EcoBatt® batts and rolls

Unfaced, Kraft, FSK, Foil

EcoBatt glass mineral wool insulation takes sustainability to a new level while delivering Knauf’s exceptional quality, handling and durability. EcoBatt leverages ECOSE® Technology—a revolutionary binder that transformed the glass wool insulation industry. It is based on rapidly renewable, bio-based material. EcoBatt also contains sand—an abundant resource—and recycled glass.

Features & functionality
- Faced products resist tears, are marked in one-foot increments, and feature extra wide stapling flange for faster and easier install
- Highly resilient, recovers quickly to full thickness for snug fit and superior aesthetics
- Consistent quality materials cut easily with low dust
- Excellent acoustical properties reduce sound transmission

Visit Knauf for more product information

Environment & materials
- Improved by: Utilization of recycled glass
- Knau's original plant-based ECOSE binder technology
- Optimized compression packaging

Certifications, rating systems & disclosures:
- Declare, Red List Free and HPD v2.1
- Energy Star
- UL GREENGUARD Gold certified
- UL Validated recycled content
- UL Validated formaldehyde-free
- Audited, European Certification Board for Mineral Wool Products exoneration process

ASTM C 665; Type I, Class A (unfaced); ASTM C 665; Type II, Class C (kraft faced); ASTM C 665; Type III, Class A (FSK-25 foil faced); ASTM C 665; Type III, Class B (foil faced)

Performance dashboard

Validity: 12/03/18 – 12/03/23
At the installation site, insulation products are unpackaged and installed. After removal, the insulation is assumed to be landfilled (incineration), and no maintenance or replacement is required to achieve the product’s life span. Packaging waste is disposed (15% to recycling, 68% to landfill, and 17% to incineration).  

**Characterized vs. single score results**

Due to normalization and weighting, different stages can dominate the mPt results, but not the characterized and single score results. The batch ingredients sand and water are the largest contributor to the manufacturing stage for all impact categories. The energy required to melt the glass and produce the glass fibers is the smallest contributor of all the stages. The maintenance are due to the disposal of packaging waste, which is the only impacts associated with installation and maintenance.
Comparability' are satisfied. Comparison of the environmental performance of building envelope products covered. Variations of specific products for differences of 10–20% may impact the overall performance of these envelope systems. The TRARC process attempts to eliminate these variations and provide a fair representation of the product 

### Table: Manufacturing Data

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
<th>Waste Generation</th>
<th>Energy Use</th>
<th>Water Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulation</td>
<td>Foam</td>
<td>0.0472</td>
<td>0.348</td>
<td>5.34E-02</td>
</tr>
<tr>
<td>Foil</td>
<td>Plastic</td>
<td>0.094</td>
<td>0.018</td>
<td>1.18E+00</td>
</tr>
</tbody>
</table>

#### Additional environmental information

- **Human health damage**
  - Respiratory effects
  - Non-carcinogenics
  - Carcinogenics

- **Ecological damage**
  - Acidification
  - Fossil fuel depletion
  - Smog
  - Eutrophication

- **Emissions**
  - CO₂
  - CH₄
  - N₂O
  - CFC-11 eq
  - HFC-134a eq
  - HFC-152a eq

#### Table: EcoBatt® batts and rolls

<table>
<thead>
<tr>
<th>Category</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAW MATERIAL</td>
<td>kg O₂</td>
<td>1.91E-04</td>
</tr>
<tr>
<td>RAW MATERIAL</td>
<td>kg CO₂</td>
<td>9.07E-04</td>
</tr>
<tr>
<td>RAW MATERIAL</td>
<td>kg CFC-11 eq</td>
<td>7.66E-04</td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>kg O₂</td>
<td>1.02E-03</td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>kg CO₂</td>
<td>4.18E-10</td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>kg CFC-11 eq</td>
<td>4.58E-01</td>
</tr>
<tr>
<td>INSTALLATION AND MAINTENANCE</td>
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<td>1.16E-10</td>
</tr>
<tr>
<td>INSTALLATION AND MAINTENANCE</td>
<td>kg CO₂</td>
<td>1.14E-03</td>
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<tr>
<td>INSTALLATION AND MAINTENANCE</td>
<td>kg CFC-11 eq</td>
<td>1.16E-10</td>
</tr>
<tr>
<td>DISPOSAL/REUSE/RECYCLING</td>
<td>kg O₂</td>
<td>2.18E-03</td>
</tr>
<tr>
<td>DISPOSAL/REUSE/RECYCLING</td>
<td>kg CO₂</td>
<td>8.36E-05</td>
</tr>
<tr>
<td>DISPOSAL/REUSE/RECYCLING</td>
<td>kg CFC-11 eq</td>
<td>2.12E-13</td>
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</table>

#### Table: A2 Transportation

<table>
<thead>
<tr>
<th>Component</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAW MATERIAL</td>
<td>kg O₂</td>
<td>1.56E-02</td>
</tr>
<tr>
<td>RAW MATERIAL</td>
<td>kg CO₂</td>
<td>8.57E-06</td>
</tr>
<tr>
<td>RAW MATERIAL</td>
<td>kg CFC-11 eq</td>
<td>3.36E-04</td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>kg O₂</td>
<td>6.08E-01</td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>kg CO₂</td>
<td>4.32E-05</td>
</tr>
<tr>
<td>TRANSPORTATION</td>
<td>kg CFC-11 eq</td>
<td>3.36E-04</td>
</tr>
<tr>
<td>INSTALLATION AND MAINTENANCE</td>
<td>kg O₂</td>
<td>9.53E-06</td>
</tr>
<tr>
<td>INSTALLATION AND MAINTENANCE</td>
<td>kg CO₂</td>
<td>5.20E-14</td>
</tr>
<tr>
<td>INSTALLATION AND MAINTENANCE</td>
<td>kg CFC-11 eq</td>
<td>5.88E-05</td>
</tr>
<tr>
<td>DISPOSAL/REUSE/RECYCLING</td>
<td>kg O₂</td>
<td>1.36E-07</td>
</tr>
<tr>
<td>DISPOSAL/REUSE/RECYCLING</td>
<td>kg CO₂</td>
<td>1.00E-03</td>
</tr>
<tr>
<td>DISPOSAL/REUSE/RECYCLING</td>
<td>kg CFC-11 eq</td>
<td>1.36E-07</td>
</tr>
</tbody>
</table>

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**Disclaimer**: The information provided is for educational purposes only and should not be used for decision-making. Always consult with a professional before making any significant business decisions.
<table>
<thead>
<tr>
<th>Impact Category</th>
<th>LIFE CYCLE STAGE</th>
<th>Emission</th>
<th>Unit</th>
<th>Multi-product weighted average</th>
<th>Characterized vs. single score results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ozone depletion</td>
<td>Cradle to gate</td>
<td>4.26E-14</td>
<td>CTU</td>
<td>9.40E-14</td>
<td>1.54E-14</td>
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<tr>
<td>Eutrophication</td>
<td>Cradle to gate</td>
<td>6.40E-15</td>
<td>CTU</td>
<td>1.28E-14</td>
<td>2.14E-14</td>
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<tr>
<td>Fossil fuel depletion</td>
<td>Cradle to gate</td>
<td>1.52E-13</td>
<td>CTU</td>
<td>2.78E-13</td>
<td>1.74E-13</td>
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<tr>
<td>Acidification</td>
<td>Cradle to gate</td>
<td>2.39E-12</td>
<td>CTU</td>
<td>1.89E-12</td>
<td>1.34E-12</td>
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<tr>
<td>Human health damage</td>
<td>Cradle to gate</td>
<td>5.31E-01</td>
<td>CTU</td>
<td>5.09E-01</td>
<td>6.40E-01</td>
</tr>
<tr>
<td>Ecological damage</td>
<td>Cradle to gate</td>
<td>1.64E-01</td>
<td>CTU</td>
<td>1.61E-01</td>
<td>2.01E-01</td>
</tr>
</tbody>
</table>

The intent is to reward project teams for selecting products from building materials that have low environmental impacts. The intent is to make the environmental impacts of building materials transparent to consumers. The intent is to make the environmental impacts of building materials transparent to consumers.
How it works
Screening lists, which include chemicals that government bodies and toxicology experts have determined need further scrutiny, as well as chemical lists not recognized by any government body.

Classifications for a building product.

Material ingredients are screened and categorized according to the hazards associated with them, based on two listings:

- International governmental bodies
- Toxicology experts

Life cycle assessment
Characterized chemicals, and elements known to pose serious risks to human health and the greater ecosystem.

Material ingredients are inventoried and screened against the manufacturers guide to declare, administered by the international living future institute. The guide provides information about the program, the certification process, and an overview of the materials specification streamlining.

EcoBatt® Foil-Scrim-Kraft (FSK) Faced

Clear red list free

EcoBatt® Kraft Faced

Clear red list free

EcoBatt® Foil

Clear red list free

Unfaced

Clear red list free

Self-declared and done in accordance with the HPD open building product disclosure level 1. Declare labels are based on the selected content inventory threshold:

- Inventory threshold: 100 ppm
- Full disclosure: known hazards:
  - Yes
  - List translator scores: Benchmark 1
  - Possible benchmark: Unknown

Total VOC content

Knauf engages very closely with its vendors to eliminate and avoid chemicals of concern. We disclose the ingredients in an HPD rather than declare used for all other product variants.

Where it goes at the end of its life

At this time, the product is landfilled at end of life. There is no option other than landfills at this time. This is why we disclose the ingredients in an HPD rather than declare used for all other product variants.

EcoBatt® Foil-Scrim-Kraft (FSK) Faced

What’s in the product and why

The primary ingredient in this product is recycled glass based binder adhesive chemistry known as ECOSE® Technology. ECOSE is a formaldehyde-free. Formaldehyde is a Red List chemical. Other ingredients include:

- Silica sand: greater than 60% by weight. The second largest content is silica sand of the potential human health impacts in the use stage.
- Casein (derived from milk) and dextrose or fructose: as a result of using plant-based binder adhesive systems for wall and ceiling applications.
- Sodium silicate: allows the product to be validated by the UL Environment as fire safe.
- ECOSE binder allows the product to be validated by the UL Environment as fire safe. We are very aware of the importance of fire-safe products.
- Formaldehyde-free. Formaldehyde is a Red List chemical.
- Other product variants:
  - We disclose the ingredients in an HPD rather than declare used for all other product variants.
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          - Other product variants:
How we make it greener

Material evaluation

Manson and Knauf are recycling advocates. We take every effort to ensure our products are recycled and reused in the building industry. This includes our glass wool products, which can be recycled up to 20 times or more, depending on the manufacturer. Our manufacturing process minimizes waste and maximizes efficiency, reducing our impact on the environment.

Leverage compression packaging

We use compression packaging to reduce the number of packages needed for delivery. This approach reduces material usage and transport emissions, resulting in a more sustainable product.

Fewer deliveries needed

By using compression packaging, we minimize the number of trips required to deliver our products, reducing the number of packages and emissions associated with transport.

More material can fit on one truck when compared to other dense materials

Our packaging approach allows for more material to be transported on each truck, reducing the need for multiple deliveries and minimizing the environmental impact of transport.

Energy required to cure our product is reduced substantially

By using compression packaging, we reduce the amount of energy required to cure our product. This is achieved through improved insulation, which retains heat and reduces the need for additional energy.

Reuse the heat in the exhausted air

This approach helps to reduce energy consumption and minimize the environmental impact of our manufacturing process.

Continuous improvement is key to our sustainable development

Continuous improvement is a central tenet of our sustainable development strategy. We are committed to improving our processes and products, reducing our environmental impact and promoting sustainability.

Develop bio-based formaldehyde-free binder

We have developed a bio-based formaldehyde-free binder that significantly reduces the impact of our products on the environment. This blends the benefits of formaldehyde-free binder with the positive environmental attributes of bio-based materials, offering a sustainable solution.

Use of corn actually offsets the carbon impact of some of the mining impacts are reduced proportionately

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Pursue sequestration potential

We are pursuing sequestration potential as a way to reduce our carbon footprint. This involves efforts to offset the carbon emissions associated with our operations and products.

Meet and exceed green standards

Our products meet and exceed green standards, offering a range of potential credits for major building product content and associated health information.

Promote Recycling

We are committed to promoting recycling and the adoption of sustainable practices. This includes recycling our products at end of life, encouraging consumers to recycle, and working with governments to enhance recycling adoption.

Glass Recycling Coalition (GRC)

We are proud members of the Glass Recycling Coalition (GRC), a group dedicated to advancing glass recycling and promoting sustainability in the building industry.

Material imperative for the construction of LBC

Our products are used in a variety of building projects, including those that meet the Living Building Challenge (LBC) specifications.

LEED, NAHB Green Building Standard and more

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Our processes and products avoid the equivalent of more than 100,000 barrels of oil in North America alone.

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Following forty years of research, glass mineral wool has been validated by UL Environment.

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In the past, a label regarding the carcinogenic potential of phenol & formaldehyde avoided the equivalent of more than 100,000 barrels of oil in North America alone.

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Our formaldehyde-free products could have on the indoor air quality of a building.

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With the health and safety exoneration criteria for glass and rock based fiber through the European Certification Board for Mineral Wool Products (EUCEB) exoneration process. This guarantees the formulations are biosoluble and pose no safety, perhaps no other building material has been as safe a product is one that has been thoroughly evaluated.

We believe a safe product is one that has been thoroughly evaluated. We guarantee the formulations are biosoluble and pose no safety, perhaps no other building material has been as thoroughly evaluated as fiberglass products.

The European Certification Board for Mineral Wool Products (EUCEB) has conducted an independent test of the material on our formaldehyde-free products.

EUCEB tested our formaldehyde-free products and concluded they meet the health and safety requirements for glass and rock based fiber.

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Following the launch of our ECOSE Technology in 2009, we had transformed all of our products and processes to this new technology for their processes.

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Manson and Knauf have also launched a new business ancillary facers used on our products.

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Phenol-formaldehyde (PF) based resins are largely a thing of the past with regard to large volume mineral fiber based insulation products.

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We use a phenol-formaldehyde-free binder for our processes.

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Our products are also taken into consideration when determining the air quality of a building.

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Our plants use 60 – 80% recycled content – which translates to about 10 railcars of recycled glass cullet a day. By leveraging so much recycled content, we reduce the energy required to form our products. RTO is five times more product on every truck. This compression means:

Leverage compression packaging

Fewer deliveries needed

Fewer packages on a job

More material can fit on one truck when compared to other dense materials

Energy required to cure our product is reduced substantially

Reuse the heat in the exhausted air

Continuous improvement is key to our sustainable development

Develop bio-based formaldehyde-free binder

Use of corn actually offsets the carbon impact of some of the mining impacts are reduced proportionately

Pursue sequestration potential

Meet and exceed green standards

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The European Certification Board for Mineral Wool Products (EUCEB) has conducted an independent test of the material on our formaldehyde-free products.

EUCEB tested our formaldehyde-free products and concluded they meet the health and safety requirements for glass and rock based fiber.
How we make it greener

**Material evaluation**

Glass is a high modulus material, which helps to facilitate leverage compression packaging five times more product on every truck. This compression means:

- Fewer deliveries needed
- More material can fit on one truck when compared to other insulation materials

**Recycling**

In the past, a label regarding the carcinogenic potential of phenol & formaldehyde avoids the equivalent of more than 100,000 barrels of oil in North America alone.

In 2008, Manson and Knauf Insulation launched perhaps the nation's largest formaldehyde-free green chemistry initiative called ECOSE Technology. Offering this into the building materials marketplace quickly transformed the entire glass mineral fiber industry toward bio-based chemistries. Today Manson and Knauf's bio-based ECOSE Technology is derived from corn-based materials.

In a given year, using corn-based ECOSE Technology instead of phenol and formaldehyde reduces the equivalent of more than 200,000 tons of CO2 emissions. The carbon sequestration impact on our processes. For instance, the use of corn has a significant carbon sequestration impact on our processes. For instance, the use of corn has a significant carbon sequestration impact on our processes. For instance, the use of corn has a significant...
Additional EPD content required by:
ULE PCR for Building Envelope Thermal Insulation and Mechanical Insulation

Environmental parameters derived from LCA per functional unit

### Total material resources

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable material resources</td>
<td>kg</td>
<td>1.57</td>
</tr>
<tr>
<td>Renewable material resources</td>
<td>kg</td>
<td>5.32</td>
</tr>
</tbody>
</table>

### Total primary energy

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-renewable, fossil</td>
<td>MJ</td>
<td>3.74</td>
</tr>
<tr>
<td>Non-renewable, coal</td>
<td>MJ</td>
<td>3.67</td>
</tr>
<tr>
<td>Non-renewable, natural gas</td>
<td>MJ</td>
<td>7.18</td>
</tr>
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<td>Non-renewable, uranium</td>
<td>MJ</td>
<td>1.14</td>
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<td>Renewable, geothermal</td>
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<td>MJ</td>
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<td>Renewable, solar power</td>
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<td>MJ</td>
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### Total water

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
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<tr>
<td>Fresh water</td>
<td>L</td>
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</table>

### Waste

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non hazardous waste</td>
<td>kg</td>
<td>0.429</td>
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<tr>
<td>Hazardous waste</td>
<td>kg</td>
<td>0</td>
</tr>
<tr>
<td>Waste to energy</td>
<td>kg</td>
<td>0</td>
</tr>
</tbody>
</table>

A variation of 10 to 20% | A variation greater than 20%

Scenarios and additional technical information

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
<th>UNIT</th>
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</thead>
<tbody>
<tr>
<td>Transport to the building site [A4]</td>
<td></td>
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</tr>
<tr>
<td>Average distance from Shelbyville to installation site</td>
<td>680</td>
<td>mi</td>
</tr>
<tr>
<td>Average distance from Shasta Lake to installation site</td>
<td>884</td>
<td>mi</td>
</tr>
<tr>
<td>Capacity utilization by mass</td>
<td>27</td>
<td>%</td>
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</table>

Installation into the building [A5]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from installation site to landfill</td>
<td>100</td>
<td>mi</td>
</tr>
</tbody>
</table>

Disposal/reuse/recycling [C1-C4]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance from installation site to landfill</td>
<td>100</td>
<td>mi</td>
</tr>
</tbody>
</table>

TRACI v2.0 acidification results per functional unit

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Raw material acquisition</th>
<th>Manufacturing</th>
<th>Transportation</th>
<th>Installation and maintenance</th>
<th>Disposal/reuse/recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acidification, TRACI 2.0</td>
<td>mole H+ eq</td>
<td>8.35E-02</td>
<td>113E-01</td>
<td>7.64E-03</td>
<td>2.05E-04</td>
<td>6.46E-03</td>
</tr>
</tbody>
</table>

A variation of 10 to 20% | A variation greater than 20%

VERIFICATION

3rd party reviewed: 
Transparency Report

Verified: 
Material evaluation

Self-declared: 

Validity: 11/07/17 – 11/07/22
KNA – 11072017 – 001

This declaration was independently verified by NSF to ISO 21930:2017, EN 15804, the UL Environment PCR, and ISO 14025:2006.

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SM Transparency Report™ + Material Health Overview™

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