

JACKODUR®

Insulation beneath the floor slab.



Installation instructions

JACKON
by BEW/

General information

JACKODUR® thermal insulation is suitable for use in applications subject to compressive loads as perimeter insulation beneath a floor slab (structurally non-load bearing) or underneath a foundation slab (structurally load-bearing). The thermal insulation is always installed in a single layer in the perimeter area because when there are multiple layers of thermal insulation boards, a slow but continuous accumulation of water can lead to heat losses. The extruded foam boards can be used in areas where ground moisture is present up to as much as pressing water, with a maximum immersion depth of 3.5 m.

Substrate

The formation level is laid according to the planner's specifications and is made up of a compacted base course or the natural ground and a levelled granular subbase (e.g. fine gravel, C8/10 concrete or sand), usually 5 cm. This means that the insulation boards can be laid flat on top.

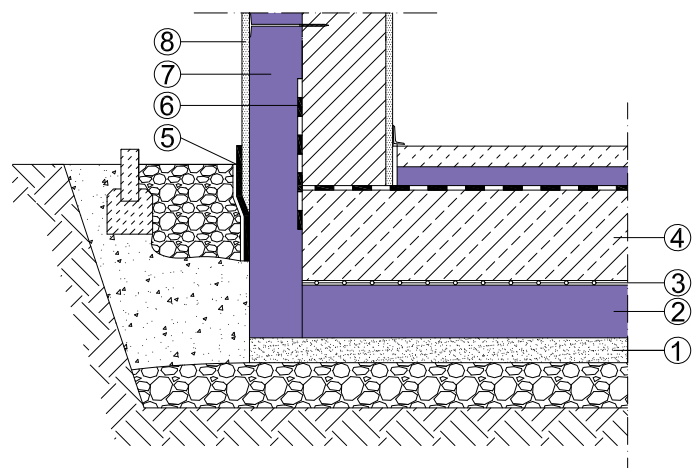
Installation

The extruded foam boards are laid in a single layer, tightly against one another in a bond. Cross joints and slipping of the boards should be avoided. Penetrations (e.g. for drainage pipes, reserve conduits, ventilation ducts) must be cut out to size on site, e.g. with a power saw. Imperfections should be filled in with a suitable filler (e.g. well foam). Then a separation layer, such as PE film, is laid loosely above the thermal insulation boards, with the joints overlapping. It prevents cement slurry from leaking out via the joints in the thermal insulation when the concrete is poured. If there is pressure from pressing water, the side edges (external front faces of the thermal insulation) should be filled with a solvent-free cold applied bituminous adhesive or thick bitumen coating.

Load transferring thermal insulation beneath foundation slab

In the case of load transferring thermal insulation, constant and variable loads of the building structure are transferred into the ground via the thermal insulation. Even horizontal loads can be transferred into the thermal insulation under certain boundary conditions. Due to the ever increasing requirements for thermal insulation in buildings, the big advantage of this construction method lies in the avoidance of thermal bridges:

Figure 1:



- ① Granular sub-base
- ② JACKODUR® KF 300/500/700
- ③ PE film
- ④ Foundation slab
- ⑤ Render waterproofing and protective layer
- ⑥ Waterproofing layer
- ⑦ Plinth insulation with JACKODUR® Gefniert
- ⑧ Exterior render

Structural stability:

Requirements for design and dimensioning are given in general building approval no. Z-23-34-1613. In particular, measurement values are given for compressive strength (fcd) and modulus of elasticity (E50), which take into account the long-term behaviour of the insulation layer.

Info: Under increased compressive strength, XPS insulation materials do not exhibit any brittle failure as with mineral building materials made from concrete, for example, but rather a slightly increased compression occurs in the insulation material.

Settlement calculation:

According to the general building approval no. Z-23.34-1613, with a total thickness of 120 mm of insulation layer no calculation of the settlement taking into account the insulation layer needs to be carried out. In the case of buildings which react sensitively to settlement or if the insulation layer thickness of 120 mm is exceeded, the settlement must be calculated taking into account the compression of the insulation layer as follows: Calculation for the building site in question, without taking into account the thermal insulation layer and calculation for the building site in question and the thermal insulation layer using the modulus of elasticity (E50) of the insulation layer.

Occurrence of horizontal loads:

Horizontal forces may be transferred into the thermal insulation layer. At the same time, the measurement value of the shear stress must not exceed the value of 20% of the measurement value of the normal stress of the associated combination of effects. If PE film is arranged between the foundation slab and the layer of insulation, horizontal effects may occur. The edges of the thermal insulation should be finished with moulded parts (see Figure 1 or with JACKODUR® Atlas).

Insulation beneath the floor slab

For use as perimeter insulation beneath a structurally non load-bearing floor slab (load made up of net weight plus traffic load), DIN 4108-10, PB (perimeter floor) stipulates the abbreviations (dh, ds and dx) for XPS insulation materials with respect to the compressive strength class.

Examples:

dh - high compressive strength - JACKODUR® KF 300

Standard SF

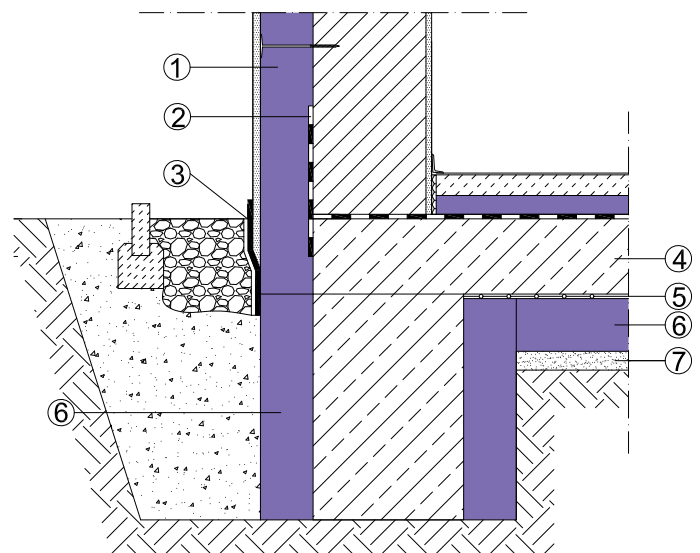
ds - very high compressive strength - JACKODUR® KF 500

Standard SF

dx - extremely high compressive strength - JACKODUR® KF 700

Standard SF

Figure 2:



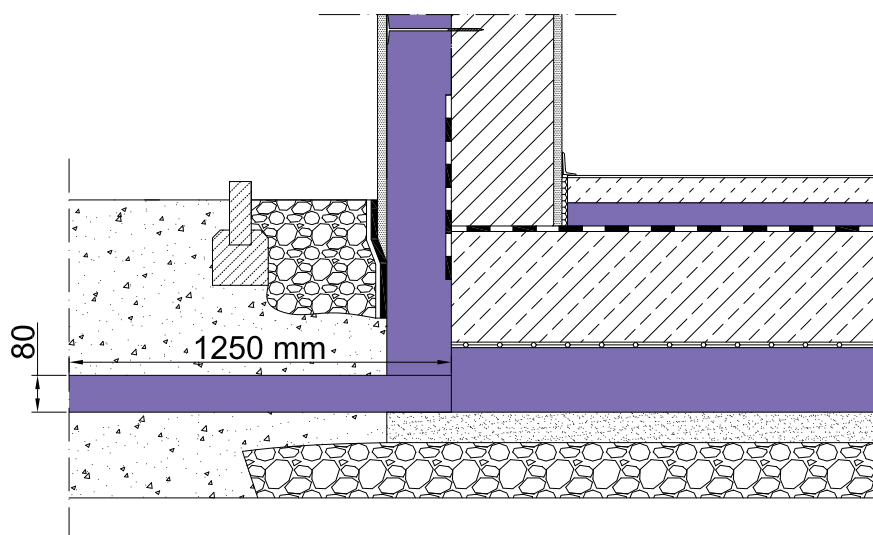
- ① Plinth insulation with JACKODUR® Gefniert
- ② Waterproofing layer
- ③ Render waterproofing and protective layer
- ④ Floor slab
- ⑤ PE film
- ⑥ JACKODUR® KF 300/500/700
- ⑦ Granular sub-base

Frost protection for residential buildings without cellars

In the case of residential buildings without cellars there is a risk of ice layers forming in the winter months and associated frost heave beneath the floor slab. Depending on the soil type, the formation of ice layers can be prevented by installing frost protection.

Figure 3:

Frost protection with JACKODUR® thermal insulation



If frost protection insulation that is 1250 mm in length and 80 mm in thickness is used, freezing beneath the floor slab can be ruled out in Germany.

Please note

The information provided in this leaflet is based on our knowledge and experience to date. It does not constitute a guarantee in any legal sense. When using this product, please always bear in mind the circumstances of the particular intended application, especially with regard to physical, technical and legal construction issues.

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