

## Neopor® for flat roofs – a prime example for sustainable construction

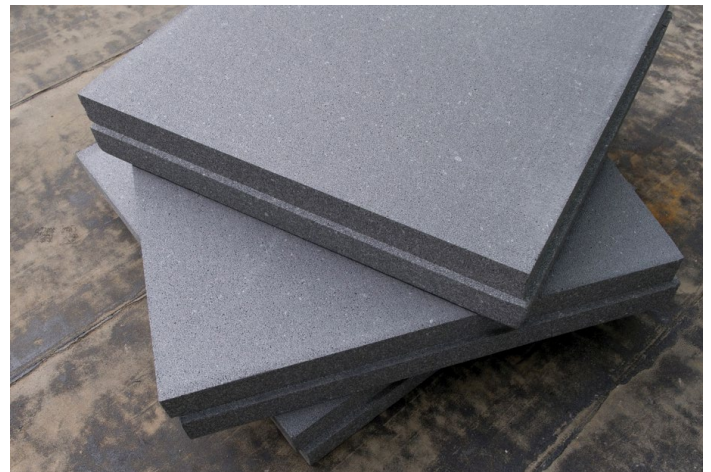


## Sustainable building with Neopor®

In the case of this construction project, Neopor® was chosen for several reasons:

- Its low thermal conductivity supports the building's high energetic requirement and thus minimises the CO<sub>2</sub> emissions and operating costs.
- By converting the entire product portfolio of Neopor® to the alternative flame retardant Polymeric FR, which has a better environmental profile than its predecessor HBCD, the insulation made of Neopor® could meet the strict guidelines with regard to sustainability. A key advantage of flat roof insulation with Neopor® in terms of static considerations is provided by the high compressive strength of the material at relatively low weight – the grey insulation material fares considerably better than mineral wool, for example, in this regard.

- Its durability also contributes to the sustainability objectives of the construction project: insulation materials made of Neopor® offer the advantage of absorbing virtually no water in the event of damage to the flat roof—compared with mineral wool, which becomes saturated and results in the insulation performance being lost and the weight load increased. Insulation material made of Neopor® thus provides a good basis for greening of flat roofs.



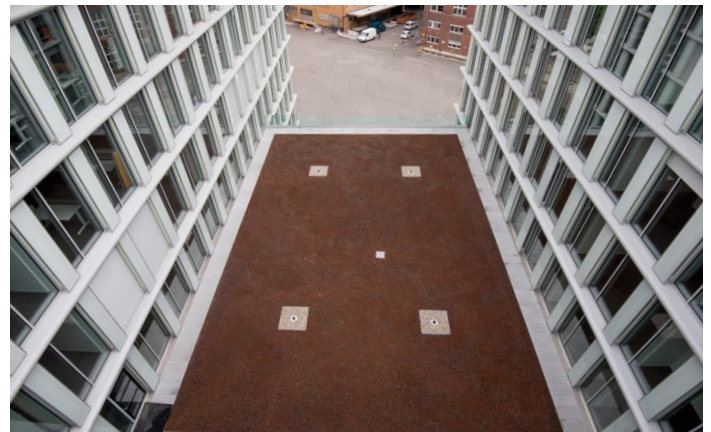
The first insulation layer consists of flat roof insulation boards made of Neopor®. The boards have ship-lapped edges all around and can be joined together perfectly.

## **Ambitious sustainability objectives achieved with Neopor® in the flat roof**

The BASF office building D105, which was opened in summer 2015, offers conference facilities and a modern canteen along with multifunctional offices with space for 1,200 employees. The complex is not only intended for representation purposes, but should also reflect the aspiration of the company – to contribute to a sustainable future. Consequently, the flat roofs of D105 incorporated insulation material based on the raw material developed and produced by BASF: Neopor®. It has a higher insulation performance than insulation boards made of conventional EPS. Economic, ecological, and social factors play a crucial role in achieving the objective of a sustainable building. Neopor® makes a major contribution to the energy efficiency of the building. At the same time, the construction costs are kept to a minimum and the design contributes to the building being both functional and comfortable to work in.

## **DGNB certification**

There are various certifications that prove the sustainability of a building. The Green Building Standard is synonymous with sustainable construction and is a general term for diverse certification seals such as the DGNB of the German Sustainable Building Council. BASF endeavours to be awarded the platinum certificate. Neopor® contributes significantly towards attaining this goal.



The flat roofs of building D105 are located at different levels. This is a flat roof area on a lower level between transparent facades. Employees have a lovely view of the areas which will later be landscaped.



The second step was to lay and fix the lightweight but highly load-bearing incline components made of Neopor® on the flat roof insulation boards made of Neopor®. The incline components spare the use of heavy concrete for inclinations. Surface water discharge can be planned and implemented accurately with the incline components.

## Planning and design benefits thanks to Neopor®

Predominantly as a result of the thin boards, at the same insulation performance as conventional EPS, and the static benefits, insulation made of Neopor® offered distinct advantages for the D105 project, particularly from the architects' design perspective. This enabled the cost-effective implementation of special design concepts. The architects gladly used the flat roof insulation boards and prefabricated

incline components made of Neopor®, fabricated in accordance with detailed CAD designs, to plan and execute the challenging roof landscape.



Transportation on the construction site: not a problem with the stable, lightweight materials made of Neopor®.

## Technical details

**For this reference object**, a roof landscape was created with substantial green areas.

- On average, 200 mm of insulation was installed.
- The insulation boards were laid in two layers.
- The first layer is composed of 140 mm thick flat roof insulation boards made of Neopor® with ship-lapped edges. The second layer consists of incline insulation boards made of Neopor®.

## Please note:

According to guidelines, even flat roofs need to be constructed with an incline of at least 2%. Otherwise, special measures are necessary to permanently seal the roof.

Incline insulation boards made of Neopor® can be supplied with the appropriate gradient and are therefore a very cost-effective alternative to achieving the desired incline.



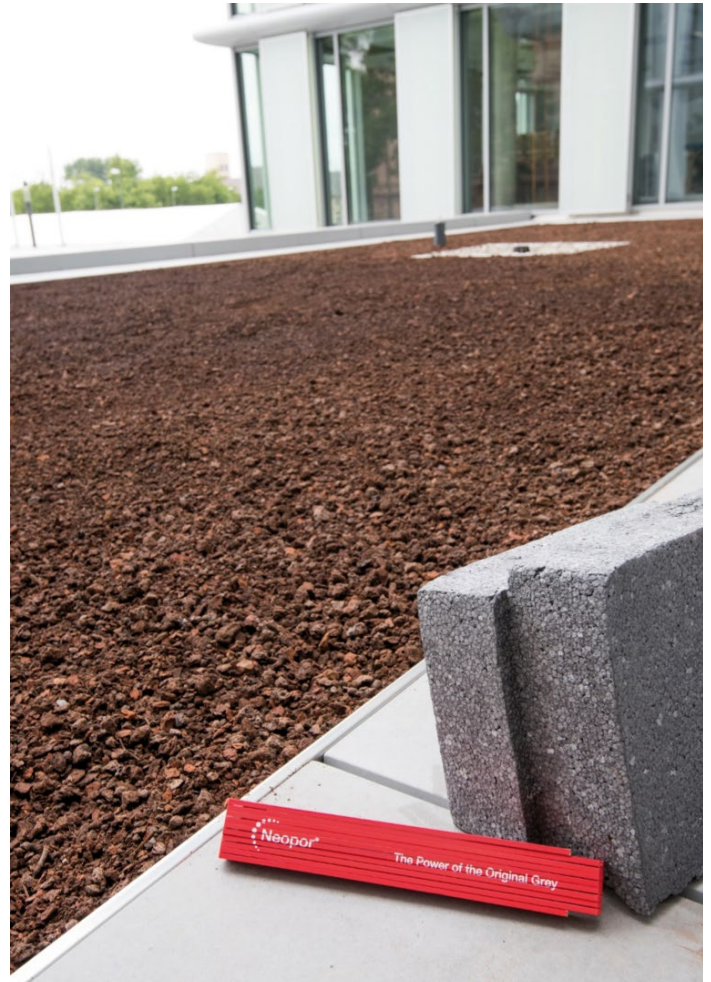
A cold adhesive membrane was added as a special separation layer on the incline components, on top of which the bitumen membrane was welded.

## The key advantages of incline components made of Neopor®

Considerably lower weight compared with incline layers made of concrete, screed, or other very heavy insulation materials.

Short installation time because the incline and thermal insulation can be fitted in one work process. The key technical data for flat roof insulation boards made of Neopor® that were used for this project:

- DAA dh according to IVH quality guideline
- Compressive stress at 10 % deformation  $\geq 150$  kPa



Planting soil and paving stones were fitted on top of the welded sealing membrane and the insulation elements directly beneath made of Neopor®.

### Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed. (February 2016)