RAVATHERM™ XPS

Ravago
BUILDING SOLUTIONS

Product description

RAVATHERM XPS thermal insulation is a closed cell polystyrene foam produced using the latest 21st-century technology. The “blue foam” is made exclusively from quality materials, significantly reduces heat loss from buildings.The unique material structure guarantees effective thermal insulation.
Due to its closed “crystal cell structure”, **RAVATHERM XPS** is

- Excellent long-term thermal insulation
- Water-tight
- Frost-resisting
- High load-bearing capacity
- Form & dimension stability
- Rot-proof
- Durable

RAVATHERM XPS thermal insulation products deliver value from manufacture to installation

PROTECTION OF THE ENVIRONMENT
From the aspect of environmental protection, it contributes to the reduction of global CO_2 emissions through continuous energy savings, and during its manufacturing process, it produces no emissions that would harm the air or the ozone layer.

OPERATION
The investor or operator can count on long lifetime, low operating and maintenance costs, operational safety and quick return on investment.

IMPLEMENTATION
The contractor can work with high-quality materials that are easy to work with and easy to install.
This way, he can offer shorter commitment time by saving money and working hours.

A RAVATHERM XPS products are products that have been developed in accordance with the product standard EN 13164:2012+A1:2015 and are manufactured in accordance with the requirements contained therein. During production, in accordance with the ISO 14001 environmental management and ISO 50001 energy management systems, and in line with our environmentally conscious thinking, we strive to continuously reduce the ecological footprint of our products.

The **RAVATHERM XPS** product line:

- **RAVATHERM XPS 300 WB 30-220 mm**
- **RAVATHERM XPS 300 SL 30-280 mm**
- **RAVATHERM XPS 300 ST 40-120 mm**
- **RAVATHERM XPS 500 SL 40-200 mm**
- **RAVATHERM XPS 700 SL 40-160 mm**
- **RAVATHERM XPS 250 PB 20 mm**

Main technical parameters:	
Thermal conductivity (λ)	0,033-0,035 W/mK
Compressive strength (CS)	300-700 kN/m²
Long-term compressive strength (CC)	130-250 kN/m²
Ratio of closed cells	>95%
Frost resistance	FTCD1
Waterproof	Capillarity 0

Application

Flat roof

- INVERTED ROOFS WITH GRAVEL BALLAST
- GREEN ROOFS
- TERRACE ROOFS
- PARKING ROOFS
- DUO ROOFS
- REFURBISHMENT - PLUS ROOFS

RECOMMENDED PRODUCT: **RAVATHERM XPS 300 SL, RAVATHERM XPS 500 SL, RAVATHERM XPS 700 SL**

Inverted roof
The thermal insulation of flat roofs is a particularly important issue both in winter chills and summer heat. Due to its numerous advantages for flat roofing one of the best solution is the inverted roof construction. The closed cell structure design of **RAVATHERM XPS** thermal insulation is perfect for inverted flat roofs.

Reliability and long lifetime
The major evidence for long-term reliability and durability of insulated waterproofing, i.e. the inverted flat roof, are the tens of millions of square metres that have been built, and are still operating, in some places for 35-40 years, without renovation. **RAVATHERM XPS** can multiply the life of built-in waterproofing on a flat roof, postpone the necessary renovation period, increase the operating safety of the building and provide significant long-term sustainability benefits for the owner or facility manager.

Safety during construction
The advantages of inverted roof structure can be utilized even during construction. The built-in insulation provides thermal protection for not only the building structure, but for the waterproofing, which ensures protection against any mechanical damage which may occur during building and installation.

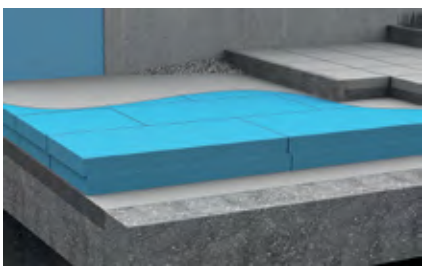
Building physical advantages
A further advantage of the inverted roof structure – except for extreme indoor climatic conditions – is that there is no condensation risk at all. Insulation with high vapour diffusion resistance is positioned on the warm side of the structure, so condensation does not occur in the thermal insulation. Under normal circumstances, an inverted roof can be designed and applied without calculating for condensation risk.

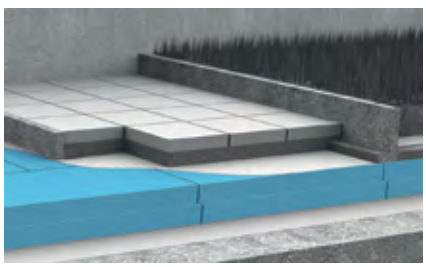
Advantages:

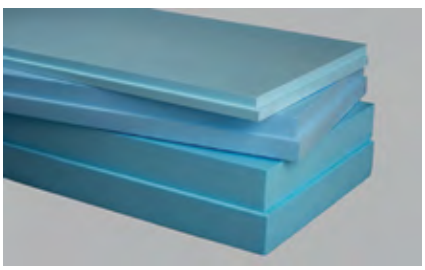
- **Waterproofing layer protected against heat and UV rays**
- **Waterproofing layer mechanically protected**
- **Building physical advantages**
- **Can be applied in all weather conditions**
- **User-friendly**
- **Easy troubleshooting and repair**

Properties:

- **Excellent thermal insulation**
- **High compressive strength**
- **Frost resistant, waterproof**
- **Easy to handle**
- **Does not rot**
- **High vapour diffusion resistance**







Application

Wall / Structures with thermal bridges / Footing

- SOCLES PLASTERED OR COVERED WITH BRICKS, STONE TILES
- CONCRETE, REINFORCED CONCRETE SURFACES
- AVOID THERMAL BRIDGES
- CAVITY/CORE INSULATED WALLS

RECOMMENDED PRODUCT: **RAVATHERM XPS 300 WB**

The application of **RAVATHERM XPS 300 WB** thermal insulation is particularly recommended for socles, reinforced concrete structures, walls with core insulation, and with stone-brick outside covering.

The rough surface of **RAVATHERM XPS 300 WB** is providing excellent adhesion to concrete, and to plaster. The product has sufficient compressive strength to withstand long-term mechanical stress. Because of its closed cell structure, it does not absorb water, therefore it is frost-resistant and it has excellent long term thermal insulation capability.

Insulation of socle and other thermal bridges
The façade of the building should be built to establish with almost the same U-value, which will require extra thermal insulation at thermal bridges. The thermal insulation of reinforced concrete can be made after pouring concrete, but **RAVATHERM XPS 300 WB** can be installed already during construction. The product does not absorb moisture, so it does not influence the final strength of the concrete. The advantages of pre-placed thermal insulation are

- the thermal insulation does not has to be fixed at a later date
- it protects the fresh concrete from drying or burning.

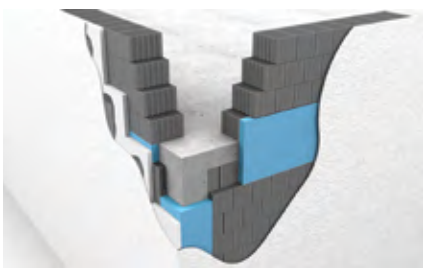
Thermal insulation behind thin and non-vapour permeable covering
Due to the high vapour diffusion resistance of **RAVATHERM XPS 300 WB** closed cell polystyrene foam - used with frost-resistant flexible adhesive - is suitable for thin, non-vapour-permeable (laminated stone, brick, ceramic etc.) wall finishes. Compared to other normal thermal insulation materials there is no condensation risk in the structure therefore in case of standard interior climatic conditions there is no need to calculate the condensation risk. **RAVATHERM XPS 300 WB** can be applied for thermal insulation of structures with core insulation too.

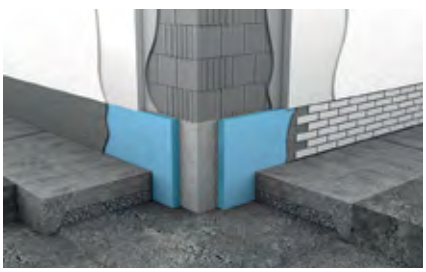
Advantages:

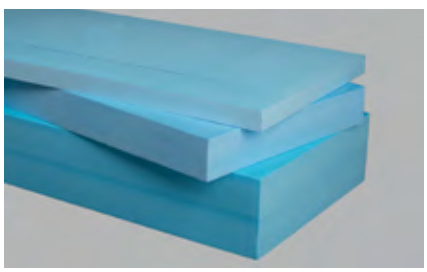
- **Rough, well adhering surface**
- **Persistent high insulating capability**
- **High strength, flexibility**
- **Frost-resisting, water-tight**
- **High vapour diffusion resistance**
- **User-friendly**

Properties:

- **Excellent thermal insulation**
- **High compressive strength**
- **Easy to handle**
- **Ensures high adhesion, roughened surface**
- **Can be plastered directly**
- **Outer and inner side application**



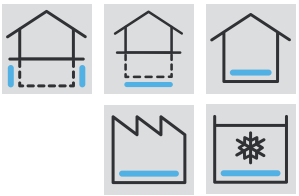




Application

Perimeter / Floor

- PERIMETER CELLAR WALLS
- PERIMETER WALLS IN SUBSOIL WATER
- BASEMENT, BASE SLABS
- FROST PROTECTION
- INDUSTRIAL FLOOR
- STANDARD BUILDING FLOOR
- COLD STORAGE FLOOR
- SWIMMING POOL



RECOMMENDED PRODUCT: **RAVATHERM XPS 300 SL, RAVATHERM XPS 500 SL, RAVATHERM XPS 700 SL**

Thermal insulation of perimeters.
RAVATHERM XPS 300 SL is an indispensable accessory for underground thermal insulation from several aspects.

The excellent properties allow to install as the outermost layer of wall structure, even in direct contact with the soil. Apart of numerous advantages, the heat storing capacity of the structure will be preserved behind the outside thermal insulation. **RAVATHERM XPS 300 SL** is glued to waterproofing as its, thermal protection and protection from mechanical damages. **RAVATHERM XPS 300 SL** can be applied not only in soil moisture but in ground water too. In this case thermal insulation slabs have to be fixed on the water insulation by bonding on the whole surface.

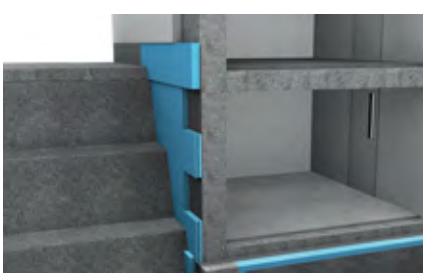
Thermal insulation of floors, ground-bearing floors
Depending on loads there are three high compressive strength products: **RAVATHERM XPS 300/500/700 SL** as excellent solution for floor insulation. **RAVATHERM XPS** products can be applied not only above the reinforced concrete floor slab, but even underneath, laid directly onto compressed gravel-ballast, when you can directly fix the reinforcement on top of the thermal insulation, or prepare the insulation of the building against soil moisture and humidity. Such a structural solution allows to save with all additional costs of one blind concrete layer.

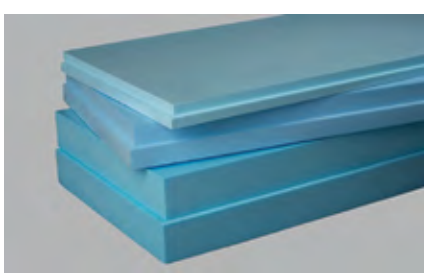
RAVATHERM XPS products can be laid on traditional floors, as well as ground-bearing floors with multilayer installation.

Advantages - Perimeter:

- **„Built-in" insulation protection**
- **Permanently good thermal insulation ability**
- **Frost resistant, water-tight**
- **Rot-proof**
- **Resistant to aging**
- **Simple structural design**

- **Advantages - floor structures:**
- **Excellent thermal insulation**
- **High compressive strength**
- **Frost resistant, waterproof**
- **Resistant to aging**
- **Fast and easy implementation**
- **Simple layer orders**
- **User-friendly**





Application

Pitched roof

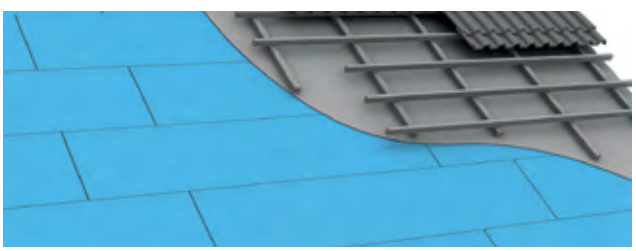
- OUTSIDE INSULATION ABOVE RAFTERS
- OUTSIDE INSULATION ON REINFORCED CONCRETE
- COMPLEMENTARY INSULATION ABOVE RAFTERS
- RENOVATION - ADDITIONAL INSULATION BELOW RAFTERS

RECOMMENDED PRODUCT:
RAVATHERMTM XPS 300 ST

RAVATHERM XPS 300 ST provides several alternative solutions for new-buildings or renovated attics. In case of internally visible roof structure with wood paneling or a reinforced concrete pitched roof, **RAVATHERM XPS 300 ST** thermal insulation - installed on the outer side of the roof structure of rafters - is one of the best solution.
This thermal bridge free solution is an easy alternative of this complicated built-up roof structure hiding several subtasks and opportunities for errors, while it provides high thermal protection for the loft and other related constructional components, even during building time. In case of future loft extensions, or renovation of attic the **RAVATHERM XPS 300 ST** is an excellent technical solution from the inside. The dimensions of **RAVATHERM XPS 300 ST** are 60x240 cm (1,44 m^2), with tongue & groove edges to avoid thermal bridge and for quick assembly.

Advantages:

- **Thermal bridge-free assembly**
- **Large board size**
- **Tongue and groove edge profining**
- **High compressive strength**
- **Consist high insulation-capability**
- **It does not collapse or shrink**
- **Resistant to aging**
- **Easy workability**



Other applications

- INSIDE WALLS AT
  - RENOVATION
  - VISIBLE CONCRETE WALLS
  - HISTORIC BUILDINGS
- INSIDE CEILING INSULATION OF
  - SMALL INDUSTRIAL BUILDINGS
  - AGRICULTURAL BUILDINGS
- OTHER, SPECIAL APPLICATIONS*

RECOMMENDED PRODUCT:
RAVATHERM XPS 300 WB INSIDE THERMAL INSULATION OF WALLS

Due to its high vapour diffusion resistance and compressive strength **RAVATHERM XPS 300 WB** can be used for inside thermal insulation. (preferred thickness: 3-5 cm)*

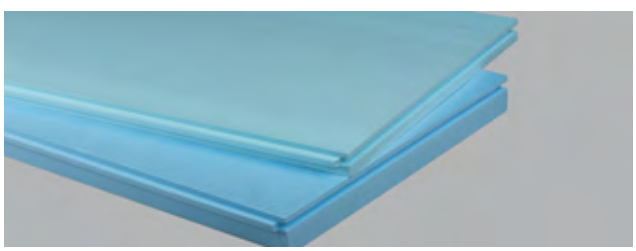
RECOMMENDED PRODUCT:
RAVATHERM XPS 300 ST INSIDE CEILING INSULATION OF INDUSTRIAL-AGRICULTURAL BUILDINGS

RAVATHERM XPS 300 ST is applicable for thermal insulation of agricultural livestock buildings, grain storage units and other industrial buildings generally single storey buildings.*

Advantages:

- **Easy to install**
- **Can be installed quickly**
- **Safe solution from building physics point**

* For further information please contact our sales associate



Field of application

			RAVATHERM XPS 300 WB	RAVATHERM XPS 300 SL	RAVATHERM XPS 300 ST	RAVATHERM XPS 500 SL	RAVATHERM XPS 700 SL
Roof	Inverted roof	with gravel ballast		●		○	
		terrace roof		●		●	○
		parking roof		○		●	●
		green roof		●		●	○
		duo roof		●		○	
		refurbishment - plus roof		●		○	
Wall	Reinforced concrete surfaces		●				
	Socle - plastered or covered with brick or stone		●				
	Thermal insulation of thermal bridges		●				
	Cavity/core insulated walls		●	○	○		
	Perimeter application on the cellar wall			●	○		
Floor	Standard building floor			●	○	○	
	Industrial floor			○		●	●
	Cold storage floor			○		●	●
	Foundation base plates			○		●	●
Pitched roof	Outside insulation above rafters				●		
	Outside insulation on reinforced concrete			○	●		
	Complementary insulation above rafters				●		
	Refurbishment - additional insulation below rafters			○	●		
Inside thermal insulations	Inside wall insulation		●				
	Inside celling insulation	agricultural buildings			●		
		industrial buildings			●		

Legend: recommended area of application: ● applicable: ○

Technical data

				RAVATHERM XPS 300 WB	RAVATHERM XPS 300 SL	RAVATHERM XPS 300 ST	RAVATHERM XPS 500 SL	RAVATHERM XPS 700 SL
Board size	thickness		(mm)	30-220	30-280	40-120	40-200	40-160
	width		(mm)	600	600	600	600	600
	length		(mm)	1250	1250	2400	1250	1250
Feature		**Standard**	**Unit**	**Value**				
λ value			(W/mK)	20-80 mm λ ≤ 0,033 100-120 mm λ ≤ 0,034 140-280 mm λ ≤ 0,035			40-80 mm λ ≤ 0,034 100-200 mm λ ≤ 0,035	
Compressive strength (CS (10/Y))		EN 826	(kPa)	300	300	300	500	700
Compressive creep (CC (1,5/2/50))		EN 1606	(kPa)	-	130	130	180	250
Water absorption								
by diffusion		EN 12088	(vol%)	-	≤ 40 mm WD(V) 3; 50-60 mm WD(V) 2; 60 mm < WD(V) 1			
by immersion		EN12087	(vol%)	WL(T) 1,5	WL(T) 0,7			
freeze-thaw		EN12091	(vol%)	-	FTCD1			
Capillarity				0				
Ratio of closed cells				>95%				
Dimensional stability		EN 1604	(vol%)	DS (70,90)				
		EN 1605	(vol%)	DLT(2)5				
Reaction to fire		EN 13501-1		E				

Production and distribution:

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