



## DISCOVER FIBERGLASS PIPE INSULATION

Feel Confident Specifying Earthwool®  
1000° Pipe Insulation for Your Next  
Commercial or Industrial Project

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## WHY SPECIFY EARTHWOOL® 1000° PIPE INSULATION TO INSULATE PIPES IN HARSH INDUSTRIAL OR COMMERCIAL ENVIRONMENTS?

Earthwool 1000° Pipe Insulation from Knauf Insulation is a proven in industrial and commercial applications. Comprised of fiberglass, it provides the thermal performance and personnel protection required in manufacturing and for processing chemicals, foods and petroleum.

For years, architects, engineers and contractors have used fiberglass products to insulate mechanical systems piping and equipment (tanks, pumps and ductwork) as well as structural insulation in commercial, institutional and industrial construction applications.

Fiberglass insulation delivers proven performance and durability in harsh conditions while reducing costs for installation, maintenance and overall operation. Earthwool 1000° Pipe Insulation is the benchmark that stands apart for its genuine sustainability, proven performance and consistently high product quality.

Explore this e-book to learn how Earthwool 1000° Pipe Insulation can deliver outstanding performance with cost-effective installation and what you need to know to confidently specify Knauf Insulation fiberglass insulation for your next project.

## WHAT IS EARTHWOOL 1000° PIPE INSULATION?

Earthwool 1000° Pipe Insulation is a molded, heavy-density, one-piece insulation made from inorganic glass fibers bonded with the revolutionary ECOSE® Technology.

Knauf Insulation products with ECOSE Technology are made using our patented, bio-based binder - a smarter alternative to the phenol/formaldehyde (PF) binder traditionally used in fiberglass products. The bio-based binder holds our product together, gives the product its unique appearance.

Earthwool 1000° Pipe Insulation was the first fiberglass pipe insulation with an [Environmental Product Declaration \(EPD\)](#) that verifies the material's sustainable qualities throughout its life cycle.



## WHAT'S THE BEST MATERIAL FOR INSULATING PIPING?

### Fiberglass Makes Earthwool® 1000° Pipe Insulation Applicable to Industrial, Commercial or Institutional Applications

Produced in three-foot lengths, with or without a factory-applied jacket, Earthwool 1000° Pipe Insulation can meet design requirements for hot, cold, concealed and exposed piping systems.

Earthwool 1000° Pipe Insulation is used because it provides thermal performance and personnel protection for piping systems (copper, iron, stainless steel, PVC and CPVC pipe) and equipment operating at temperatures from 0° F to 1000° F (-18°C to 538°C).

Additional weather protection is needed outdoors.

### When Should You Specify Earthwool 1000° Pipe Insulation?

Earthwool 1000° Pipe Insulation can be used for various applications, including:

- Steam and condensate lines
- Hot and cold domestic water or process systems
- Petrochemical processes
- Power plants



## DOES FIBERGLASS MEET PERFORMANCE STANDARDS IN COMMERCIAL AND INDUSTRIAL ENVIRONMENTS?

### Earthwool® 1000° Pipe Insulation Has Delivered Proven Performance for Over a Decade

Earthwool 1000° Pipe Insulation is a highly effective insulation that can be specified across a variety of applications and environments, both outdoor (with protective jacketing) and indoor where operating temperatures range from 0° F to 1000° F (-18°C to 538°C).



## PERFORMANCE IN KEY AREAS:

### SAFETY

**Protects workers** by reducing the risk of burns and loss of productive work time due to injury

### THERMAL

**Reduces heat loss or gain** to maintain required temperature for industrial processes

### MOISTURE

**Condensation Control** can be maintained if properly installed with either the factory applied ASJ+ or field applied vapor retarder jackets on cold piping

### FIRE

**UL/ULc Classified FHC 25/50** and USCG certified noncombustible material (unfaced)

### ACOUSTICS

**Acoustical treatment** for piping to reduce the transfer of sound energy

## WILL FIBERGLASS MEET SUSTAINABILITY GOALS?

### Earthwool® 1000° Pipe Insulation Is the First Insulation with an Environmental Product Declaration (EPD)

Building owners expect their projects to be constructed with sustainable materials that reduce costs and the impact of the organization's activities on the environment. They also want materials that safeguard the health and safety of employees and customers.

Knauf Insulation is proud to have developed Earthwool 1000° Pipe Insulation—the first fiberglass pipe insulation with an [Environmental Product Declaration \(EPD\)](#) that verifies the material's sustainable qualities throughout its life cycle.

### How It's Made—the Eco-Friendly Way

Knauf Insulation uses glass bottles that would have normally found their way to a landfill and melts them with other raw materials for making the glass fibers.



Earthwool 1000° Pipe Insulation is more than 50 percent recycled glass content by weight, as verified annually by UL Environment. It also exceeds the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED®) Green Building Rating requirement of 10–20%.

### EARTHWOOL 1000° PIPE INSULATION PROVIDES OPPORTUNITIES FOR OTHER LEED CREDITS, INCLUDING:

- **Regional extraction processing and manufacturing**  
Made in Shelbyville, Indiana
- **Optimized energy performance**  
Reduces energy demand, is extremely low emitting and does not contribute to EPA compendium method
- **Innovation in design**  
GREENGUARD Gold Certified and Validated to be Formaldehyde-Free



## ARE YOU LOOKING FOR A GREEN INSULATION?

### Earthwool® 1000° Pipe Insulation Can End Your Search

Knauf developed a rapidly renewable bio-based binder called **ECOSE® Technology, which replaces non-renewable petroleum-based chemicals** such as phenol, formaldehyde or acrylics used to hold the Earthwool 1000° Pipe Insulation fibers together.

All Knauf insulation with ECOSE Technology has been certified under the **UL Environment GREENGUARD Gold standard**. The GREENGUARD Gold Certification Standard includes health-based criteria for additional chemicals and also requires lower total volatile organic compound (VOC) emissions levels to ensure that products are acceptable for use in environments such as schools and health care facilities.

As an **ISO/IEC 17065:2012** accredited third-party certification body, UL's GREENGUARD scheme certifies products and materials for low chemical emissions and provides a resource for choosing healthier products and materials for creating healthier indoor environments. All GREENGUARD certified products must meet stringent chemical emissions standards based on established criteria from key public health agencies



## WHAT ARE THE ADVANTAGES OF ASJ+?

Earthwool® 1000° Pipe Insulation is available with ASJ+ (all-service jacket) (ASJ+), has a **0.01 permeance rating** with the following attributes. and other jackets may be field applied to unfaced pipe insulation. Jackets reduce fiberglass compression and other damage that results from contact in high-traffic areas.

ASJ+ is an all-service jacket composed of aluminum foil reinforced with a glass scrim bonded to a kraft paper interleaving with an outer film layer leaving **no paper exposed**. ASJ+ provides a professional durable, cleanable and paintable\* finish you will be proud of.

**You can maintain that professional appearance by cleaning the surface of ASJ+.** It is as simple as a wet cloth and soapy water. However, ASJ+ is not designed to be used where steam or high pressure water cleaning methods are utilized.

Third party testing indicates that ASJ+ has substantially **less degradation and discoloration** after 1,000 hours continuous UV light exposure in xenon bulb chamber than traditional ASJ. *Earthwool 1000° Pipe Insulation with ASJ+ is not intended for unprotected outdoor use.*

Earthwool 1000° pipe insulation with ASJ+ reduces construction labor and material costs. The SSL+ Advanced Closure System creates strong and lasting bond allowing for one piece installation. **Earthwool 1000° Pipe Insulation ASJ+/SSL+ eliminates the need for additional bands or wires for closure, which speeds up installation.** No special tools or equipment are needed to repair or replace damaged sections.

\*Painting may alter surface burning characteristics

## TOUGH ENOUGH FOR YOUR MOST DEMANDING APPLICATIONS

ASJ+ is tough, as evidenced by the following test results that demonstrate its durability:

### ASJ+ vs. Standard All Service Jacket

MULLEN BURST STRENGTH IS

**54% Better**

TENSILE STRENGTH  
MACHINE DIRECTION IS

**36% Better**

TENSILE STRENGTH  
CROSS-MACHINE DIRECTION IS

**20% Better**



# DOES EARTHWOOL 1000 PIPE INSULATION MEET ASHRAE 90.1 THERMAL REQUIREMENTS?

Earthwool 1000 Pipe Insulation meets or exceeds all requirements for ASHRAE 90.1-2019

EARTHWOOL® 1000° PIPE INSULATION THERMAL CONDUCTIVITY   ASTM C335		
Mean Temperature	k	k (SI)
75° F (24° C)	0.23	0.033
100° F (38° C)	0.24	0.035
200° F (93° C)	0.28	0.040
300° F (149° C)	0.34	0.049
400° F (204° C)	0.42	0.061
500° F (260° C)	0.51	0.074
600° F (316° C)	0.62	0.089

## ASHRAE 90.1-2016 REQUIREMENTS

MINIMUM PIPE INSULATION THICKNESS							
Fluid Operating Temperature Range and Usage	Insulation Conductivity		Nominal Pipe or Tube Size				
	Conductivity Range BTU-in./(hr · ft <sup>2</sup> · °F)	Mean Temperature Rating	<1"	1"-<1½"	1½"-<4"	4"-<8"	≥8"
<b>Heating and Hot Water Systems (Steam, Steam Condensate, Hot-Water Heating and Domestic Water Systems)</b> <sub>a, b, c, d</sub>							
Above 350° F	0.32–0.34	250° F	4½"	5"	5"	5"	5"
251–350° F	0.29–0.31	200° F	3"	4"	4½"	4½"	4½"
201–250° F	0.27–0.30	150° F	2½"	2½"	2½"	3"	3"
141–200° F	0.25–0.29	125° F	1½"	1½"	2"	2"	2"
105–140° F	0.22–0.28	100° F	1"	1"	1½"	1½"	1½"
<b>Cooling Systems (Chilled Water, Brine, Refrigerant)</b> <sub>a, b, c, d</sub>							
40–60° F	0.21–0.27	75° F	½"	½"	1"	1"	1"
Below 40° F	0.20–0.26	50° F	½"	1"	1"	1"	1½"

a. For insulation outside the stated conductivity range, the minimum thickness (T) shall be determined as follows:  $T=r\{(1+t/r)^{K/k}-1\}$ , where T=minimum insulation thickness (in.), r=actual outside radius of pipe (in.), t=insulation thickness listed in this table for applicable fluid temperature and pipe size, K=conductivity of alternate material at mean rating temperature indicated for the applicable fluid temperature {Btu · in./(h · ft<sup>2</sup> · °F)}; and k=the upper value of the conductivity range listed in this table for the applicable fluid temperature. b. These thicknesses are based on energy efficiency considerations only. c. For piping smaller than 1½" and located in partitions within conditioned spaces, reduction of these thicknesses by 1" shall be permitted (before thickness adjustment required in footnote a) but not to thicknesses below 1". These thicknesses are based on energy efficiency considerations only. Issues such as water vapor permeability or surface condensation sometimes require vapor retarders or additional insulation. d. The table is based on steel pipe. Non-metallic pipes schedule 80 thickness or less shall use the table values. For other non-metallic pipes having thermal resistance greater than that of steel pipe, reduced insulation thicknesses are permitted if documentation is provided showing that the pipe with the proposed insulation has no more heat transfer per foot than a steel pipe of the same size with the insulation thickness shown on the table.



## IS EARTHWOOL® 1000° PIPE INSULATION A COST-EFFECTIVE CHOICE FOR PIPE INSULATION?

### Reduce Construction, Operation and Maintenance Expenses by Choosing Earthwool® 1000° Pipe Insulation with ASJ+

Specifying Earthwool 1000° Pipe Insulation with ASJ+ jacketing enables architects, engineers and contractors to **reduce overall costs** for installing, operating and maintaining pipe insulation.

Earthwool 1000° Pipe Insulation is manufactured as a one-piece pipe insulation which provides ease of installation and is available with or without factory applied ASJ+. Alternative multi-piece unfaced sections may require increased costs for jacketing, bands, seals, screws, wire and caulking—plus associated labor.

### LOWER OPERATING COSTS POTENTIAL

**Earthwool 1000° Pipe** reduces fuel costs in commercial/institutional buildings and industrial processes—in some applications by nearly 5%.

## EARTHWOOL 1000° PIPE INSULATION WITH ASJ+ REDUCES CONSTRUCTION LABOR AND MATERIAL COSTS.

The SSL+ Advanced Closure System integrates seals into the jacket of each section of pipe insulation and includes strips to seal joints where the sections abut. Earthwool 1000° Pipe Insulation with ASJ+ eliminates the need for additional fastening materials which speeds up installation. No special tools or equipment are needed to repair or replace damaged sections.



## ABOUT KNAUF INSULATION

Knauf Insulation, with North American headquarters in Shelbyville, Ind., manufactures thermal and acoustical fiberglass insulation for commercial, industrial, marine, metal building, original equipment manufacturer and residential applications.

### CONTACT KNAUF INSULATION

Visit [knaufnorthamerica.com](http://knaufnorthamerica.com) or call (800) 825-4434

