

# RAKE TERM

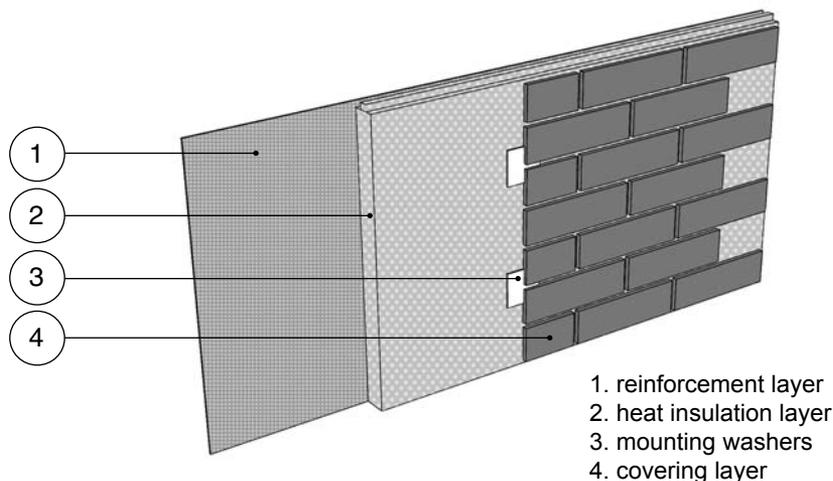
MOUNTING AND INSTRUCTION MANUAL



This manual contains instructions for mounting your façade panels on a single-storey building. Please read these instructions carefully before starting installing the panels. To perform the work you will need at least one assistant, preferably a professional carpenter or bricklayer.

**The RAKETERM Panel is a reinforced composite board consisting of two parts:**

- covering layer
- heat insulation layer

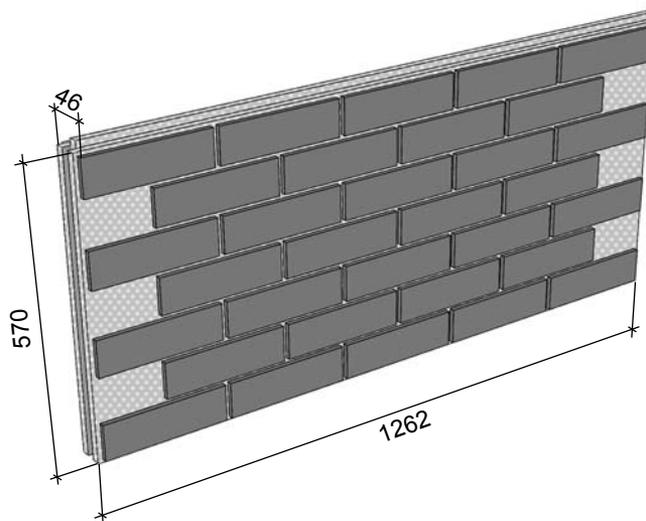


The covering layer consists of separate stone slabs or ceramic tiles. Their joints are filled with a mortar of cement, sand and polymer binder. The covering layer gives the plate its fire and weather resistant properties and mechanical strength. The rear side of the covering layer has metal mounting washers to facilitate installation.

The insulation layer is made of polyurethane foam and reinforced with glass fibre mesh on its rear. Pre-foamed polystyrene beads as filler of the heat insulation layer ensures lightweight and high insulating properties of the panel.

Panels are attached to each other with tongue-and-groove joints, which makes the cover protected against humidity and wind.

The RAKETERM standard panels are covered with clinker tiles of the so-called normal format 240×71×10 mm. Standard panels are 1262 mm long, 570 mm high and 46 mm thick.



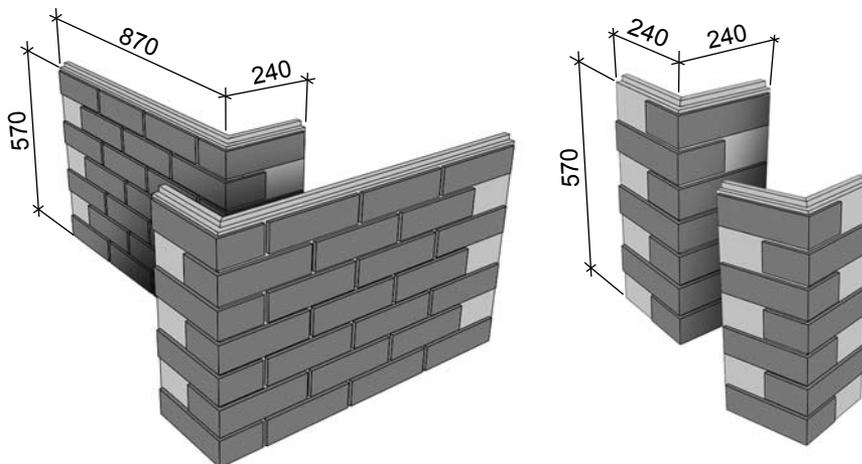
Since you cannot press panels fully tight against each other, you should assume additional 1 to 2 mm to the panel length. For calculations, take that a panel module has the length and height of respectively 1264 mm (with the resulting frame step as half of the length, or 632 mm) and 570 mm. For a tile module, take the length and height respectively of 252,8 mm and 81,6 mm.

Before you start mounting heat insulation materials, make sure that concrete works and internal plastering have been completed and the humidity has dried out of the construction, and check the heat and moisture performance of the selected wall structure.

#### Tools and materials for mounting work:

- hammer drill
- disc cutter for clinker tiles
- knife
- fat board
- spatula
- metal hammer
- polyurethane foam
- neutral silicon or assembly adhesive, with applicator gun
- electric screwdriver
- marking cord
- spirit level
- jointing tools (long and short)
- trowel
- reference strip
- fastenings, screws, dowels, washers

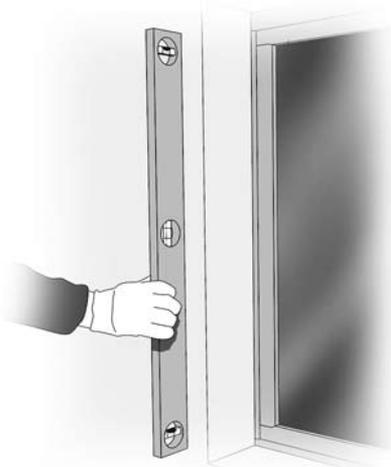
And, of course, you need the façade panels. These come with tiles to be glued and with additional joint mortar. Use large angle pieces (240/870×570 mm) for cladding corners of the building, and small angle pieces (240/240×570 mm) for cladding edges and lintels of openings. Angle pieces are of right-hand and left-hand type. They must be mounted upon each other by turns and fastened to frame sections as described in this manual.



**NB!** Before you start mounting façade panels, check all walls for evenness and vertical alignment.

Grind away all bulges and irregularities of wall surfaces, and fill all hollows, grooves and crevices. If surfaces are badly irregular, you should mount façade panels on a supporting frame.

If you want to improve thermal insulation of the exterior structure, you may put polystyrene foam boards behind façade panels. Choose foam boards of a type appropriate for façade work and of desired thickness. You do not need to fasten these additional heat insulation boards to the supporting wall because they will be pressed between the supporting wall and façade panels. Also, by installing foam sheets, you can make up for irregularities in the supporting wall and level the façade panels mounting plane.



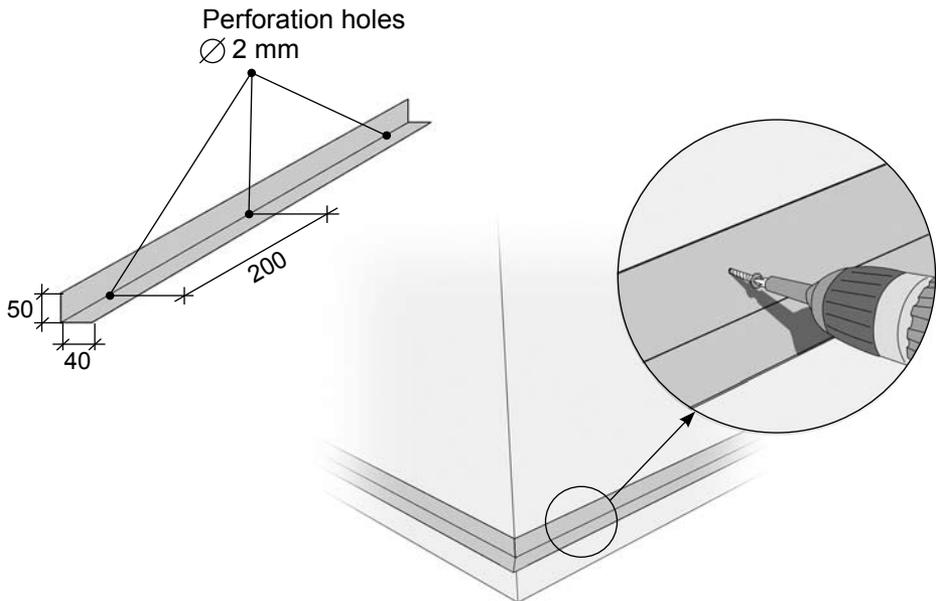
**NB!** Make sure to carefully fill or hermetically seal the joints between additional heat insulation boards, and to mount façade panels on the supporting wall in airtight way.

# 1. Height marking in the corners of the building and mounting the reference strip

1.1. Mark the location of the bottom edge of the first panel course by drawing a line on a corner of the building. Draw another line 50 mm above the first one. This will give you a height mark of the upper edge of the back side of the reference strip. Using either a levelling instrument or the marking cord and a spirit level, mark this height on all jutting and re-entrant corners of the building, and draw straight lines on the walls connecting these height marks.

**NB!** If possible, choose the part of the wall to be covered to have the height equal to an integer multiple of the panels height. This will reduce the material loss and the amount of waste.

1.2. The reference strip must be of galvanized steel at least 1 mm thick. If you install additional heat insulation, the reference strip must be 40 mm wider than the thickness of the additional heat insulation layer. It will be good to perforate the rib of the reference strip by drilling holes 2 mm in diameter at intervals of about twenty centimetres.



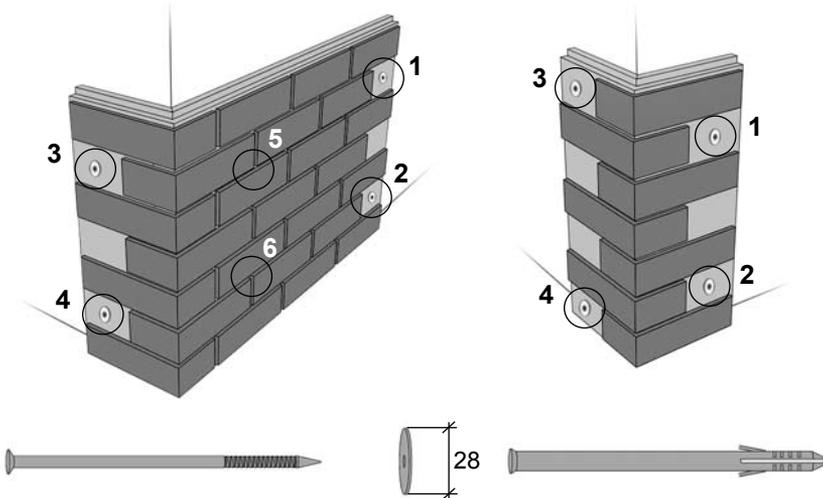
1.3. Place the upper edge of the reference strip against the marking line and fasten it horizontally around the building. Select appropriate fasteners, depending on the construction of the supporting wall.

## 2. Mounting the façade panels

Begin mounting façade panels from the left corner of the wall, and move by one course at a time.

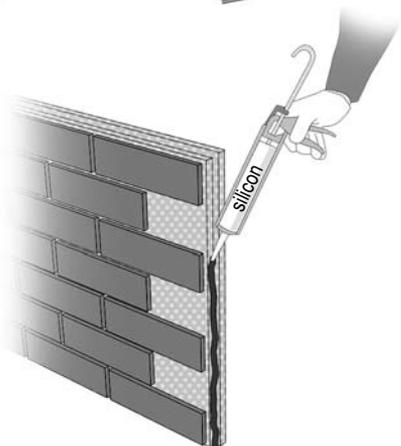
**NB!** Correct mounting of the first course is at least as important as mounting the first corner, so you must be very careful. The first course must be laid precisely horizontally and in line with the upper edge of the reference strip.

2.1. Place a large angle piece (either left-hand or right-hand) above the reference strip. Check the vertical alignment of the angle piece at its both sides and fasten it with screw-plugs at the provided places in the order shown in the picture. Put a stainless or galvanized washer  $\varnothing > 28$  mm under the screw head.



2.2. Seal the vertical joints of panels by laying a thin silicon bar along the external edge of the joint tongue on the vertical side of the previous panel.

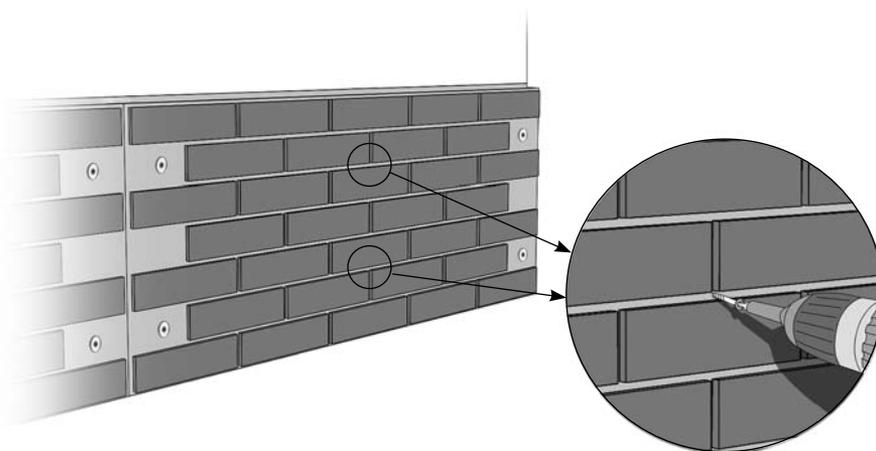
2.3. Press the next panel strongly in its place and slide the joint tongue of the previous panel into the groove of the panel you are mounting. The panel should stand possibly tight against the previous one.



**2.4.** Check the horizontal alignment and height of the panel, and fasten it with a screw-plug at the upper left fixture point.

**2.5.** Check once more that the panel is aligned perfectly, and then install the remaining three screw-plugs with washers at the edges of the panel.

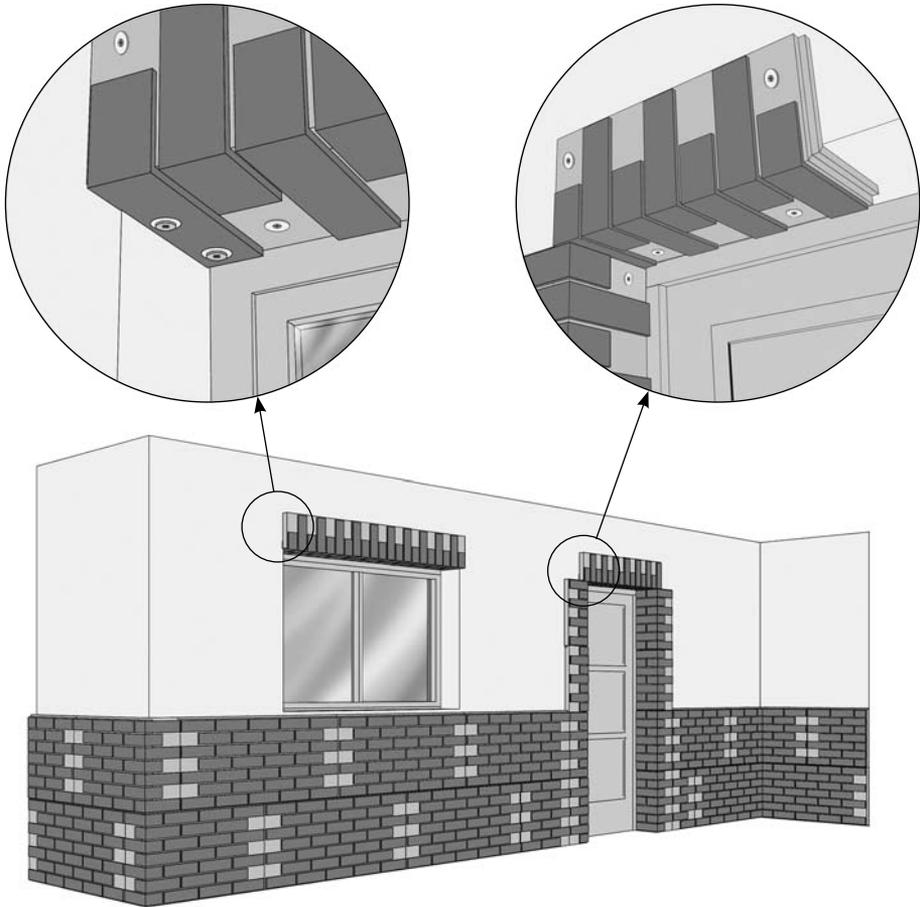
**2.6.** To completely fasten the panel to the wall, fix it with two screw-plugs, driving them through the panel in its centre into the joints between second and third bricktiles course at top and bottom of the panel. Before this, make an approximately 5 mm deep recession in the joint filler for the screw head.



**2.7.** Mount the next panels in the same manner, checking the horizontal and vertical position of each panel.

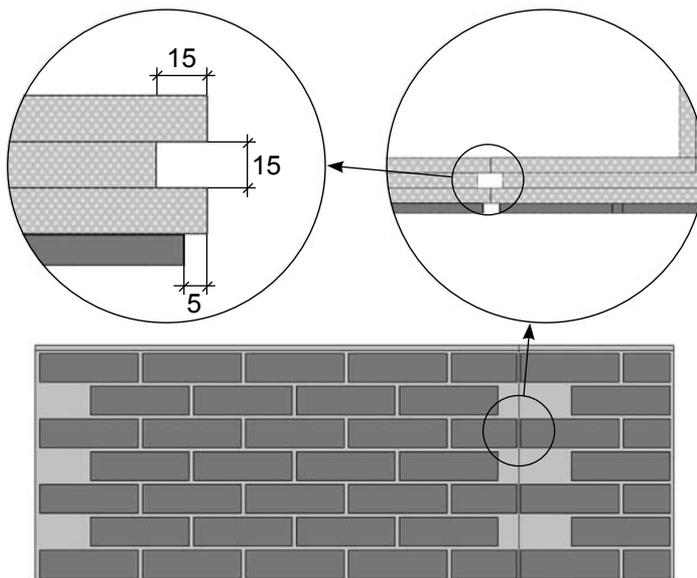
**2.8.** When you have reached the 1,5 metres distance to the edge of an opening, shape the space around the opening. Begin with mounting transoms and covering them with small angle pieces to make up a lintel. If necessary, saw the jamb side of the angle piece to make it more narrow, or add a strip of a standard panel.

For good appearance, seek to lay the lintel covering from whole pieces clinker tiles, and crosscut the edge angle pieces from the joint. Fasten the jamb side of the lintel ends with screw-plugs and washers at the distance from the edge of the angle cleat not exceeding 20 mm. In this case, the subsequently mounted jamb will cover the screw. Fasten each small angle piece at four points at least.

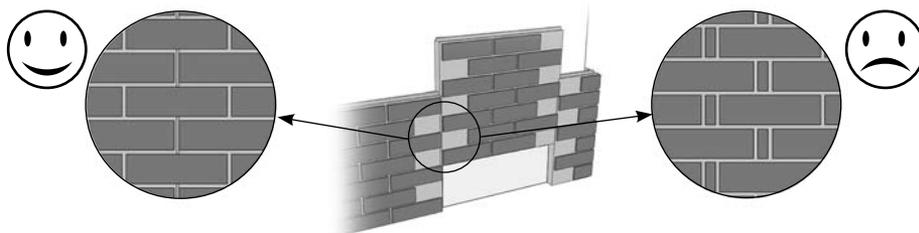


**2.9.** Now mount small corner pieces vertically on both sides of the opening to cover the edges of openings. When necessary, saw the edge of the opening to make its sides more narrow, and cut the angle pieces shorter. Make sure that the lines of horizontal joints on the angle pieces coincides with the joint lines of the mounted standard panels. When covering the edges of an opening, fasten each small angle piece at four points at least.

**2.10.** If you have to cut a standard panel that comes into contact with angle pieces, first draw a cutting line on the panel and then crosscut the panel by sawing it from the clinker surface. To ensure the correct width of the new vertical joint, always saw the covering layer 5 mm shorter than the heat insulation layer. When the panel has been cut, there must be a void in the vertical side between the heat insulation layer and the angle piece (if there is no void, you have to cut it, for example with a knife, making a cross-section of 15×15 mm). Immediately before fastening the plate, fill the void with urethane foam. Mount the cut piece of the panel and fix it with screwplugs at four corners at least.



**2.11.** While mounting the façade panels in the course that come in contact with angle pieces, keep watch that the panel would not be shorter than 240 mm and/or if you would have to mount fractions of tiles smaller than a quarter-tile instead of solid façade panels, you should cut not only the last panel but the two last panels in order to make the work look correct.

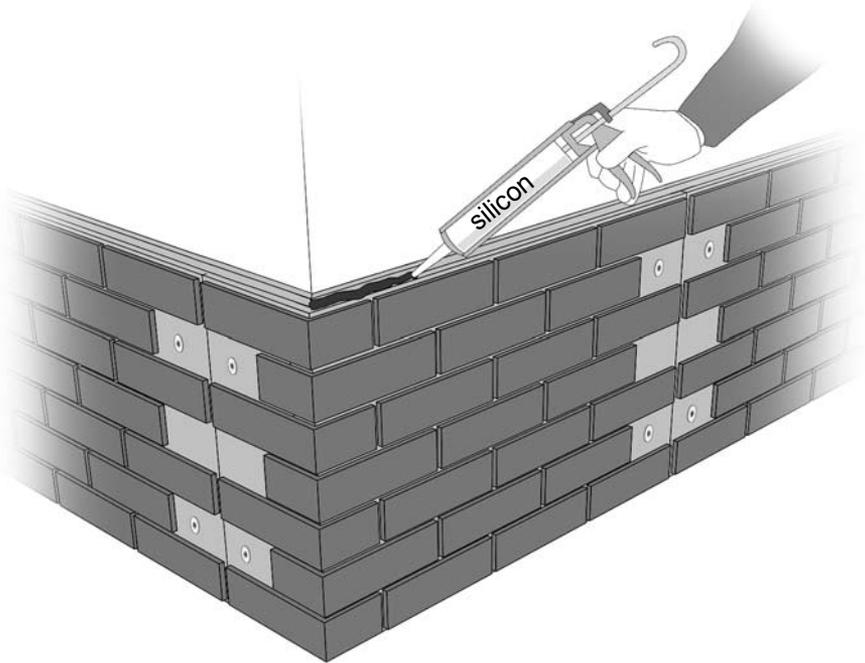


# NB!

Mounting the reference strip, angle pieces, lintels and the first panel course are the most important stages of installation. Special care at this stage spares you from problems at the following stages. If you perform installation for the first time, we recommend you to begin working from the less visible part of the building.

## 3. Mounting the next courses

3.1. Seal the horizontal joints of panels by laying a thin silicon bar along the external edge of the joint tongue in the upper side of the panel below.



3.2. Begin with mounting a large angle piece of the first corner (this time, of the opposite-hand type as compared with the course below). Then mount standard panels and claddings of the edges, lintels and other corners. To prevent conjunction of the four corners of heat insulation boards, standard panels are mounted in the interlacing way, each course shifted against the previous course by half of panel's length.

# NB!

Mount window ledge strips before mounting side parts of the window opening. Constantly observe the levelling of panel courses. The RAKETERM panels are rigid and you cannot bend, fold or twist them.

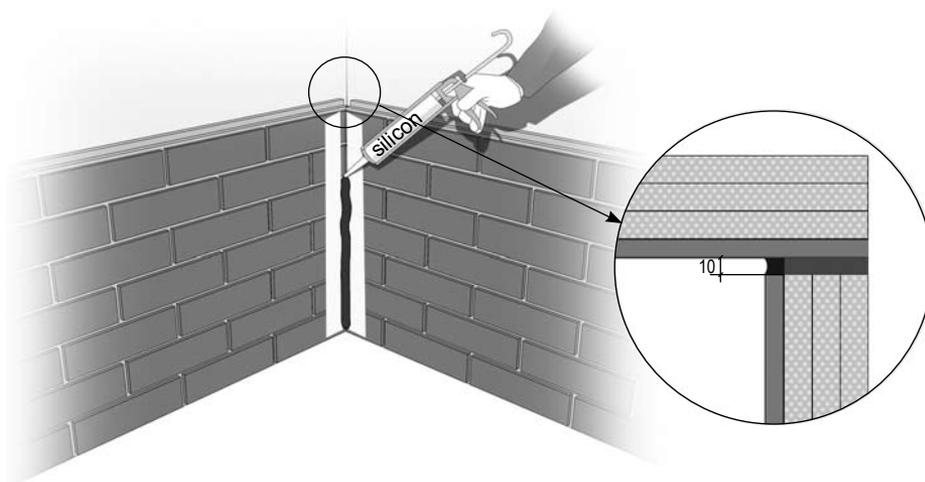
To finish jambs and transoms of doors and windows you may apply other technique as well, like plastering or covering with tin-plates, boards of timber or other materials, etc.

## 4. Making re-entrant corners

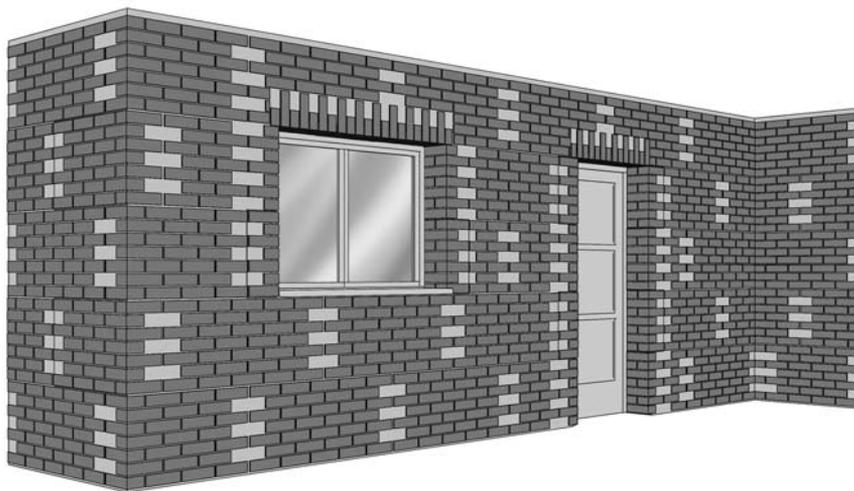
**4.1.** To make a re-entrant corner, cut one panel to the required dimensions, mount it in its place and fasten.

**4.2.** Cut the adjacent panel at right angle to give it the required dimensions, and leave a 10 mm void between the two panels. Then fasten the panel.

**4.3.** When corner panels have been fastened along the entire height of the corner, fill the void with mineral wool. Then press the joint string on the void and seal it with joint mastic or silicon.



You have now finished mounting façade panels. What remains is to glue covering tiles to their sockets and to seal joints in the space around tiles and between panels.



## 5. Gluing clinker tiles

To maintain the pebbledash pattern, tiles must overlap the panel junctions in every other course. Since it is impossible to mount tiles during manufacture, you must do this during installation.

**5.1.** If the panels have been crosscut and the socket of the tile to be glued stands against a fragmented tile on the panel, you should remove the fragmented tile. To do this, saw open the cement joint around the tile, carefully break the tile with a metal hammer into small pieces, and remove the pieces from the panel with a knife.

**5.2.** To fasten clinker tiles to their respective sockets, use either silicon or assembly adhesive. The glue must be intended for temperature range of  $-50$  to  $+100$  °C.



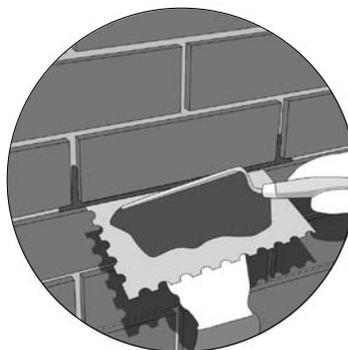
**5.3.** Check that surfaces of the tiles to be pasted are aligned exactly to the surface plane of pebbledash panels and are at the same height.

**NB!** Do not use nails, screws, etc. to support clinker tiles during glue hardening. If any aids used as supports pierce into the heat insulation layer, this may impair insulation properties and water-tightness of the façade.

## 6. Finishing

The last stage of mounting façade panels is finishing the joints. Do this when clinker tiles have been mounted and the glue has set. During jointing, air temperature must not be lower than +10 °C and relative humidity must not exceed 70%.

To fill spaces around the pasted clinker tiles and to finish panel joints and screw-holes, use only the special compound made of dry mortar that comes with the product. Add water to the mortar and mix it. Press the compound into joints and smooth it with the jointing tool, to achieve a clean joint line and invisible junction.

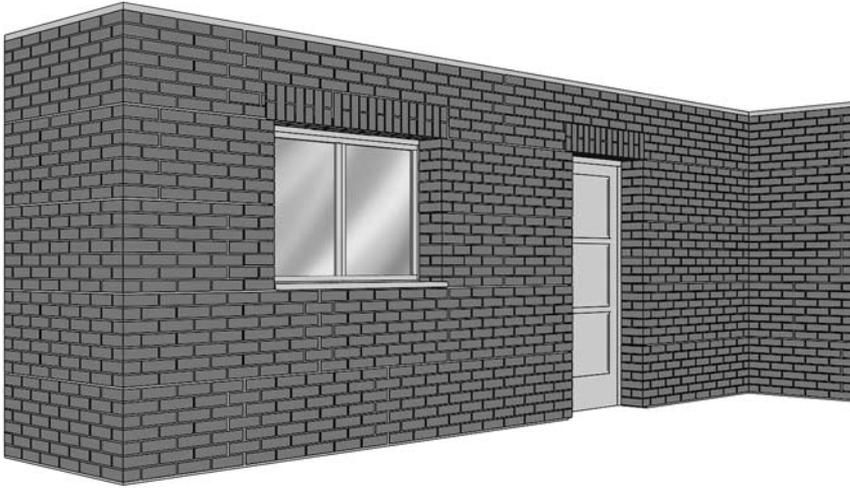


**NB!** Prepare the joint compound as dry pack. When you are smoothing joints with the jointing tool, do not allow a water membrane to emerge on the surface; otherwise the colour tone of the joint may change noticeably. When necessary, let the compound dry to harden after filling the joints and before smoothing them with the jointing tool. Avoid staining the clinker tiles while jointing; otherwise you will have to clean them later.

If the tone of refilled joints differs from that of factory-made joints, you may trim the colour by treating joints with tinted laitance.

Seal all junctions and spaces between panels, the reference strip, window and door casings, penetrations etc. with weatherproof mastic.

When joints have completely dried (in the summer it takes approximately four weeks), you may wash the finished pebbledash surface and treat it with clinker oil or an impregnating solution if desired.



## **MAINTENANCE MANUAL**

RAKETERM façade panels need no special maintenance. If desired, you may wash manually or with a power-washer. Since clinker plates are acid- and alkali-resistant, you may use appropriate solvents or acid baths to remove graffiti from the façade surface. After treating the façade with chemicals, neutralise the surface and wash it with ample water. Check that the chemical has not damaged junctions filled with silicon or mastic; reseal them with appropriate materials if necessary.

Every five years check the façade joints, replace any damaged compound layers and open and refill any possible crevices.

To refresh the façade surfaces, treat them with clinker oil or impregnating solvents.



