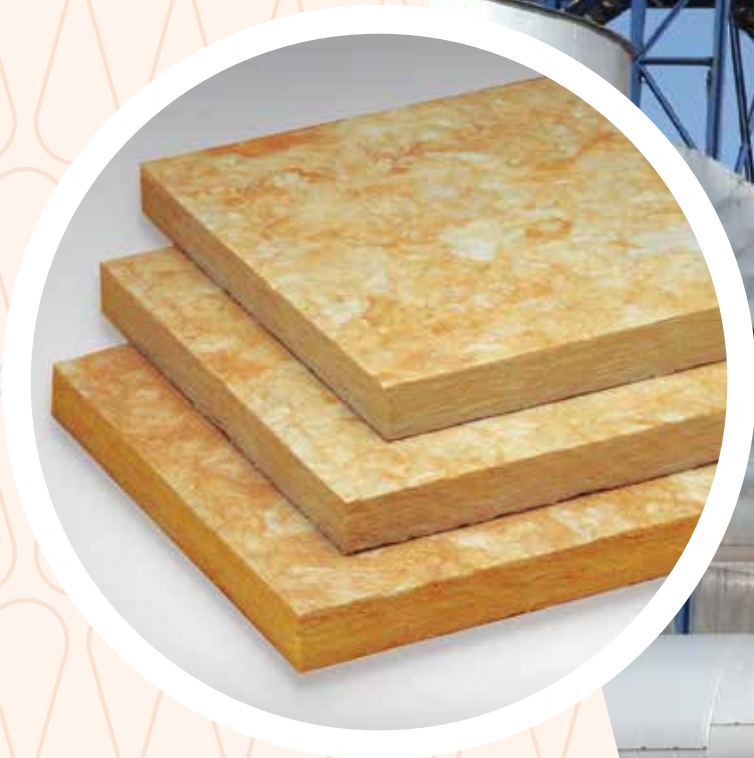




Eco-friendly lagging materials and thermal insulations

BYUCKSAN

MINERAL WOOL



BYUCKSAN



Eco-friendly lagging materials and thermal insulations

BYUCKSAN MINERAL WOOL

Byucksan mineral wool is an eco-friendly lagging materials and thermal insulations that are applied to various fields.

Byucksan mineral wool, which is made by melting calcium silicate-based ore at high temperature and obtained GR (Good Recycled) certification, is an eco-friendly lagging materials and thermal insulations that obtained Eco Label and highest HB Mark grade by considering recycling of resources from the manufacturing stage. This material is widely used in various fields for fire resistance, sound absorption, thermal insulation of various buildings, plants, ships, etc. as well as seed plates for agriculture.



Domestic and international certification of Byucksan mineral wool

■ KS certificate



■ JIS certificate (JIS A 9521)



■ JIS certificate (JIS A 9504)



■ GR certificate



■ Eco Label certificate



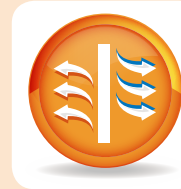
■ HB Mark certificate



■ Asbestos-free result report



Characteristics of Byucksan mineral wool



Heat Insulation

As Byucksan mineral wool is made of uniform and fine fibers, it provides excellent effect of thermal insulation owing to low thermal conductivity.



Heat-resistant non-flammable

mineral wool is used for fire prevention structures due to its high heat resistance, as it is made of artificial mineral fibers.



Sound absorption

Sound absorption performance is excellent as highly dense and thin fibers contain air tightly, which takes effect even in low-frequency sounds that are difficult to absorb. In addition, an excellent acoustic insulation effect can be obtained when filled in the partition wall.



Easy installation

mineral wool is made of fiber materials. Therefore, it is not broken easily owing to excellent flexibility and can be easily cut with a cutter.



Moisture and weather resistance

mineral wool does not absorb atmospheric moisture and provides better weather resistance than other insulators owing to a stable structure.

Maritime classification certification of Byucksan mineral wool

■ DNV GL classification society



■ American Maritime Register of Shipping



■ Lloyd's Register



■ French Maritime Register of Shipping



■ Taiwan Maritime Register of Shipping



■ Japan Maritime Register of Shipping



■ Korean Maritime Register of Shipping



■ Russian Maritime Register of Shipping



List of Byucksan mineral wool products

Product name	KSL 9102 (Artificial mineral fiber insulation)	Standard density (kg/m³)	Representative thickness (mm)					Standard specification (m)	Main use	
			25	30	50	75	100			
Felt Insulation board	Felt	50			●	●	●	0.5×1	• Insulation and dew condensation prevention of apartments and general houses • Soundproofing of schools and houses • Heat insulation of the air conditioning duct	
		60			●	●	●	0.45×1		
	Heat insulation board No. 1	80			●	●	●	0.5×1 1×1	• Heat insulation of industrial facilities such as power generation boilers, etc. • Back up of ceramic insulation • Heat radiation of ships • Insulation and lagging materials of various dryers and heat treatment devices	
		100	●		●	●	●			
		Heat insulation board No. 2	120	●		●	●			●
			140	●		●	●			●
			Heat insulation board No. 3	200			●			
Blanket	Blanket No. 1 A	60			●	●		1×3 (75T)	• Heat insulation of the ceiling and under the floor of general buildings • Insulation, lagging materials, and cold insulation of various tanks or circular ducts	
	Blanket No. 1 B	80	●		●	●		1×5 (50T)		
	Blanket No. 2	100	●		●	●		1×10 (25T)		
Wire Blanket	Blanket No. 1 B	80	●		●	●		1×3 (75T)	• Insulation and lagging materials of industrial facilities such as power generation boilers, etc. • Back up of ceramic insulation • Heat radiation of ships • Insulation, lagging materials, and round duct of various dryers and heat treatment equipment • Large diameter pipes, valve flanges, various tanks, etc.	
		100	●		●	●		1×5 (50T)		
	Blanket No. 2	120			●			1×10 (25T)		
Lamela Mat	Heat insulation Large No. 1	80			●	●	●	1×1	• For air conditioning sanitary equipment (round duct, curved part of the pipe), apartment exhaust • Heat insulation and sound insulation of ducts duct and plant piping	
		100			●	●	●			
Heat insulating tube (pipe cover)	Heat insulating tube	100~150		●	●	●	●	1/2"(15A)~ 34"(850A)×1m	• heat insulation of air conditioning equipment, industrial equipment pipes • Heat insulation of buildings, heat insulation and lagging materials for ware supply and drainage pipe, and fireproof materials in the penetrating part of the fire compartment	
Loose Wool	mineral wool							20kg/Bag	• Raw materials of mineral wool's sound-absorbing ceiling materials • Insulation for house ceilings and walls using the spraying method	
Super Wool		110	●		●	●	●	0.5×1	• Fireproof insulation for ships and industrial power plants	
		120	●		●	●	●	1×1		

* The above specifications are for the standard product of Byucksan mineral wool. Please contact person in charge for other specifications.
(● : Specifications that can be produced)

Use of Byucksan mineral wool


For shipbuilding

For ships and offshore plants
Heat insulation



For industry

Facility and equipment of various power generation plans and steel plants such as the boiler furnace wall, piping, drying furnace, and heat treatment equipment Piping, tanks, etc. of the oil refinery plant



Packing unit and vehicle loading quantity by product

Product name	Standard density (kg/m³)	Thickness (mm)	Width (m) × Length (m)	Packing unit (sheet/box)	8 tons (cargo)	11 tons (cargo)
Felt	50	50	0.5×1 (0.45×1)	10	1,680 sheets	2,160 sheets
		75	0.5×1	6	1,008 sheets	1,296 sheets
	60	50	0.5×1 (0.45×1)	10	1,680 sheets	2,160 sheets
Insulation board	80	50	0.5×1	8	1,456 sheets	2,088 sheets
		75	0.5×1	6	1,008 sheets	1,296 sheets
		100	0.5×1	4	728 sheets	1,044 sheets
	100	50	0.5 X 1	8	1,456 sheets	2,088 sheets
		75	0.5 X 1	6	1,008 sheets	1,296 sheets
		100	0.5 X 1	4	728 sheets	1,044 sheets
	120	50	0.5 X 1	7	1,274 sheets	1,827 sheets
		75	0.5 X 1	5	840 sheets	1,080 sheets
		100	0.5 X 1	3	672 sheets	768 sheets
Blanket	60	50	1 X 5	1 roll	180 rolls	240 rolls
		75	1 X 3		180 rolls	240 rolls
	80 100	25	1 X 10		140 rolls	200 rolls
		50	1 X 5		180 rolls	240 rolls
		75	1 X 3		180 rolls	240 rolls
Loose Wool				20kg/bag	250 bags	350 bags
Super Wool	120	50	1×1	5	600 sheets	720 sheets



* The picture above may be different from the actual product, so please consult with a sales rep for more information.

FELT BOARD

Mineral wool insulation boards are processed in the form of a board using an adhesive binder. Therefore, the boards are light and highly elastic, and excellent in sound absorption, sound insulation, heat insulation, and moisture resistance. These products are also used for the purpose of double insulation, fireproof, and heat resistance.



Characteristics

- Cost-effective and excellent in heat insulation
- Excellent sound absorption and acoustic isolation
- Excellent flexibility, elasticity, and constructability
- Various product specifications
- Wide range of operating temperature

Use

- Heat insulation, dew condensation prevention, and sound absorption and acoustic isolation of apartments and general houses
- Heat insulation and sound absorption of ducts, machine rooms, electrical rooms, etc.
- Sound-absorbing materials for sound control in halls, studios, gyms, etc.
- For penetration into the fire compartment
- Heat insulation of industrial facilities
- Insulation for ships, heat insulation and sound absorption of curtain walls
- Core materials for fire doors and partition walls for fire prevention purposes

General specifications and properties

Type	Density (Kg/m³)	Standard specification			Heat conductivity		Thermal shrinkage temperature (°C)	
		Thickness (mm)	Width (m)	Length (m)	Average temperature: 70°C	Average temperature: 20°C		
Felt	50 60	50 75 100	0.45 0.5	1	Below 0.049	Below 0.039	Above 400	
Heat insulation board No. 1	80	50, 75, 100	0.5 1	1 2	Below 0.044	Below 0.037	Above 600	
	100	25 50						
Heat insulation board No. 2	120	75 100			Below 0.043	Below 0.036		
	140							
Heat insulation board No. 3	200	50			Below 0.044	Below 0.038		

※Property standard: KS L 9102



* The picture above may be different from the actual product, so please consult with a sales rep for more information.

Mineral Wool PANEL CORE

Byucksan mineral wool for panel cores uses mineral wool made by melting calcium silicate-based ore, so it has strong heat resistance that does not burn easily. It is used as core materials for sandwich panels that require fire resistance.

Characteristics

- Core materials for sandwich panels that require fire resistance

General specification

Density (Kg/m³)	Standard specification			Related specifications
	Thickness (mm)	Width (m)	Length (m)	
Above 100	100	1	2	KS L 9102

※ Please consult with the person in charge for other specifications.
(Do not use the product for anything other than its intended purpose.)

Properties

Heat conductivity (W/mk)	Thermal shrinkage temperature (°C)
Average temperature: 70°C (20°C)	
Below 0.044 (below 0.037)	Above 600

※ Property standard: KS L 9102





* The picture above may be different from the actual product, so please consult with a sales rep for more information.

BLANKET

The Blanket product reduces the amount of binders to the minimum and reinforces one side is reinforced with meshes, and is used for the insulating material for the ceiling or round duct of general buildings.



Characteristics

- Excellent flexibility
- Easy installation on the curve or complex shape surfaces

Use

- Insulation for the ceiling or floor of general buildings
- Heat insulation or cold insulation of various tanks and round ducts

General specifications and properties

Density (Kg/m³)	Standard specification			Heat conductivity		Thermal shrinkage temperature (°C)	
	Thickness (mm)	Width (m)	Length (m)	Average temperature: 70°C	Average temperature: 20°C		
60	50, 75	1	5, 3	Below 0.049	Below 0.039	Above 400	
80	25		10	Below 0.044	Below 0.037	Above 600	
100	50		5	Below 0.043	Below 0.036		
120	75		3				

※ Property standard: KS L 9102



* The picture above may be different from the actual product, so please consult with a sales rep for more information.

WIRE BLANKET

The Wire blanket product molds mineral wool with a small amount of binder to make a board and stitch a hexagonal wire mesh with galvanized wire. It is easy to install, suitable for heat insulation work with complex curved surfaces, and heat resistance is strengthened further as the number of binders is small.



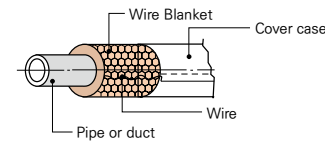
Characteristics

- Excellent constructability
- Convenient for insulation work such as complex curved surfaces
- Excellent thermal resistance

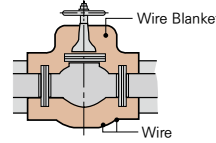
Use

- Round duct, large diameter pipe, valve, flange, various tanks, thermal power boiler, etc.

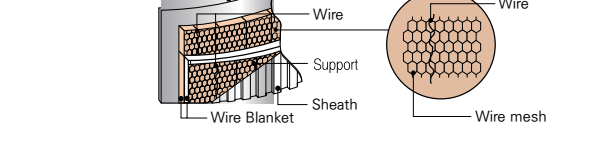
● Pipe and round duct



● Valve



● Tank



General specifications and properties

Density (Kg/㎡)	Standard specification			Heat conductivity		Thermal shrinkage temperature (℃)	
	Thickness (mm)	Width (m)	Length (m)	Average temperature: 70℃	Average temperature: 20℃		
60	50, 75	1	5, 3	Below 0.049	Below 0.039	Above 400	
80	25		10	Below 0.044	Below 0.037	Above 600	
100	50		5	Below 0.043	Below 0.036		
120	75		3				

※ Property standard: KS L 9102



* The picture above may be different from the actual product, so please consult with a sales rep for more information.

PIPE COVER

The mineral wool heat insulation tube (pipe cover) is made by molding mineral wool in the shape of a tube, and has heat insulation, heat resistance, moisture resistance, constructability, and flexibility.

Characteristics

- Very easy to install
- Lightweight but excellent in heat insulation

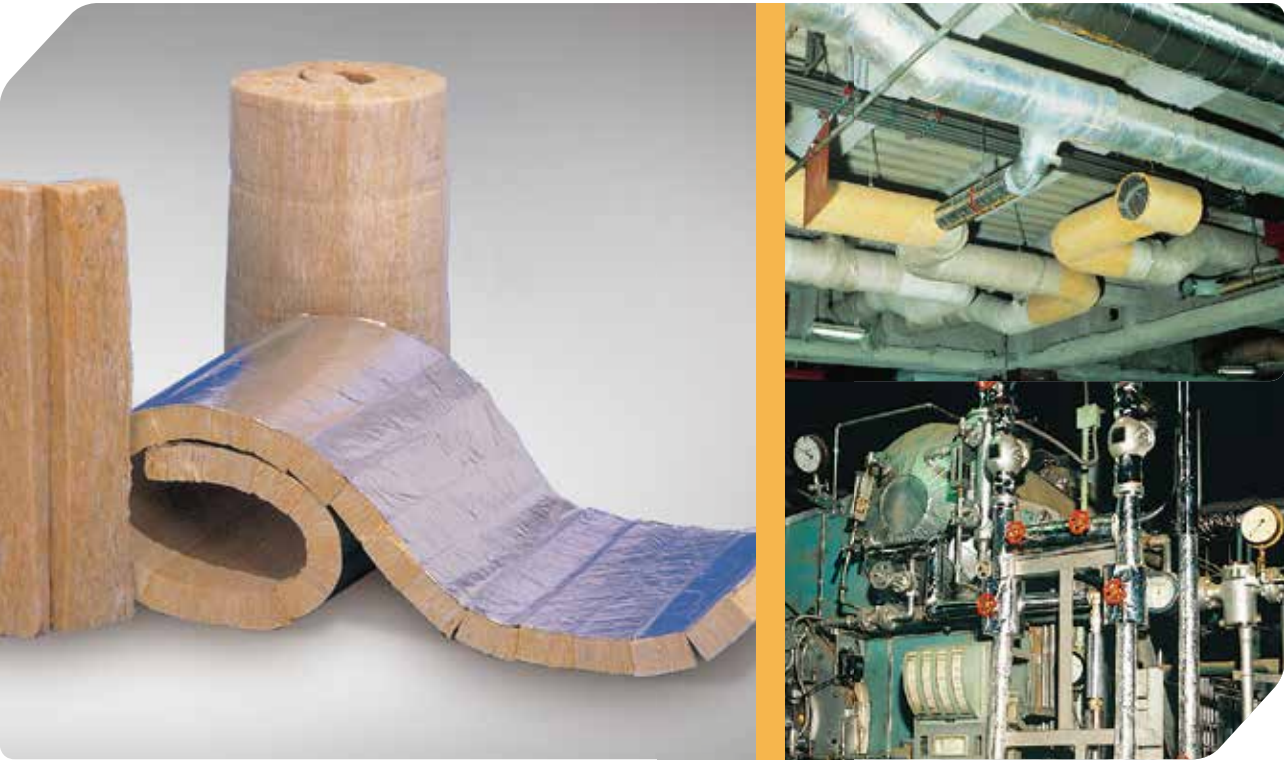
Use

- Heat insulation of air conditioning facilities, sanitary facilities, and pipes
- Heat insulation of water supply and drainage pipes
- Penetration part of the fire protection compartment, etc.

General specifications and properties

Density (Kg/m³)	Specification			Heat conductivity (W/mk)		Thermal shrinkage temperature (°C)
	Inner diameter (A)	Thickness (mm)	Length (m)	70℃	20℃	
40~200 100 ~ 150 based on KS	15~850	30~200	1	Below 0.044	Below 0.036	Above 600

※ Property standard: KS L 9102
※ Product specifications: Production in 5mm is possible.
※ Please consult with our sales rep for details such as density and thickness.



* The picture above may be different from the actual product, so please consult with a sales rep for more information.

LAMELA MAT

The Lamela Mat product is made by cutting mineral wool at regular intervals, standing them in the longitudinal fiber direction, and attaching silver foil, etc. Lamela Mat is widely used for round duct and pipe installation.

Characteristics

- Suitable for the heat insulation of large-size pipes and round tanks
- Excellent compressive strength
- Easy to install
- No need for an additional stiffener

Use

- Air conditioning and sanitary facilities (round duct, pipe, curved part, etc.)
- Heat insulation and sound insulation of plant piping
- Fireproof method of pipe for bridges

General specifications and properties

Density (Kg/m3)	Standard specification			Heat conductivity (W/mk)		Thermal shrinkage temperature (°C)
	Thickness (mm)	Width (m)	Length (m)	Average temperature 70℃	Average temperature 20℃	
80 100	50 75 100	1	1	0.052	Below 0.040	Above 600

※ Property standard: KS L 9102



* The picture above may be different from the actual product, so please consult with a sales rep for more information.

LOOSE WOOL

Loose Wool is a product that can be customized according to the location and size of the workplace by wrapping mineral wool in a fibrous state and has excellent heat insulation and sound absorption.

Characteristics

- Filling materials such as an oxygen separator
- Raw materials for mineral wool sound absorption ceiling materials
- Insulating material for semi-wet spray method for house ceilings and walls
- Filling for the part that other mats or boards cannot be installed easily

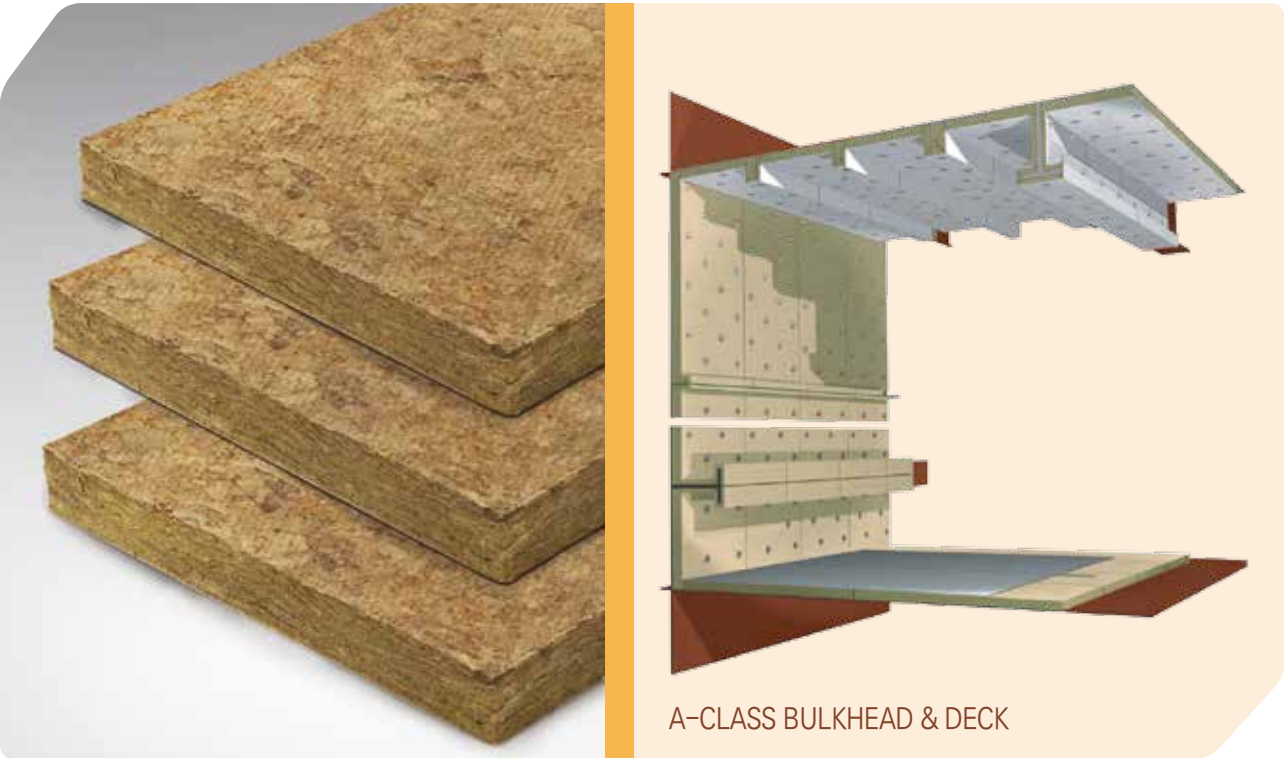
Raw material mixing ratio

Use	Loose Wool	Comment
For Insulation	1	0.28
For sound absorption and dew condensation prevention	1	0.3

Properties

Standard density (Kg/m3)	Heat conductivity (W/mk)	Thermal shrinkage temperature (℃)
	70℃	
40 ~ 150 (depending on filling density when using)	Below 0.044	Above 650

※ The above properties are Loose Wool's own properties.



* The picture above may be different from the actual product, so please consult with a sales rep for more information.

SUPER WOOL



Super Wool is a high-temperature fireproof insulating material developed for the industry and vessel. Super Wool is a non-combustible material that is a unique product and exclusively produced by Byucksan, and officially certified by certification agencies at home and abroad including Lloyd's Register in the U.K. Super Wool is particularly suitable for heat insulation facilities in industrial facilities and vessels and for the fireproof material of vessels and power plants.

Characteristics

- Incombustible material with excellent fire resistance owing to a high degree of heat resistance
- Made of fibrous material, making it easy to install owing to high flexibility
- Excellent high-temperature insulation and sound absorption, as well as excellent moisture and weather resistance

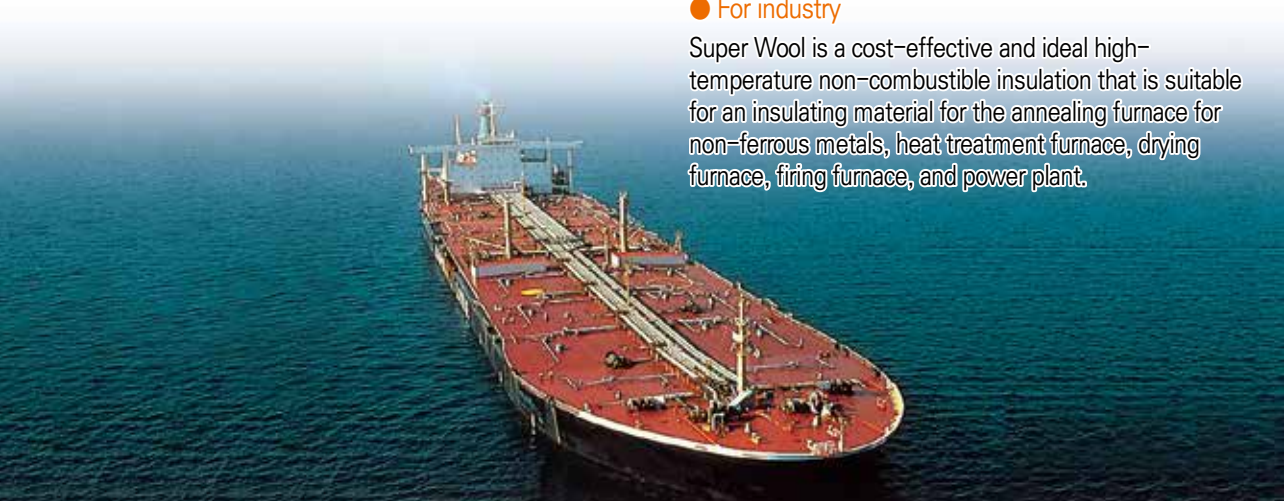
Use

● For vessels

Super Wool acquired A-class bulkhead & deck certification in accordance with SOLAS (International Convention for the Safety of Life at Sea) and certification for non-combustible material by IMO resolution.

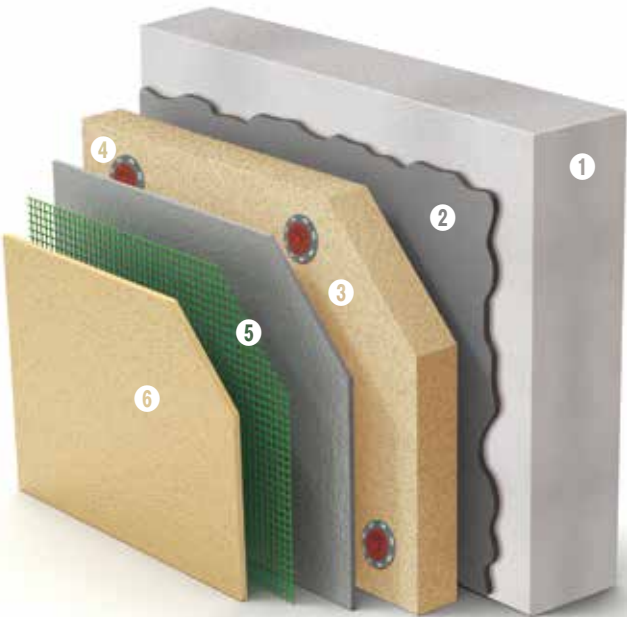
● For industry

Super Wool is a cost-effective and ideal high-temperature non-combustible insulation that is suitable for an insulating material for the annealing furnace for non-ferrous metals, heat treatment furnace, drying furnace, firing furnace, and power plant.



External insulation system that is most perfect for fire safety

BYUCKSAN ENERFREE MINERAL WOOL TOTAL SYSTEM



- 1 Structure
- 2 Adhesive
- 3 mineral wool board for external insulation (density of 100kg/m² or more)
- 4 Fastener exclusive for mineral wool
- 5 Constructability Adhesive
- 6 Finishing material

mineral wool

Byucksan mineral wool for external insulation is an optimal non-combustible insulating material. The mineral wool external insulation system is widely applied in developed countries in Europe, in order to satisfy both fire resistance and insulation properties.

Standard

Thickness(mm)	Width × Length (mm)
50~300	500 × 1,000

※ Please make sure to consult with the sales rep regarding product mixing and spraying of mineral wool surface reinforcing agent (primer) on the product.

Properties

Item	Unit	Standard	Test method
Density	kg/m ³	Above 100	KS L 9102
Heat conductivity (20℃)	W/m·k	Below 0.040	KS L 9016
Compressive strength (10% deformation)	kPa	Above 20	EN 826
Tensile strength	kPa	Above 7.5	EN 1607
Mass moisture absorption rate	%	Below 1.0	ASTM C 1104
Absorptiveness	Short-term (24 hours)	Below 1.0	ISO 29767
	Long-term (28 days)	Below 3.0	ISO 16535
Alkali resistance coefficient	-	Above 1.0	KS L 2101
Combustion performance	-	Noncombustible material	Article 2 of "Flame retardant performance of building finishing materials and fire spread prevention structure", notice of the Ministry of Land, Infrastructure and Transport

Fire safety
An external insulation system that mineral wool is applied, which is considered the best non-combustible insulation material.

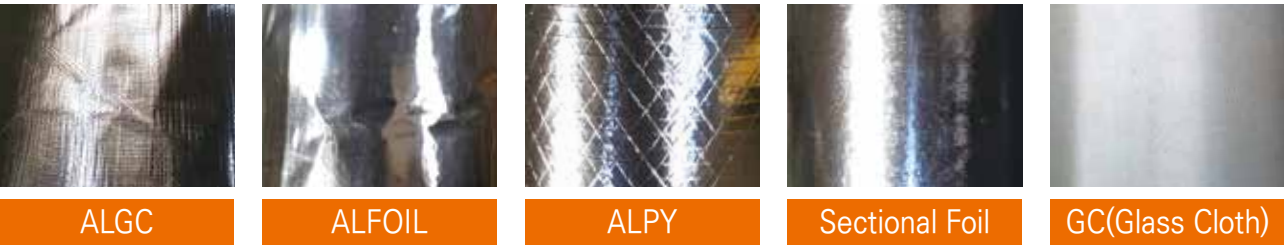
Constructability
Good at reducing the construction period by simultaneously installing insulation and finishing materials

Splendid appearance
Various finishes (color, texture) and harmony with other materials

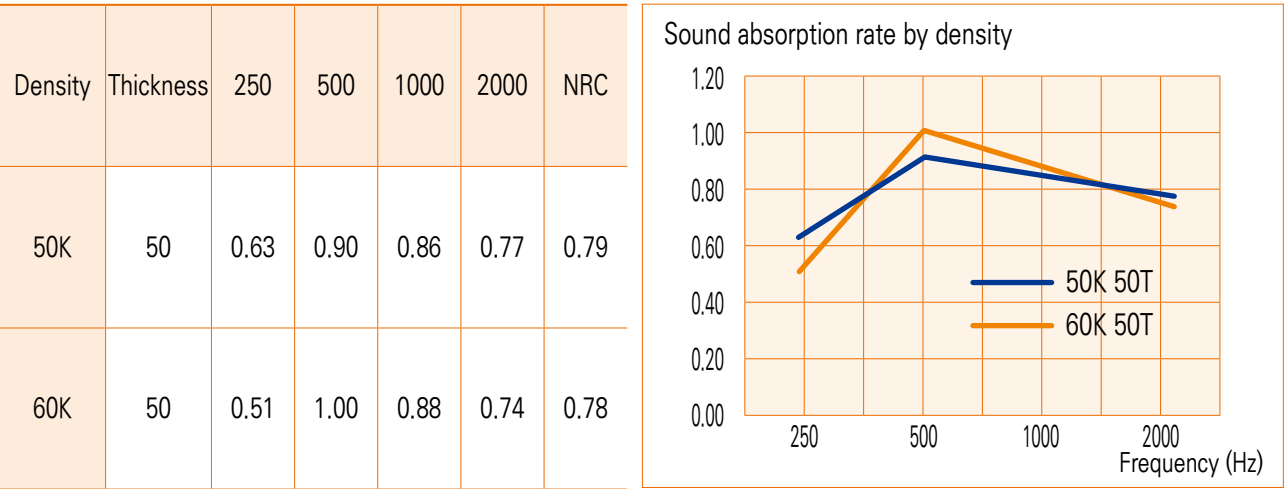


- 1 Mineral wool for external insulation coated with a surface reinforcing agent (effect of improving adhesive performance)
- 2 Mineral wool for general external insulation mineral wool

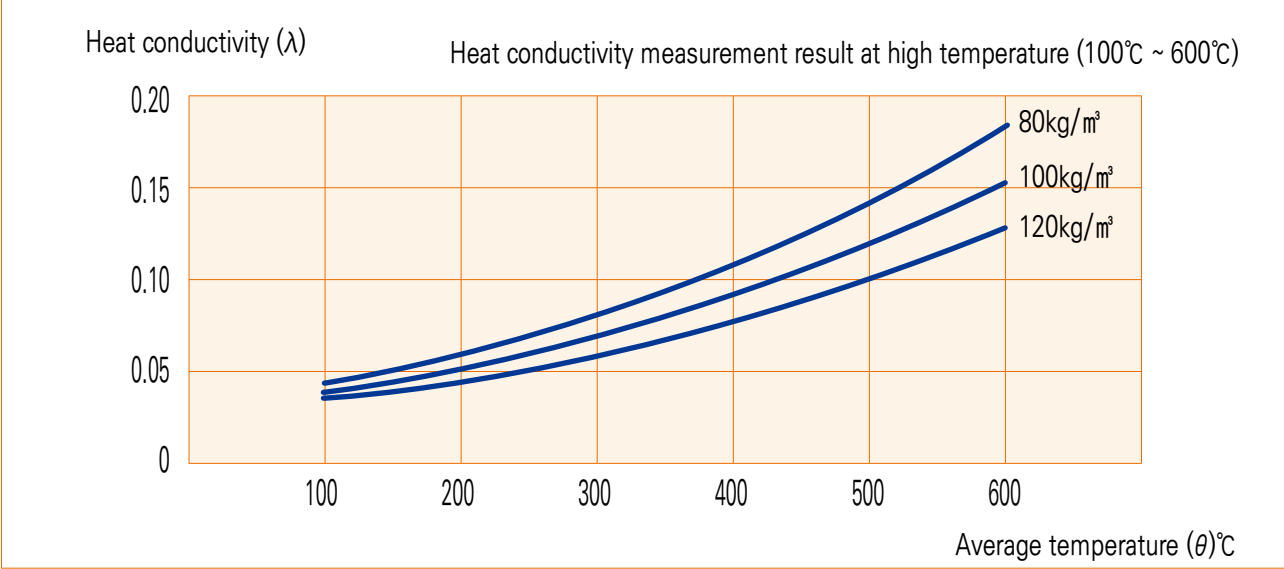
Sticked matters of Byucksan mineral wool



Sound absorption rate by density of Byucksan mineral wool



Reference table of Byucksan mineral wool heat conductivity



■ Quality assurance

1. If you have any requirements for this product or inconveniences, please call our customer center or sales office. We will do our best to process as quickly as possible.
2. The warranty period for this product is 1 year. (However, any defects caused by careless storage and handling, or incorrect installation by the customer cannot be compensated.)
3. A delivery slip should be presented when reporting a complaint about this product.

■ Handling and storage precautions

1. Keep the product inside a well-ventilated room that is not affected by moisture such as snow or rain, and keep the product upright using a pallet, etc.
2. Be careful not to place a heavy object on the product or handle the product with excessive force, in order to prevent damage to the product.
3. Be careful not to expose wrapping paper and kraft paper attachments direct heat sources to prevent fire, because they can burn.
4. Take proper actions to prevent vibration and accident when unloading and transporting such as using a transport device or working as a group of two.
5. Dispose mineral wool waste quickly by inserting it into an envelope to prevent dust scattering and using the waste disposal company.

■ Installation precautions

1. Please contact use first when using the product for the purpose other than designated use.
 2. Comply with the followings when cutting and processing this product.
 - Workers are required to wear protective gears such as safety glasses, safety helmet, dust prevention mask, and gloves, and those who don't wear protective gears should not access the workplace.
 - Take measures to ventilate the workplace.
 - Use manual tools such as a knife when cutting, to prevent dust scattering.
- ※ For other details, please refer to the Material Safety Data Sheet (MSDS) placed in our sales office, branches, and web site.



Wear safety glasses



Wear safety helmet



Wear dust mask



Wear gloves



Be careful of moisture



Be careful of breakage

※ MSDS (Material Safety Data Sheet) is a manual for the safe use of the product, which explains the risk and danger of chemical substances, emergency measures, handling methods, etc.

■ Warning signs

▲ CAUTION

1. When handling this product, wear and tighten long sleeves, and wear protective gears such as safety glasses, safety helmet, dust mask, and gloves.
 - If dust is inhaled, the respiratory system can be irritated.
2. If the skin or eye directly contacts dust, it may cause irritation. Do not rub it, but wash it completely with a running water and soap.
 - If the skin is scratched, the skin can be irritated.
3. Keep the product away from water or moisture. If it gets wet, dry it before use.
 - If the product touches an electric device while wet, it may cause electric shock.
4. Do not work on the product.
 - The worker may fall and gets hurt.
5. Please visit the doctor for a description if you feel anything wrong in the body during handling or installation.

※ ※ The contents of this brochure are subject to change. Please contact us if you plan to apply the product differently from those described in this brochure.
※ ® is a registered trademark of Byucksan Co., Ltd.



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