1/2 in. (12.7 mm) Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board

- The industry's first and lightest 12.7 mm (1/2 in.) sag-resistant interior ceiling board
- Superior sag resistance under texturing materials
- Support sprayed textures and insulation better than 15.9 mm (5/8 in.) gypsum panels
- Can be applied parallel or perpendicular to framing
- Comply with ASTM C1396, Standard Specification for Gypsum Board, for 12.7 mm (1/2 in.) gypsum ceiling board
- Underwriters Laboratories Inc. (cUL) 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>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Warming Potential (kg CO₂ eq.)</td>
<td>2.60E+02</td>
</tr>
<tr>
<td>Ozone Depletion Potential (kg CFC-11 eq.)</td>
<td>2.37E-08</td>
</tr>
<tr>
<td>Acidification Potential (kg SO₂ eq.)</td>
<td>6.18E-01</td>
</tr>
<tr>
<td>Eutrophication Potential (kg N eq.)</td>
<td>7.05E-02</td>
</tr>
<tr>
<td>Photochemical Ozone Creation Potential (kg O₃ eq.)</td>
<td>1.34E+01</td>
</tr>
<tr>
<td>Abiotic Resource Depletion Potential Fossil Fuels (MJ, LHV)</td>
<td>6.25E+02</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; 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. 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.

<table>
<thead>
<tr>
<th>DECLARATION NUMBER</th>
<th>EPD 215</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROGRAM OPERATOR</td>
<td>ASTM International – 100 Barr Harbor Drive, West Conshohocken, PA USA  <a href="http://www.astm.org">www.astm.org</a></td>
</tr>
<tr>
<td>DECLARATION HOLDER</td>
<td>USG Corporation - 550 W. Adams St., Chicago, IL USA</td>
</tr>
<tr>
<td>DECLARED PRODUCT</td>
<td>CGC 1/2 in. (12.7 mm) Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board</td>
</tr>
<tr>
<td>REFERENCE PCR</td>
<td>NSF, Product Category Rules for Gypsum Panel Products, v1.1, April 2020</td>
</tr>
<tr>
<td>DATE OF ISSUE</td>
<td>6/4/21</td>
</tr>
<tr>
<td>PERIOD OF VALIDITY</td>
<td>5 Years</td>
</tr>
</tbody>
</table>

**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 UltraLight Sag-Resistant Interior Ceiling Board panels are 12.7 mm (1/2 in.) gypsum panels that feature proprietary core and paper technologies, resulting in a high strength-to-weight ratio composite design. These lightweight panels are also engineered to have superior sag resistance in comparison to traditional 12.7 mm (1/2 in.) gypsum wallboard. The noncombustible gypsum core is encased in 100% recycled face and back papers, and the face paper is folded around the long edges to reinforce and protect the core. The ends of the panels are cut square and even, while the the long edges are tapered, allowing joints to be reinforced and concealed with CGC Sheetrock® or Synko® Brand joint treatment systems.

1.2 Designated Application

- Commercial or residential applications where 1/2 in. (12.7 mm) ceiling panels are desired.
- New or repair and remodel construction
- Parallel or perpendicular installation on ceilings with up to 24 in. (610 mm) OC framing when water-based texture is applied

1.3 Product Technical Data

Table 1: Summary of the technical data

<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>Available at 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 25¹</td>
<td></td>
</tr>
<tr>
<td>Smoke developed</td>
<td>E84</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Class A</td>
<td>E84</td>
<td>Flame spread not greater than 25 and smoke developed not greater than 450</td>
<td>Meets</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 11 lbf (49 N)¹</td>
<td>Meets</td>
</tr>
<tr>
<td>End</td>
<td>C473 (B)</td>
<td>Not less than 11 lbf (49 N)¹</td>
<td>Meets</td>
</tr>
<tr>
<td>Edge</td>
<td>C473 (B)</td>
<td>Not less than 11 lbf (49 N)¹</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 36 lbf (160 N)¹</td>
<td>Meets</td>
</tr>
<tr>
<td>Perpendicular</td>
<td>C473 (B)</td>
<td>Not less than 107 lbf (476 N)¹</td>
<td>Meets</td>
</tr>
<tr>
<td>Humidified deflection, gypsum board</td>
<td>C473</td>
<td>Not greater than 1.25&quot; (32 mm)¹</td>
<td>Meets</td>
</tr>
<tr>
<td>Humidified deflection, ceiling board</td>
<td>C473</td>
<td>Not greater than 5/16&quot; (8 mm)¹</td>
<td>Meets</td>
</tr>
<tr>
<td>Nail pull resistance</td>
<td>C473 (B)</td>
<td>Not less than 77 lbf (376 N)¹</td>
<td>Meets</td>
</tr>
</tbody>
</table>

1. Per ASTM C1396 for 1/2 in. (12.7 mm) gypsum ceiling board.
1.4 Placing on the Market/Application Rules

Standard rules for installing gypsum board are presented in the USG or CGC Gypsum Construction Handbook available online at cgcinc.com.

1.5 Product Composition

<table>
<thead>
<tr>
<th>Product Specifications</th>
<th>Measurement</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thickness</td>
<td>1/2 in. (12.7 mm)</td>
<td></td>
</tr>
<tr>
<td>Lengths</td>
<td>8-14 ft. (2438-4267 mm)</td>
<td></td>
</tr>
<tr>
<td>Width</td>
<td>4 ft. (1219 mm)</td>
<td></td>
</tr>
<tr>
<td>Weight (nominal)</td>
<td>1.3 lb./sq. ft. (6.5 kg/sq. m.)</td>
<td></td>
</tr>
<tr>
<td>Edges</td>
<td>Tapered</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Formulation</th>
<th>Additive</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum</td>
<td></td>
<td>91%</td>
</tr>
<tr>
<td>Paper</td>
<td></td>
<td>7%</td>
</tr>
<tr>
<td>Additives</td>
<td></td>
<td>2%</td>
</tr>
</tbody>
</table>

1.6 Product Manufacture

The manufacture of gypsum board 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 sheets of paper; facing paper (Manila) on the bottom and backing paper (Newsline) on the top. The wet gypsum board is allowed to hydrate after which the hard board is cut and transferred into a kiln for evaporation of excess water. After removal of the evaporative water, the board is cut to its final size, end tapes are applied and the resulting product is ready for shipment. Any gypsum board not meeting quality control specifications is recycled on-site.

Figure 1: Process diagram for the production of gypsum board
1.7 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.

1.8 Packaging

End tape is applied to every two pieces to form a unit for shipment. A quantity of units is collected and placed on sleutters (i.e., spacers) for easy pick-up by fork lift trucks.

1.9 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.

1.10 Product Installation


As dictated by the PCR, “the default on-site installation waste” scenario for gypsum boards was 10% on a surface area basis of gypsum board product. A 10% installation waste factor was adhered to in this LCA analysis.

Installation of the gypsum board 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 board 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.

1.11 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.

1.12 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, gypsum board is 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 wallboard. There are several alternative options to landfilling such as the use of reground gypsum wallboard for soil amendment applications. Contact your local EPA for rules and regulations.

1.14 Documentation on Additional Environmental Information
CGC Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board panels 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>Functional Unit</th>
<th>Value and Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gypsum Board</td>
<td></td>
</tr>
<tr>
<td>Functional Unit</td>
<td>1,000 sf (92.9 m²)</td>
</tr>
<tr>
<td>Declared Density</td>
<td>1380 lbs./MSF</td>
</tr>
<tr>
<td>Declared Density</td>
<td>6.7 kg/m²</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 taped gypsum board 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.
Specifically, this EPD covers production of 1/2 in. (12.7 mm) Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board produced at production facilities in Hagersville, Ontario (Canada), Rainier, OR and Sperry, IA.

2.3 Estimates and Assumptions

All paper raw material and energy data is specific to the manufacture of USG Manila and Newsline papers at the specific USG paper mill. Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board raw material and energy inputs are specific to the specific products produced at the gypsum board plant.

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 United States gypsum board manufacturing plant. The LCA model was created using the 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 UltraLight Sag-Resistant Interior Ceiling Board, the LCI data was collected from each gypsum board 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 for the 2019 calendar year.

2.8 Allocation
The LCI data was collected for the gypsum board plant for the 2019 production year. Raw material and energy inputs were allocated to 1/2 in. (12.7 mm) Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board 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

<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>Raw Material Supply</td>
<td>Transport</td>
<td>Manufacturing</td>
<td>Transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Construction-Installation Process Use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Maintenance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Repair</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Replacement</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refurbishment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Operational Energy Use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Operational water Use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>De-construction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Demolition</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transport</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Waste processing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Disposal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stage</th>
<th>A1-A3</th>
<th>A4</th>
<th>A5</th>
<th>B1-B7</th>
<th>C1-C4</th>
<th>Total A1-C4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global warming</td>
<td>1.57E+02 kg CO2 eq.</td>
<td>3.18E+01 kg CO2 eq.</td>
<td>3.66E+01 kg CO2 eq.</td>
<td>0.00E+00 kg CO2 eq.</td>
<td>3.51E+01 kg CO2 eq.</td>
<td>2.60E+02 kg CO2 eq.</td>
</tr>
<tr>
<td>Ozone Depletion Potential (ODP)</td>
<td>2.13E-08 kg CFC 11-eq.</td>
<td>4.09E-15 kg CFC 11-eq.</td>
<td>2.42E-09 kg CFC 11-eq.</td>
<td>0.00E+00 kg CFC 11-eq.</td>
<td>9.43E-14 kg CFC 11-eq.</td>
<td>2.37E-08 kg CFC 11-eq.</td>
</tr>
<tr>
<td>Acidification Potential</td>
<td>2.95E-01 kg SO2 eq.</td>
<td>7.69E-02 kg SO2 eq.</td>
<td>8.36E-02 kg SO2 eq.</td>
<td>0.00E+00 kg SO2 eq.</td>
<td>1.62E-01 kg SO2 eq.</td>
<td>6.18E-01 kg SO2 eq.</td>
</tr>
<tr>
<td>Eutrophication Potential (EP)</td>
<td>3.84E-02 kg N eq.</td>
<td>9.86E-03 kg N eq.</td>
<td>1.15E-02 kg N eq.</td>
<td>0.00E+00 kg N eq.</td>
<td>1.06E-02 kg N eq.</td>
<td>7.05E-02 kg N eq.</td>
</tr>
<tr>
<td>Photochemical Ozone Creation Potential (POCP)</td>
<td>6.23E+00 kg O3-Equiv.</td>
<td>2.09E+00 kg O3-Equiv.</td>
<td>1.68E+00 kg O3-Equiv.</td>
<td>0.00E+00 kg O3-Equiv.</td>
<td>3.44E+00 kg O3-Equiv.</td>
<td>1.34E+01 kg O3-Equiv.</td>
</tr>
<tr>
<td>Abiotic Depletion Potential (ADP) - fossil fuels</td>
<td>4.14E+02 MJ surplus energy</td>
<td>6.03E+01 MJ surplus energy</td>
<td>7.91E+01 MJ surplus energy</td>
<td>0.00E+00 MJ surplus energy</td>
<td>7.14E+01 MJ surplus energy</td>
<td>6.25E+02 MJ surplus energy</td>
</tr>
</tbody>
</table>

Figure 3: System Boundary

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 UltraLight Sag-Resistant Interior Ceiling Board produced at the relevant production plants.

3.1 Life Cycle Impact Assessment Results

Table 4: LCA Results using TRACI 2.1 Impacts

Mass-Weighted Average of Environmental LCA Results for 1,000 SF of 1/2 in. (12.7 mm) Sheetrock® Brand Interior Ceiling Board
Table 5: 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>5.01E+02</td>
</tr>
<tr>
<td>Renewable primary resources with energy content used as material (RPRM)</td>
<td>MJ, NCV</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Non-renewable primary resources used as an energy carrier (NRPRE)</td>
<td>MJ, NCV</td>
<td>2.91E+03</td>
</tr>
<tr>
<td>Non-renewable primary resources with energy content used as material (NRPRM)</td>
<td>MJ, NCV</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Secondary material, secondary fuel and recovered energy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary Material (SM)</td>
<td>kg</td>
<td>2.41E+02</td>
</tr>
<tr>
<td>Renewable Secondary Fuel (RSF)</td>
<td>MJ, NCV</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Non-renewable Secondary Fuel (NRSF)</td>
<td>MJ, NCV</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Renewable Energy (RE)</td>
<td>MJ, NCV</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Consumption of Fresh Water</td>
<td>m3</td>
<td>1.21E+00</td>
</tr>
<tr>
<td>Additional inventory parameters for transparency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Removals and emissions associated with biogenic carbon content of the bio-based product</td>
<td>kg CO2-eq.</td>
<td>-4.82E+01</td>
</tr>
<tr>
<td>Emission from calcination and uptake from carbonation</td>
<td>kg CO2-eq.</td>
<td>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>0.00E+00</td>
</tr>
<tr>
<td>Emissions from land use change</td>
<td>kg CO2-eq.</td>
<td>4.24E-02</td>
</tr>
<tr>
<td>Emissions from combustion of waste from renewable sources used in production processes</td>
<td>kg CO2-eq.</td>
<td>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>0.00E+00</td>
</tr>
<tr>
<td>Indicators describing waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazardous waste disposed</td>
<td>kg</td>
<td>5.52E-05</td>
</tr>
<tr>
<td>Non-hazardous waste disposed</td>
<td>kg</td>
<td>3.06E+00</td>
</tr>
<tr>
<td>High-level radioactive waste</td>
<td>kg</td>
<td>1.18E-02</td>
</tr>
<tr>
<td>Intermediate and low-level waste</td>
<td>kg</td>
<td>N/A</td>
</tr>
<tr>
<td>Assignments of output flows at the end-of-life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Components for re-use (CRU)</td>
<td>kg</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Materials for recycling (MR)</td>
<td>kg</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Materials for energy recovery (MER)</td>
<td>kg</td>
<td>0.00E+00</td>
</tr>
<tr>
<td>Recovered energy exported (EE)</td>
<td>MJ, NCV</td>
<td>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 Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board. The dominant source of greenhouse gases are generated during the board 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 3: Process Dominance Analysis for the Production of 1 MSF of 1/2 in. (12.7 mm) Sheetrock® Brand UltraLight Sag-Resistant Interior Ceiling Board Panels**

![Diagram showing the process dominance analysis](image-url)
5 References

LCA Report
A Cradle-to-Gate (A1-A3) and Cradle-to-Grave (A1-C4) Life Cycle Assessment of Selected Sheetrock® Brand PaperFaced Gypsum Board Products, 4/30/21. USG (Confidential)

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