ROXSULATION SM

NON-FLAMMABLE EXTERNAL BUILDING WALL INSULATION SYSTEM BASED ON MINERAL WOOL

DS 09.3.01

INSTALLATION INSTRUCTIONS

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I. INTRODUCTION

A. The installation instructions contained herein describe the most important steps associated with proper installation of the Dryvit Roxsulation-SM external building wall insulation system. The contractor, prior to starting work, should also become acquainted with the following documents:
   1. ITB Technical Approval AT-15-2794/2003
   2. Product data sheets DS. 03.4.01.
   3. Construction details data sheet DS. 03.2.00.
   4. The external wall insulation design.

B. Work associated with the Roxsulation SM system should be carried out by an experienced contractor holding a current training certificate* issued by Dryvit.

II. INITIAL STEPS

A. The contractor, prior to commencing work, should present to the owner/architect samples of all colours and textures described in the design for approval. Samples should be prepared from the same materials, using the same tools, equipment and techniques that will be used on the actual facade. The approved samples should be retained and made available at the construction site.

B. The contractor should become thoroughly acquainted with the design and clarify all doubts associated with used solutions, mechanical joiners and others.

III. ELEMENTS OF THE DRYVIT ROXSULATION SM SYSTEM

A. Skirting strips and corner profile offered by Dryvit.

B. Installation kits for strips containing: distance washers, strip joiners, impact mounting screws.

C. Insulation boards:
   1. mineral wool facade tiles holding current ITB Technical Approvals.

D. Mechanical joiners:
   1. plastic joiners with metal shanks as indicated in the design and permitted for use in building construction on the basis of separate codes.

E. Adhesives:
   1. Roxhesive - mineral adhesive for attachment of tiles to substrate,
   2. Roxcoat - mineral adhesive for embedding reinforcing mesh onto tile surfaces.

F. Reinforcement mesh based on impact resistance and weight:
   1. Dryvit Standard Plus,
   2. Dryvit Panzer.

G. Various types of Roxtex finishes:
   1. Roxtex Quarzputz,
   2. Roxtex Sandblast,
   3. *Roxtex Sandpebble.*

   NOTE: *Finishes should be painted with Silstar silicone, Colorsil silicate or Demandit acrylic paint. Do not use materials that are not included in the Dryvit line-up.*

H. Facade paints:
   1. Acrylic, polymer based, Demandit paint available in the entire Dryvit line-up,
   2. Silstar silicone facade paint available in the entire Dryvit line-up,
   3. Colorsil silicate facade paint is available in certain Dryvit colours.

IV. DELIVERY, STORAGE AND TRANSPORT

A. All Dryvit materials should be delivered to the site in original, sealed packages with undamaged labels. Do not use questionable materials.

B. Adhesives: Roxhesive, Roxcoat and Roxtex should not be stored for more than 6 months from the date of manufacture shown on the packaging. Bags should be protected against moisture.

C. The minimum temperature for storage of Demandit is +7℃; storage time: 2 years from the date of manufacture shown on the packaging; pail should be protected against direct sunlight. For Silstar and Colorsil paints: +7°C, storage time: 12 months from the manufacturing date provided on packing.

D. Mineral wool tiles should be stored in enclosed premises, be protected against moisture, in a horizontal position, on an even floor and in layers not exceeding 2 m.

E. Mechanical joiners should be protected against direct sunlight.

V. WORK CONDITIONS

A. Air and substrate temperature during work and at least 24 hours following completion should be at least +4℃ (> +7℃ during painting). The finish should be protected against water and damage during this time.

B. All surfaces not being worked on should be protected against dirt.

C. Temporary protection of all metal work and weather-stripping work should be ensured until such works are completed.

D. Installation work should be coordinated with other renovation and construction work.

E. Capillary moisture cannot be found inside the building.
F. The building should be free of defects that could make proper functioning of the insulation system impossible.
G. Interior plaster and floor work should be completed in new buildings with walls being sufficiently dry to prevent collection of excess moisture in tiles.

VI. H. Maintain appropriate – in accordance with work safety standards – distances between scaffolding and walls.

VII. EVALUATION AND PREPARATION OF SUBSTRATE

A. The Roxsulation SM system may be used on the following mineral substrates: B 15 class concrete, aerated concrete blocks, class 75 full bricks as well as class 50 hollow bricks, class 100 hollow ceramic bricks, silicate blocks and hollow bricks, three-ply prefabricated walls.
B. In case of three-ply walls (industrial and prefabricated wall buildings), the stability of insulation layer anchoring should be evaluated by a certified engineer. Safety steps should be undertaken in justified circumstances. One of the possible solutions is the use of additional approved joiners.
C. Check vertical slope of wall in a few places and decide, together with architect and investor, methods of their alleviation in case of significant differences.
D. Make sure that the substrate is:
   1. Clean, dry, even within +/- 6 mm within a 1.2 m radius, free of tarnishes, blooming, blistering paint and other substances that could reduce adhesion. Mineral substrates should cure for at least 28 days. Maximum sag L/240.
   2. Same as in design.
   3. Free of capillary and technical moisture.
E. Small defects and roughness may be filled using Dryvit levelling mass. Use Primax to strengthen weak finishes. Blooming should be removed using 2% hydrochloric acid and subsequently rinsed with water.

VIII. INSTALLATION OF SKIRTING STRIPS

A. Determine the height of the pedestal and mark it on the wall with the help of e.g., a coloured string.
B. Strips should be mounted using impact screws every 30 cm. Screws should be placed in oval holes with screws found in opposite holes at the end of each strip. Following preliminary installation of end screws, the strip should be levelled with a screw being installed in the middle and then all screws being hammered in.
C. Substrate unevenness under the strip should be compensated using washers.
D. Strips may not overlap. Attach plastic joiners on strip connections.
E. Corner strips should be prepared in advance.

IX. PRELIMINARY PREPARATION OF COMPENSATION JOINERS

A. Joiner size and placement.
   1. Compensation joiners with weatherstripping should be installed in places where the system meets with other materials (e.g., window or door frames) – see details contained in DS 03.2.06 and DS 03.2.13. It is recommended that such places be prepared in advance in order to speed up work.
   2. Joiner dimensions should be stated in the project. Use of the following widths is recommended:
      a) junction of system and other materials on wall: minimum 20 mm,
      b) junction of system with other materials in places other than walls (e.g., splay windows – details contained in DS 03.2.08): minimum 10 mm.
B. Installation of reinforcement mesh strips in joiners.
   1. Prepare the appropriate number of strips each with a width of approximately 15 cm from the thickness of the insulation material being used at such junction.
   2. Prepare Roxhesive adhesive in accordance with package instructions or data sheet DS. 03.4.01.
   3. Lay a strip of Roxhesive on the wall using a stainless steel trowel to a width of approximately 50 mm and at a distance of 10 or 20 mm from the woodworks (or other material). Apply the adhesive onto the substrate using woodworks movements.
   4. Next, embed the already prepared mesh strips in a manner that will allow them to be rolled onto the surface of the insulation board at a later time.
   5. Leave the mesh to dry and start installation of the insulation board.

X. MOUNTING OF INSULATION BOARDS

NOTE: *Mechanical joiners form the foundation for installation in the Roxsulation SM system. However, boards*

cannot be installed without the use of Roxhesive adhesive.

A. The evenness of a couple randomly selected boards should be checked prior to starting installation.
B. General principles regarding installation:
   1. Prepare Roxhesive adhesive in accordance with package instructions or data sheet DS 03.4.01.
   2. Apply Roxhesive to the board with the help of a stainless steel trowel in 5 cm strips along the edge of the board and 6 patches, each having a diameter of approximately 10 cm and the appropriate thickness. In case of lamella tiles, use a toothed trowel to apply Roxhesive to the entire surface.
   3. Apply the tiles immediately to the substrate after this and press the tile next to its adjacent tiles, taking care to ensure that no adhesive is found between the tiles. Tiles should be attached to the surface in such a manner as to ensure that they create a level surface; no "stepping" between adjacent tiles.
   4. Subsequent rows of tiles should be applied with a 1/2 tile offset, so-called overlap.

   NOTE: *Small differences between tiles surface levels (up to 3 mm) may be evened out during application of the base layer. Do not allow gaps to form between tiles or for adhesive to get between edges. Remove excess adhesive from tiles. The insulation layer should be continuous.*
C. Building corners
   1. Tiles on building corners should be installed alternatively, i.e., that the tiles engage each other – see DS 02.2.02 (03).
   2. Tiles should be applied so that they extrude slightly beyond the edge. The protruding parts of tiles will be cut along strips at a later time.
D. Wall openings
   1. Tiles edges and opening edges should not coincide in order to prevent surface cracking.
   2. Tiles located at the edges of openings should be cut accordingly.
   3. If insulation boards are not to be mounted inside openings, proper rolling out of meshing at wall opening edges must be remembered.
E. Compensation joiners
   1. In places where mesh strips have been installed earlier on junctions between tiles and other materials.
   2. Add additional Roxhesive to board edges when installing boards in such places. Next, press the tile to the substrate and move it towards the adjacent material leaving the required gap.
   3. Apply a 3 mm layer of Roxhesive onto the surface of the tile next to the junction.
   4. Embed the mesh protruding from the tile edge into the junction using a narrow, stainless steel trowel.
   5. Next, roll the mesh onto the tile and embed it in the adhesive.
   6. Do not embed corner profiles at the edge of compensation joiners.
F. Dilation
   1. Attach mesh strips as described in item VII to both sides of the dilation. B.
   2. Secure tiles edges as per IX. E.
G. Dilation strips may also be used to execute dilation:
   - leave a dilation gap of approximately 20 mm between tiles during their installation ,
   - cover the tile surface at edges with a 2 mm Roxcoat layer having a width of approximately 60 mm on each side,
   - install the dilation strip into the gap, embedding the strip edge into the previously prepared adhesive,
   - cover the insulation board surface with Roxcoat after embedding the dilation strip and embed mesh.

XI. MECHANICAL INSTALLATION

A. Mechanical joiners constitute the fundamental means of attaching mineral wool tiles in the Roxsulation SM system.
B. The number and type of joiners used should correspond to the project.
C. Joiner length should be selected in such a manner as to ensure that anchoring depth in concrete will be between 40 and 50 mm (hollow bricks: 60-90 mm; aerated concrete 60-120 mm) depending on manufacturer recommendations and type of joiner used.
D. Commence installation of joiners before the Roxhesive adhesive dries.
E. Drill appropriate sized holes (corresponding to anchors) in the substrate using an impact drill. Do not use impact in case of drilling in hollow bricks, aerated concrete or cavity bricks. Hole depth should be 10 mm greater than anchor length.
F. Put the anchor together with tang into the hole after it has been cleaned. Next, hammer the tang into position or – in case of screw tangs – screw in using a slow-speed drill.

G. Distance between anchors and wall edges should be:
   1. at least 100 mm for masonry walls,
   2. at least 50 mm for concrete walls.

   NOTE: *Wear complete safety clothing while working with mineral wool. Protect mouth and nose with anti-dust masks.*

XII. INSTALLATION OF BASE LAYER

The base layer consists of Roxcoat adhesive together with reinforcement mesh embedded in Roxcoat.

NOTE: *Do not use Roxhesive adhesive to embed mesh. The exception is dilation and compensation joiners.*

A. Prepare Roxcoat in accordance with package instructions or data sheet DS. 03.4.02.

B. Apply an even coat – approximately 1-1.5 mm thick – of Roxcoat to the entire surface using a stainless steel trowel.

   NOTE: *The coat layer should not exceed 3 mm due to risk of cracking.*

C. Prepare mesh strips of the appropriate length.

D. After the first coat has dried, it should be sanded and a subsequent coat of Roxcoat – approximately 1.5-2.0 mm thick should be applied onto a surface slightly larger than mesh width.

E. The mesh should be embedded immediately after the Roxcoat layer has been applied using a stainless steel trowel, moving from the middle towards the edges. The mesh should be completely embedded and its colour not visible on any surface. Places, where the mesh colour can be seen, should be evened out with a thin layer of Roxcoat. Use of standard mesh is recommended.

F. Mesh should be laid with overlaps of at least 60 mm. Only such laying of mesh will ensure proper carrying of loads by the base surface.

G. The building facade is most prone to cracking along edge of openings, e.g., windows, therefore, edges should be additionally strengthened using 20 x 30 cm mesh strips embedded at a 45 degree angle. See construction details in data sheet DS 03.2.13.

H. Securing of external corners
   1. Apply small patches of Roxcoat every 200 mm on corner profiles using a stainless steel trowel.
   2. Install profiles immediately on external building corners. Profiles should be mounted edge-to-edge with mesh being installed in such a manner that strip edges will be found at least 100 mm away from profile junctions in case of horizontal installation.
   3. Mesh should overlap 200 mm on each wall on external and internal building corners – see DS 03.2.11.

I. Installation of Panzer mesh
   1. Install only in places recommended in the project.
   2. Panzer mesh is always used together with Standard Plus mesh.
   3. Wait until the Roxcoat levelling layer has fully dried.
   4. Next, apply a 2-2.5 mm second coat of Roxcoat to a surface slightly larger than the prepared piece of Panzer mesh.
   5. Embedding of Panzer mesh is similar to embedding of Standard Plus mesh.
   6. Panzer mesh is placed edge-to-edge.
   7. Wait 24 hours after embedding Panzer mesh and then embed Standard Plus mesh as described above.

J. The base layer should be protected against moisture until it is completely dry.

XIII. APPLICATION OF FINISH, PAINTING

A. Application of Roxtex finish may be started only after the base layer has completely dried. A standard base layer is ready for application of Roxtex finish after 24 hours at +20°C and 55% relative humidity. Wait an additional 24 hours in similar weather conditions in case of Panzer mesh.

B. The base layer should be clean, dry and even.

C. Mesh colour cannot be visible.

D. Prepare the Roxtex finish in accordance with package instructions or data sheet DS 03.4.03.

E. Sand the surface with sandpaper attached to a trowel prior to application of the finish. Sand all roughness; signs of blooming should be washed and rinsed.

F. Apply the finish using a stainless steel trowel to a thickness corresponding to the largest grains of aggregate.

G. Work smoothly, using the “wet on wet” method and completing one entire surface at a time in order to avoid smoothness on finish junctions.

H. Texture is obtained using a plastic trowel to float the surface. Float the entire surface with identical movements in order to ensure a uniform texture. Breaks between application of the finish and final floating may be required on cold days.

I. Façade colour is achieved using recommended facade paints (Silstar, Demandit, Colorsil).

J. Painting with facade paint
1. If air and substrate temperature during the application of Roxtex finish and Roxcoat base layer was +20°C and relative humidity was 55%, the finish may be painted with façade paint after 48 hours. In case of inferior weather conditions, in particular during the autumn months when temperatures drop and relative humidity increases, this time will be longer. Wait about 7 days in case of low temperatures and high relative humidity. Applying paint to the finish too soon may cause blooming, discolouration and even – in case of moist plaster – bubbles. Time needed for Roxtex facades to achieve full parameters is 28 days.
2. Demandit paint should be applied at temperature exceeding +7°C. Low temperatures and high humidity may result in paint discolouration. Silstar and Colorsil paints should be used at temperatures exceeding +7°C. Low temperatures and high humidity may result in paint discolouration.
3. Mix paint thoroughly prior to use.
4. Two thin coats of paint should be applied using an acrylic paint roller.
5. The facade should be protected against moisture and damage until it has fully dried and installation of weather-stripping and metal works has been completed.

XIV. INSTALLATION OF WEATHER-STRIPPING

A. Select materials for weather-stripping in accordance with Dryvit recommendations.
B. All gaps in the system surface, e.g., dilation gaps, compensation joiners, etc., should be weather-stripped – see system construction details.
C. Installation of weather-stripping should be carried out after facade paint has fully dried.
D. Weather-stripping should be installed in accordance with manufacturer recommendations.

XV. DRYVIT SERVICE

A. Dryvit conducts on-site training of future Dryvit Roxsulation system contractors.
B. Please contact us or your regional representative in order to obtain more detailed information.

**The Personal Training Certificate confirms that the employees of the given company have been instructed in the proper installation of Dryvit systems, have obtained appropriate instructions as well as conducted on-site training. Each contractor acts as an independent company and bears full responsibility for the training of its personnel. Dryvit shall not be held liable for the quality of workmanship of a trained contractor.*
The information contained in this manual conforms to standard Dryvit recommendations regarding installation of the Dryvit Outsulation system and is presented in good faith. Dryvit Systems shall not be held liable, express or implied, for the architecture as well as of engineering and workmanship. Please contact us to ensure that you have the most recent and complete information.