



Data Sheet

BI-BT-DS 11-15

ECOBATT®

Thermal/Acoustical Insulation

with **ECOSE®**
TECHNOLOGY



Think of it as green...only browner.



Knauf Insulation EcoBatt® Insulation with ECOSE® Technology

All Knauf Insulation products are sustainable. EcoBatt glass mineral wool insulation with ECOSE Technology takes that standard to a whole new level. It is based on rapidly renewable, bio-based material—up to 70% less energy intensive than traditional binders. ECOSE Technology is a revolutionary more sustainable binder that contains no phenol, formaldehyde, acrylics or artificial colors.

Knauf Insulation's EcoBatt insulation combines ECOSE Technology with sand—one of the world's most abundant resources—and a high degree of recycled bottle glass. EcoBatt insulation 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.



Lab-tested, Mother Nature Approved

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 content. They save hundreds of times more energy in use than is required to manufacture them. EcoBatt insulation is even more sustainable because its ECOSE Technology helps reduce our carbon footprint further by eliminating the traditional non-renewable petroleum-based binder chemistry.



EcoBatt insulation is naturally brown— assures no phenol, formaldehyde, acrylics or artificial colors are used in the manufacturing process.



EcoBatt insulation ensures the professional touch—consistent quality, low dust and easy to cut—handling characteristics that you've come to expect from Knauf Insulation.



Knauf Insulation manufactures a full line of EcoBatt insulation—a variety of widths, R-values, densities and facings.

Knauf Insulation EcoBatt® Insulation *with ECOSE® Technology*

ECOBATT INSULATION DESCRIPTION

Knauf Insulation EcoBatt glass mineral wool insulation made with ECOSE Technology contains a high concentration of one of the world's most abundant resources—sand—and a high degree of recycled bottle glass bonded with ECOSE Technology. The products are available unfaced or with kraft, foil or flame-rated FSK-25 (Foil-Scrim-Kraft) foil facings.

ECOSE® TECHNOLOGY DESCRIPTION

ECOSE technology is a revolutionary binder chemistry that enhances the sustainability of our products. The “binder” is the bond that holds our glass mineral wool product together and gives the product its shape and brown color. ECOSE technology is a plant-based, sustainable chemistry that replaces the phenol/formaldehyde (PF) binder traditionally used in glass mineral wool products. Products using ECOSE technology are formaldehyde-free and have reduced global warming potential when compared to our products of the past.

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 batts are available where optimal thermal performance is required and space for insulation is limited. High Density EcoBatt Cathedral Ceiling Batts, for example, deliver greater R-value in less space, so builders can increase R-values and still maintain adequate space for ventilation.

Knauf Insulation **Staple-Free** EcoBatt insulation is flangeless kraft-faced batts which friction fit 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.

Residential Applications

Knauf Insulation offers a full line of standard and high-density EcoBatt batts and blankets with a wide range of sizes and R-values. Available unfaced, or with kraft or flame-rated (FSK) foil facings, Knauf Insulation residential insulation can be used for cavity walls, floors, ceilings, attics, basements and crawlspaces. It is highly resilient, recovering quickly to full thickness. It also greatly reduces the transmission of noise.

Light Commercial Applications

This full line of standard and high-density EcoBatt batts and blankets for wood and metal frame construction is available unfaced or with kraft, foil or flame-rated (FSK) foils facings. Knauf Insulation's commercial building insulation can be used for exterior and partition walls, floors, crawlspaces and a variety of ceiling applications.

Manufactured Housing Applications

Knauf Insulation Manufactured Housing products include a full line of EcoBatt batts and blankets with a wide range of R-values, lengths and widths. It is designed to work efficiently with pre-manufactured structures of all widths. Available unfaced in widths up to 192" (4.88 m) or with kraft facing in widths up to 24" (610 mm), it can be used for cavity walls, partition walls, floors and ceiling applications.

Acoustical Performance

Knauf Insulation's EcoBatt insulation provides excellent acoustical properties and will reduce sound transmission when properly installed in partition walls and acoustical ceiling and floor systems. Knauf Insulation 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, right, illustrates the improved STC Ratings in a commercial application using Knauf Insulation acoustical/thermal insulation compared to no insulation.



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.

TECHNICAL DATA

Surface Burning Characteristics

- Unfaced and flame-rated (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, Category 1, (unfaced)

- ASTM C 665; Type II, Class C, Category 1, (Kraft faced)
- ASTM C 665; Type III, Class A, Category 1, (FSK-25 foil faced)
- ASTM C 665; Type III, Class B, Category 1, (foil faced)
- Verified formaldehyde-free by UL Environmental GREENGUARD Institute
- UL Environmental GREENGUARD Certified
- UL Environmental GREENGUARD Gold Certified
- California Energy Commission
- MEA #498-90-M
- State of Minnesota

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, 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 distributors assures fast order fulfillment and faster inventory turns.
- 24/7 access to product submittals ensures product acceptance and helps meet quotation deadlines.

STC Ratings

| | With insulation | No insulation | With insulation | No insulation |
|---|--|---------------|--|---------------|
| Wood Frame, 2 x 4 (3½" - 4" Batt) | (with ½" gypsum wallboard both sides) | | (with ⅝" gypsum wallboard both sides) | |
| Single studs/Single layer gypsum | 38 | 35 | 38 | 34 |
| Single studs/Resilient channel | 47 | 39 | 52 | 40 |
| Staggered studs/Single layer gypsum | 49 | 39 | 51 | 43 |
| Double stud walls/Single layer gypsum | 57 | 46 | 56 | 45 |
| Steel Frame (2½" studs) (2½" - 2⅞" Batt) | (with ½" gypsum wallboard both sides) | | (with ⅝" gypsum wallboard both sides) | |
| Single layer gypsum | 45 | 36 | 47 | 39 |
| Double layer gypsum one side/Single layer gypsum other side | 50 | 39 | 52 | 44 |
| Double layer both sides | 56 | 45 | 57 | 48 |
| Steel Frame (3½" studs) (3½" - 4" Batt) | (with ½" gypsum wallboard both sides) | | (with ⅝" gypsum wallboard both sides) | |
| Single layer gypsum | 47 | 39 | 50 | 39 |
| Double layer gypsum one side/Single layer gypsum other side | 52 | 42 | 55 | 47 |
| Double layer both sides | 56 | 50 | 58 | 52 |

Knauf Insulation EcoBatt® Insulation *with ECOSE® Technology*

| Wood Frame Construction | | | | |
|----------------------------|---------------|---|-------------------------------------|---------------|
| R-Value | Thickness | Unfaced | Kraft | Staple-Free |
| R-11 | 3½" (89 mm) | 11", 15¼", 23¼" (279, 387, 590 mm) | 15", 23" (381, 584 mm) | |
| R-13 | 3½" (89 mm) | 15", 23" (381, 584 mm) | 15", 23" (381, 584 mm) | 15¼" (387 mm) |
| R-15 | 3½" (89 mm) | | | 15¼" (387 mm) |
| R-15HD* | 3½" (89 mm) | 15" (381 mm) | 15" (381 mm) | |
| R-19 | 6¼" (1599 mm) | 15", 15¼", 23¼" (381, 387, 590 mm) | 15", 19", 23" (381, 483, 584 mm) | 15¼" (387 mm) |
| R-20 | 5½" (140 mm) | 15", 23" (381, 584 mm) | 15", 23" (381, 584 mm) | |
| R-21 | 5½" (140 mm) | | | 15¼" (387 mm) |
| R-21HD* | 5½" (140 mm) | 15", 23" (381, 584 mm) | 15", 23" (381, 584 mm) | |
| R-22 | 6½" (165 mm) | 23" (584 mm) | | |
| R-25 | 8" (203 mm) | 16", 24" (406, 610 mm) | | |
| R-30 | 10" (254 mm) | | 16", 24" (406, 610 mm) | |
| R-30 Attic | 10" (254 mm) | 16", 24" (406, 610 mm) | | |
| R-38 | 12" (305 mm) | 16", 24" (406, 610 mm) | 16", 24" (406, 610 mm) | |
| R-38HD* | 10¼" (261 mm) | 23" (584 mm) | | |
| Metal Frame Construction | | | | |
| R-Value | Thickness | Unfaced | Kraft | Staple-Free |
| R-11 | 3½" (89 mm) | 16", 24" (406, 610 mm) | | |
| R-13 | 3½" (89 mm) | 16" (406 mm) | 16" (406 mm) | |
| R-19 | 6¼" (1599 mm) | 16", 24" (406, 610 mm) | 16", 24" (406, 610 mm) | |
| Manufactured Housing Rolls | | | | |
| R-Value | Thickness | Unfaced | Kraft | Staple-Free |
| R-7** | 2¼" (64 mm) | 15", 90", [96" East] (381, 2286, 2438 mm) | | |
| R-11 | 3½" (89 mm) | 15" & 96" East; 48" West (381, 2438, 1219 mm) | 15" East (381 mm) | |
| R-19 | 6¼" (1599 mm) | 15" East & 48" West (381, 1219 mm) | 15" East (381 mm) | |

Manufacturing Housing Rolls available as custom orders in R-14, R-22, R-25 and R-30

*HD-High Density Insulation

** Items not listed are deemed to be custom or non-standard products. Please contact your Knauf Insulation Territory Manager to inquire about ordering custom, foil, and FSK-foil products.

This chart is meant as a quick reference guide. Please check with your sales representative for a full product offering.



EcoBatt® Insulation

- Combines sand and recycled glass with ECOSE Technology for greater sustainability
- Legendary handling characteristics
- Saves hundreds of times more energy in use than is required to manufacture
- Natural brown color — assures no phenol, formaldehyde, acrylics or artificial colors are used to manufacture EcoBatt insulation

ECOSE® Technology

- Up to 70% less embodied energy than traditional binders
- Contains no phenol, formaldehyde, acrylics or artificial colors
- No petroleum-based chemicals. Converts rapidly renewable bio-based materials into a totally inert polymer for superior environmental sustainability

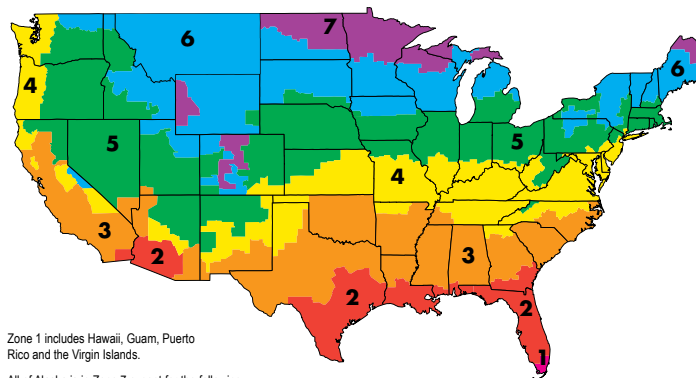
Convenient Packaging, Easier Handling

- Knauf Insulation EcoBatt insulation is packaged in a strong, white poly bag that offers excellent protection from abuse, dust and moisture.
- Our packages feature complete installation instructions and a highly visible R-value label which follows industry standards and makes Knauf Insulation product sizes and specifications easy to read.
- Knauf Insulation's unitized packaging saves time at the jobsite and space in the warehouse.
- Master bag batt units ensure reduced handling costs with greater compression—more square feet per bag, more square feet per truckload, fewer trips to the job site and less warehouse space for storage.

NOTES

The chemical and physical properties of Knauf Insulation EcoBatt 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.

2012 International Energy Conservation Code Climate Zones



Zone 1 includes Hawaii, Guam, Puerto Rico and the Virgin Islands.

All of Alaska is in Zone 7 except for the following boroughs in Zone 8: Bethel, Dillingham, Fairbanks N Star, Nome, North Slope, Northwest Arctic, Southeast Fairbanks, Wade Hampton, Yukon-Koyukuk.

New Wood-Framed Houses

| Zone | Heating System | Attic | Cathedral Ceiling | Wall | | Floor |
|------|---|--------------|------------------------------|------------------------------|----------------------------|---------------------|
| | | | | Cavity | Insulation Sheathing | |
| 1 | All | R-30 to R-49 | R-22 to R-38 | R-13 to R-15 | None | R-13 |
| 2 | Gas, oil, heat pump Electric furnace | R-30 to R-60 | R-22 to R-38 | R-13 to R-15 | None | R-13, R-19, R-25 |
| 3 | Gas, oil, heat pump Electric furnace | R-30 to R-60 | R-22 to R-38 | R-13 to R-15 | None R-2.5 to R-5 | R-25 |
| 4 | Gas, oil, heat pump Electric furnace | R-38 to R-60 | R-30 to R-38 | R-13 to R-15 | R-2.5 to R-6 R-5 to R-6 | R-25 to R-30 |
| 5 | Gas, oil, heat pump Electric furnace | R-38 to R-60 | R-30 to R-38 R-30 to R-60 | R-13 to R-15 R-13 to R-21 | R-2.5 to R-6 R-5 to R-6 | R-25 to R-30 |
| 6 | All | R-49 to R-60 | R-30 to R-60 | R-13 to R-21 | R-5 to R-6 | R-25 to R-30 |
| 7 | All | R-49 to R-60 | R-30 to R-60 | R-13 to R-21 | R-5 to R-6 | R-25 to R-30 |
| 8 | All | R-49 to R-60 | R-30 to R-60 | R-13 to R-21 | R-5 to R-6 | R-25 to R-30 |

Existing Wood-Framed Houses

| Zone | Add Insulation to Attic | | Floor |
|------|-------------------------|-----------------------------------|--------------|
| | Uninsulated Attic | Existing 3-4 Inches of Insulation | |
| 1 | R-30 to R-49 | R-25 to R-30 | R-13 |
| 2 | R-30 to R-60 | R-25 to R-38 | R-13 to R-19 |
| 3 | R-30 to R-60 | R-25 to R-38 | R-19 to R-25 |
| 4 | R-30 to R-60 | R-38 | R-25 to R-30 |
| 5-8 | R-49 to R-60 | R-38 to R-49 | R-25 to R-30 |

Wall Insulation: Whenever exterior siding is removed on an

Uninsulated wood-frame wall:

- Drill holes in the sheathing and blow insulation into the empty wall cavity before installing the new siding, and
- Zones 3-4: Add R5 insulative wall sheathing beneath the new siding.
- Zones 5-8: Add R5 to R6 insulative wall sheathing beneath the new siding.

Insulated wood frame wall:

- For Zones 4-8: Add R5 insulative sheathing before installing the new siding

Reference: DOE/CE-0180 2008. Insulation Fact Sheet



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UL Environment GREENGUARD Gold

Knauf Insulation achieved UL Environment GREENGUARD Gold Certification and is verified to be formaldehyde free.

UL Environment GREENGUARD Certification Program

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.



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.

MR Credit 4.1 - 4.2 Recycled Content

MR Credit 5.1 - 5.2 Regional Materials

Declare.

Red List Free

Declare is a voluntary self-disclosure program aiming to transform the building materials industry towards healthier and more ecological products through ingredient transparency.

Participating in Declare means this product has voluntarily self-disclosed all ingredients in order to promote transparency.

Living Building Challenge Compliant means this product meets the requirements of the Red-List Imperative of the Living Building Challenge due to a temporary exception.

Living Building Challenge Red List Free means this product does not contain any ingredients on the Living Building Challenge's Red List.

This product is covered by one or more U.S. and/or other patents. See patentwww.knaufinsulation.us/patents.

