Knauf Insulation with ECOSE® Technology

Think of it as green... only browner.

Lab-tested, Mother Nature approved.
All Knauf Insulation products are sustainable. EcoBatt® glass mineral wool insulation with ECOSE Technology takes that standard to a whole new level. It is made from rapidly renewable organic materials instead of oil-based chemicals for greater sustainability—up to 70% less energy intensive than traditional binders. ECOSE Technology is a revolutionary, natural binder that contains no phenol, formaldehyde, acrylics or artificial colors.

Combine ECOSE Technology with sand—one of the world’s most abundant resources—and post-consumer recycled bottle glass and the result is Knauf Insulation’s EcoBatt Insulation. EcoBatt products deliver the same exceptional quality, handling and durability that you have come to expect from Knauf Insulation, with an even higher level of sustainability.

EcoBatt Insulation products are interior friendly. They are certified to the toughest indoor air quality certification in the industry, GREENGUARD GOLD, and are certified to meet CHPS Low-Emitting Materials criteria section 01350. They also meet or exceed all applicable industry performance specifications and standards.

All Knauf Insulation products are inherently sustainable because of high recycled and renewable content. They save a hundred times more energy in use than is required to manufacture them, but EcoBatt Insulation is even more sustainable because its ECOSE Technology helps reduce our carbon footprint further by eliminating the traditional non-renewable oil-based binder chemistry.
**PRODUCT OFFERINGS**

**EcoBatt® Batts and Blankets**
- Unfaced
- Kraft facing
- Foil facing
- FSK foil facing

**Insulation Board**
- Plain
- FSK facing
- PSK facing
- ASJ facing

**Wall and Ceiling Liner**

**Black Acoustical Board**

**ECOBATT INSULATION APPLICATION**

Knauf Insulation EcoBatt batts and blankets are cost-effective thermal and acoustical barriers for energy-efficient construction. Their consistent quality, low dust, and easy-cutting resilient fibers make fabrication simple and installation fast. The products can be used in new and retrofit wood and metal frame applications in residential and commercial structures, as well as in manufactured housing applications. These applications include thermal and acoustical treatments to walls, ceilings and floors.

In addition, **High Density (HD) EcoBatt insulation** is available where optimal thermal performance is required and space for insulation is limited. High Density EcoBatt Cathedral Ceiling Batt, for example, deliver greater R-value in less space, so builders can increase R-values and still maintain adequate space for ventilation.

Knauf Insulation **StapleFree EcoBatt insulation** is flangeless, kraft-faced and friction fits between wood studs, eliminating the need to staple in place. These batts are designed for use in wood framed construction where the stud spacing is no more than 16” on center.

**Light Commercial Applications**

The full line of standard and high-density EcoBatt insulation for wood and metal frame construction can be used for exterior and partition walls, floors, crawlspaces and a variety of ceiling applications.

**TECHNICAL DATA**

**Surface Burning Characteristics**
- Unfaced and FSK foil faced products do not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84.
- Kraft facing will burn and should not be left exposed.

**Thermal Value**
- Thermal resistivity (R-value) is determined using industry standard test method ASTM C 518.

**Water Vapor Permeance (ASTM E 96)**
- Kraft faced products have a water vapor permeance of 1.0 or less.
- FSK foil faced products have ratings of .04.
- Foil faced products have ratings of .05.

**Water Vapor Sorption (ASTM C 1104)**
- Less than 5% by weight.

**Corrosion (ASTM C 665)**
- No greater than sterile cotton.

**Microbial Growth (ASTM C 1338)**
- Does not support microbial growth.

**Noncombustible (ASTM E 136)**
- Unfaced insulation is non-combustible.

**Specification Compliance**
- 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)
- GREENGUARD Certified
- GREENGUARD GOLD™ Certified
- California Energy Commission
- MEA #498-90-M
- State of Minnesota

**SUSTAINABILITY**

Knauf Insulation products used for thermal insulating purposes recover the energy that it took to make them in just hours or days depending on the application. Once installed, the product continues to save energy and reduce carbon generation as long as it is in place (carbon negative).

Glass mineral wool with ECOSE® Technology contains three primary ingredients:
- Over 50% recycled post-consumer glass content verified every 6 months by UL Environment.
- Sand, one of the world’s most abundant resources.
- Our green chemistry initiative ECOSE Technology, which reduces binder embodied energy by up to 70%.
- It is anticipated to reduce its Global Warming Potential (GWP) by approximately 4%, a significant reduction in our carbon footprint.

**Glass Mineral Wool and Mold**

Glass mineral wool insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold it must be discarded. If the material is wet but shows no evidence of mold, it should be dried rapidly and thoroughly. If it shows signs of facing degradation from wetting, it should be replaced.
FEATURES AND BENEFITS

Proven Performance
• Preferred by professional installers concerned with quality, appearance and productivity.
• Excellent acoustical properties reduce sound transmission in the home when properly installed in partition walls and ceiling and floor systems.

Superior Handling
• All Knauf Insulation faced products feature an extra wide stapling flange for faster and easier installation.
• Highly resilient insulation recovers quickly to full thickness for a snug fit and superior finished aesthetics.
• Consistent quality materials made of resilient fibers cut easily and install fast with low dust.
• Durable facing resists tears and is marked in one-foot increments for faster field fabrication.

Superior Service and Support
• Prompt, on-time delivery helps control inventory costs and meet customer expectations.
• Our committed network of distribution assures fast order fulfillment and enhanced product availability.
• 24/7 access to product submittals ensures product acceptance and helps meet quotation deadlines.

Acoustical Performance
Knauf Insulation’s batt insulation provides excellent acoustical properties and will reduce sound transmission when properly installed in partition walls and acoustical ceiling and floor systems. Knauf Insulation’s acoustical/thermal insulation can improve STC ratings in wood stud construction by 3 to 5 points and metal stud construction by 8 to 10 points depending upon the complexity of the wall configurations, R-values and layers of insulation. The STC Ratings table below illustrates in a commercial application, the improved STC Ratings using Knauf Insulation acoustical/thermal insulation compared to no insulation.

Notes
The chemical and physical properties of Knauf Insulation batt insulation represent typical average values determined in accordance with accepted test methods. The data is supplied as technical service and is subject to change without notice. References to numerical flame spread ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

Check with your Knauf Insulation sales representative to assure information is current.

<table>
<thead>
<tr>
<th>STC Ratings</th>
<th>With insulation</th>
<th>No insulation</th>
<th>With insulation</th>
<th>No insulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood Frame, 2 x 4 (3½”- 4” Batt)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
</tr>
<tr>
<td>Single studs/Single layer gypsum</td>
<td>38</td>
<td>35</td>
<td>38</td>
<td>34</td>
</tr>
<tr>
<td>Single studs/Resilient channel</td>
<td>47</td>
<td>39</td>
<td>52</td>
<td>40</td>
</tr>
<tr>
<td>Staggered studs/Single layer gypsum</td>
<td>49</td>
<td>39</td>
<td>51</td>
<td>43</td>
</tr>
<tr>
<td>Double stud walls/Single layer gypsum</td>
<td>57</td>
<td>46</td>
<td>56</td>
<td>45</td>
</tr>
<tr>
<td>Steel Frame (2½” studs) (2½”- 2¼” Batt)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
</tr>
<tr>
<td>Single layer gypsum</td>
<td>45</td>
<td>36</td>
<td>47</td>
<td>39</td>
</tr>
<tr>
<td>Double layer gypsum one side / Single layer gypsum other side</td>
<td>50</td>
<td>39</td>
<td>52</td>
<td>44</td>
</tr>
<tr>
<td>Double layer both sides</td>
<td>56</td>
<td>45</td>
<td>57</td>
<td>48</td>
</tr>
<tr>
<td>Steel Frame (3¼” studs) (3½”- 4” Batt)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
<td>(with ½” gypsum wallboard both sides)</td>
</tr>
<tr>
<td>Single layer gypsum</td>
<td>47</td>
<td>39</td>
<td>50</td>
<td>39</td>
</tr>
<tr>
<td>Double layer gypsum one side / Single layer gypsum other side</td>
<td>52</td>
<td>42</td>
<td>55</td>
<td>47</td>
</tr>
<tr>
<td>Double layer both sides</td>
<td>56</td>
<td>50</td>
<td>58</td>
<td>52</td>
</tr>
</tbody>
</table>
**Wall and Ceiling Liner M with ECOSE Technology**

**DESCRIPTION**
Knauf Insulation Wall and Ceiling Liner M with ECOSE Technology is a brown flexible glass mineral wool blanket with a black mat facing adhered to one surface. It provides thermal and acoustical insulation while a smooth, tough surface resists damage during installation.

**APPLICATIONS**
Knauf Insulation Wall and Ceiling Liner M with ECOSE Technology is designed for use as an acoustical and visual barrier for walls and ceilings where a black surface is required. It is primarily used in theaters, sound studios, public concourses and other areas where acoustical treatment is needed. It is intended to be mechanically fastened to walls and can be covered with fabric or draping, or suspended above linear metal and metal pan ceiling systems to serve as both a visual and acoustical treatment.

**TECHNICAL DATA**
- **Surface Burning (UL Classified)**
  Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84 and UL 723.
- **Indoor Air Quality Excellence**
  Certified for low chemical emissions by UL Environment to both the GREENGUARD Certification ProgramSM and the more stringent GREENGUARD Gold standard.
- **Corrosiveness (ASTM C 665)**
  Does not accelerate corrosion on steel, copper or aluminum.
- **Corrosion (ASTM C 1617)**
  The corrosion rate in mils/yr will not exceed that of the 1 ppm chloride solution.

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**Black Acoustical Board with ECOSE Technology**

**DESCRIPTION**
Knauf Insulation Black Acoustical Board with ECOSE Technology is a heavy density glass mineral wool board insulation made with ECOSE Technology. The base board is brown with a black mat applied to provide a smooth tough finish.

**APPLICATIONS**
Knauf Insulation Black Acoustical Board with ECOSE Technology is designed for use as acoustical insulation and/or visual barrier on walls and ceilings, where system design requires a rigid product and where additional strength and abuse resistance are required. The black surface provides a visual barrier with an aesthetic appearance, in both wall and ceiling applications.

**TECHNICAL DATA**
- **Surface Burning (UL Classified)**
  Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with ASTM E 84, NFPA 255 and UL 723.
- **Indoor Air Quality Excellence**
  Certified for indoor air quality as a low emitting product by Underwriters Laboratories to both the GREENGUARD Indoor Air Quality Certification ProgramSM and the more stringent GREENGUARD Gold standard.
- **Corrosiveness (ASTM C 665)**
  Does not accelerate corrosion on steel, copper or aluminum.
- **Corrosion (ASTM C 1617)**
  The corrosion rate in mils/yr will not exceed that of the 1 ppm chloride solution.

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**Insulation Board with ECOSE Technology**

**DESCRIPTION**
Insulation Board with ECOSE Technology from Knauf Insulation is a thermal and acoustical insulation product made from inorganic glass fibers preformed into boards. The board is available plain, with a factory applied foil-scrim-kraft (FSK) facing, with a factory-applied all service jacket (ASJ) or with a factory applied metalized polypropylene-scrim-kraft jacket (PSK).

**APPLICATIONS**
Insulation Board with ECOSE Technology from Knauf Insulation is a versatile product for use on metal and masonry walls, wall and roof panel systems, curtain wall assemblies and cavity walls.

**TECHNICAL DATA**
- **Surface Burning (UL Classified)**
  Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with NFPA 90A and 90B, ASTM E 84, NFPA 255 and UL 723 and CAN/ULC S102-M88.
- **Indoor Air Quality Excellence**
  Certified for low chemical emissions by UL Environment to both the GREENGUARD Certification ProgramSM and the more stringent GREENGUARD Gold standard.
- **Corrosiveness (ASTM C 665)**
  Does not accelerate corrosion on steel, copper or aluminum.
- **Corrosion (ASTM C 1617)**
  The corrosion rate in mils/yr will not exceed that of the 1 ppm chloride solution.
Wall & Ceiling Liner Noise Reduction Coefficients  
(ASTM C 423, Type A Mounting)

<table>
<thead>
<tr>
<th>Density</th>
<th>Thickness</th>
<th>NRC</th>
</tr>
</thead>
</table>
| 1.0 PCF  
(16 kg/m³) | 1" (25 mm) | .60 |
|           | 1½" (38 mm) | .80 |
|           | 2" (51 mm) | .85 |
| 1.5 PCF  
(24 kg/m³) | ½" (13 mm) | .50 |
|           | 1" (25 mm) | .70 |
|           | 1½" (38 mm) | .80 |
|           | 2" (51 mm) | .90 |
| 2.0 PCF  
(32 kg/m³) | ½" (13 mm) | .45 |
|           | 1" (25 mm) | .70 |

Available in 48" (1219 mm) wide rolls in lengths of 100’ or 50’ (30.48 or 15.24 m). Contact your Knauf Insulation sales representative for additional information.

Black Acoustical Board Sound Absorption Coefficients  
(ASTM C 423, Type A Mounting)

<table>
<thead>
<tr>
<th>Density</th>
<th>Octave Band Center Frequency (cycles/sec.)</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1000</th>
<th>2000</th>
<th>4000</th>
<th>NRC</th>
</tr>
</thead>
</table>
| 2.25 PCF  
(36 kg/m³) |                                            | .26 | .62 | 1.05 | 1.07 | 1.04 | 1.05 | .95 |
| 3.0 PCF  
(48 kg/m³) |                                            | .13 | .24 | .56 | .83 | .92 | .98 | .65 |

Available 24" (610 mm) wide x 48" (1219 mm) long.

Insulation Board Sound Absorption Coefficients  
(ASTM C 423, E 795, Type A Mounting)

<table>
<thead>
<tr>
<th>Type</th>
<th>Surface</th>
<th>Octave Band Center Frequency (cycles/sec.)</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1000</th>
<th>2000</th>
<th>4000</th>
<th>NRC</th>
</tr>
</thead>
</table>
| 2.25 PCF  
(36 kg/m³) | FSK     |                                            | .05 | .24 | .59 | .86 | .97 | 1.00 | .65 |
|            |         |                                            | .17 | .39 | .89 | 1.03 | 1.03 | .99 | .85 |
|            |         |                                            | .26 | .62 | 1.05 | 1.07 | 1.04 | 1.05 | .95 |
| 3.0 PCF  
(48 kg/m³) | Plain   |                                            | .08 | .23 | .62 | .88 | .96 | .99 | .65 |
|            |         |                                            | .09 | .39 | .89 | 1.03 | 1.06 | 1.01 | .85 |
|            |         |                                            | .29 | .65 | 1.11 | 1.13 | 1.06 | 1.03 | 1.00 |
|            | FSK     |                                            | .54 | 1.01 | 1.18 | 1.07 | 1.07 | 1.04 | 1.00 |
|            |         |                                            | .95 | 1.11 | 1.17 | 1.07 | 1.07 | 1.06 | 1.10 |
|            |         |                                            | .21 | .63 | .84 | .93 | .51 | .22 | .75 |
|            |         |                                            | .45 | .60 | .99 | .73 | .53 | .27 | .70 |
|            |         |                                            | .67 | .77 | .93 | .74 | .47 | .28 | .75 |

Available in widths of 24" (610 mm) and 48" (1219 mm) and lengths of 36" (915 mm) to 120" (3048 mm).
LEED Eligible Product
Use of this product may help building projects meet green building standards as set by the Leadership in Energy and Environmental Design (LEED) Green Building Rating System.

LEED v2009
MR Credit 4.1 - 4.2 Recycled Content
MR Credit 5.1 - 5.2 Regional Materials

LEED v4
Knauf Insulation offers several products for both envelope and mechanical systems that have ingredient disclosure and transparency. Please contact transparency@KnaufInsulation.com for products that currently contribute to MR credits.

UL Environment GREENGUARD GoldSM
Knauf Insulation building insulation achieved UL Environment GREENGUARD Gold and is UL Environment validated to be formaldehyde free.

UL Environment GREENGUARD Certification ProgramSM
Products are certified to UL Environment GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg.

UL Environmental Product Declarations
EPD Certification is documentation fully disclosing a product’s environmental impact as well as other information regarding human toxicity, risk, and social responsibility.

This product has been tested and is certified to meet the EUCEB requirements.

Versions of this product have surface burning characteristics that are classified by Underwriters Laboratories and therefore subject to auditing for fire performance compliance.

These products are covered by one or more U.S. and/or other patents. See patent www.knaufinsulation.us/patents.