td>
<td>Meets</td>
</tr>
<tr>
<td>Surface-burning characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flame spread</td>
<td>E84</td>
<td>Flame Spread Index, not greater than 25</td>
<td>0</td>
</tr>
<tr>
<td>Smoke developed</td>
<td>E84</td>
<td>--</td>
<td>0</td>
</tr>
<tr>
<td>Class A</td>
<td>E84</td>
<td>Flame spread not greater than 25 and</td>
<td>Meets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>smoke developed not greater than 450</td>
<td></td>
</tr>
<tr>
<td>Core hardness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>C473 (B)</td>
<td>Not less than 15 lbf (67 N)</td>
<td>Meets</td>
</tr>
<tr>
<td>End</td>
<td>C473 (B)</td>
<td>Not less than 15 lbf (67 N)</td>
<td>Meets</td>
</tr>
<tr>
<td>Edge</td>
<td>C473 (B)</td>
<td>Not less than 15 lbf (67 N)</td>
<td>Meets</td>
</tr>
<tr>
<td>Flexural strength</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parallel</td>
<td>C473 (B)</td>
<td>Not less than 80 lbf (356 N)</td>
<td>Meets</td>
</tr>
<tr>
<td>Perpendicular</td>
<td>C473 (B)</td>
<td>Not less than 100 lbf (445 N)</td>
<td>Meets</td>
</tr>
<tr>
<td>Humidified deflection</td>
<td>C473</td>
<td>Not greater than 5/16 in. (8 mm)</td>
<td>Meets</td>
</tr>
<tr>
<td>Nail pull resistance</td>
<td>C473 (B)</td>
<td>Not less than 80 lbf (356 N)</td>
<td>Meets</td>
</tr>
</tbody>
</table>

1. Per ASTM C1658 for 1/2 in. (12.7 mm) glass mat gypsum panels.

**Table 2: Summary of the technical data (1/2 in. Durock™ Brand Glass-Mat Tile Backerboard)**

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit of Measure</th>
<th>Test Method</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>psf</td>
<td>ASTM C473</td>
<td>1.7</td>
</tr>
<tr>
<td>Flexural Strength</td>
<td>lbf</td>
<td>ASTM C473</td>
<td>&gt;100 (perpendicular) &gt;800 (parallel)</td>
</tr>
<tr>
<td>Nail Pull</td>
<td>lb. (0.25 in. head diameter)</td>
<td>ASTM C473</td>
<td>&gt;70</td>
</tr>
<tr>
<td>Shear Bond Strength</td>
<td>psi</td>
<td>ANSI A118.1/ANSI A118.4/ANSI A136.1</td>
<td>&gt;50</td>
</tr>
<tr>
<td>Surface-burning characteristics</td>
<td>flame spread/smoke developed</td>
<td>ASTM E84</td>
<td>15/5</td>
</tr>
<tr>
<td>Fire Resistance</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Thermal Resistance</td>
<td>hr.-°F-ft²/BTU</td>
<td>ASTM C518</td>
<td>0.42</td>
</tr>
<tr>
<td>Mold Resistance</td>
<td></td>
<td>ASTM D3273</td>
<td>10</td>
</tr>
<tr>
<td>Minimum Bending Radius</td>
<td>ft</td>
<td>--</td>
<td>12</td>
</tr>
<tr>
<td>Permeability</td>
<td>perm</td>
<td>ASTM E96 Procedure A</td>
<td>&lt;3</td>
</tr>
</tbody>
</table>
1.6 Placing on the Market/Application Rules
Standard rules for installing gypsum panel products are presented in the USG Gypsum Construction Handbook available online at usg.com and cgcinc.com.

1.7 Product Composition
Table 3: Product specifications and formula

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>1/2 in. (12.7 mm)</td>
</tr>
<tr>
<td>Lengths</td>
<td>5-12 ft. (1524-3658 mm)</td>
</tr>
<tr>
<td>Width</td>
<td>4 ft. (1219 mm)</td>
</tr>
<tr>
<td>Weight (nominal)</td>
<td>1.6-1.8 lb./sq. ft. (7.8-8.8 kg/m²)</td>
</tr>
<tr>
<td>Edges</td>
<td>Tapered</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additive</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum</td>
<td>89-93%</td>
</tr>
<tr>
<td>Glass Mat</td>
<td>5-8%</td>
</tr>
<tr>
<td>Additives</td>
<td>2-3%</td>
</tr>
</tbody>
</table>

1.8 Product Manufacture
The manufacture of gypsum panel products starts with the combining of the dry ingredients in a screw conveyor, feeding of this dry ingredient mixture into a pin mixer where these dry ingredients are mixed with water and wet additives. The resulting slurry is fed between two glass-mat facers. The wet gypsum panel is allowed to hydrate after which the hard panel is cut and transferred into a kiln for evaporation of excess water. After removal of the evaporative water, the panel is cut to its final size, and the resulting product is ready for shipment. Any gypsum panel product not meeting quality control specifications is disposed of in an appropriate landfill.

Figure 1: Process diagram for the production of glass mat gypsum panel products
1.9 Environment and Health During Manufacturing

USG and CGC have led the building sector’s effort in developing and supplying sustainable construction materials. Today, sustainability is integrated into the design and manufacture of every wall, ceiling, and flooring product. As both a producer and a buyer of raw materials, we have a responsibility to extensively review and select each material we use. Each decision we make is based on careful consideration of environmental and safety effects over time. Raw materials used in our products are carefully selected and go through a screening procedure. Incoming raw materials are tested for contaminants by an internal lab and third-party labs for consideration of use and worker, environmental, and end-user exposure. This due diligence helps to ensure our products are safe to handle in our manufacturing plants and on job sites while having minimal impact on occupant health and indoor and outdoor environments.

1.10 Packaging

A quantity of units are collected and placed on sleutters (i.e., spacers) for easy pick-up by fork lift trucks.

1.11 Distribution

The default distances from the PCR for both truck 280 miles (451 km) and rail 130 miles (209 km) transport were used in this analysis. Final transportation from the distribution gate to the construction site was defaulted to 25 miles (40 km) by a single unit truck with an empty backhaul.

1.12 Product Installation

For installation of gypsum panel products, refer to Gypsum Association’s GA-216, Application and Finishing of Gypsum Panel Products, ASTM C840, Standard Specification for Application and Finishing of Gypsum Board, published UL Design or GA File Number and USG Gypsum Construction Handbook. As dictated by the PCR, “the default on-site installation waste” scenario for gypsum panels was 10% on a surface area basis of gypsum panel product. A 10% installation waste factor was adhered to in this LCA analysis.

Installation of the gypsum panel product into the building includes the manufacture and transportation of ancillary inputs and any energy or water required for installation or operation of the construction site. The installation stage included provision of all materials (joint tape, joint treatment, and fasteners) and energy required to install the product per industry standards. The amounts of joint tape, joint compound and fasteners required for installing 1,000 square feet (1 MSF) of gypsum panels was based on industry standards. In the case of Joint compound, the amount was based on the PCR for joint compound. Energy required during installation of this product is predominantly manual labor with minimal electricity which has been omitted in this analysis.

1.13 Environment and Health During Use Stage

Under normal conditions of intended use, this material does not pose a risk to the environment or occupant health.

1.14 Reference Service Life

A default RSL of 75 years shall be assumed for the product. An assumed Estimated Service Life (ESL) of 75 years shall be used for building life.
1.13 End-of-Life

Currently, glass mat gypsum panel products are typically disposed of in a building and construction landfill. In certain areas, USG has agreements with third-party gypsum waste recyclers who collect gypsum construction waste at jobsites for recycling and then transport this post-consumer gypsum raw material to specific USG manufacturing plants for use in the manufacturing of new gypsum panel products. There are several alternative options to landfilling such as the use of reground gypsum panels for soil amendment applications. Contact your local EPA for reuses rules and regulations.

1.14 Documentation on Additional Environmental Information

1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough® have achieved GREENGUARD Gold Certification and qualifies as a "Low Emitting" material per California Department of Public Health CDPH/EHLB/Standard Method (CA Section 01350) for school classroom, and private office modeling scenarios, and meets USGBC’s LEED® v4 emission requirements.

2. LCA Calculation Rules

2.1 Functional Unit

The functional unit for this LCA study is 1,000 sf (92.9 m²) of product. This functional unit is consistent with the PCR.

<table>
<thead>
<tr>
<th>Table 4: Functional unit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gypsum Board</strong></td>
</tr>
<tr>
<td>Functional Unit</td>
</tr>
<tr>
<td>Declared Density</td>
</tr>
<tr>
<td>Declared Density</td>
</tr>
</tbody>
</table>

2.2 System Boundary

This cradle-to-grave (A1-C4) LCA study covers all the production steps from raw materials extracted from the earth (the cradle) to pallets of gypsum panel products ready to be shipped from the plant as well as distribution, installation (including contributions from fasteners, joint tape, and joint compound), use and end of life stages (the grave). This study also includes the preparation of an intermediate LCA on joint compound used in the installation of this product.
2.3 Estimates and Assumptions

1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough® and 1/2 in. (12.7 mm) Durock™ Brand Glass-Mat Tile Backerboard raw material and energy inputs are specific to the products produced at the relevant manufacturing plants.

2.4 Cut-off Criteria

The cut-off criteria for input flows to be considered within each system boundary were as follows:

- **Mass** – if a flow is less than 1% of the cumulative mass of the model flows it may be excluded, providing its environmental relevance is minor.
- **Energy** – if a flow is less than 1% of the cumulative energy of the system model it may be excluded, providing its environmental relevance is minor.

The sum of the excluded material flows must not exceed 5% of mass, energy, or environmental relevance.

2.5 Background Data

All background was sourced from critically reviewed GaBi databases.

2.6 Data Requirements and Data Sources

Manufacturer specific data was obtained from each manufacturing plant in the United States. The LCA model was created using GaBi ts software. 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 1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough® and 1/2 in. (12.7 mm) Durock™ Brand Glass-Mat Tile Backerboard, the LCI data was collected from the relevant manufacturing plant for the 2019 calendar year.
Geographical: Where possible, all processes were chosen as being representative of U.S. manufacturing processes.

Technical: The data selected for this study is specific to the technology used in the preparation of the 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%) used for panel production has been modeled. The exception consists of transportation of the coating raw materials; the effect of which was determined to be less than 1% of the total.

Representative: Where possible all the data sets were selected to be representative of U.S.-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.

2.7 Period Under Review

All raw material and energy inputs are from the 2019 calendar year.

2.8 Allocation

The LCI data was collected for the gypsum panel product from the relevant manufacturing plants for the 2019 production year. Raw material and energy inputs were allocated to 1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough® and 1/2 in. (12.7 mm) Durock™ Brand Glass-Mat Tile Backerboard based on the mass of those panels.

2.9 Comparability

Any comparison of EPDs shall be subject to the requirements of ISO 14025:2006 section 6.7.2, ISO 21930:2017 section 5.5, and NSF Part B PCR for Gypsum Panel Products, section 5.5.
3. Life Cycle Assessment Results

Figure 3: System Boundary

<table>
<thead>
<tr>
<th>Product stage</th>
<th>Construction process stage</th>
<th>Use stage</th>
<th>End of life stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>A4</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

3.1 Life Cycle Impact Assessment Results

The Life Cycle Impact Assessment Results presented below are mass-averaged results based on the total mass of the 1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough® and 1/2 in. (12.7 mm) Durock™ Brand Glass-Mat Tile Backerboard product produced at the relevant manufacturing plants.

Table 5: LCA Results using TRACI 2.1 Impacts

<table>
<thead>
<tr>
<th>Impact Assessment Method: TRACI 2.1</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Impact Category</td>
<td>A1-A3</td>
</tr>
<tr>
<td>Global warming</td>
<td>kg CO2 eq.</td>
</tr>
<tr>
<td>Ozone Depletion Potential (ODP)</td>
<td>kg CFC 11-eq.</td>
</tr>
<tr>
<td>Acidification Potential</td>
<td>kg SO2 eq.</td>
</tr>
<tr>
<td>Eutrophication Potential (EP)</td>
<td>kg N eq.</td>
</tr>
<tr>
<td>Photochemical Ozone Creation Potential (POCP)</td>
<td>kg O3-Equiv.</td>
</tr>
<tr>
<td>Abiotic Depletion Potential (ADP) - fossil fuels</td>
<td>MJ surplus energy</td>
</tr>
</tbody>
</table>
Table 6: LCA Results for Resources Usages

<table>
<thead>
<tr>
<th>Use of Primary Resources</th>
<th>Units</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable primary resources used as an energy carrier (RPRE)</td>
<td>MJ, NCV</td>
<td>A1-A3 4.26E+02, A4 2.08E+01, A5 5.72E+01, B1-B7 0.00E+00, C1-C4 4.87E+01, Total A1-C4 5.52E+02</td>
</tr>
<tr>
<td>Renewable primary resources with energy content used as material (RPRM)</td>
<td>MJ, NCV</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 8.94E-02, Total A1-C4 8.94E-02</td>
</tr>
<tr>
<td>Non-renewable primary resources used as an energy carrier (NRPRE)</td>
<td>MJ, NCV</td>
<td>A1-A3 4.86E+03, A4 5.04E+02, A5 6.53E+02, B1-B7 0.00E+00, C1-C4 6.53E+02, Total A1-C4 6.67E+03</td>
</tr>
<tr>
<td>Non-renewable primary resources with energy content used as material (NRPRM)</td>
<td>MJ, NCV</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 7.93E-02, Total A1-C4 7.93E-02</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary material, secondary fuel and recovered energy</th>
<th>Units</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Material (SM)</td>
<td>kg</td>
<td>A1-A3 1.32E+01, A4 0.00E+00, A5 1.46E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 1.47E+01</td>
</tr>
<tr>
<td>Renewable Secondary Fuel (RSF)</td>
<td>MJ, NCV</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Non-renewable Secondary Fuel (NRSF)</td>
<td>MJ, NCV</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Renewable Energy (RE)</td>
<td>MJ, NCV</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Consumption of Fresh Water</td>
<td>m³</td>
<td>A1-A3 1.59E+00, A4 8.88E-02, A5 2.13E-01, B1-B7 0.00E+00, C1-C4 9.48E-02, Total A1-C4 1.99E+00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional inventory parameters for transparency</th>
<th>Units</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Removals and emissions associated with biogenic carbon content of the bio-based product</td>
<td>kg CO₂-eq.</td>
<td>A1-A3 -2.29E+01, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 2.29E+01, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Emission from calcination and uptake from carbonation</td>
<td>kg CO₂-eq.</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Removals and emissions associated with biogenic carbon content of the bio-based packaging</td>
<td>kg CO₂-eq.</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Emissions from land use change</td>
<td>kg CO₂-eq.</td>
<td>A1-A3 4.09E-02, A4 3.39E-02, A5 1.92E-02, B1-B7 0.00E+00, C1-C4 3.20E-02, Total A1-C4 1.26E-01</td>
</tr>
<tr>
<td>Emissions from combustion of waste from renewable sources used in production processes</td>
<td>kg CO₂-eq.</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Emissions from combustion of waste from non-renewable sources used in production processes</td>
<td>kg CO₂-eq.</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Indicators describing waste</th>
<th>Units</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous waste disposed</td>
<td>kg</td>
<td>A1-A3 1.48E+04, A4 4.21E+08, A5 1.67E+05, B1-B7 0.00E+00, C1-C4 6.03E+08, Total A1-C4 1.64E-04</td>
</tr>
<tr>
<td>Non-hazardous waste disposed</td>
<td>kg</td>
<td>A1-A3 1.26E+04, A4 4.63E+08, A5 8.99E+01, B1-B7 0.00E+00, C1-C4 7.75E+02, Total A1-C4 8.78E+02</td>
</tr>
<tr>
<td>High-level radioactive waste</td>
<td>kg</td>
<td>A1-A3 9.93E-02, A4 1.43E-03, A5 1.27E-02, B1-B7 0.00E+00, C1-C4 4.71E-03, Total A1-C4 1.18E-01</td>
</tr>
<tr>
<td>Intermediate and low-level waste</td>
<td>kg</td>
<td>A1-A3 N/A, A4 N/A, A5 N/A, B1-B7 N/A, C1-C4 N/A, Total A1-C4 N/A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assignments of output flows at the end-of-life</th>
<th>Units</th>
<th>Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components for re-use (CRU)</td>
<td>kg</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Materials for recycling (MR)</td>
<td>kg</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Materials for energy recovery (MER)</td>
<td>kg</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
<tr>
<td>Recovered energy exported (EE)</td>
<td>MJ, NCV</td>
<td>A1-A3 0.00E+00, A4 0.00E+00, A5 0.00E+00, B1-B7 0.00E+00, C1-C4 0.00E+00, Total A1-C4 0.00E+00</td>
</tr>
</tbody>
</table>
4. LCA Interpretation

The figure below graphically depicts the relative contributions for the cradle-to-grave production of 1,000 sf of 1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough®. The dominant source of greenhouse gases are generated during the panel drying process. This analysis is typical for all gypsum plants covered in this study. Future reductions in Global Warming Potential should be directed at reducing the amount of water entering the dryer.

**Figure 4: Process Dominance Analysis for the Production of 1 MSF of 1/2 in. (12.7 mm) Sheetrock® Brand Glass-Mat Panels Mold Tough®**
5. References

**LCA Report**

**Product PCR**

**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 14046:2013 - Environmental management- Water footprint- Principles, requirements and guidelines
ISO 15392:2008 - Sustainability in building construction- General principles
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

**Additional References**