



**Do you worry
about your **roof** insulation?**

POWERDECK

flat roof insulation

**Don't,
POWERDECK is the right choice.**



There are insulation materials with an excellent insulation value. Others have a better fire behaviour. There are insulation materials on the market with an excellent pressure resistance; others are very light and easy to install.

Some of them are waterproof, whereas others have diffusion tight facings.

Which advantage appeals to you most? Is it absolutely necessary that you limit your choice?

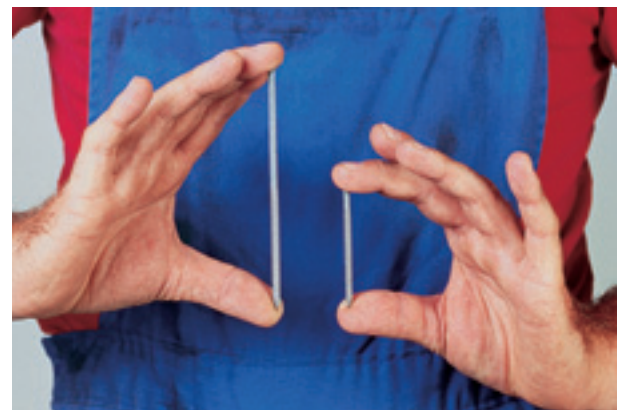
What you are really looking for is a combination of all these advantages. An insulation material that offers you an optimal return and lets others do the worrying.

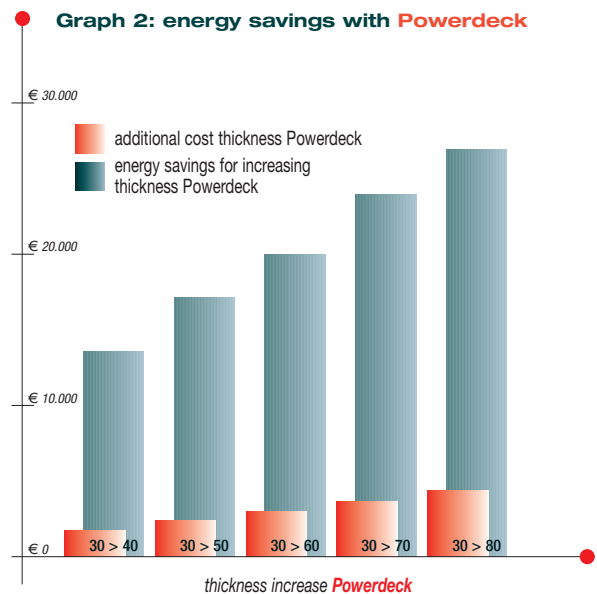
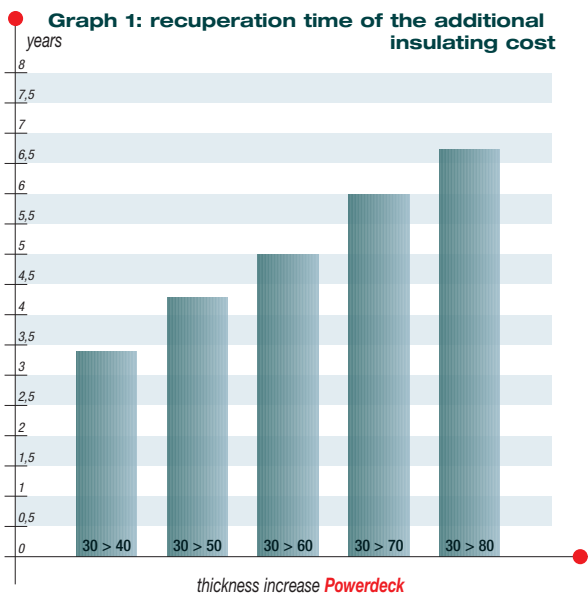
Do not look any further! Let the strength of **POWERDECK** convince you and enter into a carefree future.

POWERDECK: the thinnest flat roof insulation for every insulation requirement

Insulating at a very high level is always a good thing. The additional cost for insulating better is easily recuperated thanks to a lower energy bill. Graph 1 shows the recuperation time of the additional cost for a better insulation. The initial additional cost for Powerdeck in 60 mm instead of 30 mm is recuperated in less than 5 years.

Due to this, the energy benefits become real savings from the fifth year onwards until the end of its life span (e.g. 25 years). Graph 2 shows the order of this amount. The graph also shows the relation between the energy savings on the one hand and the additional costs for insulating at a higher level on the other hand.





How can you make sure that your flat roof is well insulated? The insulating capacity of a material (R or the thermal resistance) is defined by the used thickness (t) on the one hand and by the lambda value (λ or insulating value) on the other. The lower the lambda value, the better the material insulates. This generally means that a better insulating capacity is obtained with a thicker material, which makes the roof construction thicker and heavier. A second option is to choose the material with the best (the lowest) lambda value. Powerdeck specialises in the latter.

POWERDECK is a rigid board made of polyisocyanurate foam (PIR) with a specific cell structure – also named **TAUfoam** by Recticel – a cell structure with an excellent insulating capacity.

Due to its **declared lambda value λ_D of 0.024 W/mK**, **POWERDECK** insulates up to **twice better** than other insulating materials do.

As a consequence, with **POWERDECK**, the insulation layer will be **halved**.

The graphs above are based on the calculations of a building with a roof surface area of 1000 m², a life span of 25 years and an assumed interior temperature of 20°C.



Lambda value	PWD	MW	EPB	EPS
λ_D (W/mK)	0,024	0,040	0,055	0,040
Thermal resistance	Thickness (t) mm			
$R_D = \frac{t}{\lambda_D}$ (m ² K/W)				
2,08	50	83	114	83
2,50	60	100	138	100
2,92	70	117	161	117
3,33	80	133	183	133
4,17	100	167	229	167
5,00	120	200	275	200

PWD: Powerdeck (PIR)
MW: mineral wool
EPB: pearlite
EPS: expanded polystyrene

The declared lambda values are the highest known in the family of the certified products (NBN B62-002/A1) in question (MW, EPB and EPS).

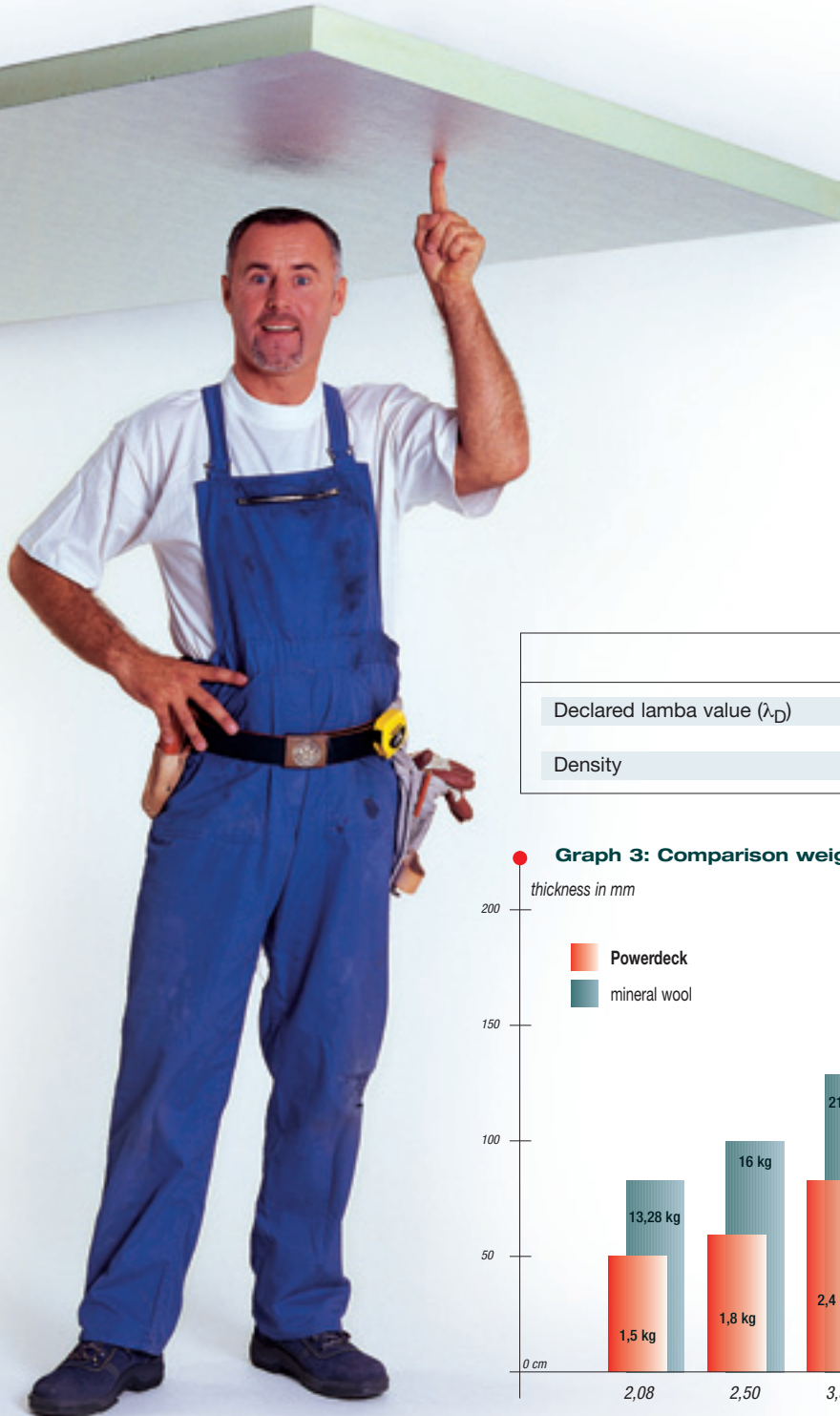
You can save a considerable amount of money by using a thinner insulation panel. You can use shorter (cheaper) screws to fix the board to the roof structure. Moreover the insulation volume to be transported is halved. By this, we do not only mean that there is less transport by road. The manual transport on the roof is also reduced: there is less going back and forth and a reduced time loss.

With POWERDECK you are always on the winning team.

Most insulation boards achieve a higher pressure resistance by increasing their density (weight). The specific cell structure of **TAUfoam** by Recticel in itself offers the necessary pressure resistance and an excellent walkability.

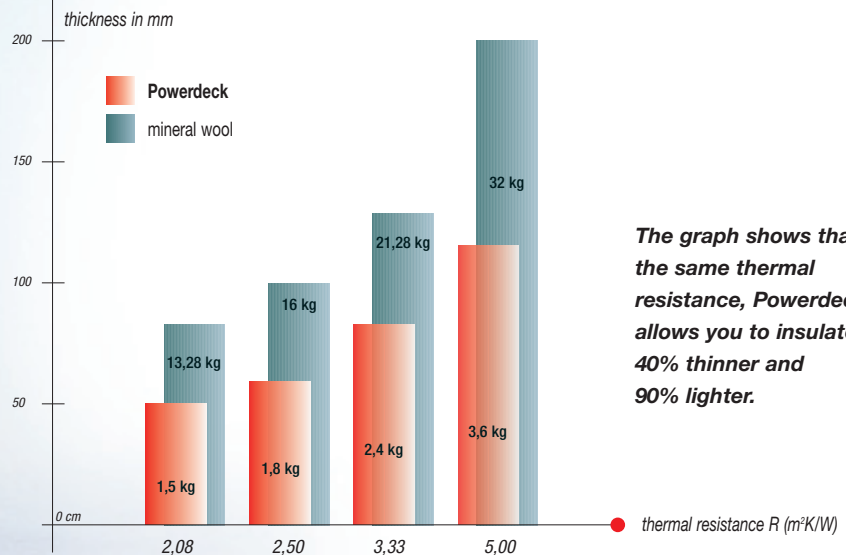
POWERDECK: the featherweight insulation material

A quality insulation material does not have to weigh a ton. **POWERDECK** weighs only 30 kg/m³. By choosing **POWERDECK**, you opt for a weight reduction that can amount up to 90%. The light weight of **POWERDECK** implies that the total weight of the roof is limited and the supporting structure can be carried out in a much more economical way. What's more, the roofer's life also becomes more comfortable. Not only does he have to handle smaller volumes, he has to carry lighter panels. With **POWERDECK** you will not strain yourself, even though the insulation requirements become twice as strict. The weight will literally and figuratively drop off your shoulders.



	POWERDECK	mineral wool
Declared lambda value (λ_D)	0.024 W/mK	0.040 W/mK
Density	30 kg/m ³	160 kg/m ³

Graph 3: Comparison weight/m² and thickness



Usually, the dimension of the insulation board is determined by its weight and by its handiness to transport.

POWERDECK: for a quick and easy installation

Thanks to the light weight of **TAUfoam** by *Recticel*, Recticel can deliver boards which are twice the size of other insulation materials. The standard dimensions are 1200 mm x 2500 mm and the board's surface area is 3 m². The large dimensions combined with the light weight per board guarantee a quick and easy installation.


thickness (mm)	weight / board (kg)
50	4,5
60	5,4
70	6,3
80	7,2
100	9,0
120	10,8

Notwithstanding the large amount of square metres per packing, the weight per pack is limited to approximately 30 kg.

thickness (mm)	Nb. of boards / pack	weight/pack (kg)	surf. area/pack (m ²)
30	12	32,4	36
40	9	32,4	27
50	7	31,5	21
60	6	32,4	18
70	5	31,5	15
80	4	28,8	12
100	3	27,0	9
120	3	32,4	9

Gain time with **POWERDECK.**





The fire risk of a building is highly influenced by its roof construction. This item is treated with the highest importance by the builder, the insurance companies as well as the fire brigades! The start and spread of a fire, as well as fire fighting, intervention and evacuation possibilities are under examination. This is the challenge for Recticel.

POWERDECK: **your guarantee for a fire safe future**

TAUfoam by Recticel turns the myth of “high risk” insulation into history. The specific cell structure of the foam protects itself by carbonising its exterior cells.

POWERDECK not only has a *fire classification A1* (according to the Belgian Royal Decree of 19/12/1997), it is beyond comparison with other synthetic foams.

TAUfoam by Recticel does not melt and no burning droplets fall from the ceiling. This means that **POWERDECK** will not contribute to the spread of the fire and that fire fighting will not be obstructed.

The introduction of the European fire classification in March 2003 will distinguish **POWERDECK** even more from other synthetic foams.

According to the new Euroclass system, Powerdeck, used on a profiled steel deck cover (end use condition), obtains a Euroclass category B-S₂-d₀.

Recticel wants to go further. Not only the insulation material but every component of the roof construction influences the spread of the fire. The insulation and waterproofing, as well as the roofing support, the bearing floor and vapour control layer are important in order to obtain a fireproof roof structure.

FM Global, an insurance company recognised worldwide, offers Recticel this extra security. By means of a large-scale and realistic fire test, not only the insulation material but the complete roof construction is being evaluated on fire characteristics, wind load and mechanical characteristics.

FM Approval is nowadays the international standard.

In combination with several roof systems, **POWERDECK** has obtained an *FM Approval Class 1-classification*.

Insulating with POWERDECK means extra safety.



POWERDECK has an excellent and permanent pressure resistance. Due to this, the roof structure remains perfectly tread-on, not only during the construction phase, but also afterwards during maintenance and other activities.

POWERDECK: a perfectly walkable roof

In order to win some space inside the building, more and more equipment (e.g. ventilating system) is installed on top of the roof. Installations like these require regular check-ups and maintenance. This increases the foot traffic on the roof and implies that walkability becomes a very important criterion when choosing an insulating material. **POWERDECK** offers you this characteristic and avoids imprints being made in the insulation. This way, permanent rainwater puddles are avoided. This positively influences the life span of the waterproofing and decreases the risk of leakage.

The combination of a mechanically fixed insulation with a bad pressure resistance may cause the waterproofing to be perforated by the fixations.



POWERDECK: for a perfectly walkable roof.



POWERDECK is faced on both sides with a pure 50µ aluminium facing. This facing works as a vapour barrier and is waterproof.

POWERDECK: vapour control layer is not necessary

Inner Climate Classes	Examples	Powerdeck	Mineral Wool
Class II Buildings with a restricted humidity production per m ² and a good ventilation	- large houses, schools - shops - not air conditioned offices - sports centres and polyvalent halls - workshops	No vapour control layer *	Vapour control layer Class E1
Class III Buildings with an important humidity production per m ² and a moderate to sufficient ventilation	- hospitals, rest homes - consumer rooms, party halls - low air conditioned buildings (RH ≤ 60%)	Vapour control layer Class E2	Vapour control layer Class E3

Table:
necessity of a vapour control layer according to the type of insulation on the steel deck on the one hand and of the inner climate class on the other hand.

** If the boards are rebated on 4 sides*
E1: e.g. a PE-foil (thickness = 0.2 mm)
E2: e.g. PE-foils (thickness = 0.2 mm) and aluminium laminates
E3: e.g. single ply waterproof membrane V3, V4, P3 or P4

This facing works as a vapour barrier and implies that only in exceptional cases, an extra vapour control layer is necessary in your roof construction.

The Recticel team is entirely at your service to make a condensation calculation for your project in order to see whether a vapour control layer is necessary.

Insulating with **POWERDECK**, saves you the vapour control layer in most cases.

POWERDECK: whatever the weather

Weather forecasts do not generally take your strict work planning into account. Rain showers but also unpredictable weather can cost you a lot of time.

The combination of the closed cell structure of **TAUfoam** by Recticel and a pure aluminium facing – guarantees that **POWERDECK** is waterproof.

As a consequence, the activities can be continued also in less favourable weather conditions.

This means that your deadline will not be compromised.

Did you know that ...

... thanks to Powerdeck's large dimensions less joints are created on the roof when installing the insulation material.

... when using a steel deck as roof support, the "flying carpet" effect will strongly be reduced by applying the large and rigid Powerdeck boards.

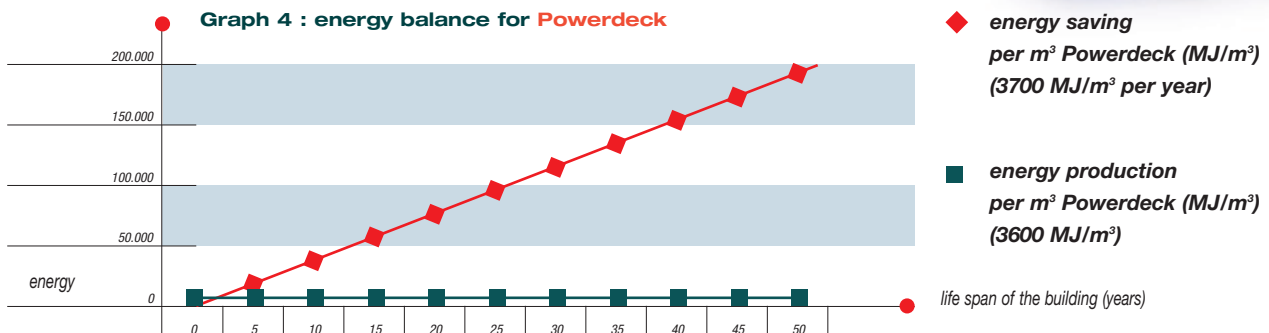
The process of refining petroleum, results in high-quality rest products. These will be used in an optimal and resolute way for the production of **POWERDECK**.

POWERDECK: environmental-friendly

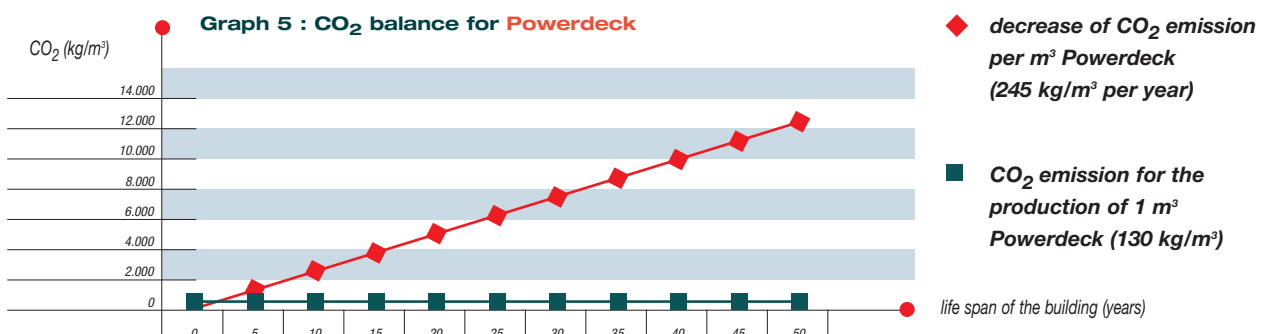
Due to **POWERDECK**'s excellent insulation value, up to 50% less volume needs to be produced and transported, compared to alternative materials.

Energy is indeed a rare product and exploiting it is a burden to the environment. As a consequence, it is important to treat the available energy with care.

The graph hereunder shows that the energy necessary for producing **POWERDECK** will be recuperated within one year after the building came into use. This extra energy saving benefits the environment and yourself to the full.



Another problem for the environment is the CO₂ emission. It is one of the most important greenhouse gases, which have a very negative impact on the ozone layer (greenhouse effect). Moreover, it is the only form of air pollution, which is still increasing today. Pushing back these emissions should be on top of our priority list. The graph hereunder shows that the CO₂ emissions caused by producing **POWERDECK** are already compensated 6 months after the building came into use, due to the decrease of CO₂ emissions as a consequence of insulating with **POWERDECK**. Moreover, the thin **POWERDECK** boards entail a decline in the transport volume. This also means less transport, less fuel and less CO₂ emission.

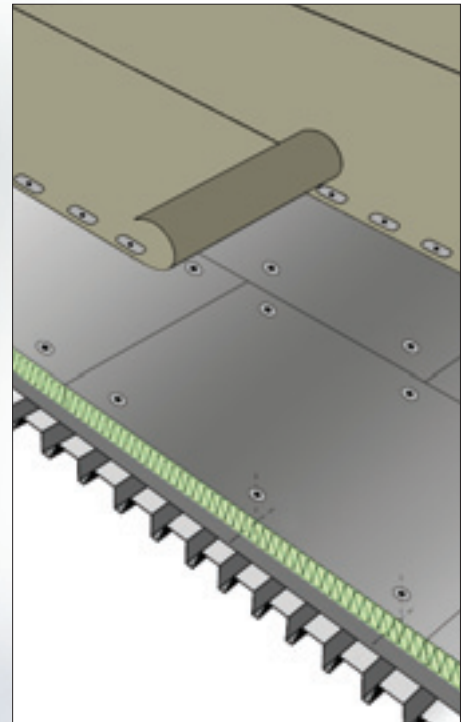


Recycling is an important aspect of environmental awareness. This needs careful thought: at the end of the building's life span, the Powerdeck boards can be recycled and reused for other durable products, such as the treatment of floor coverings.

POWERDECK: completely recyclable

Did you know that Recticel obtained the environmental award industry as early as in 1993?

POWERDECK is either mechanically fixed or loosely laid and ballasted. This ensures that the different components of the roof structure can very easily be taken apart if the building is demolished. This way, the different materials can easily be sorted out and recycled.



RECTICEL, a Belgian group with international fame and a turnover of over a billion euro has developed **POWERDECK**.

POWERDECK: an innovating product made by Recticel

During the last thirty years, Recticel, as a foam manufacturer, has offered an important support to the consumer's daily comfort.

Recticel products are used not only for insulating buildings. You will also find them in mattresses and slats, seats, interior comfort for cars and all kind of other industrial and domestic applications.

Recticel would like to further develop their innovative role and this with respect for man and environment.

POWERDECK: complete with the Keymark quality label

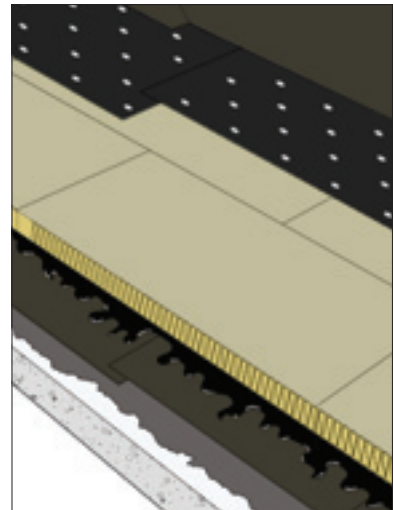
Of course, **POWERDECK** carries the compulsory CE marking. Besides, this conformity label, Recticel Insulation has resolutely chosen for the voluntary Keymark quality label.

Keymark guarantees that both the production and product characteristics, mentioned in the CE label, are being tested and audited on a permanent basis by an external recognised organism.

In other words, the Keymark certifies the continuity of **POWERDECK** 's quality.

POWERDECK F&B: the insulation boards for bonded roof systems

POWERDECK also has two twin brothers, called **POWERDECK B** and **POWERDECK F**. These insulation boards for roofs are also made of the fire-resistant **TAUfoam** by Recticel but have a different facing to make sure that the roofing membrane can be bonded.



Some of our most important reference projects:

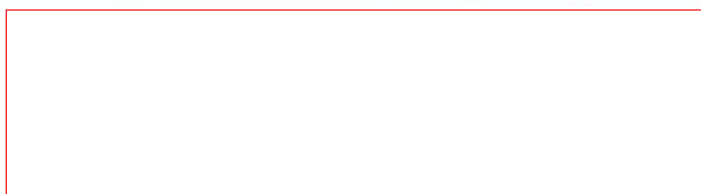
Toyota	FR	160 000 m ²	Production
Magna Park	UK	60 000 m ²	Distribution
Exhibition Centre	SP	110 000 m ²	Exhibition hall
Tuincenter	NL	22 000 m ²	Wholesale
Warehouse De Pauw	B	50 000 m ²	Warehouses
Honda Europe	B	24 000 m ²	Spare Parts Centre
Prologis	PL	43 000 m ²	Distribution / Cold store
Aldi	NL/FR/B	90 000 m ²	Distribution / Storage
Toy logistic	B	28 000 m ²	Distribution
Toyota	CZ	25 000 m ²	Production
Snow Dome	SP	33 000 m ²	Leisure



POWERDECK: technical characteristics

- **Insulation:** λ_D value: 0.024 W/mK
- **Core volume weight:** 30 kg/m³
- **Mechanical performance:**
 - compression strength with 10% deformation min. 150 kPa
 - performance under the influence of an equally distributed load: Class C
- **Facing:** pure aluminium ca. 50 μ
- **Tensile strength perpendicular to surface:** min. 80 kPa
- **Fire reaction:**
 - A1 according to Belgian Royal Decree 19/12/1997
 - Class 1 according to BS 476/Part 7
 - FM Approval Class 1 (FMRC 4450 class 1)
 - Euroclass B S₂d₀ (end use condition)
 - Euroclass D S₂d₀ (product)
- **Dimensional stability:**
 - humidity test 48 hours: 70°C. 90% RH (EN 1604)
 - change in length $\leq 2\%$
 - change in width $\leq 2\%$
 - change in thickness $\leq 6\%$
- **Dimensions:**
 - standard: 1200 mm x 2500 mm
 - thickness: 30-80 mm on stock
90-120 mm on request

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POWERDECK
flat roof insulation