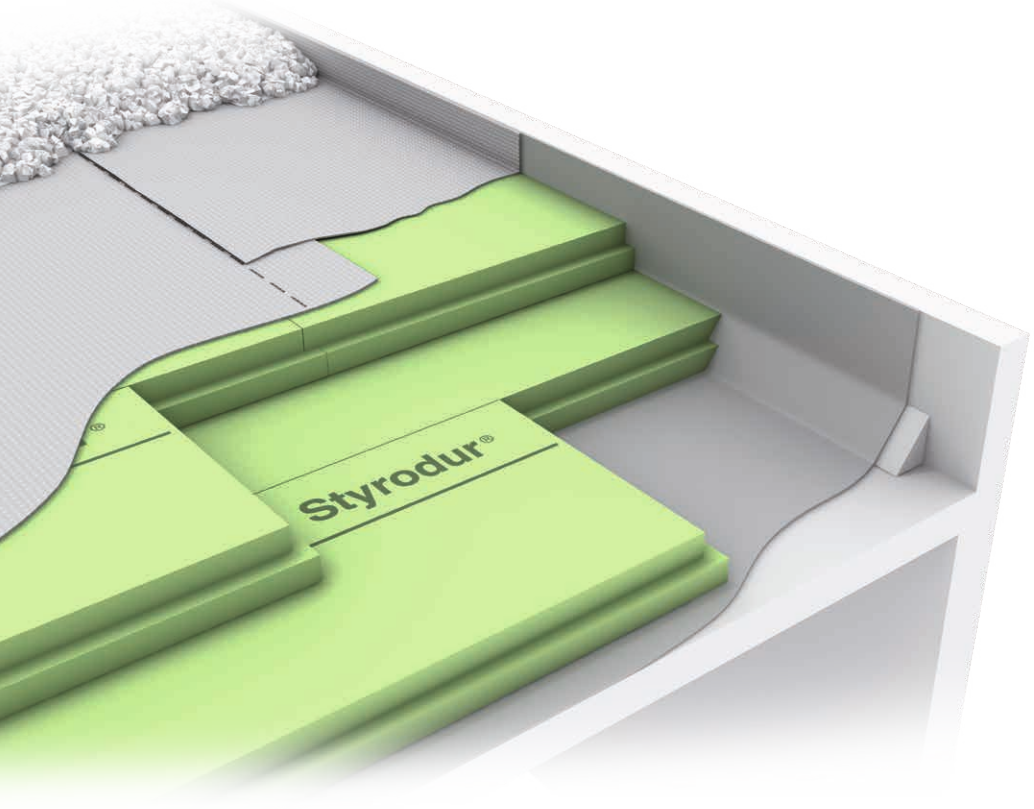
Safe. Strong.
Styrodur®

BASF
We create chemistry

# Double-layer insulation – multiple savings!

## Energy saving inverted roofs with Styrodur®




### Simple

- **Cost-effective combination of Styrodur standard thicknesses with short delivery times**
- **Uncomplicated design of connection details with thinner standard boards**

### Safe

- **Approved by building authorities**
- **Greater protection against rainwater penetration thanks to water-draining and vapour-permeable separation layer**

### Energy-saving

- **Complies with the passive house standard**
- **Insulation thicknesses of 220 to 400 mm**

This flat roof insulation designed in the form of an inverted roof is impressively quick and easy to install. The Styrodur insulation layer permanently protects the underlying sealing layer from harmful environmental impacts and mechanical stresses.

The German Institute for Building Technology (DIBt) has now approved the double-layer installation for gravelled inverted roofs under the general construction type approval Z-23.4-222. Sampling and long-term studies of existing inverted roofs in Germany and Austria have shown that Styrodur maintains its mechanical and physical properties over a very long period of time with virtually no variations. The accumulation of a permanent water film between the board layers is largely prevented by using a water-draining and vapour-permeable separation layer. This eliminates the risk of excessive moisture accumulation in the lower board layer, which could lead to a reduction of thermal insulation efficiency.

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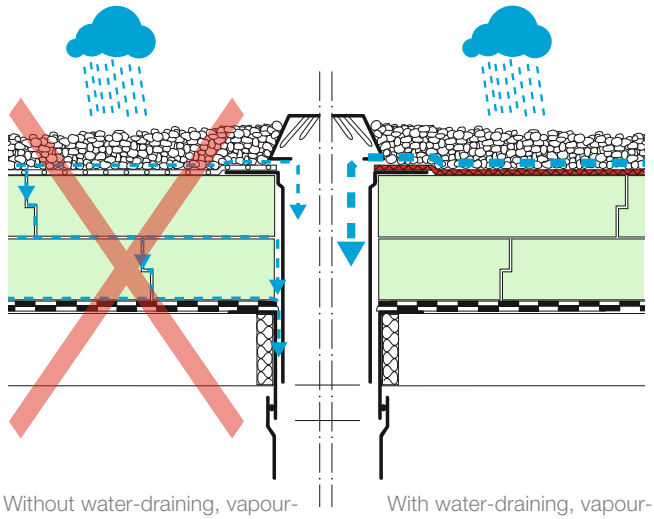
E-CPB/FM.BE.2206 STYRODUR INVERTED ROOFS FLYER

## Double-layer insulation for inverted roofs

The inverted roof construction with two insulation layers is a cost-effective way of using Styrodur 3035 CS, 4000 CS, and 5000 CS. The boards with standard thicknesses of up to 200 mm and shiplap are readily available and can be combined to achieve insulation thicknesses from 220 to 400 mm. The bottom layer should have a minimum thickness of 120 mm, while Styrodur boards with a minimum thickness of 100 mm can be installed in the top layer. Thanks to the water-draining and vapour-permeable separation layer above the insulation layers, the majority of rainwater is safely drained away from the surface.




Inverted roof with double-layer insulation and gravel layer

## Compliance with the GEG 2020

Double-layer insulation with Styrodur makes it possible to comply with Germany's Building Energy Act (Gebäudeenergiegesetz, GEG) 2020. It is also possible to renovate single-layer inverted roofs to passive house standard.

## General construction type approval Z-23.4-222

The following XPS insulation materials from BASF have been approved by the German Institute for Building Technology (DIBt) for double-layer installation in inverted roofs:

- Styrodur 3035 CS
- Styrodur 4000 CS
- Styrodur 5000 CS

| U-value | Insulation thicknesses for inverted roofs with single- and double-layer insulation: reinforced concrete ceiling 21 cm; three layers of bitumen sealing; water-draining separation layer above the insulation layer | | | |
|---|---|---|---|---|
| | Single layer | | Double layer | |
| W/(m²·K) | mm | Styrodur® | mm | Styrodur® |
| 0,31 | 120 | 3035 CS / 4000 CS / 5000 CS | – | |
| 0,27 | 140 | 3035 CS / 4000 CS | – | |
| 0,24 | 160 | 3035 CS | – | |
| 0,22 | 180 | 3035 CS | – | |
| 0,20 | 200 | 3035 CS | – | |
| 0,18 | – | | 120 + 100 | 3035 CS / 4000 CS / 5000 CS |
| 0,16 | – | | 140 + 120 | 3035 CS / 4000 CS |
| 0,14 | – | | 160 + 140 | 3035 CS / 4000 CS |
| 0,12 | – | | 180 + 160 | 3035 CS |
| 0,10 | – | | 200 + 200 | 3035 CS |

You can find further information, as well as your local distribution partner, on our homepage at: **www.styrodur.com.**