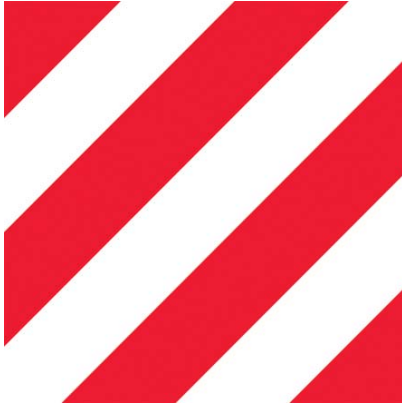


Concrete Panel Insulation

Design and Handling Guideline



Concrete panels are subjected to heaviest loading during the manufacturing stage. It is possible to choose from insulations with compression resistance classes of 5, 10 or 15 kPa depending on the thickness of the panel cladding layer and manufacturing method.

Insulation measurements are usually selected so that the height of the panel is achieved with two lengths of slabs. The standard width corresponds to that of the 600 mm truss distance and the thickness options go up to 180 mm, which means that one insulation layer is sufficient.

Thanks to their open structure, PAROC panel insulations have low vapour resistance (factor 1) so that normal structural moisture can escape through the insulation to the outside.

Non-grooved insulation

Insulation thickness d mm	U value 1) W / m ² K
100	0.37
120	0.31
140	0.27
160	0.24
180	0.22

1) With 3 % deformation by compression

Ventilated panel structure

If dampness occurs during construction or normal use, it is recommended that PAROC panel insulations with ventilation grooves, e.g.

PAROC 5g and PAROC 5gt with groove protection, are used. Selecting a product with a glass tissue facing (t) will ensure that the grooves are protected so that concrete does not penetrate the groove during the casting of the panel. The grooved insulation slab is installed on top of the cast concrete of the external skin, with its grooves facing down in the panel template.

At the top and the bottom of the panel, the grooves of the insulation slab are connected using connecting channels that are cut during panel manufacture. A connecting channel will similarly be cut for bypassing window openings. Ventilation chambers, through which the moisture that accumulates in the grooves can escape, are installed every 1-2 metres along the horizontal joints of the panel.

More effective ventilation

In terms of the drying properties of the grooves, it is important that air flows evenly in the grooves across the panel.

To make the ventilation more effective we have developed a product, PAROC 5gggt, which enables both vertical and horizontal air flow.

There are horizontal grooves connecting the vertical grooves at both ends of the insulation panel. The

horizontal groove is the same size (20 x 20 mm) as the vertical grooves. This provides the panel with 20 x 40 mm connecting grooves at the ends and in the middle of the panel. Ventilation chambers, through which the moisture that accumulates in the grooves can escape, are installed every 1-2 metres along the horizontal joints of the panel.

The glass fibre felt is attached to the surface of the insulation with polythene laminate (-PE) and it protects the grooving when the grooved insulation slab is installed on top of the cast concrete of the external layer, with its grooves facing down in the panel mould.

Best possible fire classification

PAROC panel insulations without surface treatment have a reaction to fire Euroclass A1. There are therefore no fire technical limits for using the insulation in partitioning or with window openings.

Application of insulation with glass tissue facing

Because of the fire spreading property of the PE-laminated glass tissue (Euroclass F) shall the facing always be protected by the outside surface concrete cladding.

Handling and installation

PAROC panel insulations are delivered on pallets and covered with a plastic foil. Insulations are stored on a dry platform and protected against dampness during storage if necessary.

The insulations are installed in the panel mould after casting the skin concrete. In standard production, the width corresponding to that of the truss distance is used in insulations.

The necessary cuts are made with a sharp knife, taking into account the compression margin so as not to allow gaps in the insulation for concrete to run into.

The grooves of the insulation are connected along the horizontal joints of the panel by cutting a V-shaped connection groove. A connection groove will similarly be cut for bypassing window openings.

In a cross ventilated structure there are horizontal grooves connecting the vertical grooves at both ends of the insulation panel. When the panels are positioned together facing one another, connecting grooves of

40 mm are created in the middle as well as at the top and bottom of the panel. If necessary, the seam is protected by a separate strip so that concrete cannot penetrate the grooves.

The insulation is protected by a plastic foil at the top of the panel, for example, so that moisture does not get into the panel unnecessarily during storage and installation. During installation of the panel, the sealing strips must be installed so that they do not stop the air flow into the connecting channel or out through the ventilation chambers.

Grooved insulation

Insulation thickness d mm	U value 2) W/m ² K
100	0.38
120	0.32
145	0.27
160	0.25
180	0.23

2) With reduction of 10 mm: The effect of ventilation and deformation by compression



PAROC GROUP OY AB

Headquarters
 Neilikkatie 17
 P.O.Box 294
 FIN-01301 Vantaa, Finland
 Phone +358 204 55 4868
 Fax +358 204 55 4738
 www.paroc.com