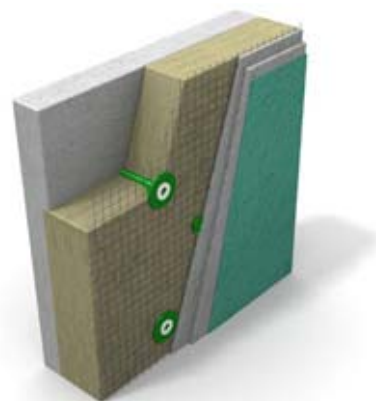


# Insulation for Three-Layer-Rendered Façades

## Design and Handling Guideline



### Properties Required of Thermal Insulation

In order to achieve a good and functional result, rendering should be laid on a steady and level base. Good alkali resistance properties are also required of the insulation, as it will be in contact with inorganic cement-lime based mortars.

The fire resistance properties of the materials used in construction have a significant influence on the fire safety of a building.

### The Right Products Guarantee a Good Result

In Three layer rendered systems the thickness of the rendering is about 25 mm. We recommend using PAROC FAS 1 or PAROC FAS 2 stone wool slabs as thermal insulation in connection with three layer rendering applications within the guidelines of the system provider or the designer. The mechanical and physical properties of the slabs have been optimised specifically for this application.

Around windows and doors and in other places where thicker insulation cannot be used PAROC FAB 3 is an ideal product. It is a thin stone wool board with higher mechanical and physical properties than those of PAROC FAS 1 or FAS 2.

Out of all mineral wools, stone wool has the best alkali resistance properties. Alkali resistance is important in applications where the insulation is in contact with inorganic cement-lime based mortars.

Thanks to being made of stone, the fire resistance properties of stone wool are in a class of their own.

All façade products are classified as the best fire class A1.

### Installing Stone Wool Insulation

When installing thick insulation layers to new buildings it is recommended that slab products are installed in two layers with staggered joints in order to avoid cold bridges.

One surface of slab products is always marked with red, which should face inwards in the structure. When using two layers of slabs, this installation instruction primarily applies to the outer insulation layer. This ensures the best possible base for rendering.

The product should be cut carefully so that joints fit tightly together. The best result is achieved by cutting on a separate cutting table and with tools that have been specifically designed for this purpose.

It is not recommended that small pieces be used, as this may result in erroneous joints. The product must be placed tightly against its base and care should be taken to avoid the creation of continuous air channels in the spatter dash layer and the flow of air from the edges to these channels.

### Wet Insulation in the Structure

Stone wool is vapour permeable and moisture repellent. The surface of a product that has become wet once it has been installed in the structure usually dries quickly and the thermal properties of the product will not be permanently damaged. Although the surface of the product is water repellent, it is recommended that it be protected against heavy rain.

This will prohibit the entry of water into the structure via joints in the slabs and enable the structure to dry quicker.

Insulation that has become slightly wet on its external surface (the unmarked side) can still be installed in the structure, as it will be able to ventilate and dry.

Insulation that has become wet on both sides should not, however, be installed at all but should be replaced by a dry one.

<b>New building, insulation thickness and the corresponding U-value when the frame is of lime sandstone 130 mm or concrete</b>					
<b>FAS 3</b>	<b>mm</b>	100	110	120	130
	<b>W/m2K</b>	0.335	0.308	0.285	0.265
		140	150	160	180
		0.248	0.233	0.22	0.198
<b>FAS 4 or FAS 5</b>	<b>mm</b>	100	110	120	130
	<b>W/m2K</b>	0.351	0.323	0.299	0.278
		140	150	160	180
		0.26	0.245	0.231	0.208
<b>FAL 1</b>	<b>mm</b>	100	110	120	130
	<b>W/m2K</b>	0.366	0.337	0.312	0.291
		140	150	160	180
		0.272	0.256	0.242	0.217

### Storage

On building sites, the product packages must be protected from weathering and they must be stored in facilities where they will not become damaged, wet or dirty.

<b>Additional insulation, insulation thickness and the corresponding U-value when the frame is e.g. aerated concrete 250 mm.</b>					
<b>FAS 3</b>	<b>mm</b>	50	60	70	80
	<b>W/m2K</b>	0.277	0.258	0.241	0.227
		90	100	110	120
		0.214	0.203	0.193	0.183
<b>FAS 4 or FAS 5</b>	<b>mm</b>	50	60	70	80
	<b>W/m2K</b>	0.282	0.263	0.247	0.233
		90	100	110	120
		0.22	0.208	0.198	0.189
<b>FAL 1</b>	<b>mm</b>	50	60	70	80
	<b>W/m2K</b>	0.287	0.269	0.252	0.238
		90	100	110	120
		0.225	0.214	0.204	0.194



### 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