KNAUF**INSULATION**

it's time to save energy

Elevated Temperature Panel 1000°

with ECOSE® Technology

with **ECOSE®** TECHNOLOGY

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Description
Knauf Insulation Elevated Temperature Panel 1000° with ECOSE® technology is a semi-rigid thermal insulation board (2.4 pcf, 38.4 kg/m³) bonded with ECOSE® technology.

ECOSE® Technology
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 Elevated Temperature Panel 1000° with ECOSE® technology is suitable for use in industrial heating applications to 1000°F (538°C), such as high-temperature panel systems for ducts and precipitators, boilers, vessels and industrial ovens. It is ideal for use in metal mesh blankets.

Features and Benefits
- Reduces operating cost
- Lightweight
- Easy to fabricate
- Sizes up to 4' x 10' available
- Damage resistant
- Reduces storage space
- Maintains integrity at elevated temperatures
- Low emitting for indoor air quality considerations

Sustainability
- Carbon-negative: Knauf Insulation products used for thermal insulating purposes recover the energy that it took to make them in just hours or a few days, depending on the application. Once installed, the product continues to save energy and reduce carbon generation as long as it is in place.
- Glass mineral wool insulation with ECOSE® technology contains three key ingredients:

- Sand, one of the world's most abundant resources
- A minimum of 50% recycled glass content and UL Environment verification every 6 months
- ECOSE® technology which reduces binder embodied energy by up to 70% and total product embodied energy by up to 4%.

Specification Compliance In U.S.:
- ASTM C 612; Type II and III- Category I
- MIL-I-24244C
- NRC Reg. Guide1.36. (Certification needs to be specified at time of order)
- HH-I-558C; Form A, Class 1, 3
- Conforms to Marine Equipment European 1408/13
- USCG 164.109/17/1
- ASTM C 1139 Type I Grade 5, Type II Grade 5

In Canada:
- CAN/ULC S102-M88
- CGSB 51-GP-10M

Indoor Air Quality
- UL/ULC Classified (UL 723)
- UL Environment GREENGUARD Certified®
- UL Environment GREENGUARD GOLD℠ certified
- UL Enivronment validated to be formaldehyde free
- This product complies with Oregon Revised Statue 453.085 and contains less than 0.10% decabromdiphenyl ether (DecaBDE) by mass.
- Tested and certified to meet all requirements of EUCEB.

Technical Data
Surface Burning Characteristics
- Does not exceed 25 Flame Spread, 50 Smoke Developed when tested in accordance with UL &23, ASTM E 84, CAN/ULC S102-M88, NFPA 90A and 90B and NFPA 255.

Water Vapor Sorption (ASTM C 1104)
- 0.1% or less by volume

Corrosiveness (ASTM C 665)
- Does not accelerate corrosion on aluminum, steel or copper

Corrosion (ASTM C 1617)
- The corrosion rate in mills/yr will not exceed that of the 5 ppm chloride solution.

Temperature Limit
(ASTM C 411 & ASTM C 447)
- Up to 1000°F (538°C) at a maximum recommended thickness of 6 inches

Resists Microbial Growth
(ASTM C 1338, G21)
- Does not promote or support the growth of mold, fungi or bacteria

Application and Specification Guidelines
Precaution
- During initial heat-up to operating temperatures above 350°F (177°C), a slight odor and some smoke may be given off as a portion of the bonding material used in the insulation begins to undergo a controlled decomposition.
- If natural convection is not adequate in confined areas, forced ventilation should be provided in order to protect against any harmful fumes and vapors that might be generated.

Storage
- Protect material from water damage or other abuse. Cartons are not designed for outside storage. Vacuum packaged material can be stored outside if care is taken not to puncture the poly bag.

Preparation
- Apply the product on clean, dry surfaces.

Application
- There is no heat-up cycle required for Knauf Insulation ET Panel 1000°.
- The product should be secured with welded pins or studs and covered with sheet metal. An alternate method entails covering the insulation with a metal mesh and insulating cement, canvassing and painting.
- Pins and washers shall be located a maximum of 4'' (102 mm) from each edge and spaced no greater than 16'' (406 mm) on center.

- Care should be taken to avoid over compressing the insulation with the retaining washer.
- In temperatures over 550°F (288°C) and designed thickness over 3'' (76 mm) dual layer application with staggered joints is recommended.
- When using the products at 1000°F (538°C), it is recommended that no more than 6'' (152 mm) thickness should be used.

Caution

Glass mineral wool may cause temporary skin irritation. Wear long-sleeved, loose-fitting clothing, head covering, gloves and eye protection when handling and applying material. Wash with soap and warm water after handling. Wash work clothes separately and rinse washer. A disposable mask designed for nuisance type dusts should be used where sensitivity to dust and airborne particles may cause irritation to the nose or throat.

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.

Notes

The chemical and physical properties of Knauf Elevated Temperature Panel 1000° with ECOSE® technology represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing variations. The data is supplied as a 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.

Thermal Efficiency (ASTM C 177)
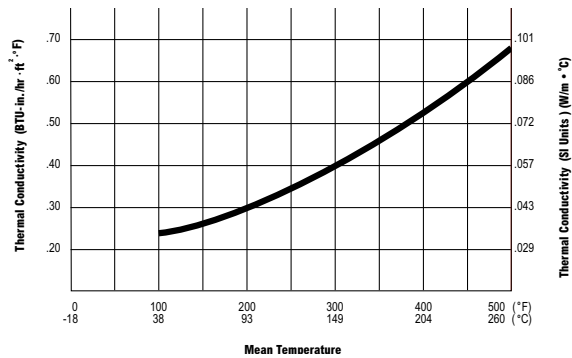
Mean Temperature		k	k(SI)
100°F	(38°C)	.25	.036
200°F	(93°C)	.32	.046
300°F	(149°C)	.40	.058
400°F	(204°C)	.52	.075
500°F	(260°C)	.68	.098

Forms Available

Thickness		Width	Length
1''	(25 mm)		
1½''	(38 mm)		
2''	(51 mm)	24'' (610 mm) to 48'' (1219 mm)	48'' (1219 mm) to 120'' (3048 mm)
2½''	(64 mm)		
3''	(76 mm)		
3½''	(89 mm)		
4''	(102 mm)		

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

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

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.
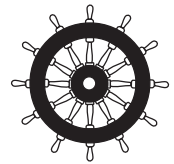
This product has been tested and is certified to meet the US Coast Guard requirements.

GREENGUARD
PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS
UL.COM/GG
UL 2818
GOLD

GREENGUARD
PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS
UL.COM/GG
UL 2818

VALIDATED
• PRODUCT IS FORMALDEHYDE FREE
UL.COM/ECV

UL Environment GREENGUARD Gold[SM]
Knauf Insulation building insulation achieved UL Environment GREENGUARD Gold and is UL Environment validated to be formaldehyde free

UL Environment GREENGUARD Certification Program[SM]
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.