Stonewool Insulation for Thermal, Acoustic and Fire Safety Applications in Buildings

www.rockwoolindia.com

ROCKWOOL INDIA
Excellence Through Insulation Pvt Ltd

MANUFACTURED UNDER LICENSE OF
ISOVER SAINT-GOBAIN

Our Insulation Business

As the market leader in the GCC, Turkey and India, the Insulation Group has a well-established reputation for delivering high-quality, energy-efficient insulation solutions to our customers.

We have a strong commitment to quality, as recognized by our accreditation by international standard bodies (ISO, UL, DCL and others); to the environment, as recognized by our selection as the sole insulation supplier and official collaborator with MASDAR City, the world's first zero-carbon, zero-waste city, in Abu Dhabi; and to the health and safety of our people.

KIMMCO

Recognized as a leading insulation solution provider in the Middle East and Asia, KIMMCO provides insulation solutions for HVAC, building (roofs, walls, floors, metallic buildings) and technical/industrial applications. With an annual production capacity of 35,000 MT, KIMMCO is certified to ISO 9001, ISO 14001 and OHSAS 18001, and is compliant with ISO, ASTM, DIN, BS and other international standards.

SAUDI INTERNATIONAL INSULATION MANUFACTURING COMPANY (SIIMCO)

Saudi International Insulation Manufacturing Company, a joint venture between Alghanim Industries and Saint-Gobain ISOVER (France), announced the construction of a new stonewool manufacturing facility based in Yanbu Al-Sinaiyah, Kingdom of Saudi Arabia in April 2012.

SIIMCO will manufacture a variety of stonewool products for thermal and acoustic insulation. Using Saint-Gobain's state-of-the-art technology (REX process), SIIMCO will serve both the industrial and building segments. The manufacturing facility in Yanbu will have a potential of 64,000 MT installed capacity, and serve markets in Saudi Arabia as well as other markets in the GCC, Egypt, Iraq and the Levant. The plant is expected to be commissioned in early 2014.

ROCKWOOL (INDIA) LTD.

Rockwool (India) Ltd. (RIL) is recognized as the leading producer of stonewool insulation in India and has recently started serving customers in the broader GCC and MENA region. RIL operates two manufacturing facilities, one in Hyderabad and one in Silvassa, with a combined capacity of 50,000 MT per annum. RIL is a licensee of Saint-Gobain technology, and is ISO 9001 certified and ASTM compliant.

IZOCAM

IZOCAM is the leading supplier of insulation in Turkey and has been operated as a joint venture between KIMMCO and Saint-Gobain ISOVER since 2006. IZOCAM manufactures a range of glasswool, stonewool, nitrile rubber, and foam-based insulation materials and holds the ISO 9001 and ISO 14001 certificates.

Commitment to Quality

Properties of our Stone wool Products

- Excellent thermal performance
- Superior acoustic performance
- Excellent fire safety
- Environmentally friendly; made from abundantly available, non-strategic materials like basalt, and contains up to 25% slag. (A waste product from the steel industry)
- Suitable for a wide variety of applications (flexible, semi-rigid, rigid and extra-rigid)
- Address a variety of performance requirements (wide range of facing materials)
- Easy to cut and install, minimum wastage on site
- Comparatively light weight
- Dimensionally stable
- No sagging or settling
- Complies with all relevant international standards

Our Commitment to Quality

Our Stonewool products are manufactured under license of Saint-Gobain ISOVER, a leading insulation provider headquartered in France.

Further, we have a strong commitment to quality, as recognized by our various certifications such as the ISO 9001 certificate.

Our Product Listing & Certification

- UL
- FM
- EIL
- Warrington Fire Certification
- DCL

ROCKINSUL Building Rolls

- ROCKINSUL Building Rolls are manufactured from stable stonewool fibres bonded with thermosetting resins and are light weight, strong and resilient, and easy to handle.
- The Stonewool fibres are fine and uniformly distributed to ensure consistent thermal properties in the building roll.

Standard Dimensions

Density (kg/m³)	Thickness (mm)		Length (m)	Width (mm)
	Min.	Max.		
36	75	100	5 to 10	1,100 (with overlap) to 1,200 (without overlap)
48	50	100	5 to 10	
64	40	100	5 to 8	

Facing Types

ROCKINSUL Building Rolls are available with ALG and FSK facings, which provide an efficient vapour barrier. Kraft Paper facing is also available.

PERFORMANCE

Working Temperature

Fibre : Up to 750 °C
Facing : 100 °C

At temperatures in excess of 230 °C a limited migration of binder may occur in the insulation in contact with the hot face. This does not impair the insulation performance.

Thermal Performance (K Value)

The thermal conductivity of ROCKINSUL Building Rolls as per ASTM C177, 518, IS 3346 is displayed in the tables below:

Mean Temperature		Thermal Conductivity for the following densities					
		W/m.K			Btu.in/ft² h.°F		
°C	°F	36 kg/m³	48 kg/m³	64 kg/m³	2.250 lb/ft³	3.000 lb/ft³	4.000 lb/ft³
10	50	0.036	0.033	0.031	0.250	0.229	0.215
25	77	0.039	0.035	0.033	0.270	0.243	0.229
50	122	0.047	0.042	0.038	0.326	0.291	0.263
100	212	0.057	0.051	0.046	0.395	0.354	0.319

Thermal Performance (R Value)

Thickness		Thermal Resistance at 25°C Mean Temperature for the following densities					
mm	inch	m² k/w			ft².h.°F/Btu		
		36 kg/m³	48 kg/m³	64 kg/m³	2.250 lb/ft³	3.000 lb/ft³	4.000 lb/ft³
40	1.5	-	-	1.212	-	-	6.556
50	2.0	-	1.429	1.515	-	8.230	8.741
60	2.5	-	1.714	1.818	-	10.288	10.926
75	3.0	1.923	2.143	2.273	11.111	12.346	13.112
100	4.0	2.564	2.857	3.030	14.815	16.461	17.482

These are typical values subject to normal manufacturing and testing variances.

Acoustic Performance

ROCKINSUL Building Rolls achieve excellent acoustic performances (sound absorption coefficients and sound insulation) when tested in accordance to various relevant ASTM standards.

ROCKINSUL Building Rolls achieve Noise Reduction Coefficient (NRC) values up to 1.05, when tested in accordance to ASTM C423.

Fire Safety Performance

ROCKINSUL Building Rolls are non-combustible when tested in accordance with IS 3144, BS 476 (part 4), ISO 1182 and ASTM E136 and are classified as Class A1, in accordance with European norms.

Unfaced, FSK and ALG-faced ROCKINSUL Building Rolls have the following fire safety rating achievements:

1. Class 1 surface spread of flame in accordance to BS 476 (part 7)
2. Class 0 in accordance to the BS 476 (part 6 & 7) and to British Building Regulations.
3. Surface burning characteristics in accordance to ASTM E84 / UL 723
   a. Fire Spread Index : Less than 25
   b. Smoke Developed Index : Less than 50

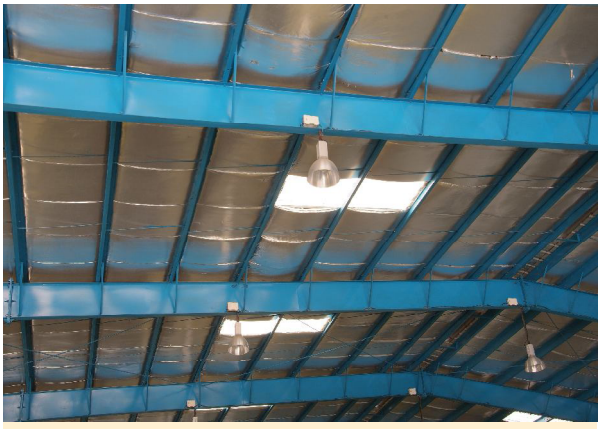
Moisture Abosorption Performance

ROCKINSUL Building Rolls absorb less than 1% by volume when tested in accordance with BS 2972, ASTM C1104 / 1104 M, and do not absorb moisture from ambient air or from water by capillary action. Only water under pressure can enter into stonewool insulation products; however, it quickly dries out due to the open cell structure of ROCKINSUL Building Rolls.

When tested in accordance to ASTM E96, FS K-faced Building Rolls achieve water vapour permeability of 0.02 perm, ALG faced Building Rolls achieve zero water vapour permeability.

Applications

ROCKINSUL Building Rolls are commonly used on the walls and roofs (under and over purlins) of pre-engineered buildings, pre-fabricated houses, poultry farms and HVAC ducting.



Installation Procedures

Fix end of ROCKINSUL Building Rolls faced side down, at ridge and allow to unroll to eaves. At eaves, the roll should be cut and pulled taut. Each subsequent roll should be overlapped or butted to avoid gaps.

Packing strips, equal in thickness to the insulation, should be placed along the line of each purlin and fixed through the roofliner to the purlin below. This avoids undue compression of the insulation.

The roof cladding should be carried out in conjunction with the insulation work to avoid accidental damage. Fixing should be through the crown profile of the roofing sheet and down through the spacer to the purlin below.

Weathering sheets should be fitted as insulation, work progresses in order to avoid unnecessary damage to the insulation. Holes for hook bolts sealed against water penetrations.

Handling & Storage

ROCKINSUL Building Rolls should be stored safely indoors. If stored outside, they should be stacked clear of ground and covered with a securely anchored weather proof sheet.

ROCKINSUL RB Slabs

- ROCKINSUL RB Slabs are semi-rigid and rigid boards manufactured from stable stone fibres bonded with a minimum quantity of thermosetting resin binder.
- ROCKINSUL RB Slabs are capable of with standing extreme temperatures up to 750 °C and are light weight, strong, resilient, easy to handle, and easy to cut to suit intricate shapes.

Standard Dimensions

Thickness (mm)	Width (mm)	Length (m)
25 to 125	600	1.0 to 1.2

Standard Density

Density (kg/m³)	Thickness (mm)
48	50 - 200
64	40 - 150
80	40 - 125
96	25 - 100
120	25 - 100
144	25 - 100
160	25 - 75
200	25 - 50

Non-standard sizes may be available on request.

Facing Types

ROCKINSUL RB Slabs for building applications are unfaced, or with a facing of glass reinforced aluminium foil / Kraft paper laminate (FSK), ALG and Black Glass Tissue (BGT).

PERFORMANCE

Working Temperature

Fibre : Up to 750 °C
Facing : 100 °C

At temperatures in excess of 230 °C a limited migration of binder may occur in the insulation in contact with the hot face. This does not impair the insulation performance.

Thermal Performance (K Value)

The thermal conductivity of ROCKINSUL RB Slabs as per ASTM C177, 518, IS 3346 is displayed in the tables below:

Mean Temperature	Thermal Conductivity in W/m.K for the following densities in kg/m³							
°C	48	64	80	100	120	144	160	200
25	0.036	0.035	0.035	0.034	0.034	0.034	0.036	0.037
35	0.038	0.036	0.037	0.036	0.036	0.036	0.037	0.038

Thermal Performance (R Value)

Thickness (mm)	Thermal Resistance (m². K/W) at 25 °C Mean Temp. for the following densities in kg/m²							
	48	64	80	100	120	144	160	200
25	0.694	0.714	0.714	0.735	0.735	0.735	0.694	0.676
50	1.389	1.429	1.429	1.471	1.471	1.471	1.389	1.351
75	2.083	2.143	2.143	2.206	2.206	2.206	2.083	-
100	2.778	2.857	2.857	2.941	2.941	2.941	-	-
125	3.472	3.571	3.571	3.676	3.676	3.676	-	-
150	4.167	4.286	4.286	-	-	-	-	-
200	5.555	-	-	-	-	-	-	-

These are typical values subject to normal manufacturing and testing variances.

Acoustic Performance

ROCKINSUL RB Slabs achieve excellent acoustic performances (sound absorption coefficients, sound insulation, and impact sound isolation) when tested in accordance to various relevant ASTM standards.

ROCKINSUL RB Slabs achieve Noise Reduction Coefficient (NRC) values up to 1.05, when tested in accordance to ASTM C423.

Fire Safety Performance

Unfaced ROCKINSUL RB Slabs are non-combustible when tested in accordance with IS 3144, BS 476 (part 4), ISO 1182 and ASTM E136 and are classified as Class A1, in accordance with European norms.

Unfaced, FSK and ALG-faced ROCKINSUL RB Slabs have the following fire safety rating achievements:

1. Class 1 surface spread of flame in accordance to BS 476 (part 7)
2. Class 0 in accordance to the BS 476 (part 6 & 7) and to British Building Regulations.
3. Surface burning characteristics in accordance to ASTM E84 / UL 723
   a. Fire Spread Index : Less than 25
   b. Smoke Developed Index: Less than 50

Mositure Absorption Performance

ROCKINSUL RB Slabs absorb less than 1% by volume when tested in accordance with BS 2972, ASTM C1104 / 1104 M, and do not absorb moisture from ambient air or from water by capillary action. Only water under pressure can enter into stonewool insulation products; however, it quickly dries out due to the open cell structure of ROCKINSUL RB Slabs.

When tested in accordance to ASTM E96, FS K-faced RB Slabs achieve water vapour permeability of 0.02 perm, ALG-faced RB Slabs achieve zero water vapour permeability.

Applications

- ROCKINSUL RB Slabs are used for thermal and acoustic insulation for internal partitions and in between floor joints in public buildings like hotels, hospitals, schools and offices where fire safety is a primary concern.
- ROCKINSUL RB Slabs are also used for thermal and acoustic insulation for exterior walls, and walls of stair cases and elevator shafts.

Installation Procedures

Before installing ROCKINSUL RB Slabs, make sure to clear away any dust or grease and dry the surface. ROCKINSUL RB Slabs are pre-cut in required dimensions and placed over the surface to be insulated. Care should be taken to ensure that the joints fit properly and no gaps are left at the joints. Depending on the surface and equipment, pins or spacers should be used to fix the Slabs in place.

Handling & Storage

Stonewool being light in weight, is easy to handle. Products are to be stored in a well-lit, dry and protected area. They are to be kept in the original packaging, at elevated positions above the ground or on a slab, and away from the walls, in order to avoid any penetration of moisture and dust or foreign contamination. If stored outside and in an open area, packages should be protected with a polyethylene film, canvas or other similar type of covering.

TUFFINSUL Rigid Slabs

TUFFINSUL Rigid Slabs range offers superior rigidity and durability for application areas where high levels of compressive strength are required.

Standard Dimensions

Density (kg/m³)	Thickness (mm)	Width (mm)	Length (m)
48 to 200	25 to 200	600	1.0 to 1.2

On request Tuffinsul Slabs may be supplied with Facings.

The following table compares the compression strength of TUFFINSUL Rigid Slabs vs. regular slabs.

Comparison B/W RB slabs & Tuffinsul Compressive Strength (Kpa)		
Density(kg/m³)	RB Slab	Rigid Slab
48	4.60	10.44
64	8.23	12.25
96	9.23	19.68
122	13.32	20.78
144	37.06	40.65
160	43.62	68.74
200	44.12	95.07

These are typical values subject to normal manufacturing and testing variances.

PERFORMANCE

Working Temperature

Fibre : Up to 750 °C
Facing : 100 °C

At temperatures in excess of 230 °C a limited migration of binder may occur in the insulation in contact with the hot face. This does not impair the insulation performance.

Thermal Performance (K Value)

The thermal conductivity of TUFFINSUL Rigid Slabs as per ASTM, C177, 518, IS 3346 is displayed in the tables below:

Mean Temperature	Thermal Conductivity in W/m.K for the following densities in kg/m³							
°C	48	64	80	100	120	144	160	200
25	0.036	0.035	0.035	0.034	0.034	0.034	0.036	0.037
35	0.038	0.036	0.037	0.036	0.036	0.036	0.037	0.038

Thermal Resistance (R Value)

Thickness (mm)	Thermal Resistance (m². K/W) at 25 °C Mean Temp. for the following densities in kg/m²							
	48	64	80	100	120	144	160	200
25	0.694	0.714	0.714	0.735	0.735	0.735	0.694	0.676
50	1.389	1.429	1.429	1.471	1.471	1.471	1.389	1.351
75	2.083	2.143	2.143	2.206	2.206	2.206	2.083	-
100	2.778	2.857	2.857	2.941	2.941	2.941	-	-
125	3.472	3.571	3.571	3.676	3.676	3.676	-	-
150	4.167	4.286	4.286	-	-	-	-	-
200	5.555	-	-	-	-	-	-	-

These are typical values subject to normal manufacturing and testing variances.

Acoustic Performance

TUFFINSUL Rigid Slabs achieve excellent acoustic performances (sound absorption coefficients, sound insulation, and impact sound insulation) when tested in accordance to various relevant ASTM standards.

TUFFINSUL Rigid Slabs achieve Noise Reduction Coefficient (NRC) values up to 1.05, when tested in accordance to ASTM C423.

Fire Safety Performance

Unfaced TUFFINSUL Rigid Slabs are non-combustible when tested in accordance with IS 3144, BS 476 (part 4), ISO 1182 and ASTM E136 and are classified as Class A1, in accordance with European norms.

TUFFINSUL Rigid Slabs have the following fire safety rating achievements:

1. Class 1 surface spread of flame in accordance to BS 476 (part 7)
2. Class 0 in accordance to the BS 476 (part 6 & 7) and to British Building Regulations.
3. Surface burning characteristics in accordance to ASTM E84 / UL 723
   a. Fire Spread Index : Less than 25
   b. Smoke Developed Index: Less than 50

Mositure Absorption Performance

TUFFINSUL Rigid Slabs absorb less than 1% by volume when tested in accordance with BS 2972, ASTM C1104 / 1104 M, and do not absorb moisture from ambient air or from water by capillary action. Only water under pressure can enter into stonewool insulation products; however, it quickly dries out due to the open cell structure of TUFFINSUL Rigid Slabs.

When tested in accordance to ASTM E96, FS K-faced Rigid Slabs achieve water vapour permeability of 0.02 perm, ALG faced Rigid Slabs achieve zero water vapour permeability.

Applications

TUFFINSUL Rigid Slabs are used for thermal and acoustic insulation where high compressive strength is required such as over-deck, floors, sandwich panels, and dry wall partitions.

Before installing TUFFINSUL Rigid Slabs, make sure to clear away any dust or grease and dry the surface. Slabs are pre-cut in required dimensions and placed over the surface to be insulated. Care should be taken to ensure that the joints fit properly and no gaps are left at the joints. Depending on the surface and equipment, pins or spacers should be used to fix the Slabs in place.

Handling & Storage

Stonewool being light in weight, is easy to handle. Products are to be stored in a well-lit, dry and protected area. They are to be kept in the original packaging, at elevated positions above the ground or on a slab, and away from the walls, in order to avoid any penetration of moisture and dust or foreign contamination. If stored outside and in an open area, packages should be protected with a polyethylene film, canvas or other similar type of covering.

TUFFINSUL Lamella Batts

TUFFINSUL Lamella range offers superior rigidity and durability for application areas where high levels of compressive strength are required.

Standard Dimensions

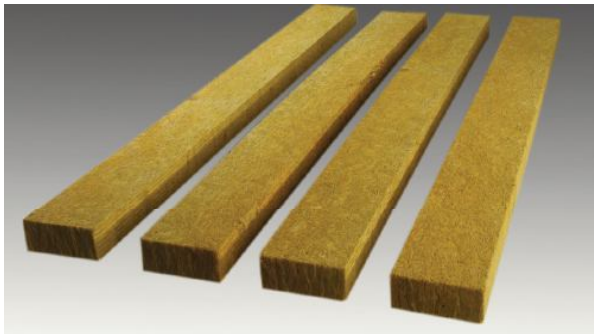
Density (kg/m³)	Thickness (mm)	Width (mm)	Length (m)
100 to 150	Various thicknesses from 25mm to 118mm	100 to 110	0.92 to 1.2

PERFORMANCE

Working Temperature

Product : Up to 750 °C

At temperatures in excess of 230 °C a limited migration of binder may occur in the insulation in contact with the hot face. This does not impair the insulation performance.



Compression strength of TUFFINSUL Lamella.

Density (kg/m³)	Thickness (mm)	Minimum compressive strength at 10% deformation (kPa)
110	50	105
140	50	115
144	50	130
144	100	142

These are typical values subject to normal manufacturing and testing variances.

Applications

TUFFINSUL Lamella is used for thermal and acoustic insulation where high compressive strength is required. It is commonly used in heavy loaded sandwich panels, floors and roofs.

How to use Lamella?

Check the fibre orientation of the TUFFINSUL Lamella before sandwiching in between two metal surfaces with glue. Utmost care should be taken to ensure that the fibres are oriented perpendicular to the width of the two metal surfaces, in order to achieve optimum compression strength.

Installation Procedures

Before installing TUFFINSUL Lamella, make sure to clear away any dust or grease and dry the surface, and then place carefully over the surface to be insulated. Care should be taken to ensure that the Lamella fits properly and no gaps are left at the joints. Depending on the surface and equipment, pins or spacers should be used to fix the Lamella in place.

Handling & Storage

TUFFINSUL Lamella products should be stored safely indoors. If stored outside, they should be stacked clear of the ground and covered with a securely anchored weatherproof sheet.

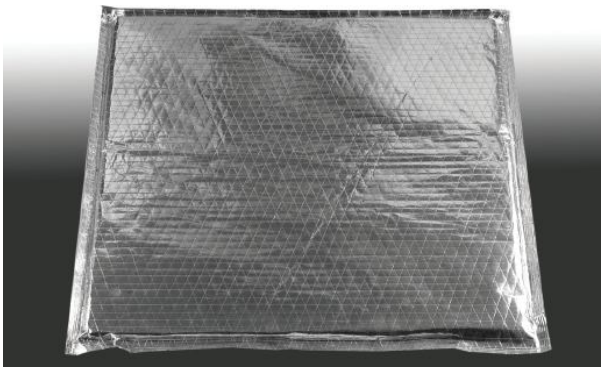
ROCKINSUL Acoustic Thermal Insulation Board (ATIB)

- ROCKINSUL Acoustic Thermal Insulation Board (ATIB) is a stonewool sandwiched product with aluminium foil on the top side and black glass tissue mat on the under side.
- ROCKINSUL Acoustic Thermal Insulation Boards (ATIB) are specially designed for under-roof applications for excellent thermal resistance and sound absorption properties. They are used in airports, entertainment malls and commercial complexes.

Standard Dimensions

Normal Density (Kg/m3)	80 to 120
Thickness (mm)	20 to 30
Dimensions (mm)	590 x 590
With facing FSK + BGT	650 x 650

Other dimensions, densities and facings available on request.



Applications

ROCKINSUL Acoustic Thermal Insulation Board (ATIB) is specially designed for under-roof overlaying ceiling applications in airports, entertainment malls and commercial complexes.

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