

# JACKODUR® Atlas

The Structural Insulated Passive Slab Formwork System.

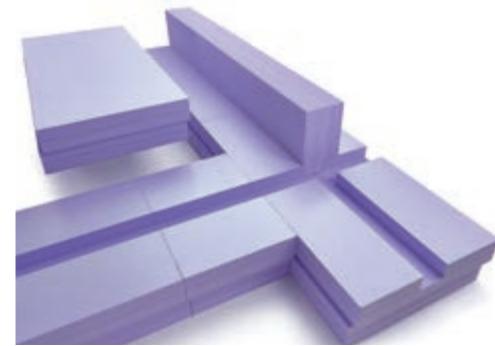
Insulated from the ground up



**JACKON**  
UK Limited

# JACKODUR® Atlas: That's how to save energy and money.

JACKODUR® Atlas – made of extruded polystyrene foam (XPS) – is an intelligent, efficient thermal insulation and formwork system for floor slabs. The innovation part is the new, economical interlocking system, which provides thermal bridge-free insulation in all types of buildings.



More than 1000 reference sites speak for themselves



Builders throughout Europe count on the benefits of JACKODUR® Atlas.

Wolfgang Schütz, owner, Euskirchen, Germany



To the application film



Bungalow | Area: 182 m<sup>2</sup> | Insulation: KF 300 in 160 mm

## Building with the JACKODUR® Atlas system

The Atlas system will eliminate the key thermal bridge at the junction of the floor slab and the external walls. The system is made up of four components:



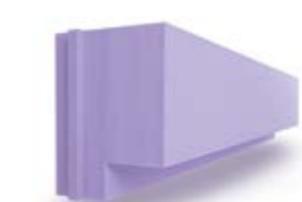
**The Surface Element**, which covers the majority of the floor area.



**The Side Elements** are of similar thickness to the Surface Elements but are machined with a groove to hold the Formwork Elements secure without additional fixings or adhesive.



**Corner Edge Elements** are machined to form the corners of the floorplate.



**The Formwork Elements** can be supplied at a height to suit your floor slab thickness.

**JACKODUR® Atlas:**  
The great way  
to insulate.

## Its product properties speak for themselves:

- Excellent thermal insulation which can be tailored to suit desired insulation standards
- Elimination of thermal bridges
- Stable compressive strength properties
- Moisture resistant, its thermal and mechanical properties remain consistent over time
- More than 1000 reference sites
- Supplied cut to size to eliminate waste on site and ensuring a rapid build programme whilst offering complete design flexibility
- A certified PASSIVE HOUSE solution



Bungalow completed in April 2016

**JACKODUR®**

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# JACKODUR® Atlas: Made from XPS for long term performance

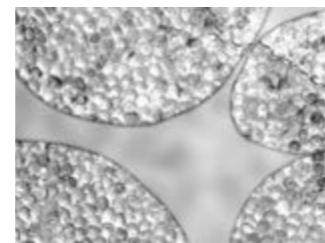
## XPS for below ground applications

When developing an insulation system for concrete foundation rafts JACKON decided to use their expertise in extruded polystyrene (XPS) rather than conventional expanded polystyrene (EPS).

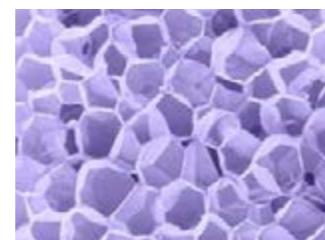
XPS is produced by melting beads of polystyrene in an extruder and then injecting carbon dioxide into the molten material. This creates a closed cell structure with no voids in the material and a uniform skin that repels water. XPS from JACKON only absorbs less than 1% of moisture even when submerged in water at high pressure or in freeze thaw conditions.

EPS is produced by expanding beads of polystyrene at high temperature in moulds. This can leave microscopic voids between the individual beads. When submerged in water for long periods of time EPS can absorb varying proportions of water.

As very experienced manufacturers of EPS, JACKON can produce EPS that absorbs less than 5% moisture when subjected to water under pressure; but other qualities of EPS can take in up to 10% particularly when subjected to repeat freeze thaw conditions.



**EPS (expanded polystyrene)**  
Open gaps between the individual foam beads



**XPS (extruded polystyrene)**  
Close cell structure

Once any insulating materials absorbs water its thermal properties deteriorate. The freeze thaw cycle test is required to determine the durability of insulation in below ground applications.

# JACKODUR® Atlas: Save. Proven. Certified.

## Certified

The JACKODUR® Atlas XPS-material is covered by a European Technical Accreditation (ETA) for use as insulation under a concrete slab. We also have a thorough Environmental Product Declaration (EPD) that analyses the long term impact on the environment due to the manufacture, transport, utilisation and recyclability of the products. JACKODUR® Atlas is also certified by the German Passive House Institute.



## U-value

We can prepare a detailed calculation which will determine the thickness required of the Surface Elements for your desired u-value. The following table gives a general indication of the u-values for different thicknesses of KF300. These calculations are based on EN13370:2017 but if you are using Passive House methods a different model is required.

thickness of surface element	u-value
mm	m²·K/W
160	0.15
200	0.13
240	0.11
280	0.10

Calculation based on EN 13370:2017  
Assumes a rectangular floor plan of 15 m x 10 m, a 200 mm concrete floor slab with no benefit from additional finish screed or floor coverings.

	units	EPS	XPS
moisture absorption, under freeze-thaw	EN 12091	up to 10%	up to 1%
thermal conductivity, $\lambda_D$	EN 13164	W/(m·K)	0.034
thermal conductivity, $\lambda_D$ with 10% moisture	EN 10456	W/(m·K)	0.051
thermal conductivity, $\lambda_D$ with 1% moisture	EN 10456	W/(m·K)	–
if the EPS takes in 10% of moisture its insulation properties will deteriorate by 50%			

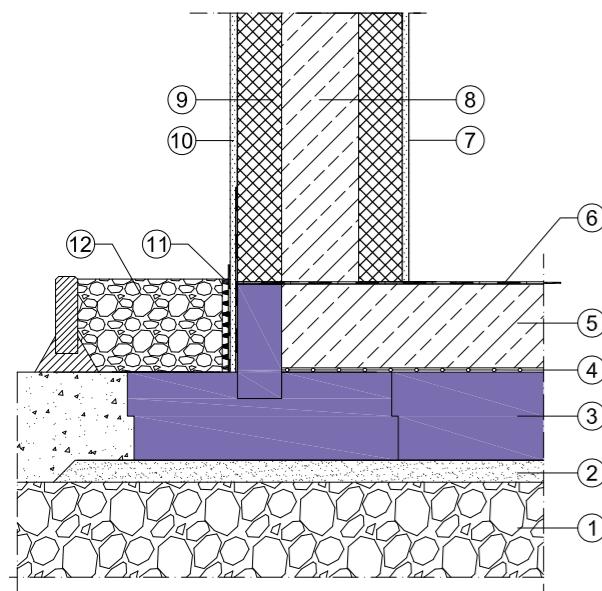
## Suits every requirement

The compressive strength of the Surface Elements and their thickness can be varied to suit the design loads, calculated by your structural engineer, and the u-value determined by your architect or SAP assessor. The slab thickness, and hence the height of the Formwork Elements, is determined by your structural engineer. The thickness of the Formwork Elements can be varied to suit your method of wall construction. For most residential applications the compressive strength of our JACKODUR® KF300 material is more than adequate. For more arduous applications we offer KF500 or KF700 grades.

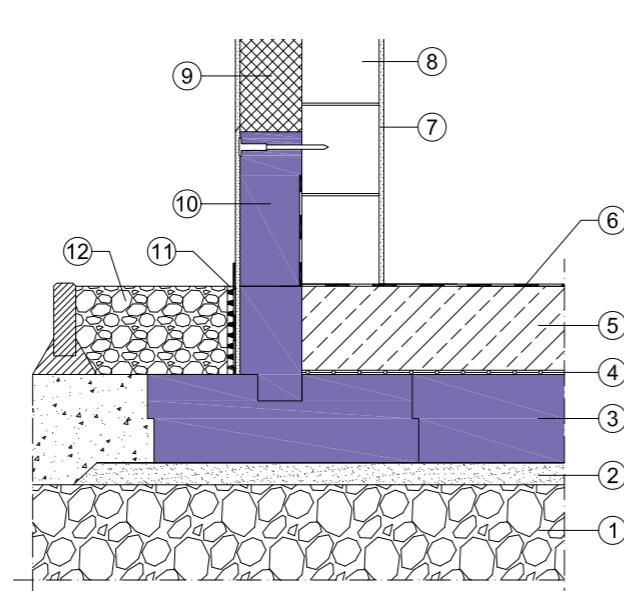
compressive strengths	KF 300	KF 500	KF 700
compressive strengths at 10% deformation in kPa [EN 826]	300	500	700
compressive creep (50 years, deformation <2% in kPa [EN 1606])	130	180	250

# JACKODUR® Atlas connecting details:

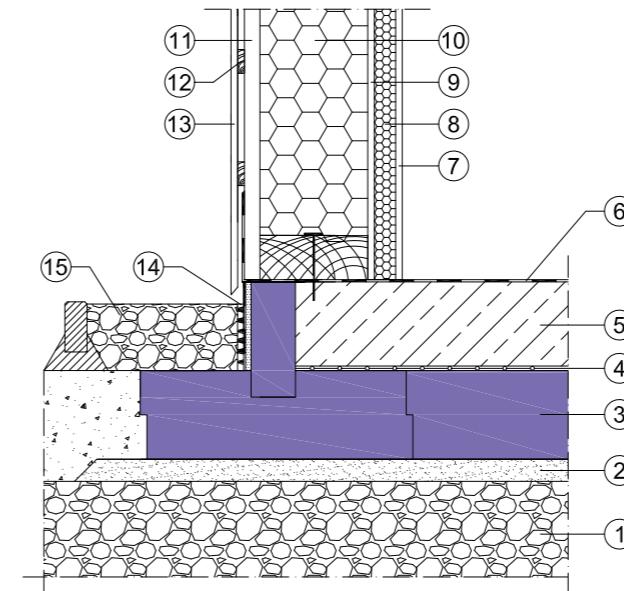
**JACKODUR® Atlas**  
in connection with **THERMOMUR**  
insulated concrete form (ICF) system



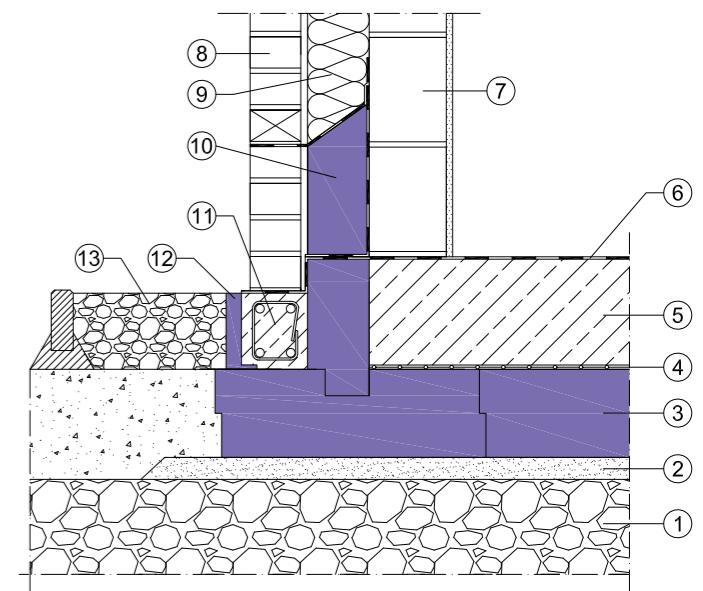
**JACKODUR® Atlas**  
in connection with an ETICS  
(external insulation composite system)



**JACKODUR® Atlas**  
in connection with timber work and concrete plinth



**JACKODUR® Atlas**  
in connection with cavity wall



- ① Crushed stone layer e.g. 0/45 or 0/63
- ② Leveling layer e.g. gritt 4/8
- ③ JACKODUR® Atlas
- ④ PE film
- ⑤ Foundation slab
- ⑥ Waterproofing
- ⑦ Plasterboard
- ⑧ Concrete core
- ⑨ THERMOMUR (ICF)
- ⑩ Exterior Render
- ⑪ Cement-based waterproof coating and dimple sheet
- ⑫ Filter gravel 16/32 mm

- ① Crushed stone layer e.g. 0/45 or 0/63
- ② Leveling layer e.g. gritt 4/8
- ③ JACKODUR® Atlas
- ④ PE film
- ⑤ Foundation slab
- ⑥ Waterproofing
- ⑦ Plasterboard
- ⑧ Blockwork
- ⑨ ETICS (external insulation composite system)
- ⑩ JACKODUR® Gefiniert
- ⑪ Cement-based waterproof coating and dimple sheet
- ⑫ Filter gravel 16/32 mm

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- ② Leveling layer e.g. gritt 4/8
- ③ JACKODUR® Atlas
- ④ PE film
- ⑤ Foundation slab
- ⑥ Waterproofing
- ⑦ Concrete plinth
- ⑧ Plasterboard
- ⑨ Insulation/installation layer
- ⑩ OSB board
- ⑪ Insulation
- ⑫ MDF board
- ⑬ Battens/air space
- ⑭ Timber lining
- ⑮ Cement-based waterproof coating and drainage board
- ⑯ Filter gravel 16/32 mm

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- ② Leveling layer e.g. gritt 4/8
- ③ JACKODUR® Atlas
- ④ PE film
- ⑤ Foundation slab
- ⑥ Waterproofing
- ⑦ Masonry
- ⑧ Blockwork
- ⑨ Insulation
- ⑩ JACKODUR® Cavity tray insulation
- ⑪ Reinforced concrete ringbeam
- ⑫ JACKODUR® insulation shuttering JD
- ⑬ Filter gravel 16/32 mm

## Our Atlas Service

We are happy to assist with questions concerning sealing guide, selection of pressure resistance or the nature of substrate.

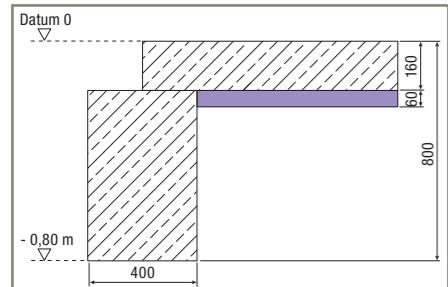
# JACKODUR® Atlas: High technology made simple.

## The performance of JACKODUR® Atlas compared to strip foundations.

The prerequisites for a well-insulated building are:

- High-quality insulation materials
- High levels of air tightness
- Sufficient thickness of insulation materials
- Elimination of thermal bridges

### Insulation with strip foundations



Typical section through a strip foundation.

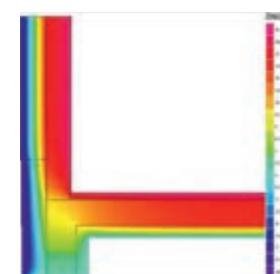
#### Disadvantages

Thermal bridge created between the slab and the foundation

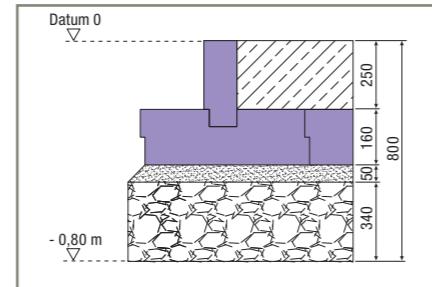
Additional timber shuttering will be required for both the slab and the foundation

The insulation must be cut to size to fit under the slab, generating waste and cost.

The timber shuttering must be removed and disposed of after use



### Insulation with JACKODUR® Atlas and load-bearing floor slab



Typical section through a JACKODUR Atlas system

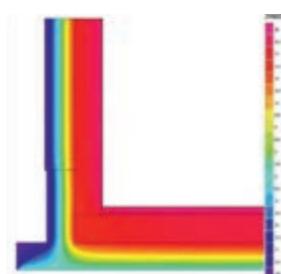
#### Advantages

Thermal bridge eliminated

Insulation and shuttering installed in one operation

Insulation and shuttering system is supplied cut to size, eliminating waste and saving time.

No timber shuttering required or waste generated.



The application of JACKODUR® Atlas provides genuine benefits. It works because it is easy to install and streamlines procedures, thus saving time and costs.

Single-family house in Schlangen | Area: 95 m<sup>2</sup> | Thickness: 100 mm

# JACKODUR® Atlas Installation: Simple and Time Saving.

## Site preparation

### Initial situation:

- Compressed base course per specifications of the Structural Engineer
- Drainage pipes fitted through the Atlas elements

### The next step:

- Create a level granular subbase  
**Thickness:** approx. 5 cm
- **Area:** approx. 40 cm wider than the outer edge of the floor slab
- **Material:** e.g. sharp sand  
Tolerance for subbase: +/- 1 cm on 5 m
- Compressed base course per specifications of the structural engineer
- Installed drainage pipes

# JACKODUR® Atlas: Features and benefits.

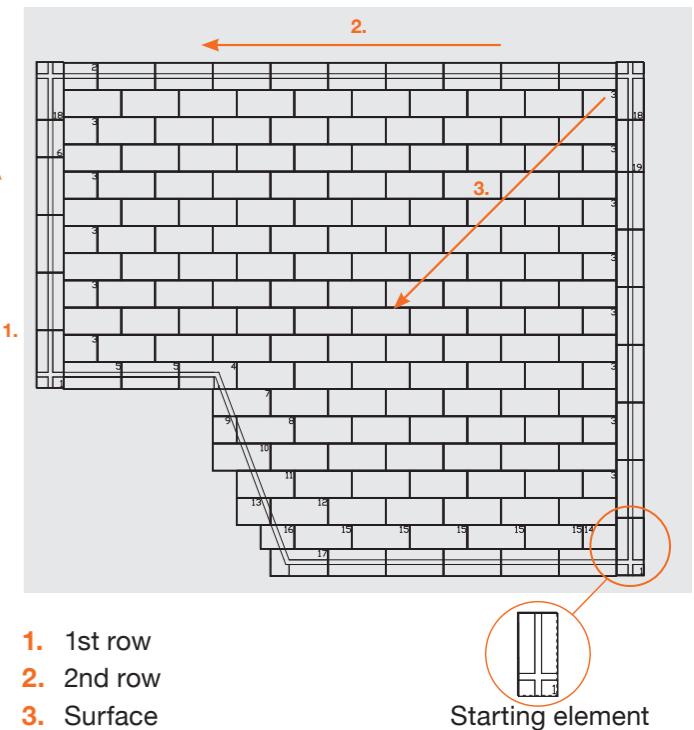
## Features

- Made to measure system
- Installation layout drawing provided
- Board numbering
- No cutting required

The installation drawing on the right shows how it works

## Benefits

- Installation can be done by the general contractor
- Faster, less complicated ground preparation
- Simple, clear instructions
- Flat slab design creating lower ground pressure
- Complete over site slab offers greater internal design flexibility
- Eliminates thermal bridging
- Thermal mass of slab within the building envelope
- Installation not restricted by weather conditions



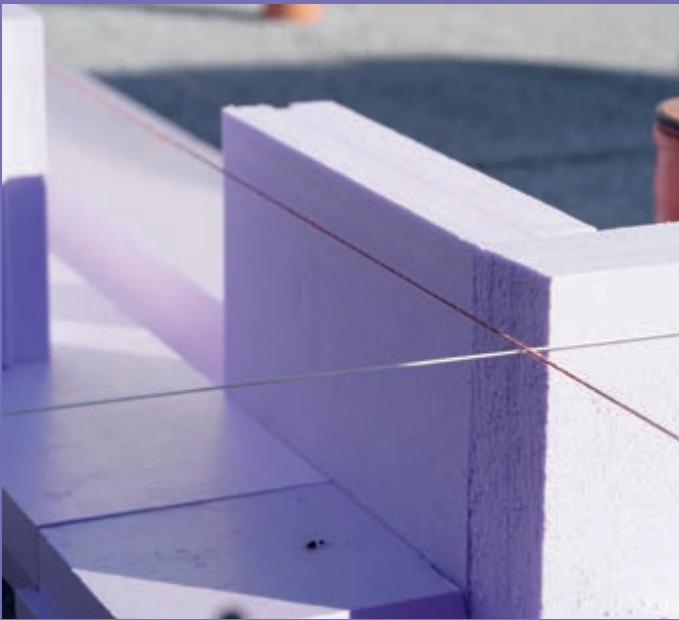
## Practical tip:

Lay the leveling bars at about 3-meter intervals across the area and adjust them to the required height. Pour the fill material into the spaces between the bars and pull a straight edge to level off the granular base.

Clamp the batter boards at a distance of 80 cm from the outer edge of the floor slab. Take care to maintain stability and tighten the lines enough that they can be "played" like guitar strings.



Single-family home in Bellac | Passive house, | Area: 117 m<sup>2</sup> | Thickness: 240 mm



## JACKODUR® Atlas: Contact & Enquiry

to the request form:



To prepare your price enquiry we will need to the following information:

- A plan of you proposed concrete slab, showing the area and perimeter
- The height of the formwork element which will be the thickness of your reinforced concrete slab
- The thickness of formwork element to suit the method of wall construction
- The desired u-value or the thickness of the surface element which is the insulation under the slab

Your contact:

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