



GREENBOARD™ INSTALLATION GUIDE

Environmentally Responsible. Energy Efficient. Building Systems

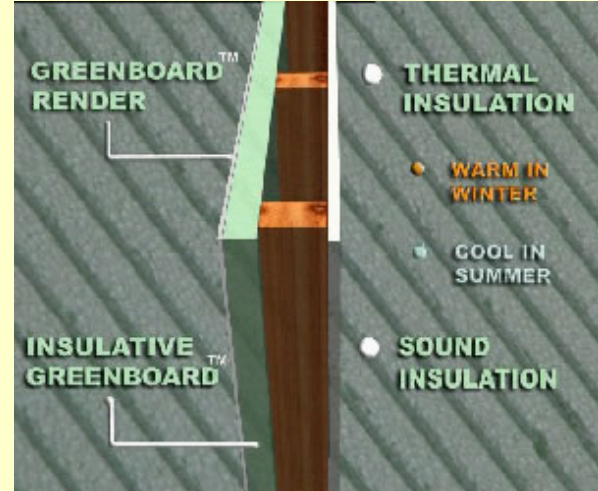
NRG Greenboard™ Building System Installation Guide Greenboard™ Energy Efficient Insulative Walling System Installation Information

Installation Information:

Typical Greenboard™ wall over "timber or steel domestic frame"

Tools required for installation

1. Screw Gun
2. Power Saw
3. Diamond Blade
4. Straightedge
5. Level
6. Chalk Line
7. Sealant Gun



Estimating Hints:

1. Measure the square meters of Greenboard™ required and add 10% for waste.
2. Bostik "No More Nails" - calculate at 0.22 per m2. This will give you the number of 300mL tubes required. E.g. (150m2 X 0.22 = 33 tubes)
3. Window sealant - calculate the Lm of bead required by dividing the Lm of bead by 8. E.g. (150Lm divided by 8 = 18.75 tubes) round up to 19 tubes.
4. Screws and Washers, allow 12 screws and washers per m2.
5. Fibreglass mesh will equal the area of Greenboard™ allowed.
6. NRG Greenboard™ render = approximately 2m2 per bag.



Product expansion and improvements:

NRG have employed a builder of 25 years experience, along with an environmental expert & one of Queensland's respected architect to look at new ways to improve the range and the processes of installation. We are studying the countries that have used the Greenboard™ system for many years such as Germany, Canada, America & New Zealand to name a few. These countries all have one common denominator "extreme cold weather". With these conditions condensation is a large issue, coupled together with high wind areas we believe there is a need to design an NRG walling system that can withstand both condensation & high wind areas. Such designs will incorporate varying capabilities primarily regulated by the wind category & possible cyclonic conditions. One other product we have introduced into our range is our window awning & blades designed to protect your windows against the elements where eaves have either been deleted or are too high up from the window; they also give an architectural appeal to your building.

New product range

- Greenboard™ render, developed throughout the 2003 year
- Greenboard™ [window awnings](#), also developed throughout the 2003 year
- Our new range of [UV stabilised pvc beads](#)
- Greenboard™ architectural moulds
- Greenboard™ lightweight fencing system



Installation Manual November 2004 3rd Edition

18.1.1 This manual provides information on the correct procedures and materials to be used for the installation of NRG Greenboard™ Walling System over standard framed and solid structures. The drawings and details are provided to assist specifiers in the correct design and detailing of the NRG Walling System. These details cover most common applications. If the details are to be altered or new ones proposed please contact NRG to discuss the changes. Failure to do so may void the systems warranty.

The components that make up the NRG Greenboard™ Insulative Walling System are:

The Greenboard™, screws, washers, beading, fibreglass mesh, Greenboard™ render and texture coatings "all available through NRG Building Systems. These components form part of the complete system and must not be substituted with other possibly nonconforming materials." (Please also refer to [applied finishes](#)).

18.1.2 **Timber and steel framing**
All timber and steel framing should conform to the current Australian standards as well as the relevant local standards for structural requirements including wind loadings and bracing.

18.1.3 **Existing framing**
When over-cladding existing timber buildings, inspection must be carried out to identify any deterioration or infestation by wood boring insects by a fully qualified person, although the GREENBOARD™ is impregnated with an effective insect repellent it will not prevent existing infestations of timber framing to continue. Where necessary repairs must be undertaken to ensure that the timber substrate is sound, straight and true.

18.1.4 **Back blocking**
Where sheets join off the studs it is necessary to back block the joint by fitting a noggin behind the joint and fixing with screws and washers. Horizontal "back blocks" does not need to be a full noggin, spaced approximately every 300mm. A vertical piece of stud turned on the 75mm side is equally as efficient, glue the edge of the sheet prior to installing the following sheet, with the two sheets in place take noggins, smear Bostik glue over one face, place noggings against join of sheets screw through face of Greenboard™ into noggings pulling both sheets into alignment.

18.1.5 **Solid blocking**
Solid timber backing should be provided for fixing taps, downpipes, lights or balustrading etc,

18.1.6 **Fitting Greenboard™ insulation panels**
Before commencing to fit panels check that the frames are straight, all windows and flashings are correctly installed and solid backing blocks are in place. Timber frames must have a moisture content of less than 15% before panels are fitted. GREENBOARD™ panels may be fitted either vertically or horizontal. Fixed off at 300mm centres along the studs and around all edges, at both internal and external corners the sheets are overlapped the full thickness of the sheet. Glue external angle beads to all external corners using recommended construction adhesive. Ensure that the beads are straight, plumb and line up with the starter strips to allow for the correct thickness of render and texture to be applied.

18.1.7 **Curved walls**
40mm and 60mm panels can be fitted to curved walls with a radius greater than 2.4 metres. Where a tighter radius is required multiple layers of 20mm panels are used with the joints off set.

18.1.8 **Expansion joints**
Expansion joints must be provided to allow for movement in the building. Place joints vertically every 8 metres and horizontally no further than 3 metres apart or over every floor joist intersection. Expansion joints must be provided where the NRG SYSTEM covers different substrates, joins adjacent materials or where there is a construction joint in the substrate.

| | |
|---------|--|
| 18.1.9 | <p>Fixings Timber framing 40mm board uses 10-8 x 65mm CSK ribbed head class 3 screws 60mm board uses 10-8 x 100mm CSK ribbed head class 3 screws Steel framing 40mm board uses 65mm Drill Point 60mm board uses 100mm Drill Point</p> <p>Note: All NRG PVC washers and fixings are required at 300mm centers.</p> |
| 18.1.10 | <p>Cutting NRG GREENBOARD™ can be cut using a handsaw, knife or a power saw with a diamond blade. For the most accurate cut, the power saw with the diamond blade has proven the preferred method. It has also been proven that for environmental reasons the power saw with a diamond blade or a hot wire table is a must when cutting NRG Greenboard™ on building sites as there is no debris or any material polluting the environment.</p> |
| 18.1.11 | <p>Gluing and sealing <i>Adhesives;</i> Bostik "no more nails" construction adhesive is recommended for all joint adhesions. <i>Sealants;</i> Bostik "seal n flex" or sika "pro 2 HP". Any sealants or adhesives proposed to be used on NRG GREENBOARD™ must be checked prior to use for compatibility to EPS.</p> |
| 18.1.12 | <p>Beading NRG have a full range of UV stabilized PVC beads specifically designed for greenboard™ cladding use only UV stabilized beads for external application.</p> |

Concrete and Masonry Walls

| | |
|---------|---|
| 19.1.1 | <p>Concrete and masonry walls GREENBOARD™ sheets come in 20mm, 40mm, 60mm & 75mm thicknesses. The panels are fixed using both gluing and mechanical fixing. Mechanical fixings are Hilti IDP polypropylene anchors.</p> <p>Adhesive used is greenboard™ render or "Powers" foam adhesive.</p> |
| 19.1.2 | <p>Preparation All walls must be clean and dust free from dirt, oil, vegetation, and crumbling or loose materials.</p> |
| 19.1.3 | <p>Power's Foam adhesive system When installing via the Power's Foam adhesive system, apply a large "dob" of foam adhesive to the middle of each and every masonry block.</p> |
| 19.1.4 | <p>Drilling Masonary Position the board and drill 8mm hole through the masonry at each corner offset in by approx 100mm.</p> |
| 19.1.5 | <p>Hammer the Hilti IDP anchors in.</p> |
| 19.1.6a | <p>Use a minimum of 8 IDP anchors for each 2500X1200 board with at least 2X IDP anchors staggered in the mid section of the board.</p> |
| | <p><i>Alternatively</i></p> |
| 19.1.6b | <p>Mix the Greenboard™ render with clean water to achieve a smooth stiff paste. This material will have a pot life of approx. 2 hrs</p> |
| 19.1.7 | <p>Applying Adhesive Adhesive is applied to the back of the board using a coarse notched trowel. The first sheet is fitted into the starter strip at the base of the wall and positioned level with the corner. The panels are pressed firmly against the wall and fitted tightly together.</p> |
| 19.1.8 | <p>Filling Gaps Any gaps must be filled with EPS and not left to be filled with the cement rende, as thermal bridging will occur at these points. Further panels are installed in the same manner to cover the entire wall. Internal and external corners are overlapped the full thickness of the sheet. As the panels are laid, a straight edge is used to ensure that the wall is straight and true. The panels are fitted to window reveals and sealed around frames.</p> |
| 19.1.9 | <p>Mechanical fixings are subsequently installed at the rate of 4 fixings per square metre.</p> |
| 19.1.10 | <p>Before rendering any irregularities in the surface of the sheet or joints are sanded back using a coarse rasp.</p> |
| 19.1.11 | <p>All expansion joints in the substrate must be carried through the complete cladding system.</p> |

Reinforced render, texture and membrane coating preparation

| | |
|--------|---|
| 20.1.1 | <p>*Fit angle beads to all external angles using liquid nails or similar adhesives. The angles must be fitted straight and plumb, aligning with the starter beads to allow the correct thickness of render and texture to be applied. Check that the wall is straight and all joints are flush. Sand back any irregularities and dust the wall down with a broom or compressed air to remove all dust or loose materials.</p> <ul style="list-style-type: none"> ● Walls must be clean and dry before application of reinforced render commences. ● Seal around any extrusions through the wall and around windows with a flexible joint filling compound such as Bostik seal "n " flex ● Mask all windows and adjacent surfaces that are not to be coated and cover all finished paving and tiled areas. |
| 21.1.1 | <p>The reinforced render system The reinforced render system consists of Greenboard™ render reinforced with alkali resistant fibreglass mesh 160g per square metre finished with a 100% acrylic topcoat either as a texture coating with a membrane finish or a membrane finish directly over the Greenboard™ render. The system has a finish thickness of approximal 6mm</p> |
| 21.1.2 | <p>Application procedure Greenboard™ render is a pre-blended polymer modified cement render that is mixed with water immediately prior to use.</p> |
| 21.1.3 | <p>The powder is mixed with clean water to achieve a smooth trowelable paste and applied to the wall using a steel trowel or suitable spray machines.</p> |
| 21.1.4 | <p>The first coat is applied to a thickness of approx 4mm. The fibre mesh is lightly trowelled into the surface of the render while it is still wet and trimmed around the edges with a knife.</p> |
| 21.1.5 | <p>The mesh is laid onto the wall in strips 1 metre wide and the edges are overlapped at least 100mm extra reinforcing mesh, 200 mm x 600 mm must be trowelled into the render diagonally across the corners of all openings.</p> |
| 21.1.6 | <p>A further application of render is applied to bring the finish surface of rendered wall flush with the beading. The mesh should be positioned just below the surface of the render. The render thickness is to be 6mm.</p> |
| 21.1.7 | <p>Cement curing variables, due to climatic conditions, together with structural movement through varying structural components, may result in possible hair line shrinkage to door or window openings. To minimize controlled movement, check with your NRG for construction reference Drawings.</p> |
| 21.1.8 | <p>Handling and storage The boards should be laid flat with edges and corners protected from damage. If storage is to be in the open then they need to be protected from prolonged exposure to direct sunlight and kept away from extreme heat and organic solvents. NRG GREENBOARD™ render must be stored in a dry place of the ground and away from moisture. Acrylic base texture coatings and membranes must be stored out of sunlight and not allowed to freeze.</p> |
| 21.1.9 | <p>Health and safety When installation is complete the NRG Greenboard™ insulative waiting system and the NRG Greenboard™ reinforced render system are non-hazardous. However, as with all composite materials basic safety clothing and gloves are to be worn when handling or cutting the NRG Greenboard™. When cutting with a power saw it is recommended that a face mask and protective glasses must be worn. Please Note to use appropriate resperator mask and eye protection when mixing NRG Render with water.</p> |