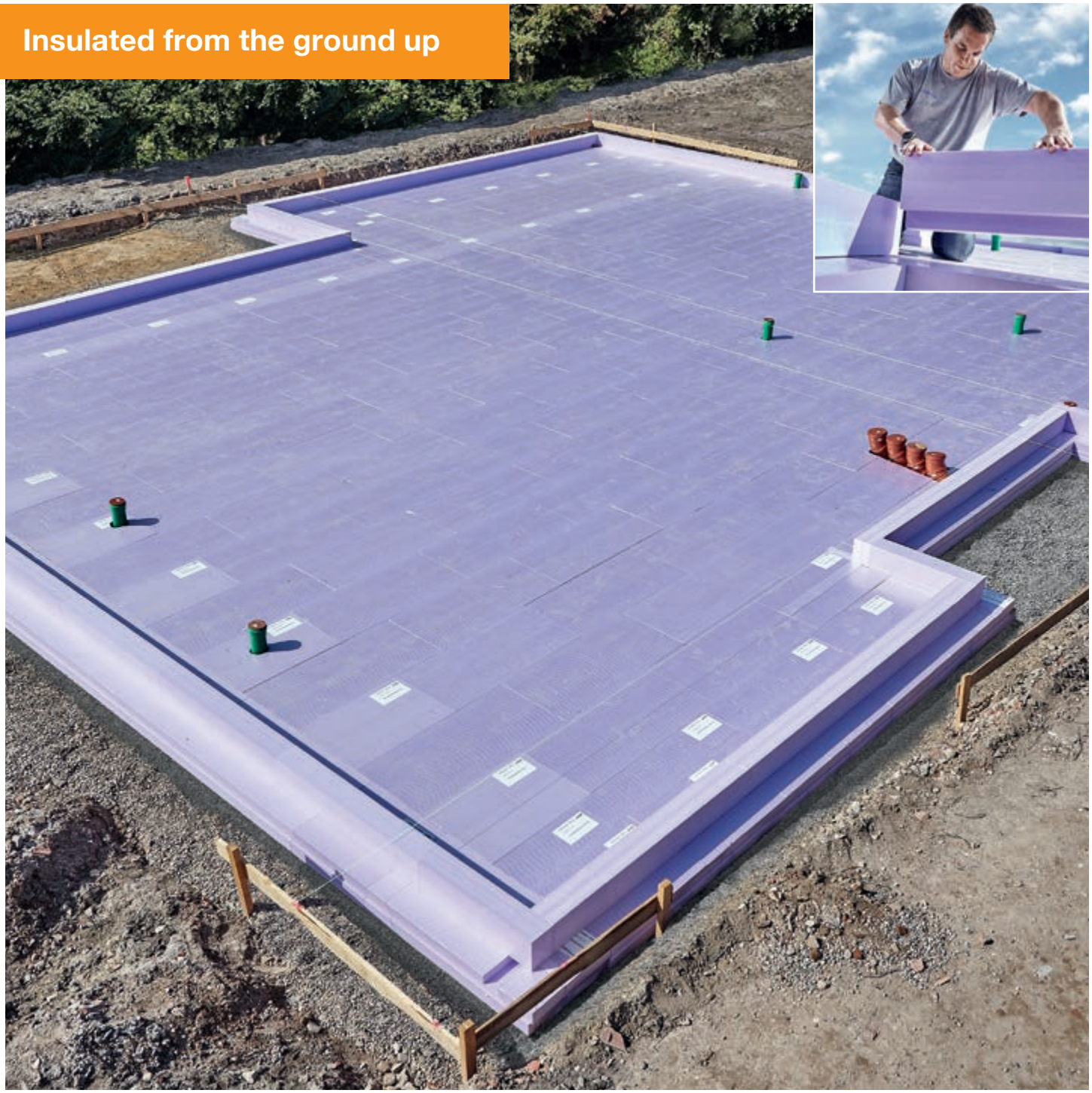
JACKODUR® Atlas

The Structural Insulated Passive Slab Formwork System.

Insulated from the ground up



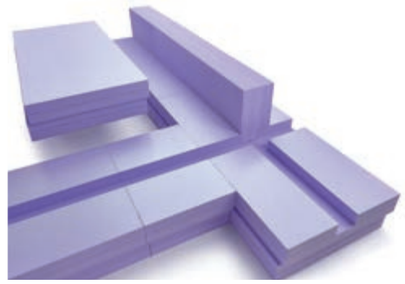
CERTIFIED COMPONENT
Passive House Institute

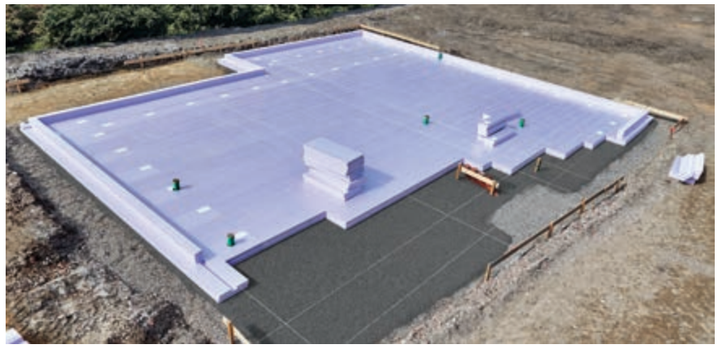
BBA APPROVAL INSPECTION TESTING CERTIFICATION
CERTIFICATE 20/5812

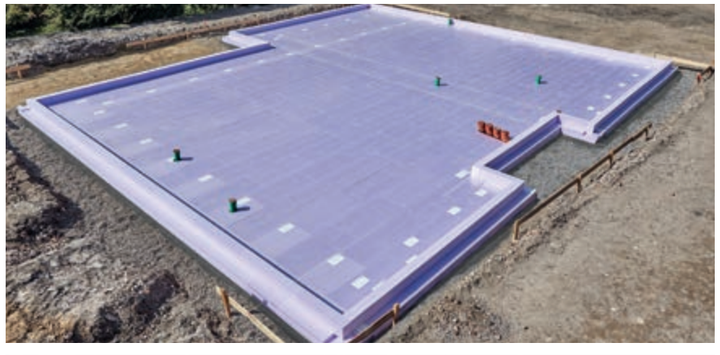
JACKON UK Limited

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 m² | 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

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JACKODUR® Atlas: Made from XPS for long term performance

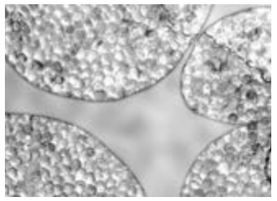
XPS for below ground applications

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).

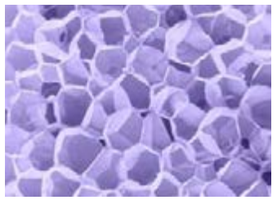
XPS is produced by melting beads of polystyrene in an extruder and then injecting carbon dioxide into the molten material. This creates a closed cell structure with no voids in the material and a uniform skin that repels water. XPS from JACKON only absorbs less than 1% of moisture even when submerged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

		units	EPS	XPS
moisture absorption, under freeze-thaw	EN 12091		up to 10%	up to 1%
thermal conduktivity, λ_D	EN 13164	W/(m·K)	0.034	0.034
thermal conduktivity, λ_D with 10% moisture	EN 10456	W/(m·K)	0.051	–
thermal conduktivity, λ_D with 1% moisture	EN 10456	W/(m·K)	–	0.035
if the EPS takes in 10% of moisture its insulation properties will deteriorate by 50%				

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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.

CERTIFIED COMPONENT
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	$m^2 \cdot K/W$
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.

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

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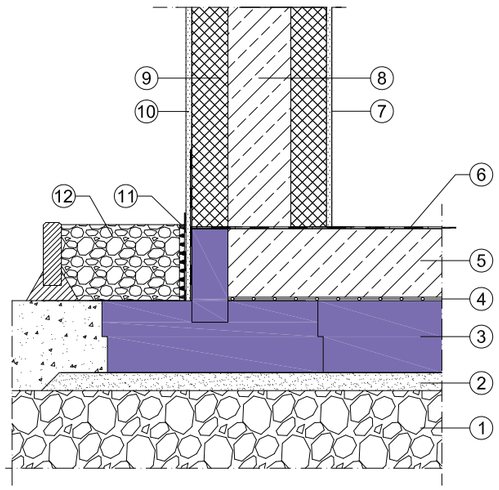
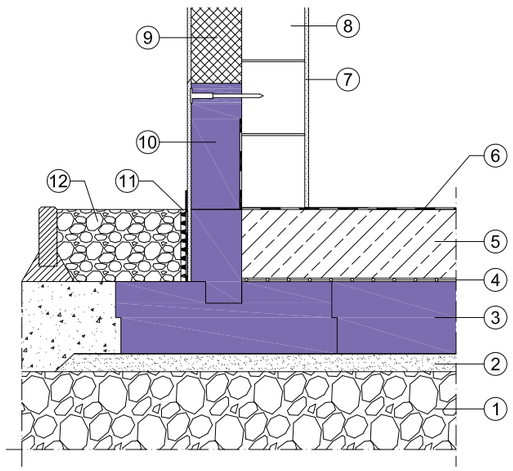
JACKODUR® Atlas connecting details:

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



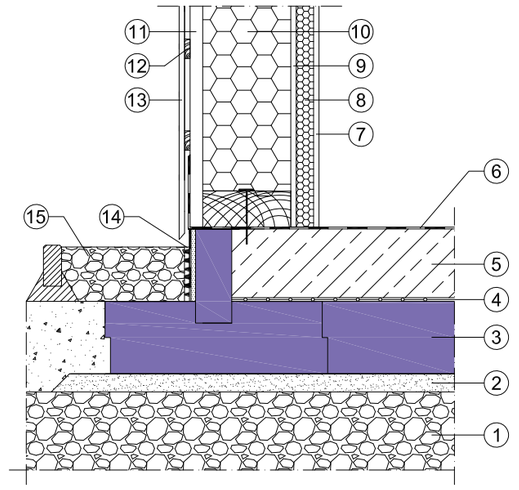
1. Crushed stone layer e.g. 0/45 or 0/63
2. Leveling layer e.g. gritt 4/8
3. JACKODUR® Atlas
4. PE film
5. Foundation slab
6. Waterproofing
7. Plasterboard
8. Concrete core
9. THERMOMUR (ICF)
10. Exterior Render
11. Cement-based waterproof coating and dimple sheet
12. Filter gravel 16/32 mm

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



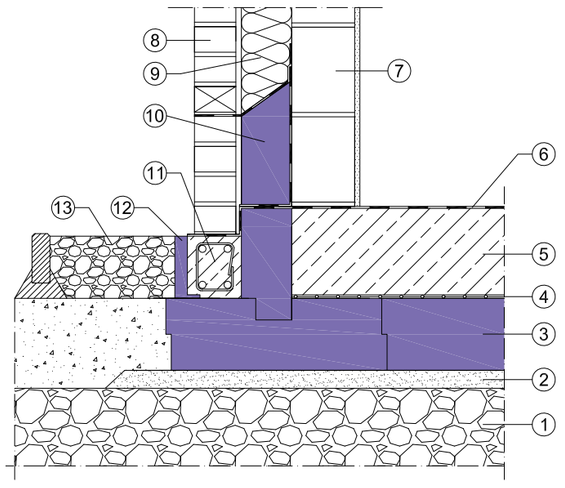
1. Crushed stone layer e.g. 0/45 or 0/63
2. Leveling layer e.g. gritt 4/8
3. JACKODUR® Atlas
4. PE film
5. Foundation slab
6. Waterproofing
7. Plasterboard
8. Blockwork
9. ETICS (external insulation composite system)
10. JACKODUR® Gefiniert
11. Cement-based waterproof coating and dimple sheet
12. Filter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

JACKODUR® Atlas
in connection with timber work and concrete plinth



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. 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

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. Masonry
8. Blockwork
9. Insulation
10. JACKODUR® Cavity tray insulation
11. Reinforced concrete ringbeam
12. JACKODUR® Insulation shuttering JDS
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.

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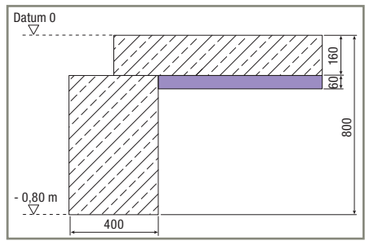
JACKODUR® Atlas: High technology made simple.

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

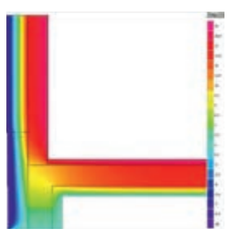
Insulation with strip foundations



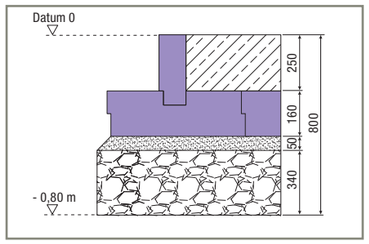
Typical section through a strip foundation.

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



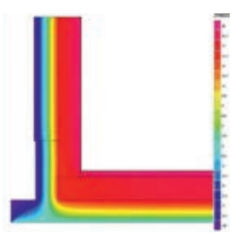
Insulation with JACKODUR® Atlas and load-bearing floor slab



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 m² | Thickness: 100 mm

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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

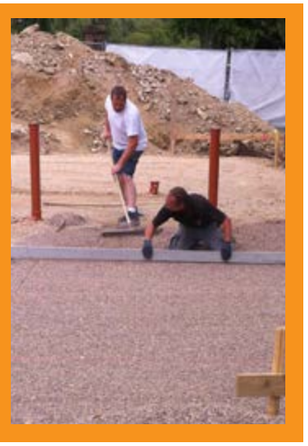
The next step:

- 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

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.



JACKODUR® Atlas: Features and benefits.

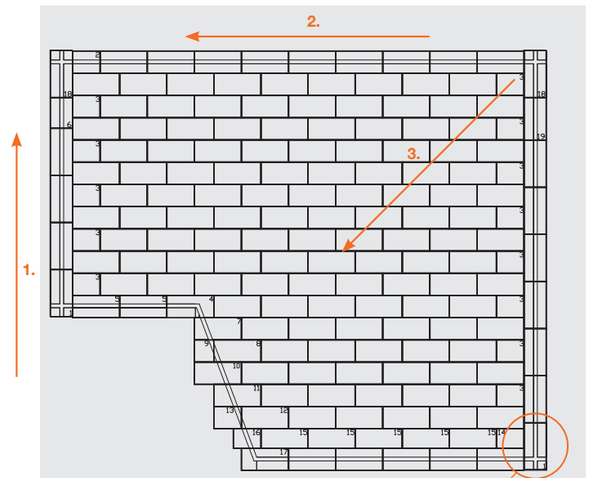
Features

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

The installation drawing on the right shows how it works

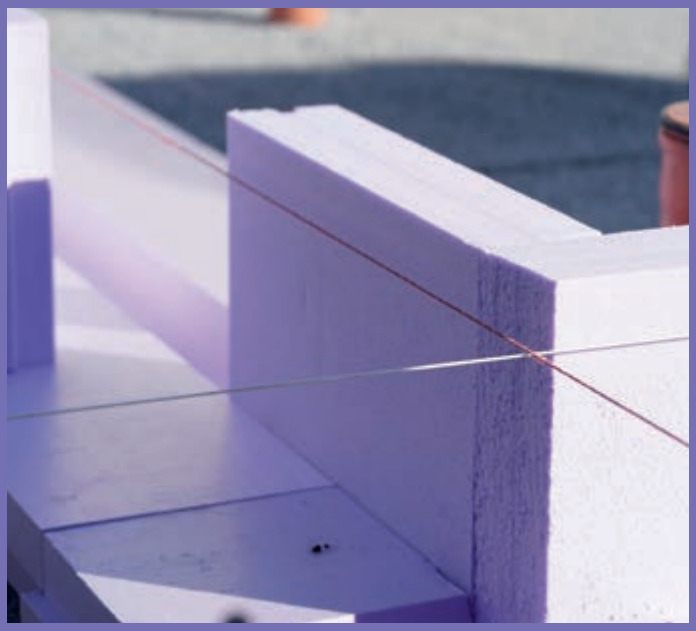
Benefits

- 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



1. 1st row
2. 2nd row
3. Surface

Single-family home in Bellac | Passive house, | Area: 117 m² | 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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