Nutec®
ROOFING AND CLADDING SOLUTIONS

# Flat Sheets & Facades

Suitable for a wide range of external and internal applications





# Introduction

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Nutec flat sheets are manufactured from a **combination of Portland cement, silica and organic fibres, and do not contain any asbestos fibres.** These materials have considerable strength in their own right and will not deteriorate with age.

EVERITE has over the years established a reputation for producing outstanding quality flat sheets which have been used in a wide range of external and internal applications.

In the late eighties and after extensive research, EVERITE launched its range of Nutec flat sheets, the registered name for products manufactured without asbestos as a raw material. This development has resulted in innovative new products which not only have similar characteristics to fibre-cement flat sheets, but are superior in many ways.

Nutec flat sheets are available in medium and high density material and in plain and medium density textured finishes, offering a wider choice for innovative applications.

As a partition board, it offers major advantages over conventional materials in terms of strength and resistance to biological attack.

In summary Nutec flat sheets are:

- An economical all-purpose building board which is unaffected by moisture and therefore ideal for internal and external use in almost any application.
- Relatively light in weight and can be supported on light gauge metal frames or light timber structures. These factors facilitate easy handling and erection and are major benefits on projects where low mass construction is an important factor.
- Non combustible and provide perfect protection against flying sparks.
- Resistant to corrosion and are unaffected by ultraviolet light.
- Designed to have good thermal properties when compared with other building materials.
- Manufactured to the highest internal quality standards and compliance is ensured by strict quality assurance programmes in the production process as well as stringent testing in our laboratory. All Nutec Flat sheets carry a SABS mark for compliance to the specification SANS 803. Nutec flat sheets are supplied in their natural colour, but are compatible with a large variety of in-situ applied coatings and paints. This will allow the designer an almost limitless combination of colours and textures for external and internal applications.

The sheets are best painted with a pure acrylic PVA paint. Where it is intended to use oil or alkyd paints it is essential to prime the sheet with an alkali-resistant sealer. In this instance both faces of the product should be sealed.

Use only high density sheets for external flat sheet facades where the surface is to be painted.

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# General Design Criteria



## Catalogue Information

The information contained in this catalogue serves as a general guide only and should not be accepted as the standard for all construction. Consult EVERITE for designs of a special nature.

This service is provided free of charge and without obligation, but architects, engineers and specifiers must finally approve the acceptability in terms of the design and construction criteria, as well as other implications.

## Mechanical and Physical Properties

For details on the mechanical and physical properties of Nutec flat sheets, refer to **Table 2, Page 5 and 6.**

## Recommended Uses

The recommended uses of Nutec flat sheets under normal conditions are tabulated for easy reference in **Table 3, Page 13.**

## Exposed and Windy Conditions

The information presented in this catalogue is relevant for normal wind-loading conditions. **EVERITE should be consulted for advice on specific fixing and framing recommendations where structures are situated in high wind areas.**

## Substructure

The design of structural supports requires professional expertise and should, as a general rule, be executed by structural engineers. Minimum design parameters are that the structure should be able to withstand 1,2 kPa wind loadings. (Structures not higher than 6 metres.)

**TABLE 1 Recommended Supporting Structure for Nutec Flat Sheets**

| | External and Internal Vertical Cladding | |
|---|---|---|
| **Description and Thickness of Board - mm** | **Maximum spans between vertical supports - mm** | **Maximum spans between horizontal supports - mm** |
| **Medium density** | | |
| 9 | 600 | 800 |
| 12 | 600 | 900 |
| **High density** | | |
| 10 | 600 | 800 |
| 15 | 800 | 1 200 |

**NB:**
- **The information presented in the above table is relevant for wind-loading conditions normally encountered and for structures not higher than 6m.**
- **For higher structures and for areas where design wind pressure exceeds 1,5 kPa, a structural engineer should be consulted.**
- **Consult EVERITE for specific fixing and framing recommendations where the sheets are to be used for applications such as floors, shelving and permanent shuttering.**
- **If used for flooring, and covered by ceramic tiles or other inflexible material, expansion joints must be provided. Refer to EVERITE sales office technical department.**
- **Using 9mm and 12mm M.D. externally, coating in a smooth acrylic paint is recommended.**

# General Design Criteria

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## Ventilation

When using Nutec flat sheets to form a double skin wall in a prefabricated steel or timber framed structure, the cavity between the two skins should be ventilated. In these structures, especially in humid conditions, foil is often installed as a moisture barrier and as an insulator. Ventilating the cavity will permit the evaporation of any condensation which may collect on the insulating material.

## Site Service

Site service personnel are available on request to assist with recommended storage, handling and erection of the Company's products before and during installation.

# Nutec Mechanical and Physical Properties



**TABLE 2** Mechanical and Physical Properties

| PARAMETER | UNIT | High Density | Semi-High Density | Medium Density | Textured Nutec | TEST METHOD |
|---|---|---|---|---|---|---|
| | | | SPECIFICATIONS | | | |
| **DIMENSIONS** | | | | | | |
| **Thickness Tolerance:** | | | | | | |
| 9 mm | mm | - | + 0.3 or - 0.3 | ± 0.8 | ± 0.8 | SANS 803 |
| 10 mm | mm | ± 0.8 | - | - | - | SANS 803 |
| 12mm | mm | - | ± 0.8 | - | - | SANS 803 |
| 15 mm | mm | ± 1.0 | - | - | | |
| **Length Tolerance:** | | | | | | |
| All lengths | mm | ± 2 | +0 or -5 | +3 or -5 | +3 or -5 | SANS 803 |
| **Width Tolerance:** | | | | | | |
| All widths | mm | ± 2 | +0 or -2 | +3 or -5 | +3 or -5 | SANS 803 |
| **Squareness** | | | | | | |
| All sizes | mm | Maximum 5 | Maximum 2 | Maximum 5 | Maximum 5 | SANS 803 |
| **Edge Trueness** | | | | | | |
| All sizes | mm | Maximum 1 | Maximum 3 | Maximum 5 | Maximum 5 | SANS 803 |
| **PHYSICAL PROPERTIES** | | | | | | |
| **Minimum MOR : With Grain** | MPa | 9.00 (2) | 8.44 (1) | 7.40 (1) | 7.40 (1) | SANS 803 – 1995 |
| **Minimum MOR : Across Grain** | MPa | 13.00 (2) | 12.10 (1) | 10.60 (1) | 10.60 (1) | SANS 803 – 1995 |
| **Target Density** | g/cm$^3$ | 1.50 | 1.35 | 1.26 | 1.26 | ISO 8336-1993 |
| **Maximum Hygral Linear Expansion** | mm/m | 2.47 | 2.47 | 2.47 | 2.47 | SANS 803 – 1995 |
| | | | TYPICAL VALUES | | | |
| **Thermal Conductivity** | | | | | | |
| **Thermal Expansion Coefficient** | W/m.K | 0.30 | - | 0.19 | 0.19 | ASTM C518 |
| 20-70˚C | | | | | | |
| 10-70˚C | | | | | | |
| **Moisture Movement** | ˚C$^{-1}$ | Negligible | - | Negligible | Negligible | SANS Doc. 722/W 1009 |
| With Grain | ˚C$^{-1}$ | 4.21 x 10$^{-6}$ | - | 9.31 x 10$^{-6}$ | 9.31 x 10$^{-6}$ | ASTM C518 |
| Across Grain | | | | | | |
| **Moisture Content** | % | 0.30 | 0.053 | 0.06 | 0.06 | ASTM C1185 |
| **Water Absorption** | % | 0.06 | 0.049 | 0.06 | 0.06 | ASTM C1185 |
| **Permeability** | % | 6.92 | 2.53 | 6.25 | 6.25 | ASTM C1185 |
| | % | 22.05 | 28.10 | 37.72 | 37.72 | ASTM C1185 |
| | - | No droplets formed | No droplets formed | No droplets formed | No droplets formed | SANS 685 – 1985 |
| **Water Vapour Transmission** | | | | | | ASTM C1185 |
| **pH** | | | | | | BS 4624 |
| **MECHANICAL PROPERTIES** | ng/Pa.s.m$^2$ | 97.154 | - | 276.79 | 276.79 | ASTM E96 |
| **MOR : With Grain** | - | 10 – 12 | 10 – 12 | 10 – 12 | 10 – 12 | - |
| **MOR : Across Grain** | MPa | - | 6.20 (2) | 4.20 (2) | 4.20 (2) | ASTM C1185 |
| | MPa | 14.40 (3) | 11.20 (3) | 7.50 (3) | 7.50 (3) | ASTM C1185 |
| | MPa | - | 9.40 (3) | 11.20 (3) | 11.20 (3) | BS 4624 |
| | MPa | - | 8.40 (2) | 7.75 (2) | 7.75 (2) | ASTM C1185 |
| | MPa | 24.05 (3) | 18.50 (3) | 12.10 (3) | 12.10 (3) | ASTM C1185 |
| | MPa | - | 15.60 (3) | 16.40 (3) | 16.40 (3) | BS 4624 |

# Nutec Mechanical and Physical Properties



**TABLE 2**

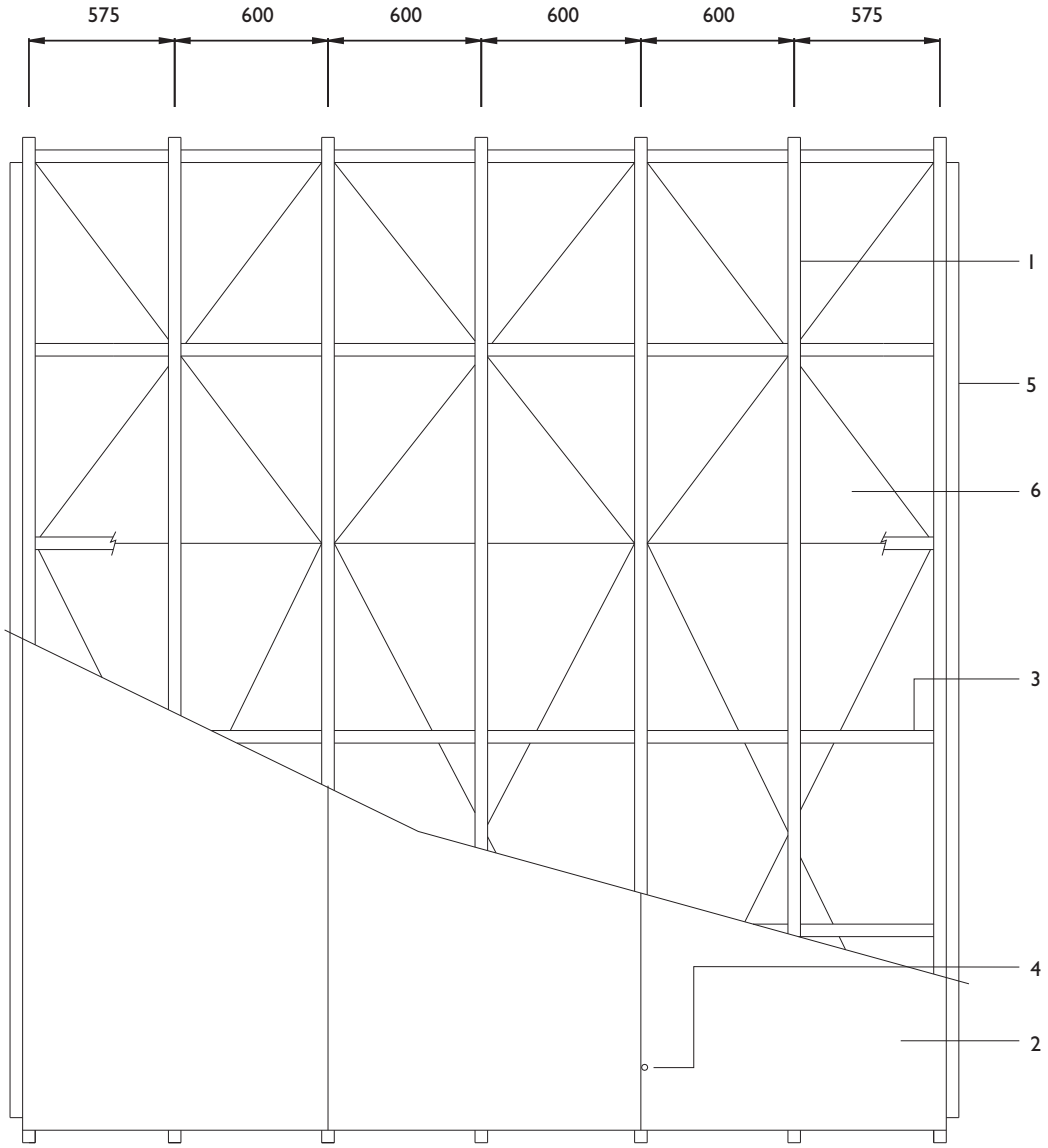
| PARAMETER | UNIT | High Density | Semi-High Density | Medium Density | Textured Nutec | TEST METHOD |
|---|---|---|---|---|---|---|
| **Classification in accordance to ASTM C1186** | - | II | I | I | I | |
| **Compressive Strength Parallel to Surface of Board** | | | | | | ASTM C1186 |
| With Grain | MPa | 15.21 | - | 10.86 (2) | - | ASTM D1037 |
| | MPa | 24.62 | - | 15.57 (3) | - | ASTM D1037 |
| Across Grain | MPa | 20.61 | - | 11.54 (2) | - | ASTM D1037 |
| | MPa | 37.22 3(3) | - | 19.58 (3) | - | ASTM D1037 |
| **Tensile Strength Parallel to Surface of Board** | | | | | | |
| With Grain | MPa | 3.47 (2) | - | 2.11 (2) | - | ASTM D1037 |
| | MPa | 5.12 (3) | - | 3.26 (3) | - | ASTM D1037 |
| Across Grain | MPa | 4.34 (2) | - | 2.24 (2) | - | ASTM D1037 |
| | MPa | 5.95 (3) | - | 2.88 (3) | - | ASTM D1037 |
| **Tensile Strength Parallel to** | MPa | 1.42 (2) | - | 0.83 (2) | - | ASTM D1037 |
| **Surface of Board** | MPa | 2.18 (3) | - | 1.02 (3) | - | ASTM D1037 |
| **Young's Modulus (E.Mod)** | | | | | | |
| With Grain | MPa | 9898 (3) | - | 5337 (3) | - | ASTM C120 |
| | MPa | 7747 (2) | - | 3974 (2) | - | ASTM C120 |
| Across Grain | MPa | 11645 (3) | - | 6474 (3) | - | ASTM C120 |
| | MPa | 7903 (2) | - | 4681 (2) | - | ASTM C120 |
| **Block Shear Strength** | MPa | 3.30 (3) | - | 1.60 (2) | - | ASTM D143 |
| | MPa | 3.17 (2) | - | 1.32 (3) | - | ASTM D143 |
| **FIRE PROPERTIES** | | | | | | |
| **Surface Spread of Flame** | Class | 1 | 1 | 1 | 1 | SANS 10177: Part 111, BS 476: Part 7 |
| Spread of Flame Index | - | Nil | Nil | Nil | Nil | SANS 10177 Part III |
| Heat Contribution Index | - | Nil | Nil | Nil | Nil | SANS 10177 Part III |
| Smoke Emission Index | - | Nil | Nil | Nil | Nil | SANS 10177 Part III |
| Surface Fire Index | - | Nil | Nil | Nil | Nil | SANS 10177 Part III |
| **Surface Burning Characteristics** | | | | | | |
| FSI (Flame spread index) | | | | | | |
| SD (Smoke developed index) | - | 0 | - | 0 | 0 | ASTM E84 |
| **Non-Combustibility** | - | 5 | - | 3 | 3 | ASTM E 84 |
| **Continuous Temperature** | | Non-combus. | Non-combus. | Non-combus. | Non-combus. | BS 476 Part 4, SANS 10177: Part V |
| **OTHER PROPERTIES** | - | 150˚C | 150˚C | 150˚C | 150˚C | - |
| **Frost Resistance** | | | | | | |
| Cycles Completed | | | | | | |
| Strength Ratio | - | 50 | - | 50 | - | ASTM C1185 |
| **Biological Resistance** | % | 97.5 | - | 78.5 | - | ASTM C1185 |
| Rodent Resistance | | | | | | |
| Termite Resistance | Class | B1 | - | B1 | - | SANS 5417 |
| Resistance to Bacteria | | No Damage | - | No Damage | - | SANS 5471 |
| | | - | - | No Growth | - | BS 5980: 1980 |

**(1) Dried till constant weight**
**(2) Saturated with water**
**(3) Equilibrium conditions**

# Fire Resistance
# - Floor/Ceiling Systems



**FIG. General Plan of Arrangement of Floor/Ceiling 60 Minute Fire Rated System - Loading 1500 kN/m$^2$**

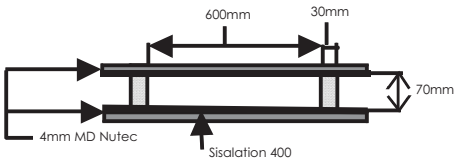
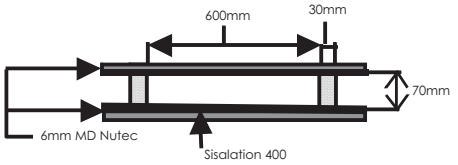
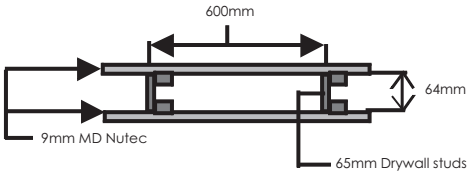
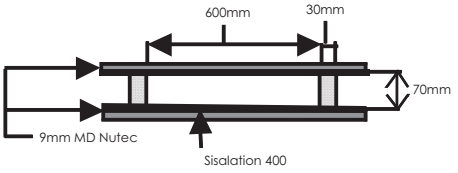
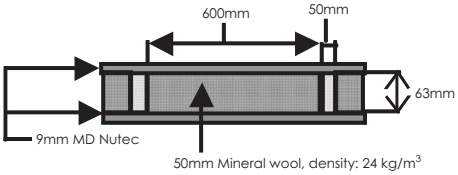
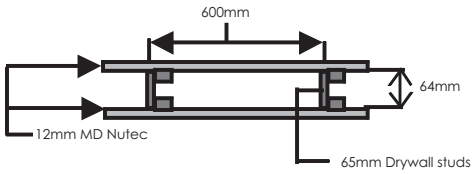
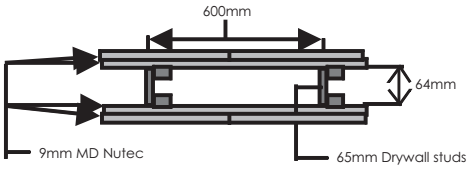
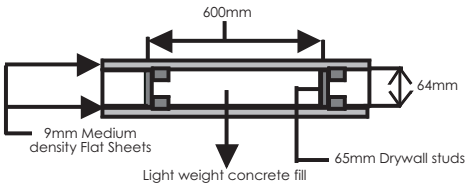



1. Softwood timber joists - 230mm x 50mm at 600mm centre.
2. Floor Boards HD Nutec, 3600mm x 1200mm x 15mm.
3. Softwood timber noggings at 600mm centres by means of 100mm nails.
4. 50mm timber screws at 300mm centres.
5. Mineral Fibre seal.
6. 6mm Nutec Ceiling Board, 3600mm x 1200mm. Fixed with 50mm timber screws at 300mm centres to underside.

Insulation: 50mm Insulmate, 80 kg/m$^3$.
Joints sealed with Intumex MA.
Screws and nail heads sealed with sodium silicate liquid.

# Fire Resistance
# - Nutec Boards in Wall Systems

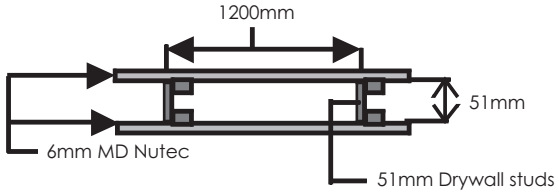
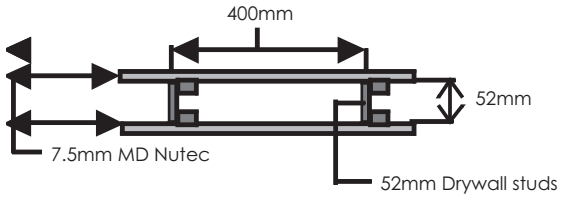
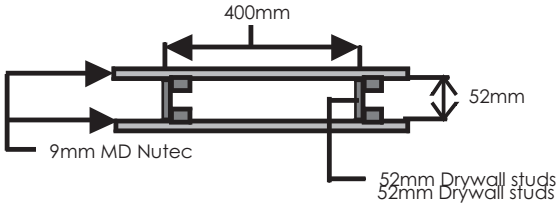
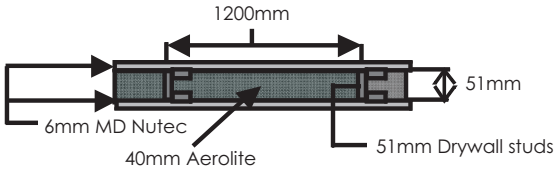
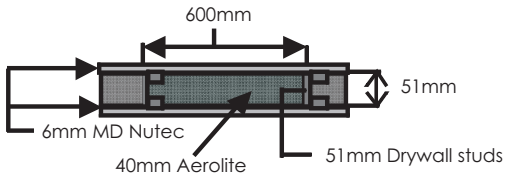
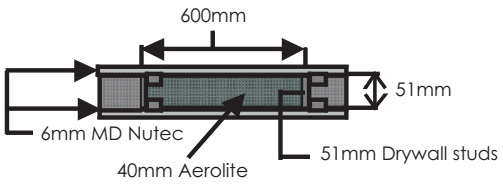


| Fire Rating | Timber Frame Systems | Galvanised Steel Stud Systems |
|---|---|---|
| 20 minutes |  | |
| 20 minutes |  | |
| 27 minutes | |  |
| 30 minutes |  | |
| 33 minutes |  | |
| 41 minutes | |  |
| 60 minutes | |  |
| 120 minutes | |  |

**Face layer joints to be taped and plastered.**
**Drywall screws spaced at +/- 250mm centres.**
**All fixings according to Everite Building Products' recommendations**

# Acoustical Insulation



| Rw - value (dB) | Nutec |
|---|---|
| **26.0 dB** |  |
| **35.7 dB** |  |
| **38.0 dB** |  |
| **40.0 dB** |  |
| **44.8 dB** |  |
| **45.7dB** |  |
| **47.2dB** |  |

# Handling and Storage

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Nutec flat sheets are manufactured from a composite material containing mainly cement and may be damaged under excessively high shock loads. Reasonable care should therefore be taken to ensure that the products are not dropped or subjected to rough handling.

While stacked, Nutec flat sheets should not be exposed to the elements for lengthy periods and under cover storage is recommended.

A smooth level under cover area should therefore be made available where the sheets can be stacked safely. The stacks should be supported on suitable timber bearers at maximum 400mm centres and the edges and corners protected against possible damage.

Where under cover storage is not available, the stacked product should be covered to avoid it becoming soaked with water. Soaked sheets will be difficult to handle and should be allowed to dry out before use.

**It is recommended that sheets should not be stored for a period exceeding one month if not under cover.**

# General Installation Guidelines



- Nutec flat sheets as manufactured are made without asbestos fibres, it is nevertheless recommended that when working with the product, tools that create excessive dust should not be used.

  Ordinary carpenters' tools can be used effectively.

  For further information refer to the brochure **'Finishing and Maintenance'.**

- **To ensure a high standard of finish, it is essential that the supporting structure is accurately constructed. Warped, twisted or poor quality timber, or badly erected steelwork will reflect in the finished surface and can cause damage to the product.**

  The structure must be checked and adjusted as necessary to ensure that there is no bowing or distortion which could affect the true plane of the final application.

- For maximum spacings between supports for Nutec flat sheets, **refer Table 1 page 3 and Fig. 8 page 26 and Fig. 9 page 27.**

  Sheets should not be fixed directly onto a masonry wall, but on timber or steel battens forming a framework to which the fascia boards or sheets can be fixed.

- Holes for fixing must be set out evenly and must be drilled and not punched.

  An ordinary hand drill and steel drill bits specially sharpened to a 20° angle are recommended.

  The drill bit must be 2mm larger than the diameter of the fixing bolt or screw.

- When the sheets are fixed into a framed structure allowance must be made for thermal movements in the sheet and the supporting structure.

  **The allowance for movement will depend on the size of the sheet, but an average can be accepted as ± 2mm per metre in both directions. For facade jointing, use recommended jointing details.**

## NUTEC FLAT SHEETS

**MD = Medium Density**
**HD = High Density**

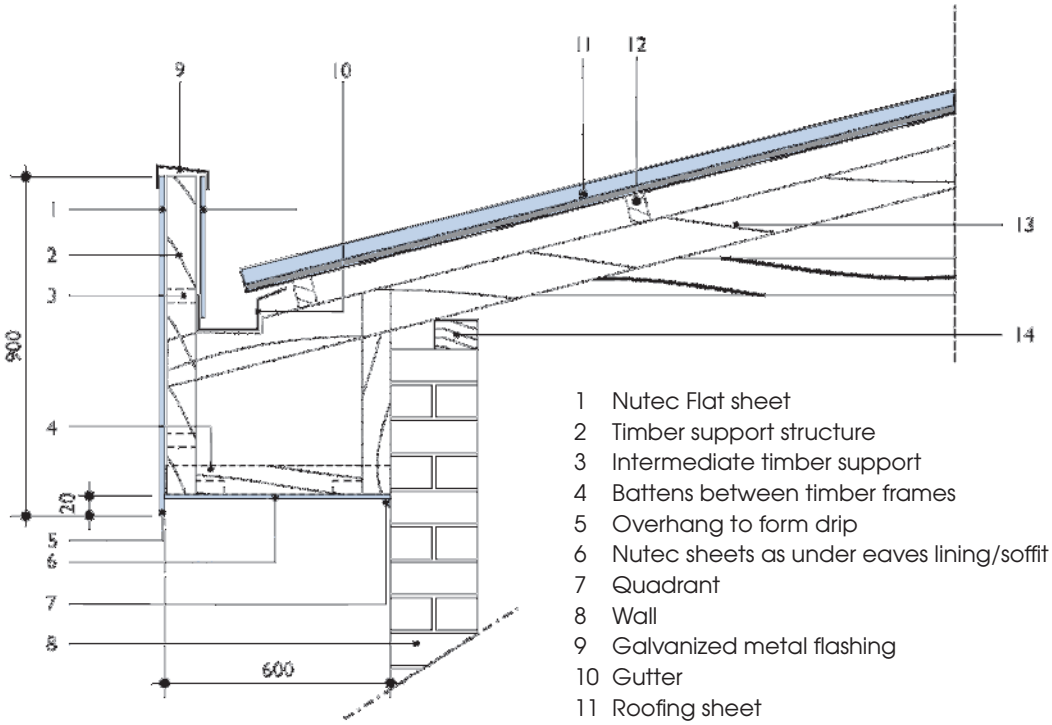
| Product No. | Nominal Thickness mm | Size mm | Average Mass kg |
|---|---|---|---|
| 010-910 | 9 MD | 2 400 x 1 200 | 38 |
| 010-911 | 9 MD | 3 000 x 1 200 | 47 |
| 010 -912 | 9 MD | 3 600 x 1 200 | 52 |
| 011-210 | 12 MD | 2 400 x 1 200 | 49 |
| 011-211 | 12 MD | 3 000 x 1 200 | 61 |
| 011-212 | 12 MD | 3 600 x 1 200 | 73 |
| 011-005 | 10 HD | 3 000 x 1 200 | 61 |
| 011-006 | 10 HD | 3 600 x 1 200 | 73 |
| 011-505 | 15 HD | 3 000 x 1 200 | 87 |
| 011-506 | 15 HD | 3 600 x 1 200 | 104 |
| Textured Tongue & Groove Boards used for internal cladding only | | | |
| 650-567 | 6 MD | 1 200 x 2 400 | 24 |
| 650-568 | 6 MD | 1 200 x 3 000 | 30 |
| 650-569 | 6 MD | 1 200 x 3 600 | 37 |
| 060-643 | 9 MD | 1 200 x 2 400 | 35 |
| 060-644 | 9 MD | 1 200 x 3 000 | 44 |
| 060-645 | 9 MD | 1 200 x 3 600 | 52 |
| Plain Tongue & Groove Boards used for internal cladding only | | | |
| 650-566 | 6 MD | 1 200 x 3 000 | 30 |
| Floor Boards | | | |
| 011-504 | 15HD Floor Board | 1 800 x 1 200 | 52 |

**TABLE 3** Recommended Uses of Nutec Flat Sheets

| | Product Description | Medium Density | | | | High Density | |
|---|---|---|---|---|---|---|---|
| | | Plain 9mm | Plain 12mm | Textured 6mm | Textured 9mm | Plain 10mm | Plain 15mm |
| Recommended Uses | Internal panelling | ● | ● | ● | ● | | |
| | Gable cladding | ● | ● | | ● | ● | |
| | Prefabricated housing | ● | ● | | ● | ● | |
| | Steel & Timber frame houses & steel frame interior walls | | | ● | | | |
| | Steel & Timber frame houses & steel frame exterior walls | ● | | | ● | | |
| | Partitioning | ● | | | ● | ● | |
| | Sandwich panels | | | | | | |
| | Special size fascias | ● | ● | | | ● | ● |
| | Louvres | | ● | | | ● | ● |
| | Balustrading | | | | | ● | ● |
| | Steel beam and column lining | ● | ● | | | ● | ● |
| | Cable trench covers | | | | | | |
| | Permanent shuttering | | | | | | ● |
| | Toilet and shower partitioning | ● | ● | | | ● | ● |
| | Floors | | | | | | ● |
| | Special size windowsills | | | | | | ● |
| | External facades (stone chip finish) | ● | ● | | | ● | |
| | External facades (paint application) | ● | ● | | ● | ● | |
| | Suspended floors | | | | | | ● |

## Special Fascia Boards

**FIG. 1** Using Nutec Flat Sheets as a Special Fascia



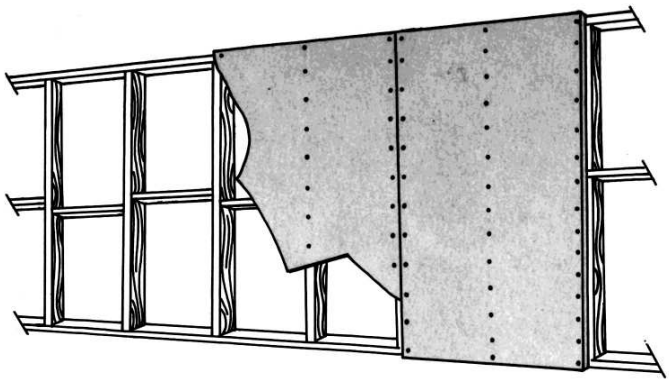

All dimensions in mm

1 Nutec Flat sheet
2 Timber support structure
3 Intermediate timber support
4 Battens between timber frames
5 Overhang to form drip
6 Nutec sheets as under eaves lining/soffit
7 Quadrant
8 Wall
9 Galvanized metal flashing
10 Gutter
11 Roofing sheet
12 Purlin
13 Timber truss
14 Wallplate

**NB:**

- **In the above application 9mm medium density sheets are used. In instances where ceramic tiles are fixed to a fascia, minimum thickness of sheets should be 10mm high density or 12 mm medium density sheets.**
- **The flashing should be sloped away from the face of the fascia to avoid discolouration due to dust being washed down by rain over the finished surface.**
- **For spanning capabilities of FLAT SHEETS, refer Table 1, Page 3.**
- **Fascias should not be fixed directly to a wall, use timber battens to provide a framework for the fascia.**

## Typical Layout of Sheet on Timber and Steel Framework

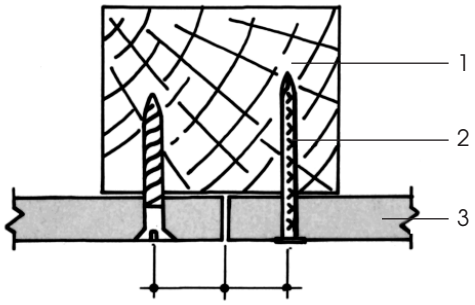


NB:
- Timber or steel framing may be used and should be constructed in accordance with local building regulations and acceptable building practice.
- Timber should be selected structural grade timber.
- Timber supports must be firmly secured to top and bottom plates and frames must not rely on the Nutec sheets for stability.
- Support spacings for external or internal walls should not exceed 600mm centres.
- Framing members, should be arranged to support all sheet edges.
- Where the support faces behind sheet joints are less than 38mm wide, pack out to provide additional landing for sheet fixing. Refer fig 4, Page 20.
- For further information on timber framed structures, refer to SANS 10082.

# Fixing Details (cont.)

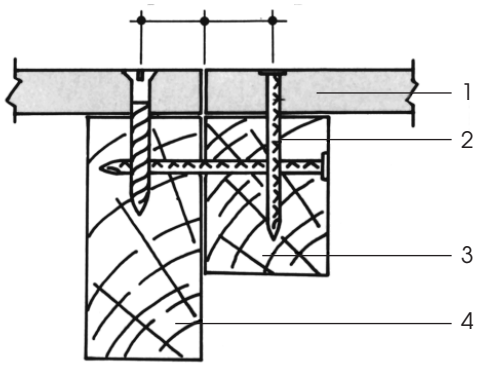
### Fixing of Sheets to Support

1 Timber stud
2 Galvanised nail or wood screw
3 Nutec sheet




### Fixing of Sheet to Narrow Support

1 Nutec sheet
2 Galvanised nail or wood screw
3 Packing as required for narrow stud
4 Narrow stud

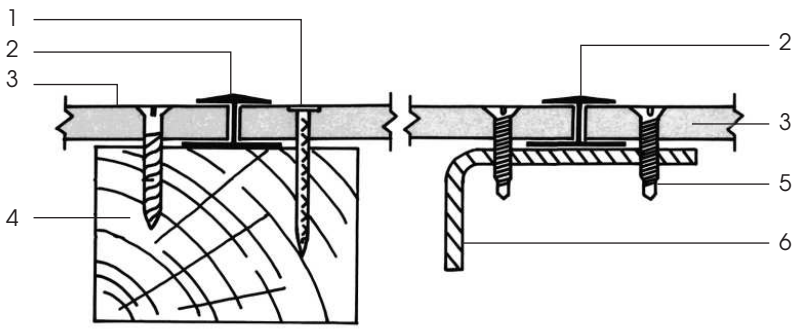



## Jointing

There are various methods that can be used for jointing.

### Showing the Use of an H-profile Strip

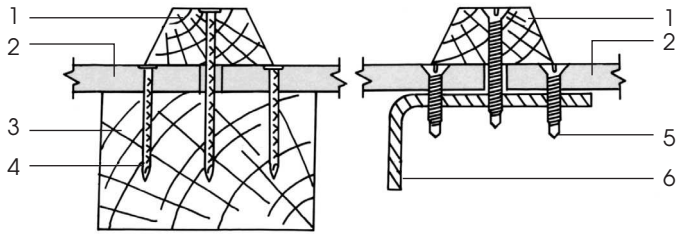
1 Galvanised nail or wood screw
2 H profile jointing strip
3 Nutec-cement flat sheet
4 Timber stud
5 Fixing screw
6 Metal frame



## Jointing (cont.)

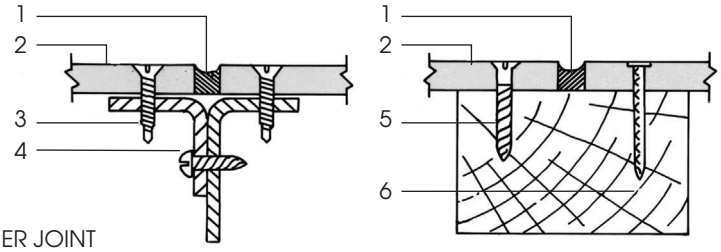
### Showing Mouldings Used as Cover Strips

1 Timber moulding
2 Nutec-cement flat sheet
3 Timber stud
4 Galvanised nail or wood screw
5 Fixing screw
6 Metal frame

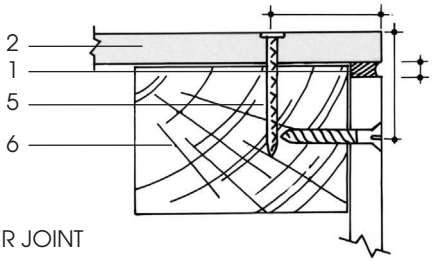



### Illustrating the Use of Epoxy Fillers for Jointing

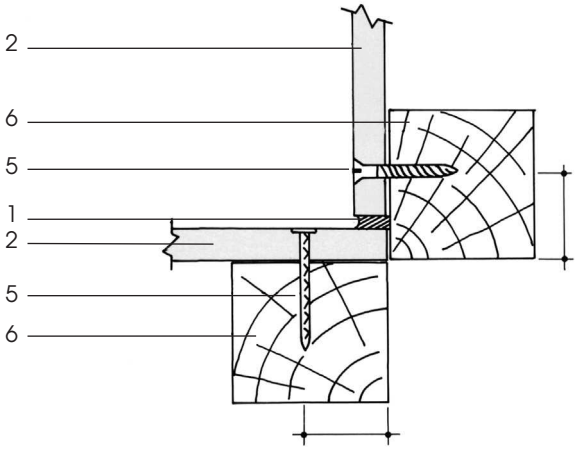
JOINTING ON A STRAIGHT WALL




EXTERNAL CORNER JOINT




INTERNAL CORNER JOINT




1 Epoxy filler
2 Nutec sheet
3 Screw fixing
4 Metal frame
5 Galvanised nail or wood screw
6 Timber stud

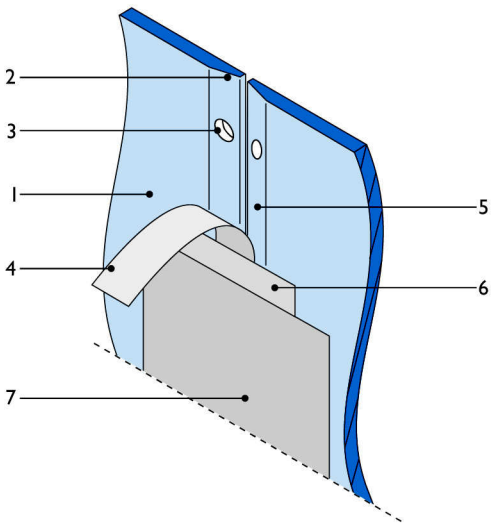
## Typical Flush Jointing Application

Everite should be consulted for advice on specific application and recommended compounds to be used.

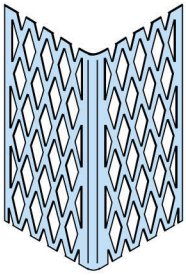
For flush jointing of Nutec sheets, whether erected on steel studs or timber studs, the procedure is as follows:

- Prepare jointing compound as per manufacturer's instructions.
- A suitable plaster is recommended.
- Apply the mixture firmly into the joints between the edges of the board.
- To avoid premature drying out of the mixture do not fill joints longer than 5m at a time.
- Embed 'Fibatape' into the mixture using a spatula or plastering trowel and allow to dry thoroughly. **Refer Fig. 2.**
- Appy a coat of the mixture to nail or screw heads and allow to dry.
- After the base coat has thoroughly dried out apply further coats, allowing each coat to dry before the next coat is applied.
- Care should be taken to feather out each application so that a smooth joint results. The final coat is finished off by using a fine grit sand paper.
- For internal corners use 'Fibatape' and for external corners use a metal 'Corner Bead'. **Refer Fig. 2** and apply jointing compound as described above.

**FIG. 2 Flushing Jointing Application**




CORNER BEAD



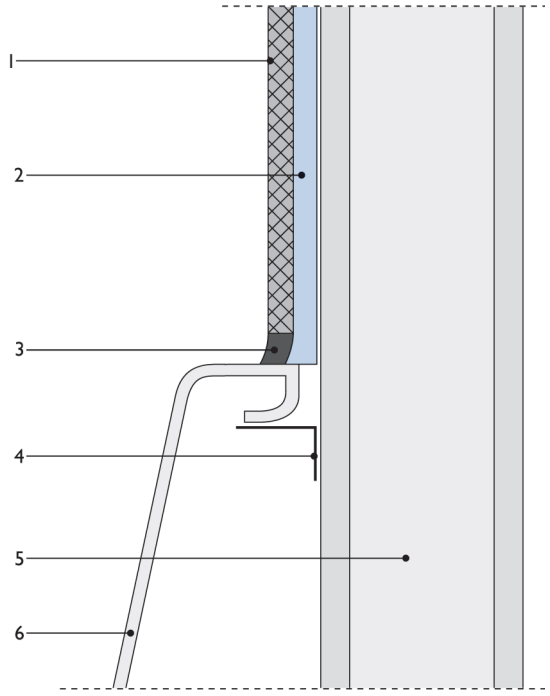
1 Nutec sheet
2 Edge of board
3 Fixings
4 Fibatape
5 Joint between boards base coat
6 Second coat
7 Final coat

## Wall Tiling

Where a partition wall is finished with ceramic wall tiles, the following procedures should be followed:

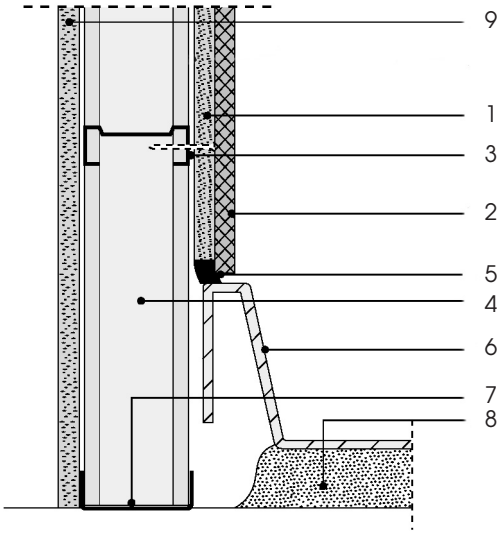
- **Reduce the stud spacing to a maximum of 400 mm.**
- Provide horizontal noggings between studs at 900 mm centres.
- External and internal corner studs must be joined together using a corner bead.
- Sealed both sides of the Nutec sheet with a concrete sealer.
- Before fixing tiles ensure that the boards are completely free of dust or grease.
- Using a notched trowel apply suitable tile adhesive to the partition board covering an area of 1m$^2$ at a time.
- Press tile firmly into the adhesive to ensure that no voids occur under the tiles.
- Allow a minimum gap of 2mm between tiles for grouting.
- Directions for mixing of adhesive and grout should be obtained from the manufacturers.
- For bath, shower/wall junction detail refer to **Figs. 3, 4 and 5, Pages 19 and 20.**

**FIG. 3 Bath/Wall Junction Detail Using Steel Frame**



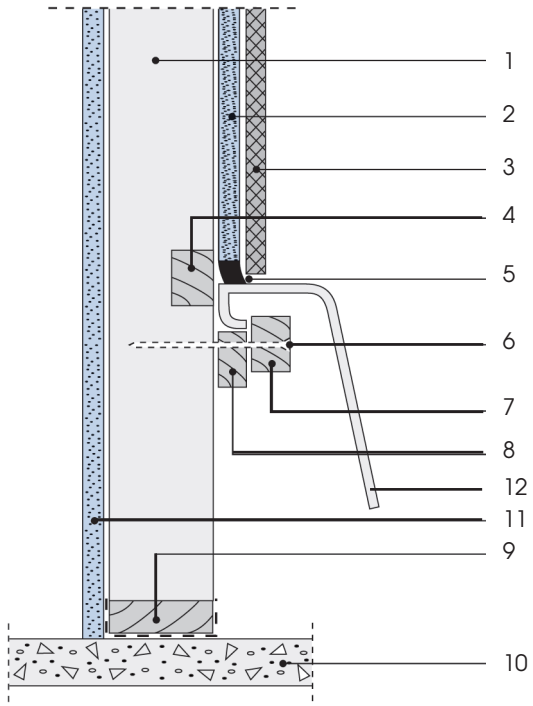

1 Ceramic wall tiles
2 Nutec sheet
3 Sealant
4 Support angle pop-riveted to stud
5 Galvanised stud
6 Profile of bath

**FIG. 4** Shower Base/Wall Junction Detail Showing Steel Frame



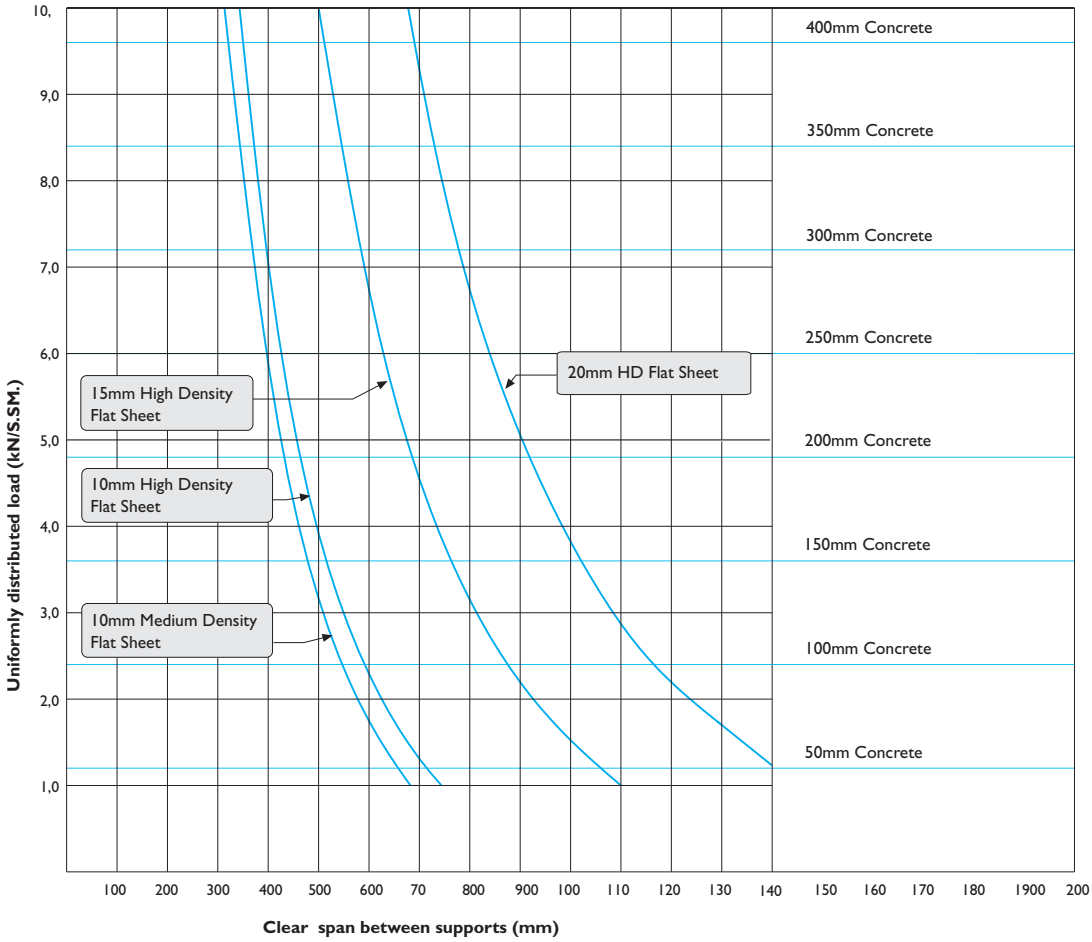

1 Nutec sheet
2 Ceramic tiles
3 Steel nogging
4 Galvanised stud
5 Sealant
6 Profile of shower base
7 Track
8 Screen bedding
9 Nutec sheet

**FIG. 5** Base/Wall Junction detail using timber framing




1 Timber stud
2 Nutec sheet
3 Ceramic sheet
4 Backing nogging
5 Sealant
6 Fixing point
7 Timber rail to secure rim of bath
8 Timber spacer
9 Base plate
10 Concrete floor slab
11 Nutec sheet
12 Bath

## Nutec Sheets in Shuttering Applications

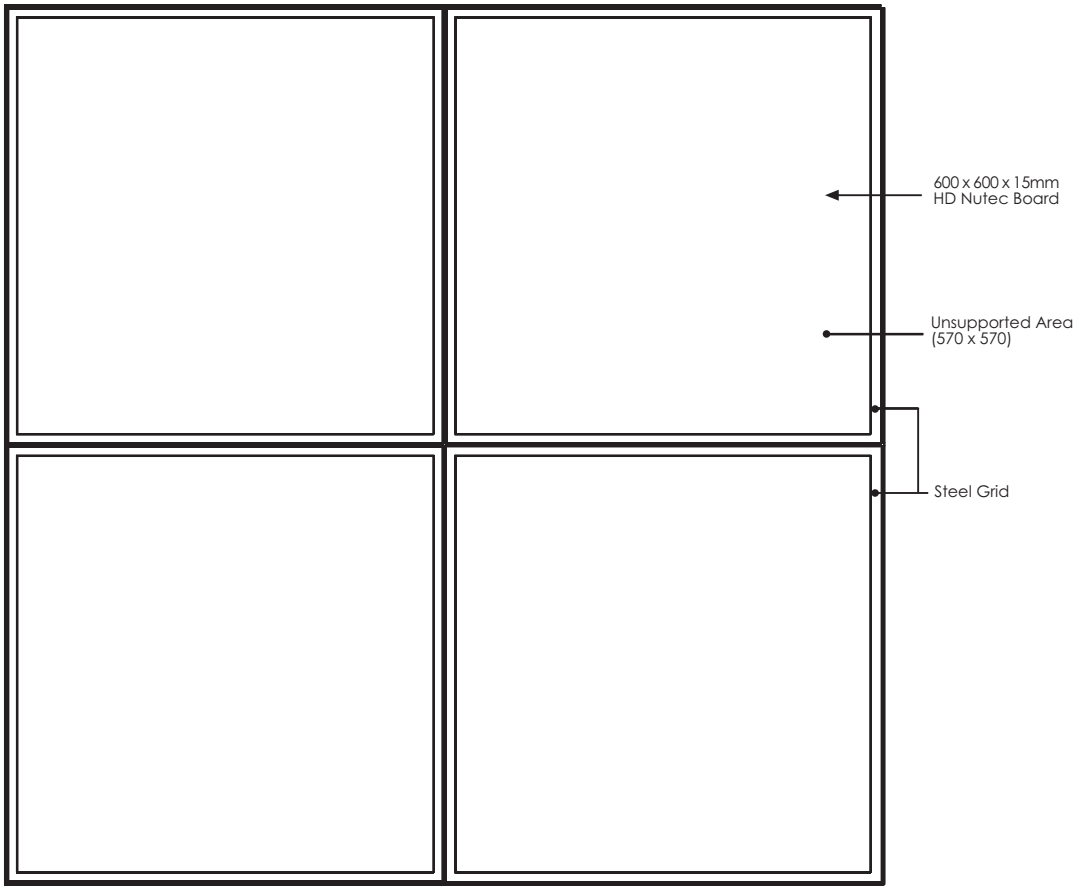



1. In 1200 widths
2. Shuttering to have 25mm Minimum bearing at each end
3. Concrete must be spread evenly to avoid excessive heaping

# Access Floor System



**Typical Structure for Suspended Floor on steel supports**




**Typical Loads and Deflection Measured per Floor Board**

| Sample No. | Temp. °C | RH % | Deflection at 3kN Loading (mm) | Maximum Load Achieved (kN) | General Remarks |
|---|---|---|---|---|---|
| 1 | 21,9 | 45 | 2,23 | 4,99 | Ambient |
| 2 | 21,9 | 45 | 2,34 | 5,39 | |
| 3 | 21,9 | 45 | 2,57 | 5,13 | |
| 4 | 20 | 65 | 3,40 | 5,29 | 48 hour conditioned samples |
| 5 | 20 | 65 | 3,18 | 5,27 | |
| 6 | 20 | 65 | 3,42 | 5,72 | |

# General Information Facades and Cladding



## Application

EVERITE Nutec sheets and moulded panels are particularly suitable where a light weight and durable cladding is required. They protect the structure, yet provide access to the many services which are required in modern buildings. An existing building can be given an entirely new facade without major alteration to its structural framework.

The availability of in situ coated surfaces presents the designer with an almost limitless combination of colour and texture.

## Quality Standards

EVERITE sheets and moulded panels are manufactured to the requirements of ISO 9001:2000. Flat sheets carry an SABS mark under specification SANS 803.

## Fire

Nutec sheets are non-combustible and do not contribute to the spread of flame.

## Thermal Insulation

The thermal properties of Nutec sheets and moulded panels compare very well with other building materials available on the market. For thermal conductivity values (K value), **refer to the table 2: Mechanical and Physical Properties, page 5.**

## Corrosion Resistance

Nutec sheets and moulded panels are resistant to most corrosive conditions encountered in the environment and is unaffected by ultraviolet light. For further information, consult any EVERITE Sales Office.

## Fixing Accessories

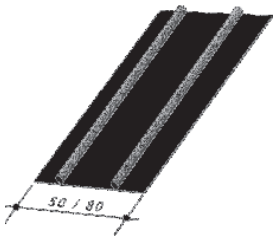
Suitable fixing accessories are obtainable from EVERITE.

## External Facade and Moulded Panel Fixing Accessories

***All products not supplied by EVERITE**

| Fixings | Facade | | | | Moulded Panels | |
|---|---|---|---|---|---|---|
| Fastener | Steel Structure | | Timber Structure | | | |
| | Flat Sheet Exposed Fixing | Flat Sheet Concealed Fixing | Flat Sheet Exposed Fixing | Flat Sheet Concealed Fixing | Fixed to Steel | Fixed to Timber |
| * Countersunk Head Brass Wood Screw 40mm x 12mm | | | | ● | | ● |
| * Self Tapping Screw Countersunk Head 35mm x 5,5mm | | ● | | | ● | |
| * Drill Screw Countersunk Head 30mm x 5,5mm | | ● | | | ● | |
| * Spade Point Screw Hexagon Washer Head 50mm x 5,5mm<br>Steel<br>Stainless Steel | | | ●<br>● | | | ●<br>● |
| * Drill Screw Hexagon Washer Head 50mm x 5,5mm<br>Steel<br>Self Tapping Stainless Steel | <br>●<br>● | | | | <br>●<br>● | |

## EPDM Gaskets

| Sketch | Product No | Description | Size |
|---|---|---|---|
|  | 602-001 | EPDM sealing gasket for use with flat sheets having open joints | 50mm wide |
| | 602-002 | EPDM sealing gasket for use with flat sheets having open joints | 80mm wide |
| | 630-100 | Elibond FR964 Epoxy Kit | 400 g |
| | 630-110 | Elibond FR964 Epoxy Kit | 1 kg |
| | | Silicone Sealer | |
| | | Galvanised Hoop Iron 50mm x 0,5mm | |
| | | Foam Backing Strip | |
| All dimensions in mm | | Fixings | |

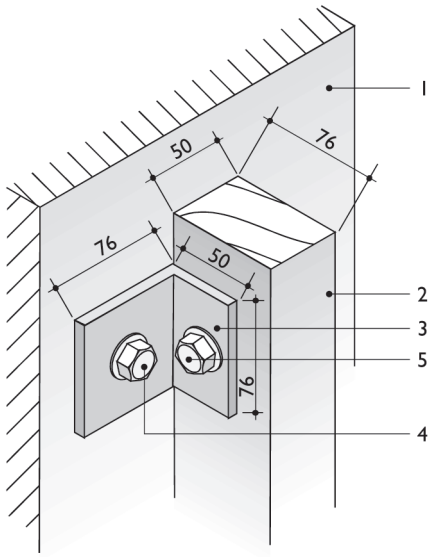
## Setting Out and Fixing Procedures for Nutec Sheet Facade

For vertical runners or counter battens, cold rolled steel sections could also be used instead of timber as illustrated in **Fig. 7.**

- Girts should be provided with elongated holes for fixing to supporting cleats - **refer to Fig. 7.** This provides for adjustment of the girts to obtain a true fixing line for the panels.

- A basic framing layout is shown in **Fig. 8 page 26 and Fig. 9 page 27 for flat sheets.**

**FIG. 6**

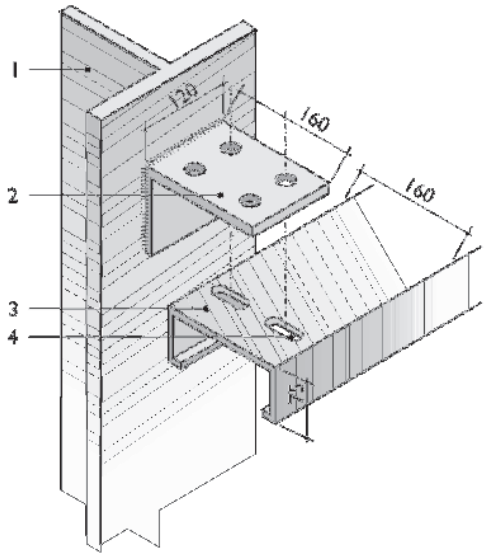



1 Main structure
2 Timber runner at 600mm centres
3 Angle secured with rawl bolt
4 Rawl bolt
5 Bolt fixing to timber

- Holes can be elongated to allow for adjustment
- **Dimension of supporting structure to be confirmed by engineer**

All dimensions in mm

**FIG. 7**




1 Structural member
2 Cleat welded to structural member
3 Cold formed steel girt
4 Elongated holes to allow for adjustment

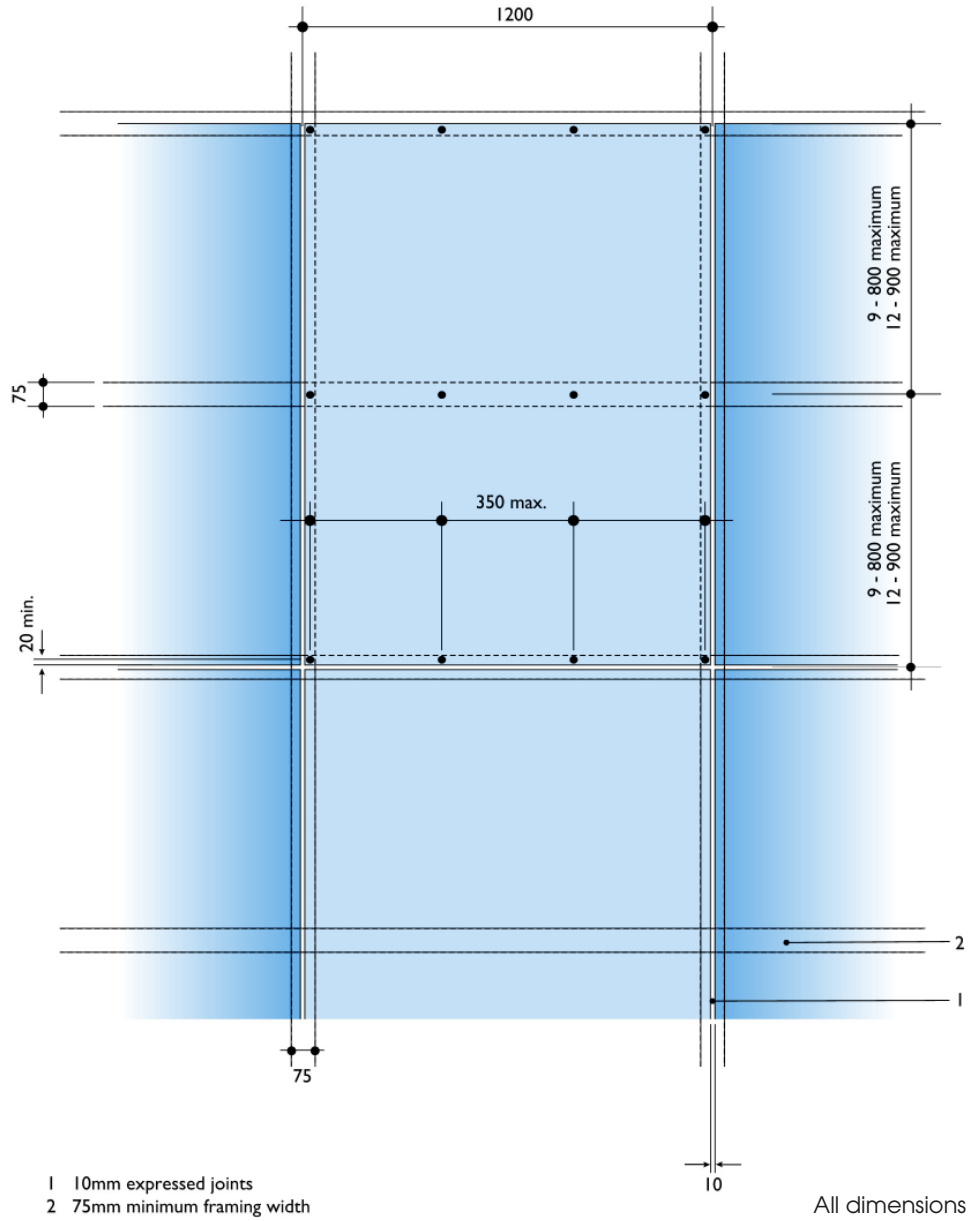
- **Dimension of supporting structure to be confirmed by engineer**

All dimensions in mm

## Setting Out and Fixing Procedures Nutec Sheet Facade (Continued)

- It is recommended that joints in each line of girts occur at the same column or supporting member.
- A minimum of 75 mm wide bearing surface required behind a horizontal joint to provide sufficient landing for screws to be placed at least 20 mm from the edge of the panels, **Fig. 8 and 9, page 26 and page 27 for flat sheets.**

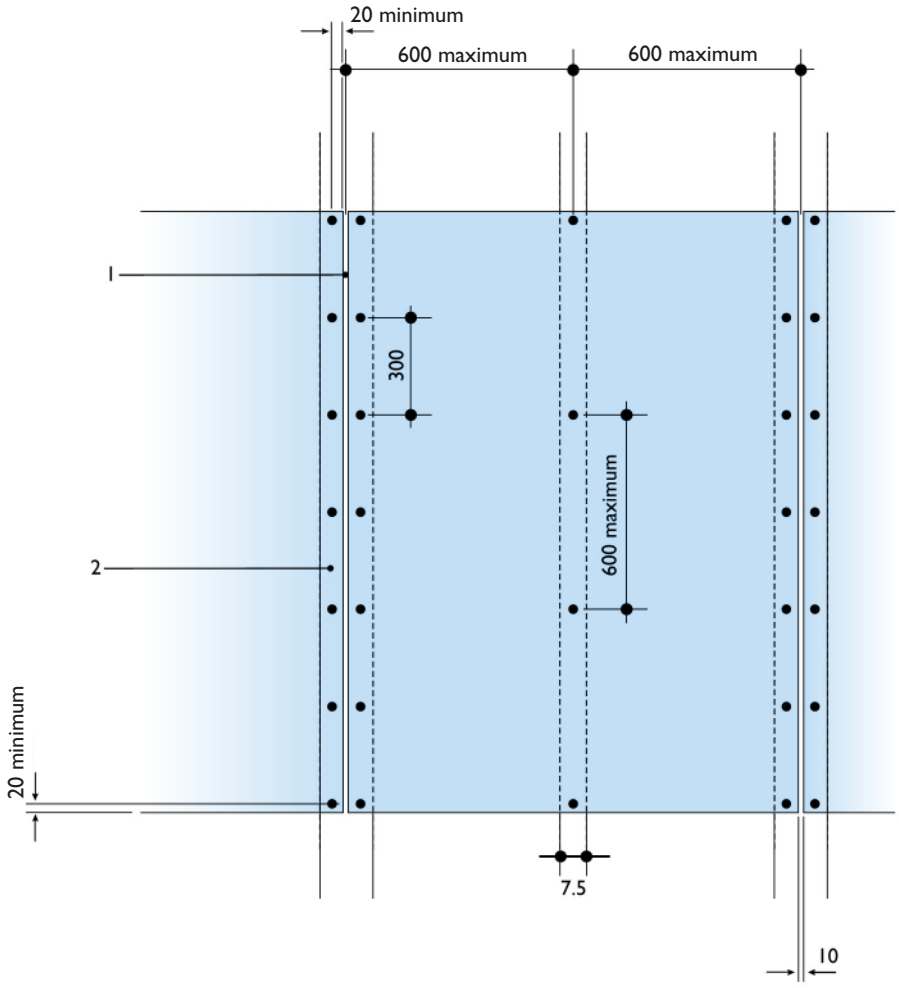
**FIG. 8 Horizontal Girts (See Fig. 9 page 27 for Vertical Runners)**



## Setting Out and Fixing Procedures Nutec Sheet Facade (Continued)

- The runners supporting the facades should not exceed 600 mm centres vertically and 800 mm centres horizontally. **Framing members should be arranged to support all panel edges, Refer Fig. 8 page 26 and Fig. 9 page 27.**

**FIG. 9** Vertical runners



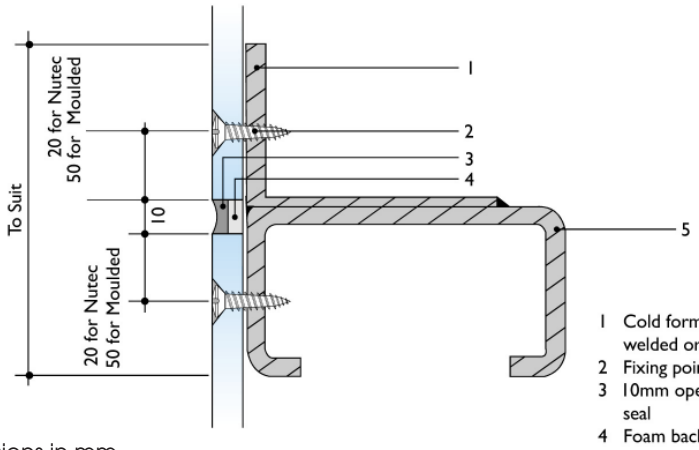

All dimensions in mm

1 10mm expressed joints
2 75mm recommended framing width

**NB:**
- **For further design information or copy of the report on wind resistance tests performed by the CSIR, contact EVERITE Sales Office.**
- **The above is relevant for wind loading conditions for structures not higher than 15m.**

## Setting Out and Fixing Procedures of Nutec Sheets

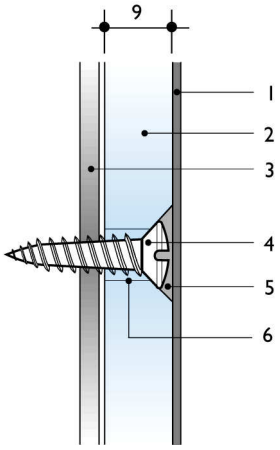
**FIG. 10** Framing Behind Horizontal Joints / Vertical Joints




1 Cold formed steel angle spot-welded or bolted to girt
2 Fixing point
3 10mm open joint with silicone seal
4 Foam backing strip
5 Cold form steel girt

All dimensions in mm

**FIG. 11** Counter Screw Detail




1 In situ coating as required
2 Moulded panel
3 Steel support rail
4 Countersunk self tapping screw
5 Epoxy filler sanded flush with panel
6 2mm oversize hole

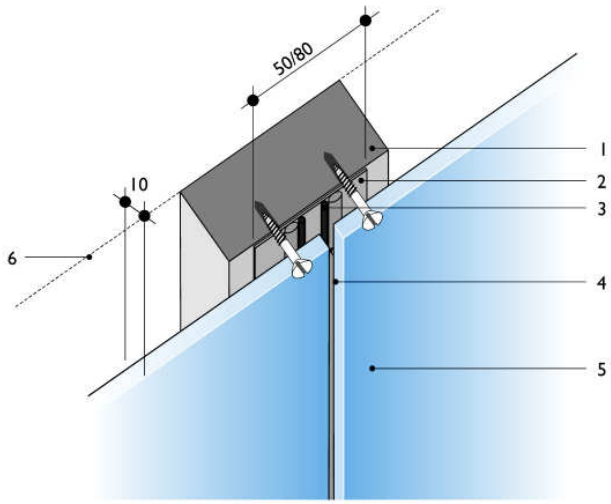
## NUTEC SHEET FACADE

### Open Joints

For open vertical, horizontal and corner joints, EPDM gaskets are recommended. As an extra precaution against water penetration, silicone is used in conjunction with the EPDM gasket - **Fig. 12(A) and Fig. 12(B) page 29, Fig.13(A) and Fig. 13(B) page 30, Fig. 14(A) and Fig. 14(B) Page 31.**

For alternative horizontal joints, silicone is used. **Fig.10 page 28 and alternative Fig.15, page 32.**

**FIG. 12(A) Perspective of an Open Vertical Joint**

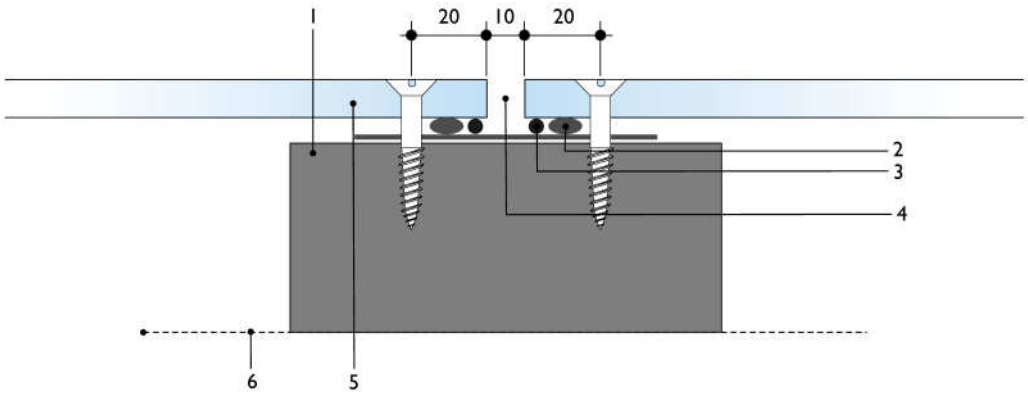



1 Timber/steel frame fixed to main structure
2 50/80mm EPDM gasket fixed
3 Silicone bead
4 10mm open joint
5 Nutec sheet
6 Outer line of main structure

All dimensions in mm

**FIG. 12(B) Plan of an Open Vertical Joint**

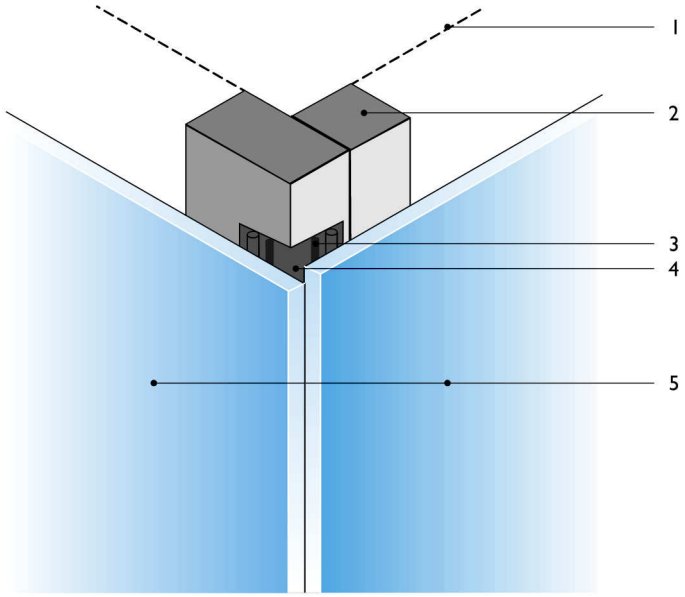
All dimensions in mm




1 Timber/steel frame fixed to main structure
2 50/80mm EPDM gasket fixed to frame
3 Silicone bead
4 10mm open joint
5 Nutec sheet
6 Outer line of main structure

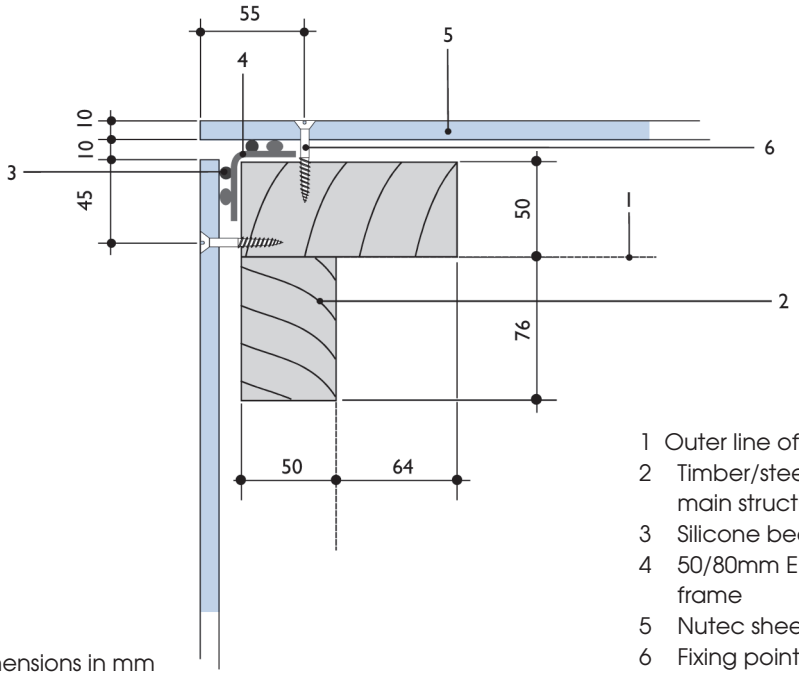
## NUTEC SHEET FACADE (continued)

**FIG. 13(A)** Perspective of an External Open Corner Joint




1 Outer line of main structure
2 Timber/steel frame fixed to main structure
3 Silicone bead
4 50/80mm EPDM gasket fixed
5 Nutec sheet

**FIG. 13(B)** Plan of an External Open Corner Joint

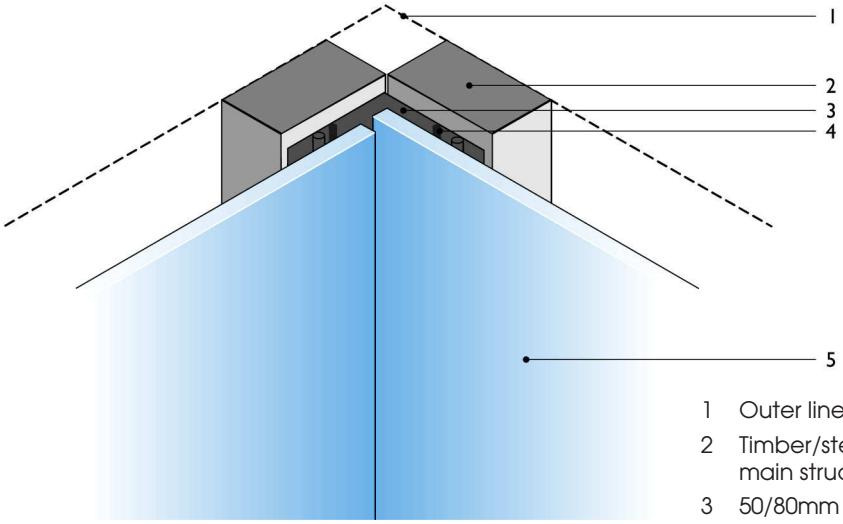



All dimensions in mm

1 Outer line of main structure
2 Timber/steel frame fixed to main structure
3 Silicone bead
4 50/80mm EPDM gasket fixed to frame
5 Nutec sheet
6 Fixing point

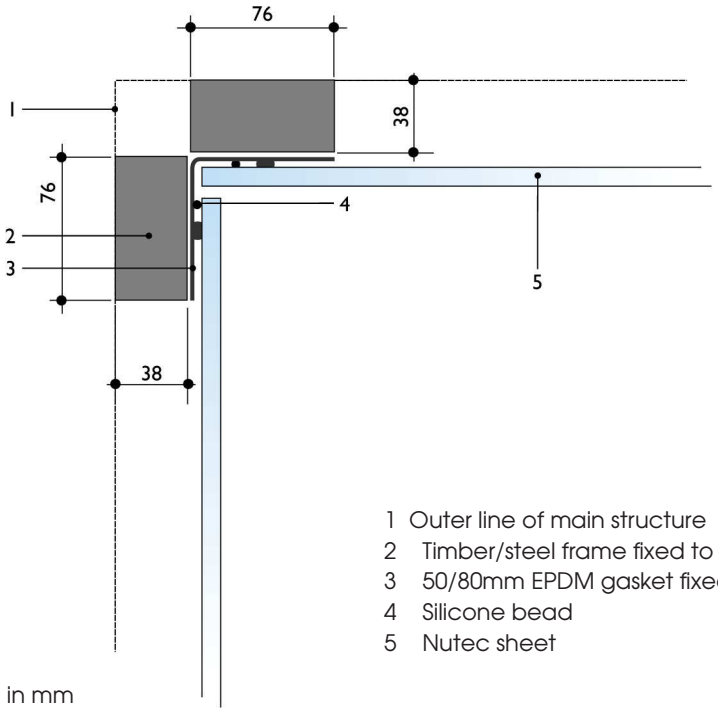
## NUTEC SHEET FACADE (continued)

**FIG. 14(A) Perspective of an Internal Open Corner Joint**




1 Outer line of main structure
2 Timber/steel frame fixed to main structure
3 50/80mm EPDM gasket fixed to frame
4 Silicone bead
5 Nutec sheet

**FIG. 14(B) Plan of an Internal Open Corner Joint**




1 Outer line of main structure
2 Timber/steel frame fixed to main structure
3 50/80mm EPDM gasket fixed to frame
4 Silicone bead
5 Nutec sheet

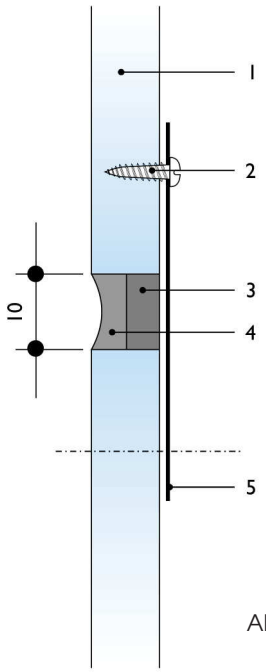
All dimensions in mm

## NUTEC SHEET

### Sealed Joints

- For sealed joints, only silicones which are compatible with cement should be used.
- **Painting over sealants is not recommended.**
- The minimum joint opening should not be less than 6mm and not more than 10mm.
- The depth of the sealant should be half the sheet thickness.
- The edges of the material next to the joint should be parallel and relatively smooth.

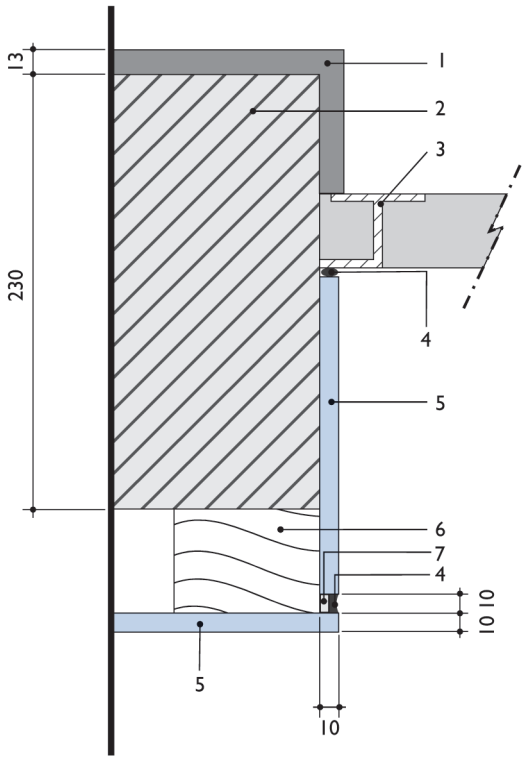
**FIG. 15 Sealed Joint Detail**




All dimensions in mm

1 Nutec sheet
2 Self tapping or rivet (optional)
3 Foam backing strip
4 Silicone sealant
5 50mm Galvanised hoop iron

**FIG. 16 Plan of Window Detail Showing Closed joint at Window Reveal**



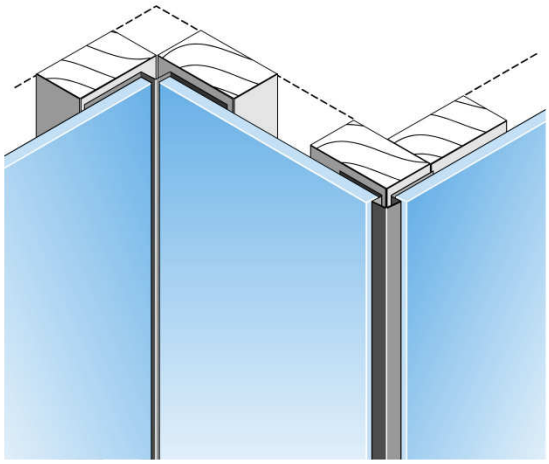

1 Plaster
2 Main structure
3 Steel window
4 Silicone sealant
5 Nutec sheet
6 Timber/steel frame
7 Foam backing strip

## FLAT FACADE

### Metal Flashing Corner Details

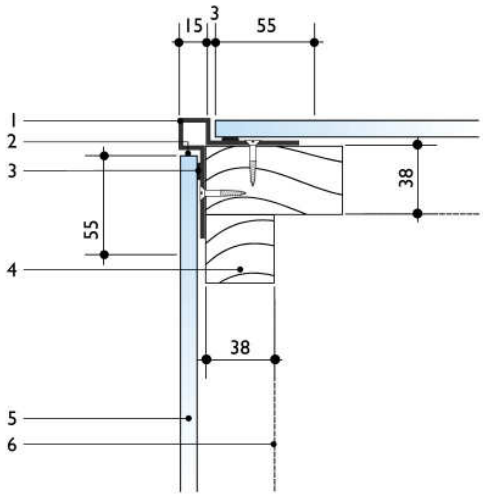
- **Metal products not supplied by EVERITE.**
- **External and internal finishings are optional.**

**FIG. 17(A)** Perpective of Metal Corner



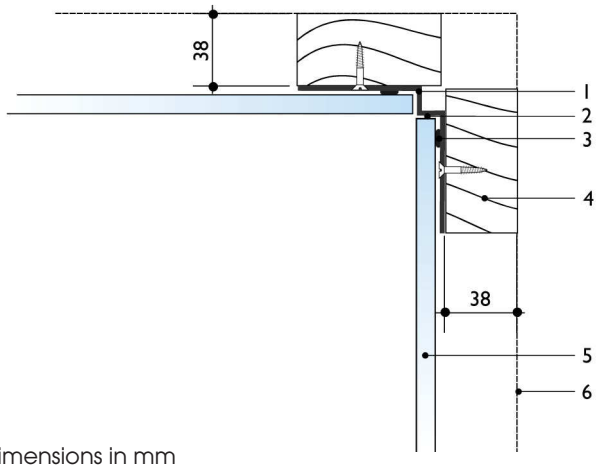
All dimensions in mm

**FIG. 17(B)** Plan of Metal Corner




1 Chromaprep preformed metal
2 Maximum tolerance 3mm
3 Silicone sealant
4 Timber fixed to main structure
5 Nutec sheet
6 Outer line of main structure

**FIG. 17(C)** Perpective of Internal Metal Corner



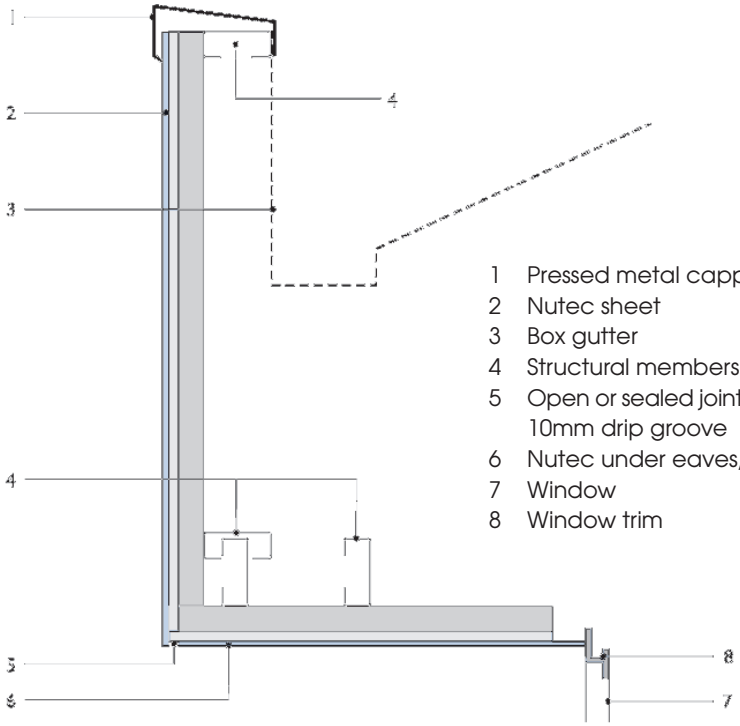

All dimensions in mm

1 Chromaprep preformed metal corner piece
2 Maximum tolerance 3mm
3 Silicone sealant
4 Timber fixed to main structure
5 Nutec sheet
6 Outer line of main structure

## General Details

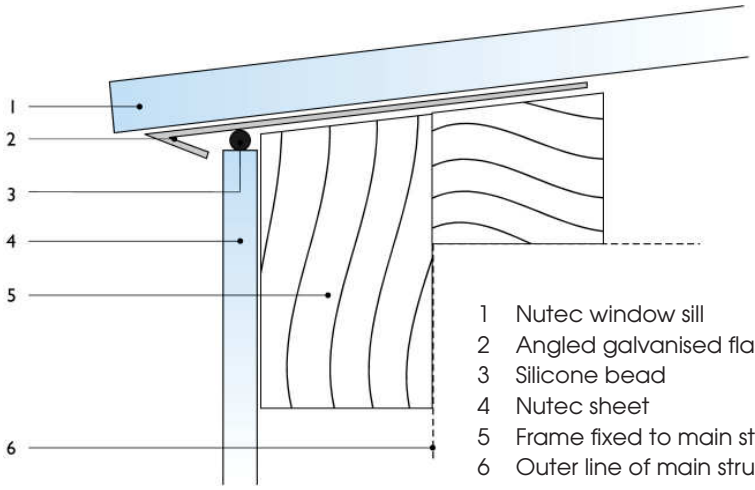
Where flashing is to be used on a parapet wall, it should wherever possible be sloped away from the face of the Nutec sheet in order to avoid any discolouration of the finished surface due to rain washing down dust onto the face of the sheet.

**FIG. 18** Typical Section Through Window and Parapet Wall




1 Pressed metal capping
2 Nutec sheet
3 Box gutter
4 Structural members
5 Open or sealed joints forming 10mm drip groove
6 Nutec under eaves/soffit
7 Window
8 Window trim

**FIG. 19** Section Through Windowsill




1 Nutec window sill
2 Angled galvanised flashing fixed to frame
3 Silicone bead
4 Nutec sheet
5 Frame fixed to main structure
6 Outer line of main structure

## Ventilation

When using Nutec flat sheets to form a double skin wall in a prefabricated steel or timber framed structure, the cavity between the two skins should be ventilated. In these structures, especially in humid conditions, foil is often installed as a moisture barrier and as an insulator. Ventilating the cavity will permit the evaporation of any condensation which may collect on the insulating material.

The sheets are best painted with a pure acrylic PVA paint. Where it is intended to use oil or alkyd paints it is essential to prime the sheet with an alkali-resistant sealer. In this instance both faces of the product should be sealed.

**The Tongue and Groove Textured Board is medium density. These sheets are supplied in the natural grey and can be varnished with wood stain to simulate timber. Sheets can also be painted in various techniques to achieve a pleasant aesthetic finish. These boards are ideal for ceilings, internal & external wall panelling, door panelling and garden sheds.**

## Handling & Storage

EVERITE boards are manufactured from composite materials and may be damaged under excessively high shock loads. Reasonable care should therefore be taken to ensure that the products are not dropped or subjected to rough handling.

A smooth level area should be made available where these products can be stacked safely.

The stacks should be supported at maximum 400mm centres and stacked clear of the ground.

They should be protected against possible damage. Stacking height should not exceed 500mm with canterlever not exceeding 100mm.

It is recommended that products be stored covered to keep them dirt-free before installation to prevent build-up of dust that will affect paint adhesion.

## Product Range

| Product No. | Nominal Thickness mm | Size mm | Average Mass kg |
|---|---|---|---|
| Textured Tongue & Groove Boards | | | |
| 650-567 | 6 MD | 1 200 x 2 400 | 24 |
| 650-568 | 6 MD | 1 200 x 3 000 | 30 |
| 650-569 | 6 MD | 1 200 x 3 600 | 37 |
| 060-643 | 9 MD | 1 200 x 2 400 | 35 |
| 060-644 | 9 MD | 1 200 x 3 000 | 44 |
| 060-645 | 9 MD | 1 200 x 3 600 | 52 |
| Plain Tongue & Groove Boards | | | |
| 650-566 | 6 MD | 1 200 x 3 000 | 30 |

# Tongue and Groove (cont.)

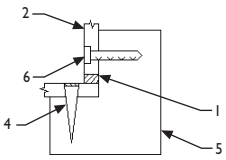
## Fixing Details

| Thickness mm | Maximum spans between Vertical supports – mm | Maximum Spans between Horizontal supports – mm |
|---|---|---|
| **6mm** | 570 | 500 |
| **9mm** | 570 | 800 |

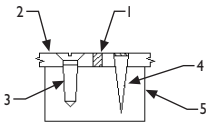
1.Cut the board to the correct size using a masonry cutting disk and place onto the wall in the desired position.

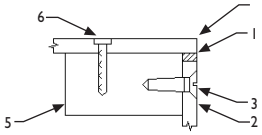
2. Drill 5mm holes through the board at the fixing points and fasten the board to the wall using a 5x30mm (minimum size) nail in screws with wall plugs. Cut nails can be used on plastered brick walls.
3. Make sure the screws are countersunk into the board when fastened.
4. Adjoining boards are butt joined together to simulate an extra 'groove' (5mm apart).
5. Use crack filler to cover the screw heads and fill the butt joint leaving a smooth finish, (eg. Painter's mate).

**FIG. 20** **Flush, internal and external joints for Tongue and Groove boards.**



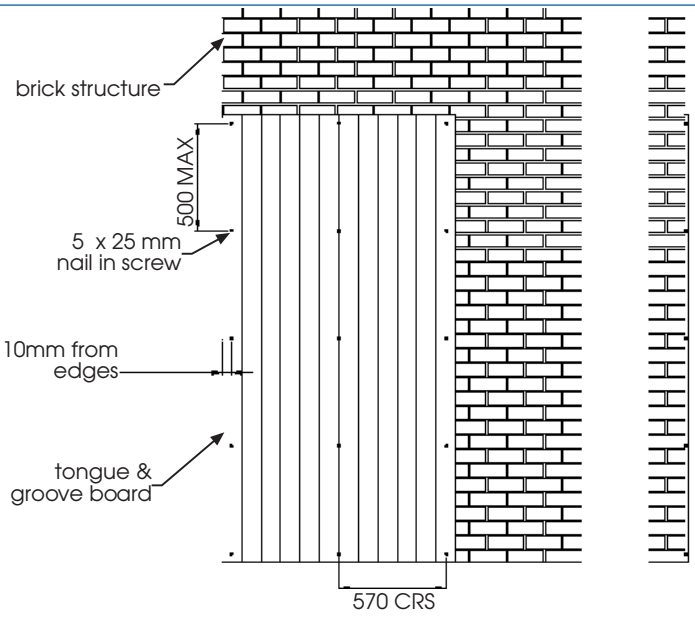

1. crack filler
2. tongue & groove board
3. nail in screen with wall plug for masonry
4. cut nail for plastered brick walls
5. timber, tiles or brick
6. galvanised nail



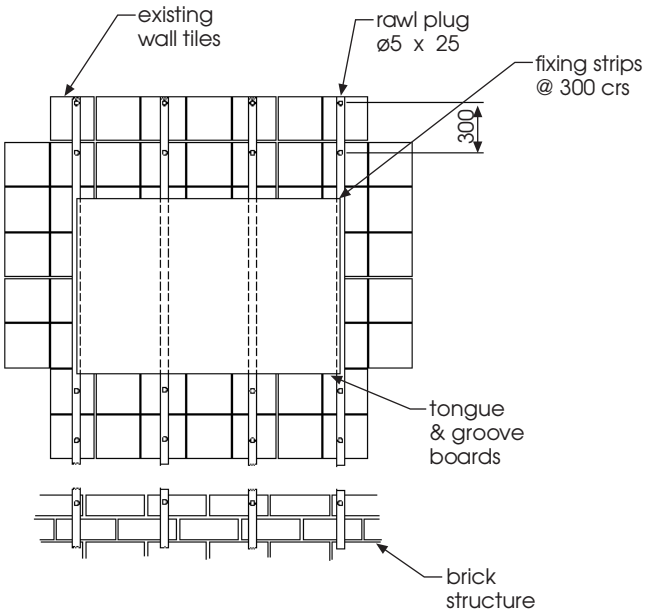

metal, wood or plastic corner pieces can be glued into external corners for extra strength

**FIG. 21** **Installing Tongue and Groove board to even surfaces**



## Fixing Details

**FIG. 22 Installation of Tongue and Groove board to uneven surfaces**




## Things to remember when installing Tongue and Groove boards.

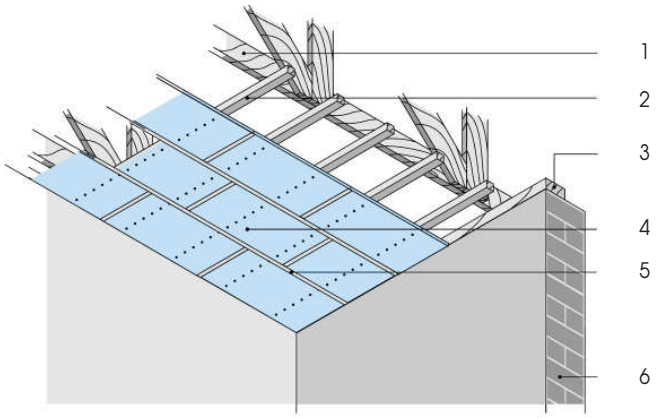
- Tongue and Groove boards may be applied to timber frames, plastered and unplastered walls and tiled surfaces as shown in **figure 21, page 36**.
- Standard dado rails can be easily attached onto the wall above or below Tongue and Groove boards except when fixing strips are used. In such cases a shelf should be used instead.
- Fixing to uneven walls may required the use of fixing strips **(figure 22)** to ensure that the board remains flat and does not follow an uneven contour.
- Fixing strips must be fastened to the wall with nail in screws at 300mm intervals. The irregularity of the wall will determine the thickness of timber used but a minimum of 15mm should be adhered to.
- Spacer must be used at relevant fixing points behind the strips to compensate for the irregularities in the wall. A builders line must be used to draw a level across the strips.
- Tongue and Groove boards are attached to the fixing strips at the same intervals as they would normally be attached using.
- For ceiling applications these boards should be fixed at 600m centers as shown in **figure 23, page 38.**
- When used in wet areas, the board must be sealed continuously around the perimeter of the reverse side of the board 5mm from the edge.

# Tongue and Groove (cont.)



## Fixing Details

**FIG. 23** Installing the Tongue & Groove as a Ceiling




1. tie beam
2. brandering
3. wallplate
4. nutec ceiling board
5. h-profile jointing strip
6. wall

**NB:**
- **Timber or steel framing may be used and should be constructed in accordance with local building regulations and acceptable building practice.**
- **Timber should be selected structural grade timber.**
- **Timber supports must be firmly secured to top and bottom plates and frames must not rely on the Nutec sheets for stability.**
- **Support spacings for external or internal walls should not exceed 600mm centres.**
- **Framing members, should be arranged to support all sheet edges.**
- **Where the support faces behind sheet joints are less than 38mm wide, pack out to provide additional landing for sheet fixing.**
- **For further information on timber framed structures refer to SABS 082-1975.**

| Description | Quantity | Rate | Amount |
|---|---|---|---|
| EVERITE high density Nutec sheets (uncoated), medium density plain Nutec sheets (uncoated), moulded panels (uncoated), fitting & fixing accessories fixed to (specify type and material of battens or sheeting rails). Battens, sheeting rails and supporting substructure elsewhere measured,including all cutting and waste (measured net). | | | |
| **1. Flat Sheets** | | | |
| a) EVERITE high density Nutec sheet (quote relevant dimensions of sheet) (measured net) $m^2$ | | | |
| or | | | |
| b) EVERITE Nutec medium density Nutec sheet (quote relevant dimension of sheet) $m^2$ | | | |
| **2. Accessories** | | | |
| a) Metal flashing with silicone for horizontal open joints (specify size and type of metal flashing) m | | | |
| or | | | |
| b) EPDM gasket for vertical joints (specify size and relevant product number) m | | | |
| or | | | |
| c) EPDM gasket for vertical corner joints (specify size and relevant product number) m | | | |
| or | | | |
| d) Galvanised hoop iron cover strip used behind panel (specify type and size of joint) by others m | | | |
| or | | | |
| e) Silicones for joint fillers (specify type and size of joint) by others m | | | |
| or | | | |
| f) Foam backing strip for jointing (specify type and size) by others m | | | |
| or | | | |
| g) Extra over for filling in | | | |

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