

Solar Panels Insulation



ROCK MINERAL WOOL – MAIN FEATURES AND CHARACTERISTICS

■ THERMAL INSULATION

PROPERTIES; Rock mineral wool has excellent thermal conductivity properties.

■ **NON-COMBUSTIBILITY;** Rock mineral wool boasts the highest possible Euroclass A1 fire rating according to European standards (melting point above 1,000°C).

■ **SUPERB ACOUSTIC PERFORMANCE;** Due to its open fibrous structure rock mineral wool is able to absorb and significantly reduce high levels of sound.

■ **ENERGY SAVING MATERIAL;** Lower energy consumption and reduced CO₂ emissions.

■ **VAPOUR PERMEABILITY;** Owing to its fibrous structure rock mineral wool is vapour permeable.

■ **WATER REPELLENT;** The wool fibres are permanently water-repellent.

■ **HIGHLY SUSTAINABLE;** Rock mineral wool is non-hazardous for both personal health and for the environment. It is entirely free of CFCs, HCFCs and all other ozone depleting materials, both in manufacture and end-content, and represents no known threat to the environment.

■ **PERMANENTLY STABLE DIMENSIONS;** Rock mineral wool products remain integral, and do not change shape or fluctuate in dimensions (length or width), regardless of changes in humidity or temperature.

■ **RESISTANCE TO MICROORGANISMS;** Rock mineral wool remains clean and hygienically sound, is non-hygroscopic, rot-proof, and will not sustain vermin nor encourage the growth of fungi, mould or bacteria.



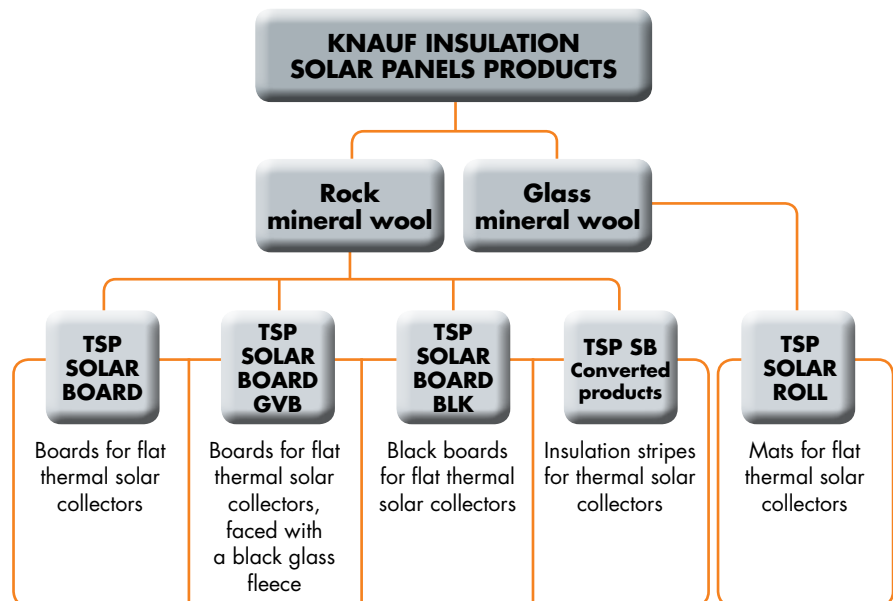
KNAUF INSULATION – supplier of insulation products to leading producers of thermal solar collectors

Insulation in thermal solar collectors prevents loss of accumulated heat in the solar collector and improves absorption efficiency. It is important that insulation remains stable at high temperatures (up to 220°C) and does not produce any emissions of organic compounds that could visibly accumulate on thermal solar collector glazings.

Knauf Insulation rock and glass mineral wool is an integral part of thermal solar collectors owing to **its outstanding thermal insulation properties, material stability at high temperatures and low organic compound emissions.** Excellent mechanical properties enable automated production processes.

We supply insulation products to leading European producers of thermal solar collectors. We provide insulation solutions for:

- Roof flat thermal solar collectors
- Wall flat thermal solar collectors
- Vacuum tube solar collectors



SPF CERTIFICATE

The widely recognised SPF Institute in Rapperswil, Switzerland, tested our TSP Solar products at 220°C over a period of 150 hours and **confirmed virtually no detectable emission of organic compounds.**

SOLAR KEYMARK CERTIFICATE

Producers of thermal solar panels who want to use Knauf Insulation TSP Solar products instead of classic faced or unfaced rock mineral wool boards **do not need to apply for a new Solar Keymark certificate** as long as the thickness remains unchanged.

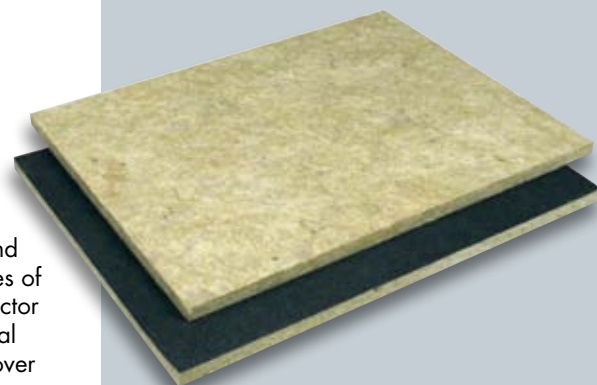
KNAUF INSULATION TSP SOLAR BOARD (TSP SB)/TSP SOLAR BOARD GVB (TSP SB GVB) Insulation boards for solar panels

DESCRIPTION

KNAUF INSULATION TSP SB are boards made of **rock mineral wool** and can be faced with a black glass fleece (**TSP SB GVB**). The insulation properties of rock mineral wool solar collector boards increase heat retention within the collector and improve the overall function of the collector system. Additionally the optional glass fleece facing improves the visual appearance as the absorber does not cover the entire visible surface of the collector.

PREFERENCES

- Provides excellent thermal insulation thereby minimizing heat loss
- Virtually any dimension and density can be produced, providing clients with a tailor-made product
- Optional facing with black glass fleece
- Tested and certified by SPF Institute Rapperswil/CH



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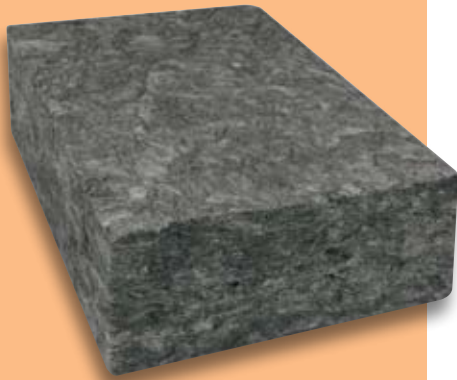
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APPLICATION

Thermal insulation for **flat thermal solar collectors**

TECHNICAL PROPERTIES

- Thermal conductivity: 0.035 W/mK
- No emission at high temperatures (SPF Certificate)
- Flexible dimensions



KNAUF INSULATION TSP SOLAR BOARD BLACK (TSP SB BLK) Black insulation boards for solar panels

DESCRIPTION

KNAUF INSULATION TSP SB BLK boards are made of **rock mineral wool** and dyed in black colour in order to achieve better properties in the solar panels. **Black coloured boards improve performance at high temperatures, reduce evaporation of organic compounds and improve the overall function of the collector system.**

TSP SB BLK boards are produced according to **patented Knauf Insulation technology.**

PREFERENCES

- Provides excellent thermal insulation thereby minimizing heat loss
- Easy mounting via robotics as the board's upper and lower side are identical
- Special inorganic black dyestuff with long-term resistance
- Better performance at high temperatures regarding evaporation of organic compounds ("fogging")
- Tested and certified by SPF institute, Rapperswil/CH

APPLICATION

Rear and lateral insulation for **flat thermal solar collectors**, mounted on roofs, facades or in large-scale collector areas, used for the purpose of space heating or cooling

TECHNICAL PROPERTIES

- Thermal conductivity:
0.035 W/mK
- No emission at high temperatures (SPF Certificate)
- Flexible dimensions



KNAUF INSULATION TSP SOLAR ROLL (TSP SR) Insulation mats for solar panels

DESCRIPTION

KNAUF INSULATION TSP SR insulation mats are made of **glass mineral wool**, using unique Knauf Insulation **ECOSE® TECHNOLOGY**. Products do not use a phenol-formaldehyde binder, as this is replaced with a bio-based binder made from completely renewable sources and have virtually no emission of organic compounds up to 220°C. The insulation properties of glass mineral wool solar collector mats increase the heat retention within the collector and improve the overall function of the collector system.

PREFERENCES

- Provides excellent thermal insulation thereby minimizing heat loss
- Aids heat absorption
- Virtually any dimension and density can be produced, providing customers with a „tailor-made“ product
- Light weight product
- No emission of organic compounds up to 220°C – tested and certified by SPF Institute Rapperswil/CH
- Presentation of product in compressed rolls or packages – optimal use of truck and warehouse capacity



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APPLICATION

Thermal insulation for **flat thermal solar collectors**

TECHNICAL PROPERTIES

- Thermal conductivity: 0.035 W/mK
- No emission at high temperatures (SPF Certificate)
- Flexible dimensions

TECHNICAL PROPERTIES

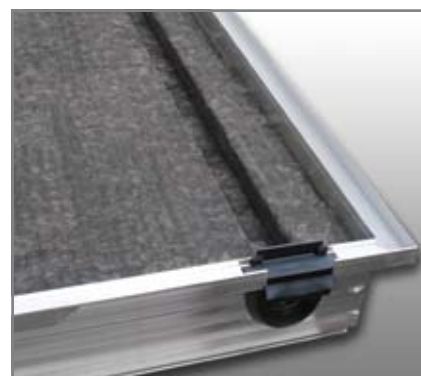
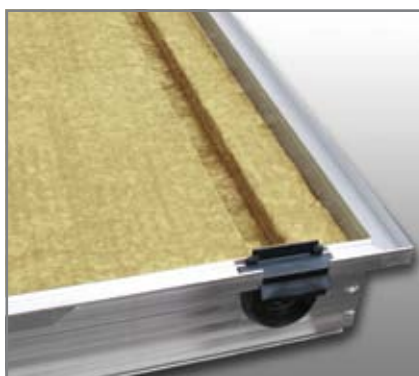
- Distance between channels can be adjusted according to customer requirements, from 1500 mm to 1900 mm
- Width and depth of channels can be customized according to customer requirements

KNAUF INSULATION TSP SOLAR PRODUCTS WITH CUT-OUT CHANNELS

Knauf Insulation provides TSP Solar products with cut-out channels, where the thicker collecting tubes of the absorber can enter.

ADVANTAGES FOR THERMAL SOLAR PANEL PRODUCERS

- **Thickness** of insulation board can be **reduced** enabling **flatter collector design**
- **Ventilation** between absorber and insulation board, which can negatively impact collector efficiency, can be **reduced**
- **Complex insulation** design composed of boards and stripes with high mounting costs can now be **replaced by one board** with cut-out channels



APPLICATION

Lateral thermal insulation of **flat thermal solar collectors**

TECHNICAL PROPERTIES

- Thermal conductivity: 0.035 W/mK
- No emission at high temperatures (SPF Certificate)
- Flexible dimensions

KNAUF INSULATION TSP SOLAR BOARD – converted products Insulation stripes for borders of solar panels

DESCRIPTION

KNAUF INSULATION TSP SB Converted products are stripes cut out of boards made of **rock mineral wool** with a facing of black glass fleece on one side. The insulation properties of rock mineral wool stripes increase heat retention within the collector and improve the overall function of the collector system. The glass fleece facing improves the visual appearance.

PREFERENCES

- Provides excellent thermal insulation thereby minimizing heat loss
- Aids heat absorption
- Facing with black glass fleece
- Tested and certified by SPF Institute Rapperswil/CH

KNAUF INSULATION TSP SOLAR BOARD – converted products Insulation for vacuum tube solar collectors

DESCRIPTION

KNAUF INSULATION TSP SB Converted products are specially designed products made of **rock mineral wool for vacuum tube solar collectors**. The insulation properties of rock mineral wool stripes boost heat retention within the collector and improve the overall functioning of the collector system. Insulation is designed and produced for each collector separately.

PREFERENCES

- Provides excellent thermal insulation thereby minimizing heat loss
- Custom made sizes, shapes and forms
- Tested and certified by SPF Institute Rapperswil/CH



Our customers are supported in new product development with our technical and R&D team who work closely with customer's technical professionals.



APPLICATION

Thermal insulation of **vacuum tube solar collectors**

TECHNICAL PROPERTIES

- Thermal conductivity: 0.035 W/mK
- No emission at high temperatures (SPF Certificate)
- Flexible dimensions

HEALTH AND ENVIRONMENTAL PROTECTION

The incorporation of insulation material from mineral wool makes it possible to build healthy and comfortable living spaces as its properties improve the microclimate in a room and, at the same time ensure excellent thermal, sound and fire protection. Products are tested according to Directives 97/69/EC, for which they were granted the »Test Certificate of Bio-solubility«, demonstrating their health safety. Knauf Insulation products are also ecologically oriented, as they reduce the consumption of thermal energy sources, thereby reducing environmental pollution.

It is also of great importance that the production procedure of mineral wool is carried out in a closed circuit, i.e. production process waste is recycled in briquette manufacturing and then returned back to the production line.

As part of our policy of continuous product development, we reserve the right to revise specifications without notice. The information given in the brochure is correct to the best of our knowledge. It provides general information only and users should verify whether the products described are suitable for their specific requirements.



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