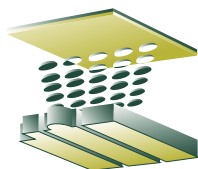




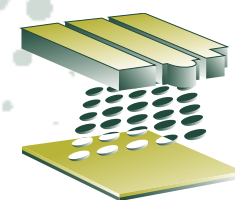
BUBBLE & FOAM INDUSTRIES nv | sa

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BUBBLE & FOAM INDUSTRIES
Protective Packaging & Insulation



Styrisol®



BUBBLE & FOAM INDUSTRIES
Protective Packaging & Insulation

Styrisol®: Specification sheet



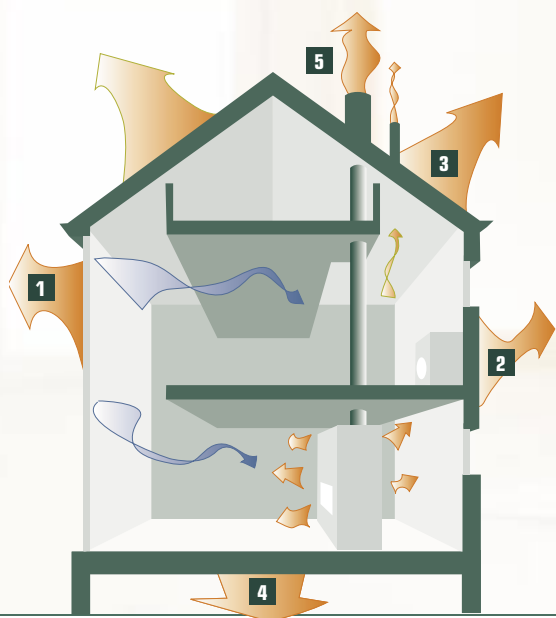
1. DEFINITION

STYRISOL® boards are yellow closed cell extruded polystyrene for use as thermal insulation.

2. ADVANTAGES

STYRISOL® boards meet the following requirements for the insulation of building and construction projects:

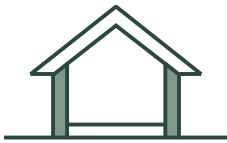
- high thermal resistance
- minimal water absorption
- high compressive strenght
- non-perishable
- resistant to fungus and microbes
- resistant to vermin and rodents
- self-extinguishing additive
- good workability
- fully recyclable



THERMAL LOSS	
1	windows and doors 19 %
2	walls 37 %
3	roofs 13 %
4	floors 11 %
5	ventilation 20 %



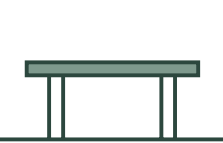
floor



wall



cellar








inverted roof



pitched roof

3. APPLICATIONS

Surface and edge finishings	Skin on			Waffle	Skin off or grooves
Application					
Floors					
■ Building and construction projects	X	X			
■ Industrial floorings	X	X			
Walls					
■ Cavity walls			X		
■ Inner walls	X			X	
■ Cold bridging	X			X	
■ Outer walls	X			X	
Ceilings					
■ Sport halls, Industry halls			X		
Roofs					
■ Inverted roofs covered with gravel or tiles (e.g. terrace, green roof)		X			
		X			
■ Pitched roofs (Sarking)			X		
Cellars					
■ Floors		X	X		
■ Walls		X			
Other					
■ Sandwich panels	X				X

4. PACKAGING UNITS

Thickness (mm)	Number of boards pack	m ² pack		m ³ pack	
		125 x 60	250 x 60	125 x 60	250 x 60
20	20	15	30	0,3	0,6
25 *	16	12	24	0,3	0,6
30	14	10,5	21	0,315	0,63
40	10	7,5	15	0,3	0,6
50	8	6	12	0,3	0,6
60	7	5,25	10,5	0,315	0,63
70 *	6	4,5	9	0,315	0,63
80	5	3,75	7,5	0,3	0,6
90 *	4	3	6	0,27	0,54
100	4	3	6	0,3	0,6

* upon request



Styrisol® as floor insulation

The high resistance to compression and the excellent damp-resistance of STYRISOL® render the product most suitable for insulation under different floorings.

1. INSTALLATION UNDER THE CONCRETE

STYRISOL® insulation boards are placed directly under the flat and stabilised foundation. A PE-foil needs to be put above the insulation to prevent the mortar from getting between the joints of the boards (creates cold bridges).

2. INSTALLATION ABOVE THE CONCRETE

The surface of the concrete needs to be smooth.

- (1) Along the wall a patch strip needs to be placed up to floor level.
- (2) Between the insulation and the concrete it's advisable to place a water vapour barrier (avoids cold bridges).
- (3) The water vapour barrier has to cover the entire surface. Overlaps need to be joined with adhesive tape.

Concrete with reinforcement

The reinforcement in the concrete is to be placed in the upper part of the flooring, the minimum covering is 10 mm. Steel nets can be used as reinforcement.

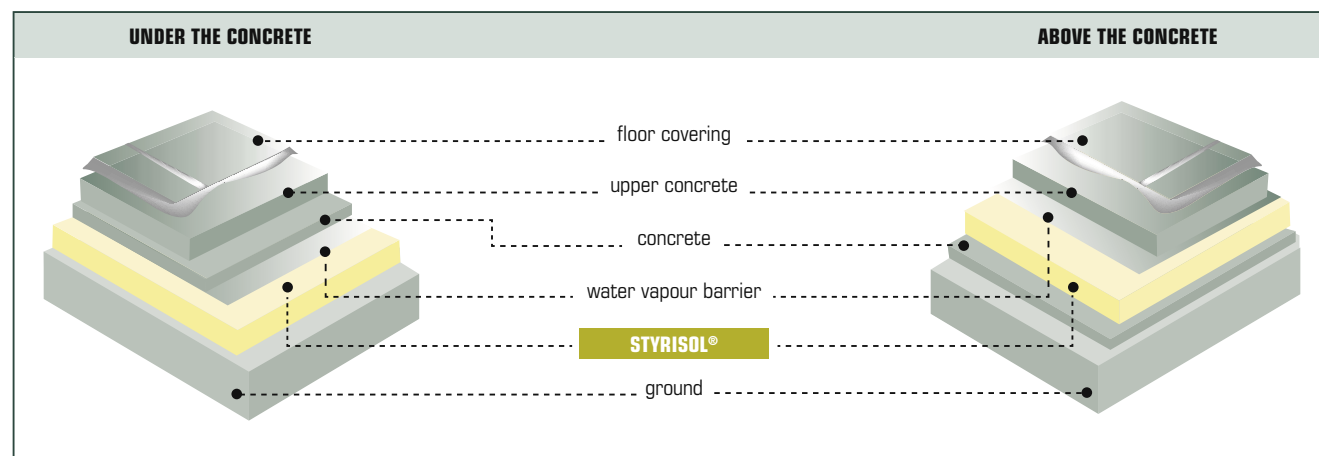
The concrete needs to be protected against drying out too soon.

Concrete without reinforcement

It is recommended to limit the surface of the floorings to 40 m².

Underfloor heating

STYRISOL® insulation boards can be used in all standard underfloor heating systems.



3. ATTACHMENT ON THE CONCRETE

It is recommended to attach the insulation mechanically to the concrete.

Styrisol® as wall insulation

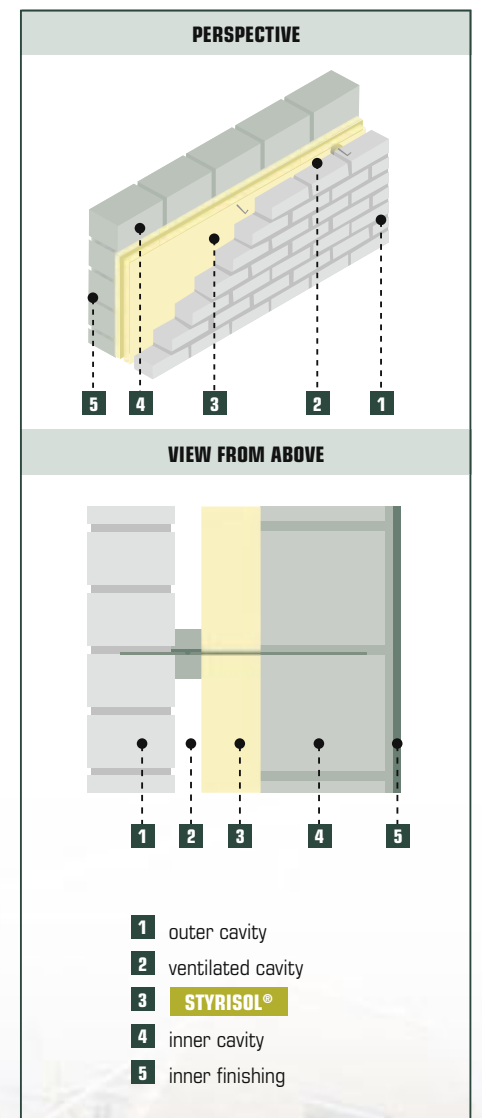


1. CAVITY WALL INSULATION

To ensure a good installation of the cavity wall insulation, we advise the following installation:

- (1) STYRISOL® insulation boards are being placed with the tongue upwards, close to one another and on the inner cavity. There has to be a ventilated cavity of at least 40 mm between the STYRISOL® insulation material and the cavity wall.
- (2) The wall ties, with a maximum spacing of 600 mm, have to be installed so that no water can penetrate into the inner wall. Extra anchoring has to be provided at the edges of the walls. On these anchorings, retaining clips have to be installed to keep the boards pressed against the inner wall.
- (3) Bulging mortar has to be removed to guarantee a perfect joint.
- (4) At ground level, a damming layer needs to be applied in the shape of a triangle. Water is being drained off the open grooves.
- (5) All necessary precautions need to be taken in order to ensure a good junction with the framing around windows and doors. STYRISOL® insulation boards need to fit well on the corners the walls.

Any faults in the insulation layer need to be filled up correctly with insulating material. It is advisable to protect the walls that are being constructed against all weather influences.

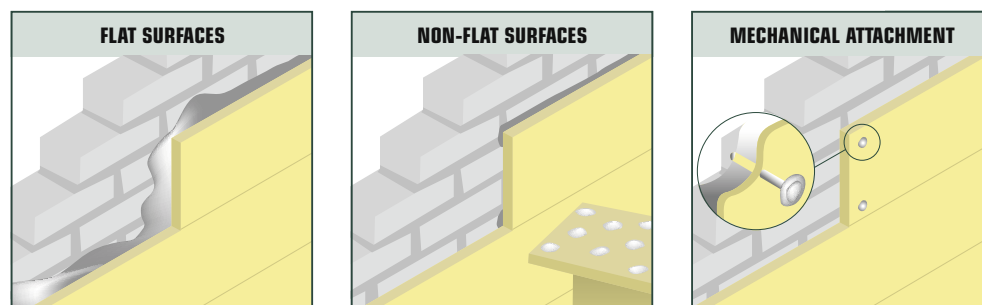


2. INNER WALL INSULATION

STYRISOL® insulation boards are the perfect support for stucco work or mortar layers. The surface of the boards are grooved or waffled, this ensures a good bonding.

Installation:

- **On flat surfaces**, it is advisable to apply mortar all over the boards. Afterwards, the boards need to be pressed tightly on the surface one against the other.
- **On non-flat surfaces** the mortar needs to be applied on the insulation surface in a layer of 30-40 mm with a minimum of six adhesives points per m². The STYRISOL® insulation boards need to be installed at right angles and square to the surface. At least 60 % of the surface will be covered by mortar after the pressing of the insulation boards.
- **Mechanical attachment:** when the surface of the STYRISOL® insulation boards is insufficiently adhesive, it would be advisable to install the boards mechanically by specific metal or plastic fasteners.



Insulation of cold bridging:

To obtain good adhesion, cold bridges are insulated with STYRISOL® insulation boards with waffled surface.

Outer wall insulation:

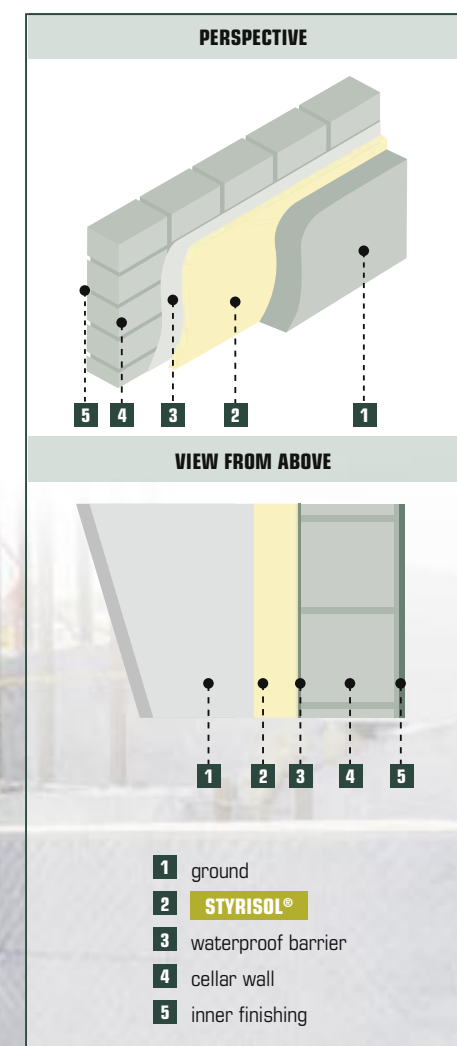
STYRISOL® insulation boards can also be installed as outer wall insulation. This technique is advantageous in newly built houses as well as in renovation. Outer wall insulation is a delicate work and requires a professional appliance of the insulation boards and the outer stucco work.

1. CELLAR INSULATION

Calculations show that the most suitable place for installing thermal insulation in heated spaces is on the cold side of the construction.

Installation:

STYRISOL® insulation boards are adhered to the outer side of the cellar wall with an appropriate adhesive (min. 500 g/m²). The cellar wall can be covered with a waterproof barrier. The adhesive needs to be placed at six points on the insulation board. Glueing the boards together is helpful during construction as the pressure of the ground will cause the boards to stay in place. For boards that may be in contact with water for long periods, glueing is necessary. STYRISOL® insulation boards can be installed in combination with most building materials.





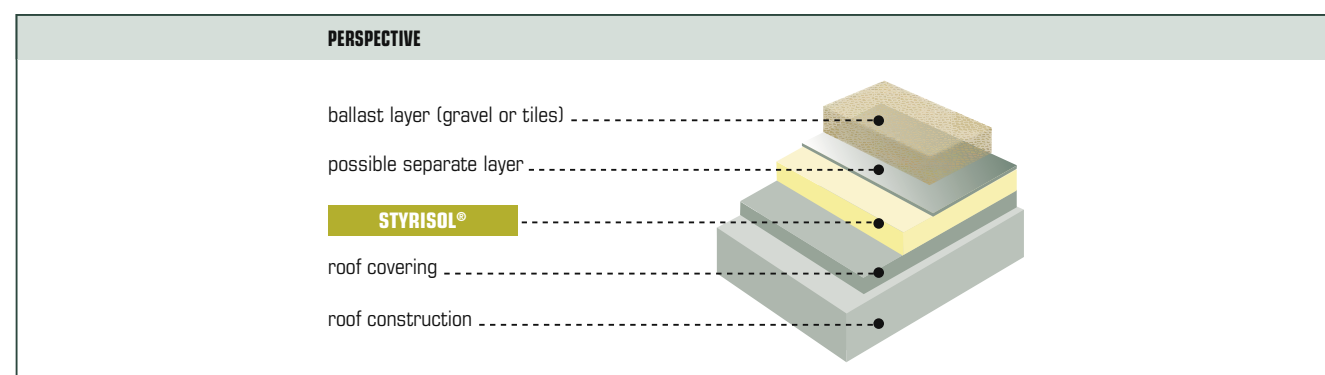
Styrisol® as roof insulation

1. INVERTED ROOF

The inverted roof is a construction by which the STYRISOL® insulation boards are placed above the waterproof membrane. The insulation is loaded with an additional ballast layer.

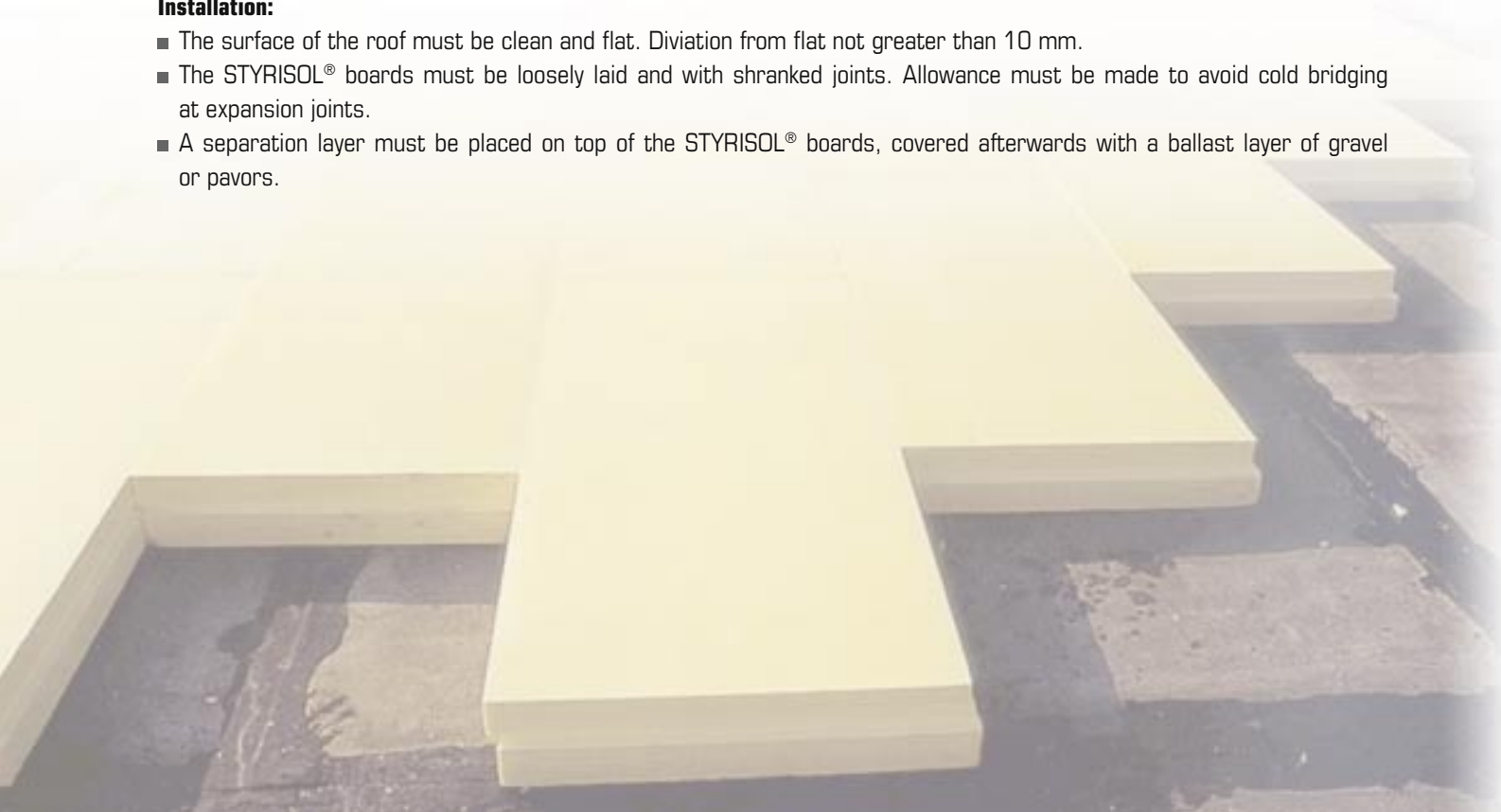
This construction has a number of benefits:

- (1) Protects the roof covering from temperature fluctuations and UV radiation.
- (2) Protects from mechanical damage.
- (3) The structural deck increases resistance to fire and the ballast layer prevents the fire from spreading.
- (4) Installation is possible in any weather.
- (5) The roof covering (at the warm side of the insulation) acts as a waterproof layer and a water vapour barrier whereby the construction and installation of the roof becomes much easier.
- (6) Insulation is being installed loosely on the roof covering.



Installation:

- The surface of the roof must be clean and flat. Deviation from flat not greater than 10 mm.
- The STYRISOL® boards must be loosely laid and with shranked joints. Allowance must be made to avoid cold bridging at expansion joints.
- A separation layer must be placed on top of the STYRISOL® boards, covered afterwards with a ballast layer of gravel or pavers.



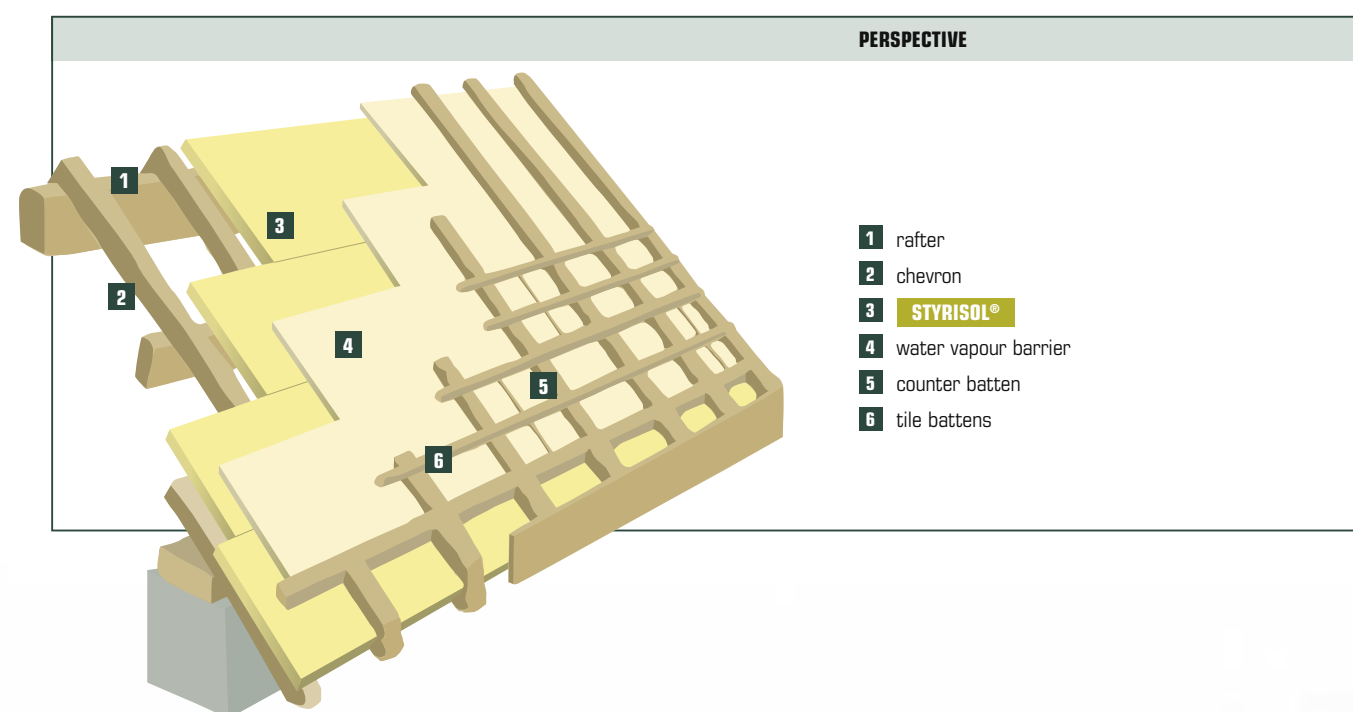
Styrisol® as roof insulation



2. PITCHED ROOF (SARKING)

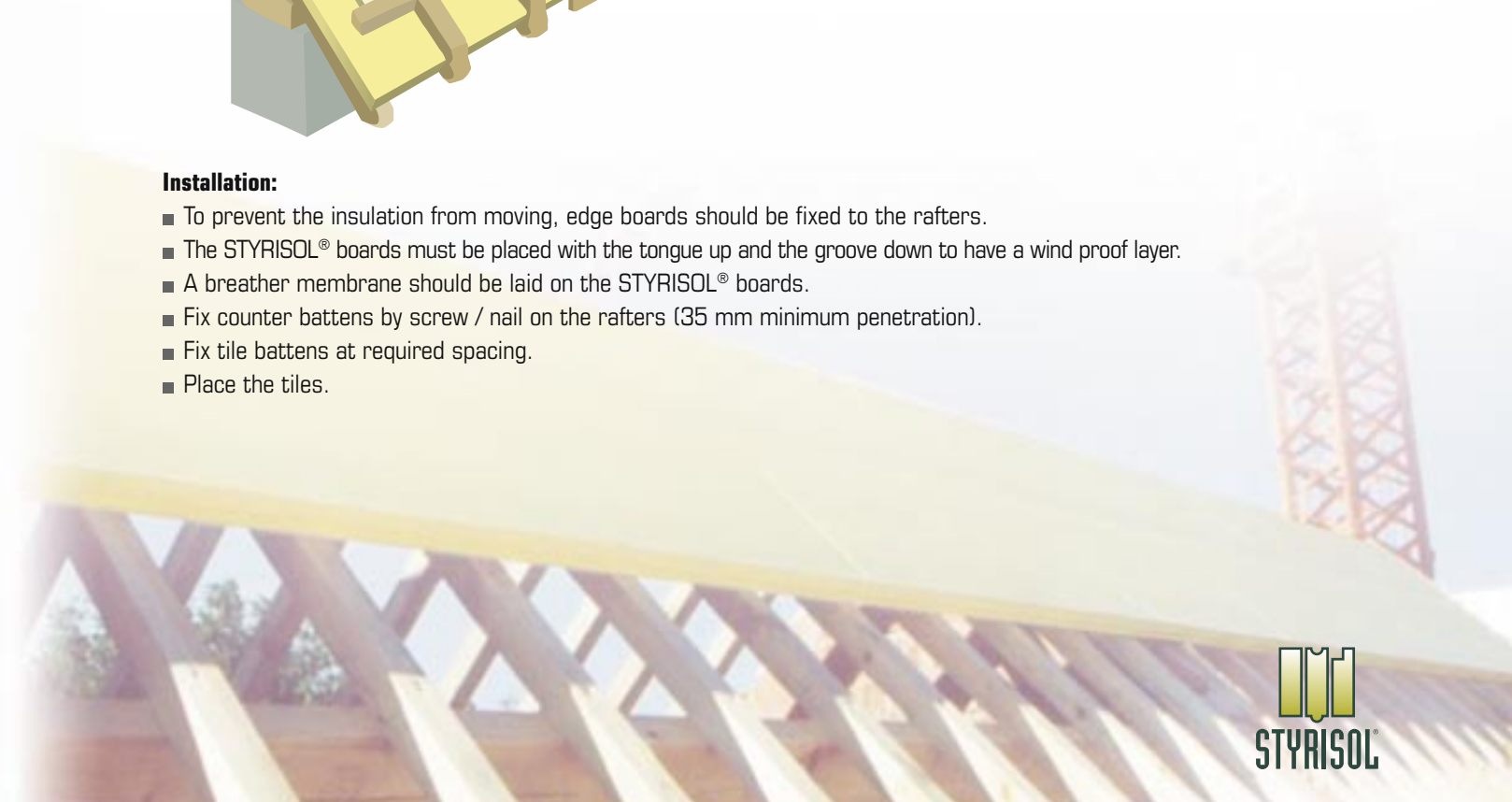
The advantages of this system are:

- (1) The inner finishing is easily and quickly completed as the installation of insulation and roof covering is done in one operation.
- (2) Loss of heat is restricted as the continuous use of STYRISOL® boards at the outside prevent cold bridging and reduce condensation.
- (3) The rafters are being protected against humidity.
- (4) Space between the roof covering and the insulation boards is ventilated.
- (5) The roof frame remains visible and the useful space is optimised.



Installation:

- To prevent the insulation from moving, edge boards should be fixed to the rafters.
- The STYRISOL® boards must be placed with the tongue up and the groove down to have a wind proof layer.
- A breather membrane should be laid on the STYRISOL® boards.
- Fix counter battens by screw / nail on the rafters (35 mm minimum penetration).
- Fix tile battens at required spacing.
- Place the tiles.





Styrisol®: Safety measures

1. STORAGE

STYRISOL® insulation boards of yellow extruded polystyrene can be stored for a long time in their original packaging. When the boards are exposed to the sunlight for a long time, they may discolour a little.

2. FIRE PROTECTION

STYRISOL® contains flame-retardants additives. Extruded polystyrene is combustible and may not be exposed to any kind of heat. Dense smoke is produced when the product burns. Combustion products may include carbon monoxide, carbon dioxide and soot.

3. CHEMICAL STABILITY

Extruded polystyrene can be used in combination with most building materials (lime, cement, plaster, anhydrous plaster, alcohols, acids and bases). Petroleum based solvents, coal tar and derived products may affect the material. Thinners and solvents such as acetone, ethyl acetate, petrol, toluene may damage the boards. Always check the manual if the product is suitable for applications with extruded polystyrene.

4. GLUEING PRODUCTS

We recommend glueing products without petroleumbased solvents. Always check if the product is suitable for applications with extruded polystyrene.

5. ENVIRONMENT

Extruded polystyrene foam is not biodegradable. There is no danger for soil or water pollution. In addition the STYRISOL® insulation boards are 100% recyclable.