KNAUF INSULATION FOR THE WORLD WE LIVE IN

MANSON INSULATION

Earthwool® 1000° Pipe Insulation

ALLEY-K® Pipe Insulation

Knauf Insulation Earthwool 1000° pipe insulation is a molded, one-piece insulation made from inorganic glass mineral wool bonded with ECOSE® Technology. It is produced in 3' lengths with or without a factory-applied jacket. ASJ+ is the newest generation all-service jacket composed of aluminum foil, reinforced with a glass scrim bonded to a kraft paper interleaving, with an outer film layer. This jacket leaves no paper exposed, allowing for easier cleaning. Earthwool is the only glass mineral wool pipe insulation in the market that is formaldehyde-free.

Manson ALLEY-K® Pipe has standard ASJ

with ECOSE TECHNOLOGY

Performance dashboard

Features & functionality

Excellent resistance to heat loss or gain, saving energy and lowering operating costs

Fast and easy installation reduces labor costs

ASJ+ facing (Earthwool 1000°) is cleanable with a soapy wet cloth and has a self-sealing lap, which eliminates the need for additional material and tools

UL Environment validated formaldehyde-free

Visit Knauf and Manson for more product information:
Earthwool® 1000° Pipe Insulation, ALLEY-K®

Environment & materials

Improved by:
Utilization of recycled glass

Knauf's original plant-based ECOSE binder technology

Certification & rating systems:
Audited, European Certification Board for Mineral Wool Products exoneration process

Earthwool 1000°
Declare, Red List Free

UL GREENGUARD Gold certified

UL Validated recycled content

UL Validated formaldehyde-free

ALLEY-K®
UL GREENGUARD Gold certified

UL Validated recycled content

UL Validated formaldehyde-free

CSI MasterFormat® #MF 23 07 19
Thermal Insulation Guide Specification:
Earthwool® 1000°
ALLEY-K®

For spec help, contact us or call 317 421 8727

See LCA, interpretation & rating systems

See materials, interpretation & rating systems

Declare. hpd VERSION 2.1 GREENGUARD VALIDATED EUCEB

SM Transparency Report™ + Material Health Overview™

VERIFICATION	LCA
3rd party reviewed	✓ NSF
	Transparency Report
3rd party verified	✓ NSF
	Material evaluation
Self-declared	✓

Validity: 12/03/18 – 12/03/23
MAN – 12032018 – 005

This declaration was independently verified by NSF to the UL Environment PCR and ISO 14025.

NSF International
P.O Box 130140
789 N.Dixboro Road
Ann Arbor, MI 48105, USA
www.nsf.org
734 769 8010

Knauf Insulation, Inc.
One Knauf Drive
Shelbyville, IN 46176
www.knaufinsulation.us
317 398 4434

Contact us

LCA & material health results & interpretation

Earthwool® 1000° and ALLEY-K® Pipe Insulation

Life cycle assessment | Material health

Scope and summary

○ Cradle to gate ○ Cradle to gate with options ✓ Cradle to grave

Application
Used to insulate iron and copper piping in industrial applications and in commercial and institutional buildings. It is suitable for hot, cold, concealed, and exposed piping systems operating at temperatures from 0°F to 1000°F. Additional weather protection is needed outdoors.

Declared unit
Reference service life: 60 years. 1 kg of insulation material, packaging included, plus one square meter of facing over a period of 60 years.

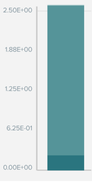
Manufacturing data
Reporting period: October 2015 – September 2016
Location: Shelbyville, IN

Default installation and maintenance phase scenario
At the installation site, insulation products are unpackaged and installed. No material is lost or wasted because scraps are typically used to fill corners or crevices. Packaging waste is sent to landfill, and no maintenance or replacement is required to achieve the product's life span.

Material composition greater than 1% by weight

PART	MATERIAL	AVG % WT.
Batch	Post-consumer cullet	38.3%
Batch	Sand	15.2%
Packaging	Cardboard	11.3%
Batch	Borax	6.4%
Batch	Soda ash	6.1%
Binder	Sugars	5.8%
Facing	Kraft paper	3.4%
Batch	Dolomite	2.3%
Binder	Diammonium phosphate	2.0%
Facing	Facing adhesive	1.9%
Batch	Nepheline syenite	1.9%
Batch	Quicklime	1.4%
Facing	Other facing materials	2.1%
	Others	1.8%

Total impacts by life cycle stages [mPts/decl unit]



LIFE CYCLE STAGE	MPTS/DECL UNIT
Raw material acquisition	2.33E-01
Manufacturing	2.35E+00
Transportation	4.29E-03
Installation and maintenance	2.99E-03
Disposal/reuse/recycling	1.02E-02

Total impacts = 2.60E+00 mPts
per 60 years installed

What's causing the greatest impacts

All life cycle stages
The manufacturing stage dominates the results for all impact categories. The raw material acquisition stage is the second highest contributor for most impact categories, but it is the third highest for ecotoxicity and fourth highest for non-carcinogenics. The impact of the raw material acquisition stage is mostly due to the borax, manganese oxide, and soda ash in the batch and the dextrose in the binder. The manufacturing stage shows major contributions to all impact categories. The contributions to outbound transportation are caused by the use of trucks and rail transport. For ecotoxicity, outbound transportation is the second highest contributor to the impacts. The landfilling of the discarded product contributes to the disposal stage. The only impacts associated with installation and maintenance are due to the disposal of packaging waste, which is a small contributor except for the non-carcinogenics impact category, where installation and maintenance is the second highest contributor to the results.

Manufacturing stage
The energy required to melt the glass and produce the glass fibers is the largest contributor to the manufacturing stage for all impact categories.

Sensitivity analysis
There are no sensitivity results that lead to variations greater than 10% in the LCA results.

How we're making it greener

Knauf and Manson are committed to providing products that conserve energy and preserve natural resources.

- This product uses ECOSE® Technology, which is a plant-based binder adhesive instead of a fossil fuel based binder. ECOSE Technology represents a fossil fuel avoidance equivalent of 100,000 barrels of oil a year for Knauf and Manson products.
- Earthwool® Pipe and Manson ALLEY-K® are the only formaldehyde-free glass fiber pipe insulation available in the market today.
- Our products contain a high degree of recycled content, which translates to 20% less glass melting energy and a 25% reduction in embodied carbon.
- Our utilization of recycled content reduces mining impacts by 60%. In fact, we recycle 10 rail cars of recycled glass a day to make Knauf and Manson products.
- All of our glass is audited by a 3rd party to ensure biosoluble chemistry from a health and safety standpoint.

See how we make it greener

LCA results

LIFE CYCLE STAGE	RAW MATERIAL ACQUISITION	MANUFACTURING	TRANSPORTATION	INSTALLATION AND MAINTENANCE	DISPOSAL/REUSE/ RECYCLING
Information modules: Included I Excluded*	**A1 Raw Materials**	**A3 Manufacturing**	**A4 Transporation/ Delivery**	**A5 Construction/ Installation**	**C1 Deconstruction/ Demolition**
*In the installation and maintenance phase, packaging waste in module A5 is the only contributor to the potential impacts.	**A2 Transportation**			**B1 Use**	**C2 Transporation**
				B2 Maintenance	**C3 Waste Processing**
				B3 Repair	**C4 Disposal**
				B4 Replacement	
				B5 Refurbishment	
				B6 Operational energy use	
				B7 Operational water use	





SM 2013 Learn about SM Single Score results

Impacts per 60 years of service	2.33E-01 mPts	2.35E+00 mPts	4.29E-03 mPts	2.99E-03 mPts	1.02E-02 mPts
Materials or processes contributing >20% to total impacts in each life cycle stage	Batch material and binder material production.	Energy required to melt the glass and produce the glass fibers.	Truck and rail transportation used to transport product to building site.	Transportation to landfill and landfilling of packaging materials.	Transportation to landfill and landfilling of product.

TRACI v2.1 results per declared unit

LIFE CYCLE STAGE	RAW MATERIAL ACQUISITION	MANUFACTURING	TRANSPORTATION	INSTALLATION AND MAINTENANCE	DISPOSAL/REUSE/ RECYCLING
Ecological damage					
Impact category / Unit					
Acidification kg SO_2 eq	5.96E-03	1.11E-02	7.04E-04	5.44E-04	3.63E-04
Eutrophication kg N eq	5.98E-04	7.29E-04	4.48E-05	1.15E-04	6.45E-05
Global warming kg CO_2 eq	1.15E+00	4.07E+00	5.37E-01	1.70E-01	1.01E-01
Ozone depletion kg CFC-11 eq	2.38E-10	1.30E-09	1.57E-11	1.11E-12	6.25E-12
Human health damage					
Impact category / Unit					
Carcinogenics CTU_h	3.23E-11	1.88E-10	7.49E-13	1.84E-11	6.13E-12
Non-carcinogenics CTU_h	1.64E-12	1.13E-11	3.33E-13	1.09E-11	3.27E-12
Respiratory effects kg $PM_{2.5}$ eq	4.00E-03	4.09E-02	4.27E-05	4.23E-05	1.73E-04
Smog kg O_3 eq	6.62E-02	1.61E-01	1.21E-02	2.41E-03	3.86E-03
Additional environmental information					
Impact category / Unit					
Ecotoxicity CTU_e	2.77E-04	5.46E-04	2.88E-04	1.20E-05	2.13E-05
Fossil fuel depletion MJ surplus	1.67E+00	5.25E+00	1.09E+00	1.89E-02	1.07E-01

See the additional EPD content required by the UL Environment PCR on page 4 of the Transparency Report PDF.

References

LCA Background Report
Knauf Insulation Products LCA Background Report (public version), Knauf 2017

ULE PCR for Building Envelope Thermal Insulation and Mechanical Insulation
PCR review conducted by Wayne Trusty, Andre Desjarlais, and Susan Fredholm Murphy.

Download PDF SM Transparency Report/Material Health Overview, which includes the additional EPD content required by the UL Environment PCR.

SM Transparency Reports (TR) are ISO 14025 Type III environmental declarations (EPD) that enable purchasers and users to compare the potential environmental performance of products on a life cycle basis. They are designed to present information transparently to make the limitations of comparability more understandable. TRs/EPDs of products that conform to the same PCR and include the same life cycle stages, but are made by different manufacturers, may not sufficiently align to support direct comparisons. They therefore, cannot be used as comparative assertions unless the conditions defined in ISO 14025 Section 6.7.2. 'Requirements for Comparability' are satisfied.

Rating systems

The intent is to reward project teams for selecting products from manufacturers who have verified improved life-cycle environmental performance.

LEED BD+C: New Construction | v4 - LEED v4
Building product disclosure and optimization
Environmental product declarations

○ Industry-wide (generic) EPD	½ product
✓ Product-specific Type III EPD	1 product

Green Globes for New Construction and Sustainable Interiors
Materials and resources

- ✓ NC 3.5.1.2 Path B: Prescriptive Path for Building Core and Shell
- ✓ C 3.5.2.2 and SI 4.1.2 Path B: Prescriptive Path for Interior Fit-outs

Collaborative for High Performance Schools National Criteria
MW 7.1 – Environmental Product Declarations

- ✓ Third-party certified type III EPD — 2 points

SM Transparency Report™ + Material Health Overview™

VERIFICATION	LCA
3rd party reviewed	✓ NSF
Transparency Report	
3rd party verified	✓ NSF
Material evaluation	
Self-declared	✓

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P.O Box 130140
789 N.Dixboro Road
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www.nsf.org
734 769 8010

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One Knauf Drive
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LCA & material health results & interpretation

Earthwool® 1000° and ALLEY-K® Pipe Insulation

Life cycle assessment | Material health

Evaluation programs

Declare

Declare labels are issued to products disclosing ingredient inventory, sourcing and end of life options. Declare labels are based on the Manufacturers Guide to Declare, administered by the International Living Future Institute.

How it works

Material ingredients are inventoried and screened against the Living Building Challenge (LBC) Red List which represents the 'worst in class' materials, chemicals, and elements known to pose serious risks to human health and the greater ecosystem.

The Health Product Declaration®

The HPD Open Standard provides a consistent, and transparent format to accurately disclose the material contents and associated hazard classifications for a building product.

How it works

Material ingredients are screened and categorized according to the hazards that international governmental bodies and toxicology experts have associated with them, based on two listings:

- Authoritative lists maintained or recognized by government bodies
- Screening lists, which include chemicals that government bodies determined need further scrutiny, as well as chemical lists not recognized by any government body.

Assessment scope and results

Declare™

Inventory threshold: 100 ppm

Declare level:

The Declare product database and label are used to select products that meet the LBC's stringent materials requirements, streamlining the materials specification and certification process.

- LBC Red List Free
- LBC Compliant
- Declared

Red List Free

Click the label to see the full declaration.

Earthwool® Pipe Insulation Unfaced


Declare.

Earthwool® Pipe Insulation Unfaced
Knauf Insulation

Final Assembly: Shelbyville, IN, USA
Life Expectancy: Life of the Structure
End of Life Options: Landfill (100%)

Ingredients:

Glass Fibers from Recycled Glass (Chicago, IL), Glass Fiber from Virgin Minerals (Sand) (Lewisport, KY), Dextrose or Fructose, Aluminum Foil, Polyester, Ammonium Sulfate, Ammonia, Silane, Latex Adhesive, Hot Melt Adhesive

Living Building Challenge Criteria:

KNF-2008
VOC Content: N/A
Declaration Status

EXP 09/01/2017
VOC Emissions: CDPH Compliant
■ LBC Red List Free
□ LBC Compliant
□ Declared

MANUFACTURER RESPONSIBLE FOR LABEL ACCURACY
INTERNATIONAL LIVING FUTURE INSTITUTE™ declareproducts.com

Health Product Declaration®

Earthwool® Pipe Insulation with ASJ+

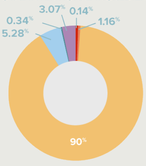
Inventory threshold: 100 ppm

Full disclosure known hazards: Yes

Based on the selected content inventory threshold:

☑ Characterized ☑ Screened ☐ Identified

TOTAL INTENTIONAL INGREDIENTS



GreenScreen® List Translator Scores

- List Translator Likely Benchmark 1 / Benchmark 1
- List Translator Possible Benchmark 1
- List Translator Benchmark Unknown
- Benchmark 3
- Benchmark 3
- Benchmark 4
- No GS data available

Learn about the GreenScreen® List Translator

Total VOC Content

VOC Content data is not applicable for this product category.

What's in this product and why

Declare level

Earthwool® Pipe without a facer is Red List free. The Red List is a list of chemicals that are not allowed in Living Building Challenge buildings. Being Red List free is our design benchmark at Knauf.

Earthwool utilizes a bio-based binder chemistry derived from corn that is formaldehyde-free (FF) and more interior friendly than phenol-formaldehyde (P/F) systems. It is the only FF glass fiber pipe insulation in the marketplace today.

What's in the product and why

The ingredients of most Earthwool Pipe variants avoid the 800+ chemicals of the Living Building Challenge Red List. This is primarily because of its bio-based binder adhesive chemistry known as ECOSE® Technology. ECOSE is based on dextrose or high fructose corn syrup instead of phenol and formaldehyde. Dextrose and fructose can be used interchangeably. The ECOSE binder allows the product to be validated by the UL Environment as formaldehyde-free. Formaldehyde is a Red List chemical.

Earthwool Pipe Insulation with the ASJ+ facer does not meet Red List free status because the facer contains a halogenated fire retardant (HFR). This is why we disclose the ingredients in an HPD rather than Declare used for the unfaced variant.

Red List free is our development benchmark and we constantly challenge ourselves on elimination of Red List chemicals. An HFR is used on the ASJ+ variant because the product is for exposed applications and must meet stringent fire performance requirements. We are very aware of the concerns associated with HFRs and continually work with vendors on this issue. At the same time, fire performance is critical and current events relating to fire performance of building materials only support the importance of fire-safe products.
materials, but we will one day find a solution.

What's been done in the design and manufacture in consideration of the potential human health impacts in the use stage

Knauf led the industry in bio-based development to avoid phenol and formaldehyde in our processes beginning in 2008. This development was likely the largest green chemistry disruption of our era. Today, our competitors have followed or are striving to meet this benchmark.

The primary ingredient in this product is recycled glass. While recycled content may vary from year to year, the recycled content is currently greater than 60% by weight. The second largest content is silica sand which is sourced as locally as possible. The third largest ingredient is corn-based syrup (dextrose or fructose). As a result of using plant-based binders, the VOC profile of this product is very interior friendly.

The emission from our factories is also much better for our communities. We ensure our glass formulations have no serious health concerns by allowing our processes to be audited to meet European Certification Board for Mineral Wool Products (EUCEB) biosolubility requirements.

Where it goes at the end of its life

At this time, the product is landfilled at end of life. We take extended producer responsibility very seriously and have active programs to address end of life. There is no option other than landfills at this time.

How we're making it healthier

Knauf engages very closely with its vendors to eliminate and avoid chemicals of concern. No competitor has as many Red List free products as Knauf Insulation. We continually reduce our environmental impacts through recycled content and optimize our products by designing them to be transformative.

See how we make it greener

References

Declare
Earthwool® Pipe Insulation Unfaced

Manufacturer's Guide to Declare
A comprehensive guide providing information about the program, the assessment methodology, how to submit material data to obtain a Declare label and how they are used to meet the Health & Happiness and Materials Petals of the Living Building Challenge.

Health Product Declaration®
Earthwool® 1000° Pipe Insulation with ASJ+

Health Product Declaration Open Standard v2.1
The standard provides guidance to accurately disclose the material contents of a building product using a standard, consistent, and transparent format.

Rating systems

LEED BD+C: New Construction | v4 - LEED v4
Building product disclosure and optimization
Material Ingredients

Credit value options — 1 product each

☑ 1. Reporting ○ 2. Optimization ○ 3. Supply Chain Optimization

Living Building Challenge 3.0
Materials petals imperatives

☑ 10. Red List Free ○ 12. Responsible Industry ○ 13. Living Economy Sourcing

Well Building Standard®
Air and Mind Features

○ **Air**, 26. Enhanced Material Safety

☑ **Mind**, 97. Material Transparency ○ **Mind**, 98. Organizational Transparency

Collaborative for High Performance Schools National Criteria
MW 10.1 — Building Product Health Related Information Reporting

☑ Product Health Related Information Report — 1 point

VERIFICATION	Material evaluation
Self-declared	☑

KNA – 11072017 – 004

The material health evaluation is self-declared and done in accordance with the HPD Open Standard 2.1

HPD Collaborative
401 Edgewater Place, Suite 600
Wakefield, MA 01880
www.hpd-collaborative.org
781.876.8871

The material health evaluation is self-declared and done in accordance with the Manufacturers Guide to Declare.

International Living Future Institute
501 East Madison St.
Seattle, WA 98122
www.living-future.org
206 223 2028

Knauf Insulation, Inc.
One Knauf Drive
Shelbyville, IN 46176
www.knaufinsulation.us
317 398 4434

Contact us

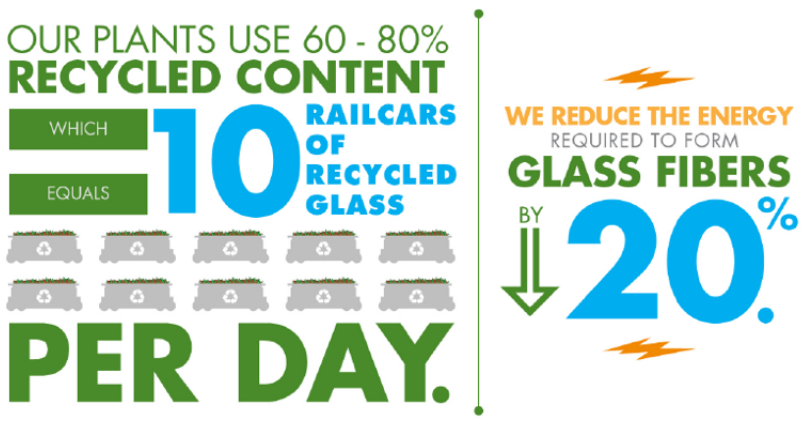
How we make it greener

Earthwool® 1000° and ALLEY-K® Pipe Insulation

RAW MATERIAL ACQUISITION

Utilize recycled content

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 glass fibers by 20%. If we use even 60% recycled content, then mining impacts are reduced proportionately.



Pursue sequestration potential

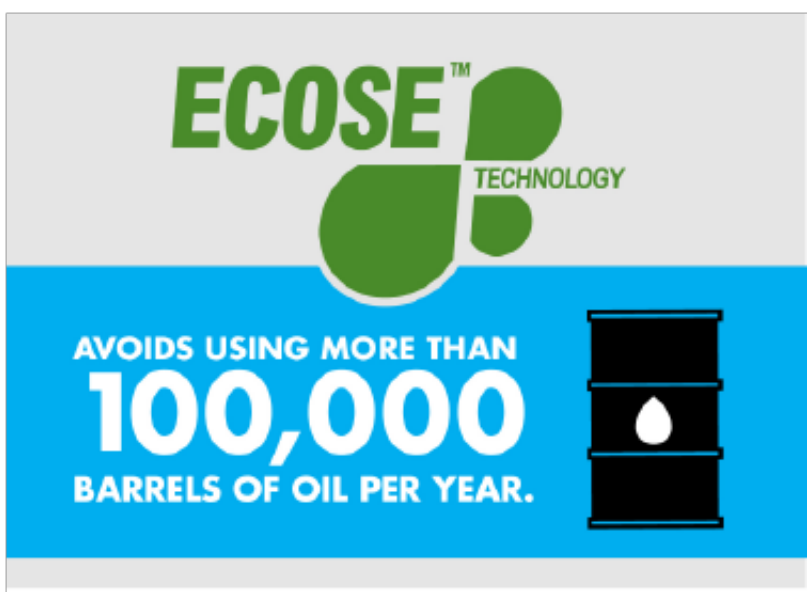
Manson and Knauf's bio-based ECOSE Technology is derived from corn. On average, the Knauf Family Farm produces one half the amount of corn we use to make our products on an annual basis, which is equal to 5,000 acres. While we don't grow the corn used in our products, the use of corn has a significant carbon sequestration impact on our processes. For instance, the use of corn actually offsets the carbon impact of some of the ancillary facers used on our products.

MANUFACTURING

Develop bio-based formaldehyde-free binder

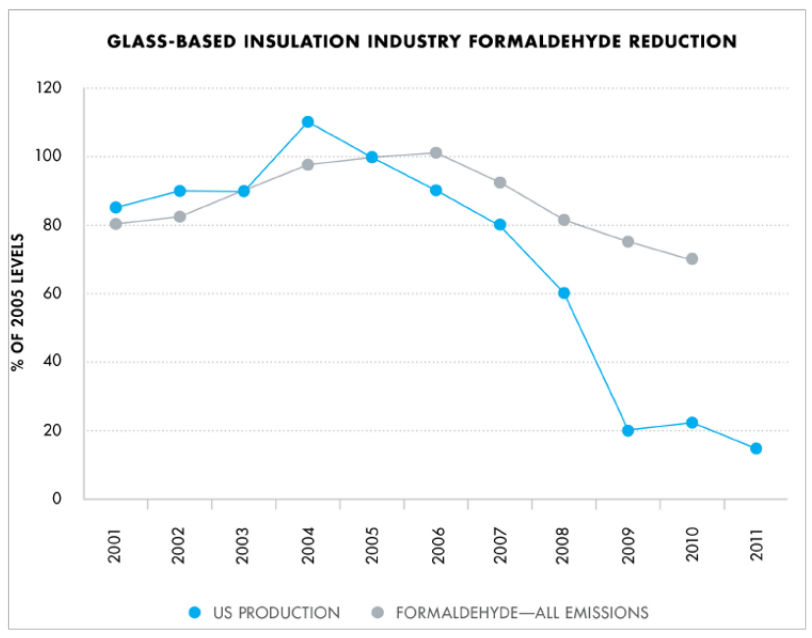
In 2008, Manson and Knauf Insulation launched perhaps the nation's largest formaldehyde-free green chemistry initiative called ECOSE Technology. Offering this into the building materials marketplace quickly transformed the entire glass mineral fiber industry toward bio-based chemistries. Today phenol-formaldehyde (PF) based resins are largely a thing of the past with regard to large volume mineral fiber based insulation products. Manson and Knauf have also launched a new business venture to assist other industries in accessing ECOSE Technology for their processes.

In a given year, using corn-based ECOSE Technology instead of phenol & formaldehyde avoids the equivalent of more than 100,000 barrels of oil in North America alone.



Lead green chemistry efforts

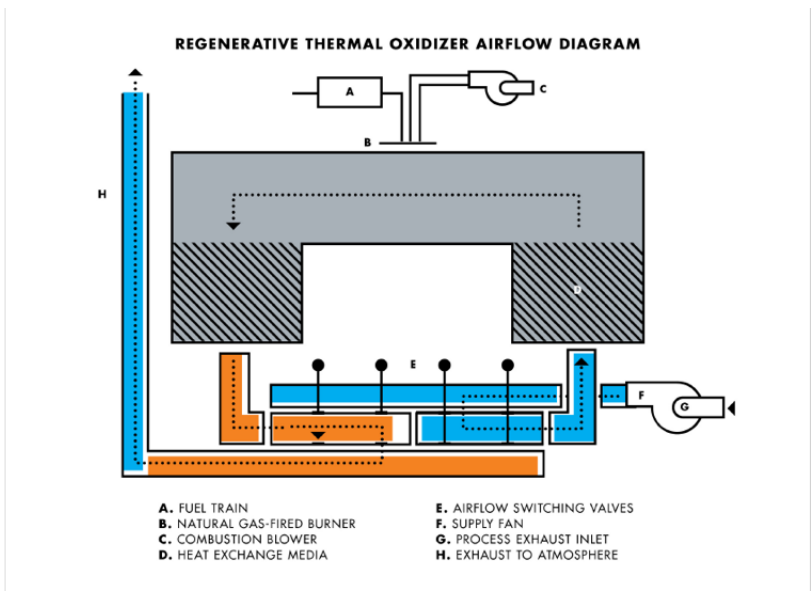
Following the launch of our ECOSE Technology in 2009, we had transformed all of our products and processes to this new technology. Using our bio-based ECOSE Technology has removed phenol and formaldehyde from our stack emissions. By 2012, the entire industry had followed our lead. This initiative not only established Manson and Knauf Insulation in a leadership position, but it had a transformative impact on our industry in general.

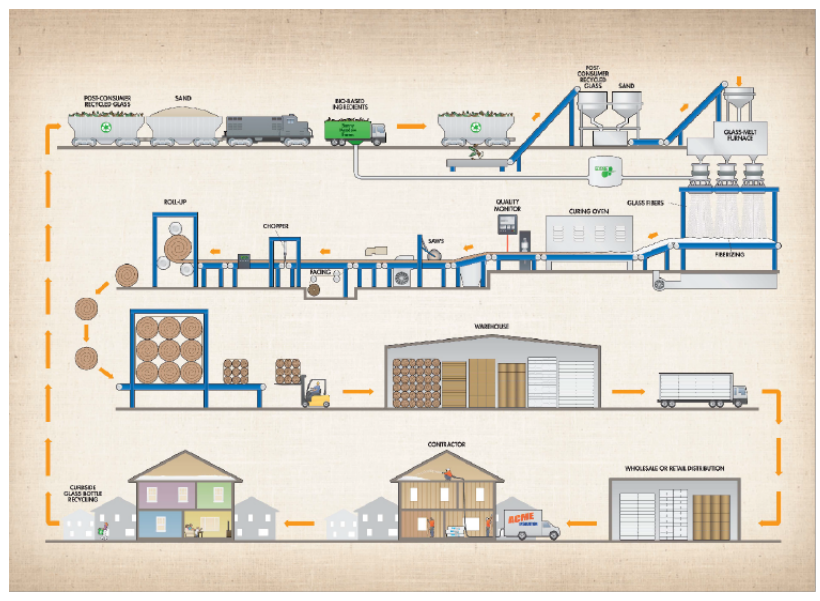


Green manufacturing Processes

1. Regenerative thermal oxidizers Manson and Knauf Insulation use regenerative thermal oxidizers (RTO) to capture and recycle much of the energy we used to cure our products. RTO is equipment used for the treatment of exhaust air. Our ovens exhaust into a ceramic heat exchange media to capture and reuse the heat in the exhausted air. Therefore, the amount of energy required to cure our product is reduced substantially.

2. Recycling As you can see below, everything we do starts with recycling. Our plant uses as much as 80% recycled content. While our only option is to landfill our products at end of life, that doesn't stop us from encouraging consumers to recycle other products, particularly glass bottles.





Continuous Improvement

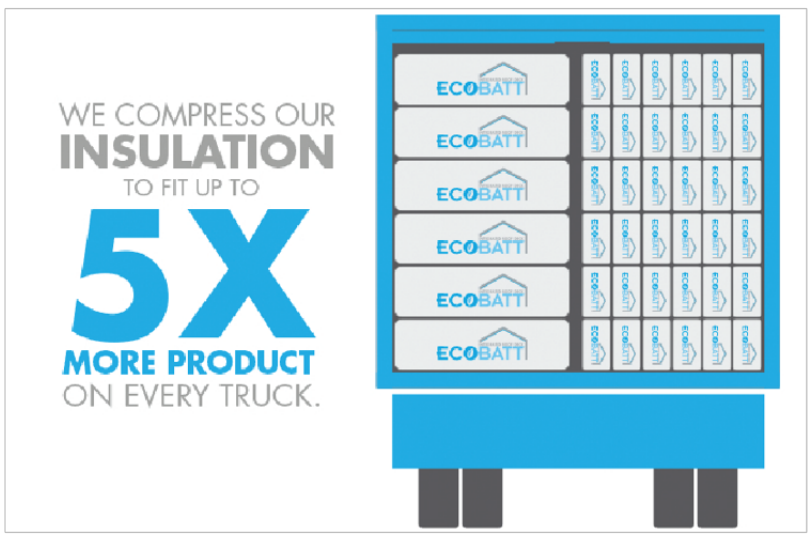
Continuous improvement is key to our sustainable development. Globally, we maintain the following Bureau Veritas certifications: ISO 9000, 14000, and 50001. These certifications relate to quality management systems, energy management and environmental management efforts. For more information on our current continuous improvement efforts, please review our global sustainability report.

TRANSPORTATION

Leverage compression packaging

Glass is a high modulus material, which helps to facilitate compression packaging. We compress our insulation to fit up to five times more product on every truck. This compression means:

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



INSTALLATION AND MAINTENANCE

Be confident in glass mineral wool's safety

In the past, a label regarding the carcinogenic potential of insulation made from glass fibers was required on all packaging. Following forty years of research, glass mineral wool has been exonerated entirely. Glass mineral wool is comprised of fibers that are biosoluble, meaning that the fibers dissolve in the body in a short period of time and exit the body with normal bodily functions. The scrutiny glass mineral wool has undergone is now seen as proof of its safety.

Meet and exceed green standards

GREENGUARD certified On the forefront of indoor air quality, Knauf Insulation was the first GREENGUARD certified product in 2002. This achievement led us to understand the impact our formaldehyde-free products could have on the indoor environment. The formaldehyde-free claim is third party validated by UL Environment.

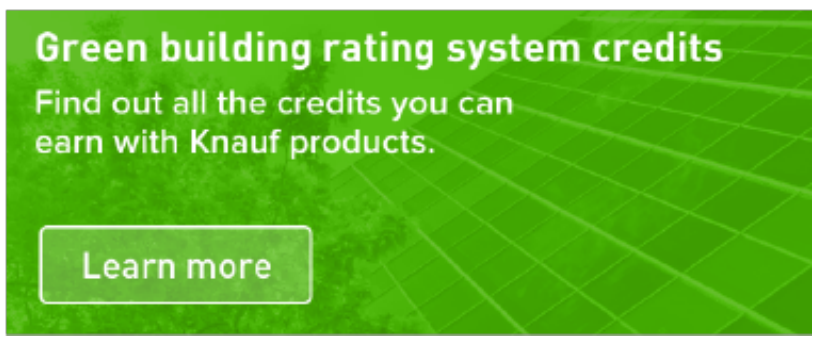
Red List Free Since 2012, Knauf Insulation North America used the Living Building Challenge (LBC) Red List as its developmental benchmark. The Red List is a list of chemicals that are avoided in material imperative for the construction of LBC buildings. Formaldehyde is just one of about 800 chemicals on the Red List. Manson Insulation has chosen the Health Product Declaration® (HPD) Collaborative as its standard for reporting building product content and associated health information.

EUCEB tested Glass fiber is perhaps the most widely studied building material available today. All of our processes and formulations are voluntarily third-party audited for compliance 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 health concerns. Having 35 years of research behind its safety, perhaps no other building material has been as thoroughly evaluated as fiberglass products. We believe a safe product is one that has been thoroughly evaluated.

Green building rating systems

Our products offer a vast array of potential credits for major green building rating systems, including: WELL, LEED v4, International Green Construction Code, Green Guide for Heath Care, NAHB Green Building Standard and more.

Visit the green building rating systems page to see all the credits you can earn using Manson and Knauf Insulation products.



DISPOSAL

Promote Recycling

Manson and Knauf are recycling advocates. We take every opportunity to advocate for recycling and financially support the Glass Recycling Coalition (GRC). We feel that a comprehensive understanding of the benefits of recycling will lead to greater recycling adoption and more promotion by state and local governments. While our only option is to landfill our products at end of life, that doesn't stop us from encouraging consumers to recycle other products, particularly glass bottles.

SM Transparency Report™

VERIFICATION	LCA
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Additional EPD content required by:
ULE PCR for Building Envelope Thermal Insulation and Mechanical Insulation

Earthwool® 1000° and ALLEY-K® Pipe Insulation

Environmental parameters derived from LCA per functional unit

Total material resources

Parameter	Unit	Total
Non-renewable material resources	kg	9.00
Renewable material resources	kg	33.6

Total primary energy

Parameter	Unit	Total
Non-renewable, fossil	MJ	17.0
Non-renewable, coal	MJ	25.8
Non-renewable, natural gas	MJ	36.5
Non-renewable, uranium	MJ	8.83
Renewable, biomass	MJ	0.0444
Renewable, geothermal	MJ	0.0222
Renewable, hydro power	MJ	1.49
Renewable, solar power	MJ	13.1
Renewable, wind power	MJ	0.635

Total water

Parameter	Unit	Total
Fresh water	L	2944

Waste

Parameter	Unit	Total
Non hazardous waste	kg	1.37
Hazardous waste	kg	0
Waste to energy	kg	0

Scenarios and additional technical information

PARAMETER	VALUE	UNIT
Transport to the building site [A4]		
Average distance from Shelbyville to installation site	680	mi
Capacity utilization by mass	27	%
Installation into the building [A5]		
Distance from installation site to landfill	100	mi
Disposal/reuse/recycling [C1-C4]		
Distance from installation site to landfill	100	mi

TRACI v2.0 acidification results per functional unit

Parameter	Unit	Raw material acquisition	Manufacturing	Transportation	Installation and maintenance	Disposal/reuse/recycling
Acidification, TRACI 2.0	**mole H+ eq**	3.01E-01	5.84E-01	3.78E-02	2.80E-02	1.91E-02

SM Transparency Report™ + Material Health Overview™

VERIFICATION	LCA
3rd party reviewed	✓ NSF
Transparency Report	
Verified	✓ NSF
Material evaluation	
Self-declared	✓

Validity: 12/03/18 – 12/03/23
MAN – 12032018 – 005

This declaration was independently verified by NSF to the UL Environment PCR and ISO 14025.

NSF International
789 N. Dixboro Road
Ann Arbor, MI 48105, USA
www.nsf.org
734 769 8010

Knauf Insulation, Inc.
One Knauf Drive
Shelbyville, IN 46176
www.knaufinsulation.us
317 398 4434

Contact us