



# Tiling Systems



## A business dedicated to a sustainable future

As a leading manufacturer and distributor of tile adhesive systems, grouts and floor screeding compounds we understand the need to work towards creating a sustainable business. We have already taken great strides but recognise there is still more to do.

We continue to focus on six key 'green' steps that help us move forward in further reducing our impact on the community and its surrounding environment.

### 1. Product Development

We develop products that minimise their impact on the environment. All elements including the raw materials, the manufacturing process and the type of packaging are considered. Recycled and recyclable materials are used wherever possible.

### 2. Carbon Footprint

Our manufacturing processes, buildings, delivery and travel policies are monitored continuously which has already reduced our carbon emissions.

### 3. Waste Reduction

The latest manufacturing techniques and the use of grey water technologies have reduced the amount of waste our manufacturing facilities create.

### 4. Recycling

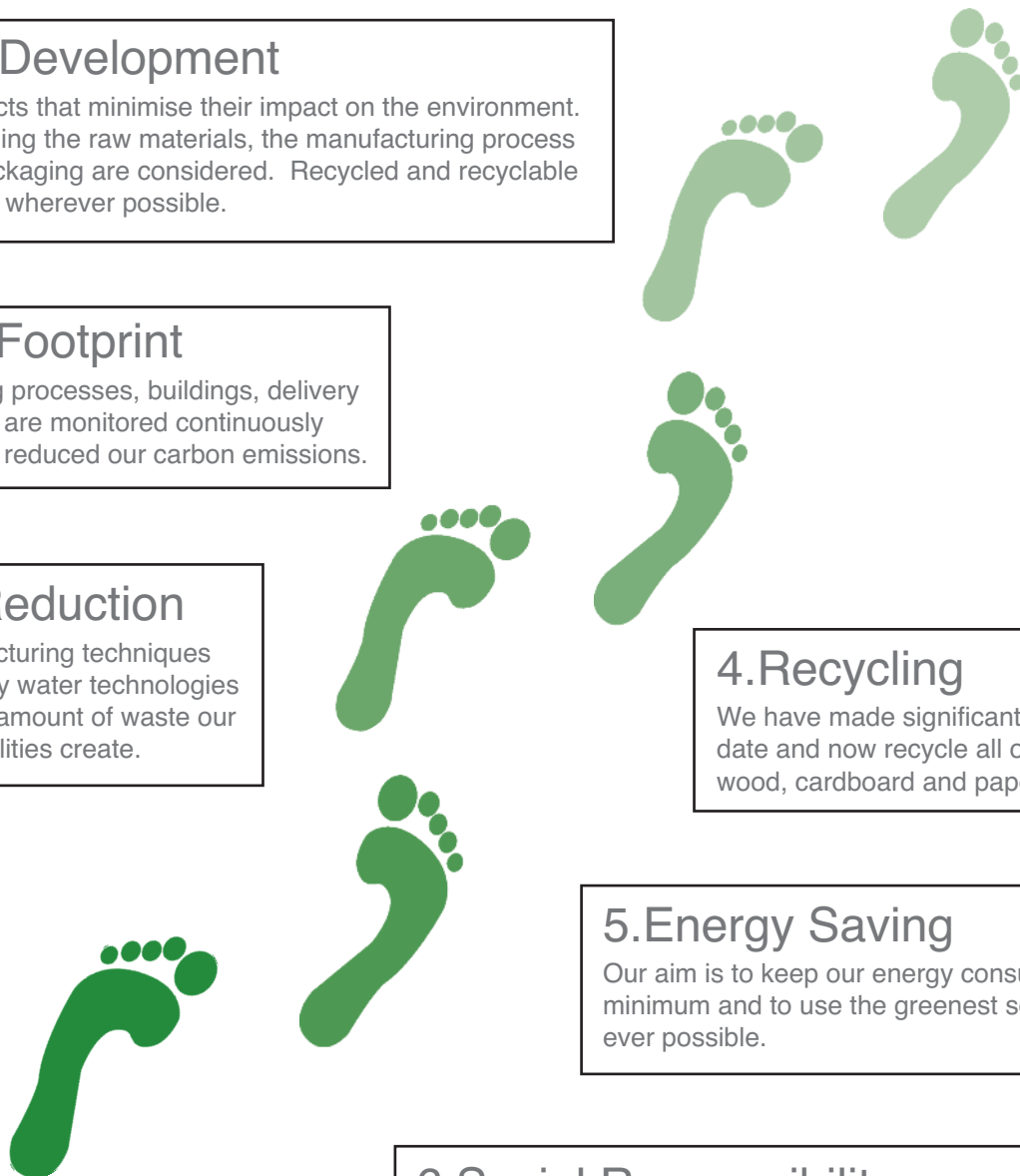
We have made significant progress to date and now recycle all our plastics, wood, cardboard and paper.

### 5. Energy Saving

Our aim is to keep our energy consumption to a minimum and to use the greenest sources wherever possible.

### 6. Social Responsibility

We believe that a sustainable and responsible business will ultimately become a more successful one. We work closely with our local communities and a national charity that help disabled children and young people live a life of greater freedom.



### Experience

Founded in 1875, the Nicholls and Clarke Group is a British owned company that has over 135 years of experience in the manufacture and distribution of high quality building products. N&C Nicobond uses this wealth of experience in the manufacture of Nicobond products, offering the specifier and contractor a comprehensive range of high quality products and systems that can be used with total confidence.

### Inventors & Innovators

N&C Nicobond invented ready mixed tile adhesive in 1958 and continue to be market leading Innovators. We have spent more than 50 years developing innovative tiling solutions that solve the challenges faced in today's construction industry.

### British Manufacture

Our three state of the art U.K manufacturing facilities comply with ISO 9001 and ISO 14001, utilise the latest manufacturing technologies and apply stringent quality control checks during every part of the manufacturing process.

Only the highest quality raw materials, product formulations and packaging materials are used, ensuring the finished product meets our exacting standards, far exceeding those of the latest European standards.

### Research & Development

The chemists, in our factories highly equipped laboratories are constantly engaged in research and development. Investment in the latest laboratory equipment allows us to make use of new, innovative raw materials and manufacturing techniques that lead to the production of unique products that offer distinct advantages to the specifier, contractor or client.

### International

N&C Nicobond products are used in over 70 countries throughout the world in some of the most demanding commercial situations and climates imaginable.

This worldwide experience has furthered the development of some of the latest technologies we now use in the U.K.

### Trade Associations & Technical Committees

N&C Nicobond has been heavily involved in the creation of British & European Standards for decades. We have chaired The Tile Association and various Technical Committees.

We continue to push for stringent policing of the industry which would stop manufacturers falsely claiming specific European standards on packaging. Our philosophy has always been to drive up quality and standards whilst remaining highly competitive.

### Total Solution Providers

We don't just manufacture tiles, sanitaryware and healthcare products. 'Tiling Products - The Directory' offers the specifier and contractor 68 pages of products and systems that create solutions for the most demanding of environments. We are still unique in being the only British manufacturer offering a 'Total Wet room Solution', starting with a tray former and tanking kit all the way through to the glass screen, sanitaryware, tiles and accessories - a total solution from one quality manufacturer.

### Environment

We take our impact on the environment very seriously and to that end employ an Environmental Manager who works with our environmental committee, with the aim of further reducing our carbon footprint in accordance with ISO 14001. We manufacture using recycled materials; recycle our waste paper, cardboard, timber and plastic at all 19 sites within the group. Other examples of our environmental commitment include; making use of grey water, solar power and ground heat source pump technologies, low energy lighting systems and a low emission fleet of commercial vehicles.

### 24 Hour Nationwide Delivery

We own & operate a fleet of over 100 commercial vehicles that deliver on a next day basis throughout the UK\*. Our distribution centres are strategically placed throughout England, Scotland & Wales. Our transport managers hold a 'Certificate of Professional Competence' and ensure that you get your delivery on the day you want it.

We take orders up until 5pm for next day delivery and do not have a minimum order value\*\*.



**Customer Care**

We aim to provide you with an outstanding level of customer service that will help to further enhance the service you offer your clients. We monitor our performance levels and strive to achieve 100% client satisfaction.

We believe that open channels of communication with our customers, coupled with their feedback are a sure way of further improving our customers buying experience.

**Technical Specification Service**

Our technical team have over 100 years combined experience in the specification of tiles for commercial and residential use. We offer a full technical specification service and are able to attend any site address throughout the U.K. A technical written specification is available on request. 'Tiling Systems' is available as a hard copy or download and contains fixing solutions to suit the vast majority of project types.

Clients can also create their own adhesive, grout and screed specifications online using the 'Nicobond-i' system which can be found at [www.ncdirect.co.uk](http://www.ncdirect.co.uk)

**Warranties**

N&C Nicobond products are manufactured to such high and exacting standards enabling us to offer a life time warranty on all our adhesives, grouting compounds and screeds\*\*.

**Commercial Partners**

We have worked in partnership with an extensive list of customers throughout the U.K and worldwide on some of the most demanding projects imaginable.

Our first U.K and export projects were completed 50 years ago, the Nicobond products used are still performing today and will continue to do so for the life of the building or project. This pedigree has created ultimate confidence in the Nicobond range of products.

Today we are working with many of the U.K's premier contractors who in turn have worked in partnership with leading brands such as;



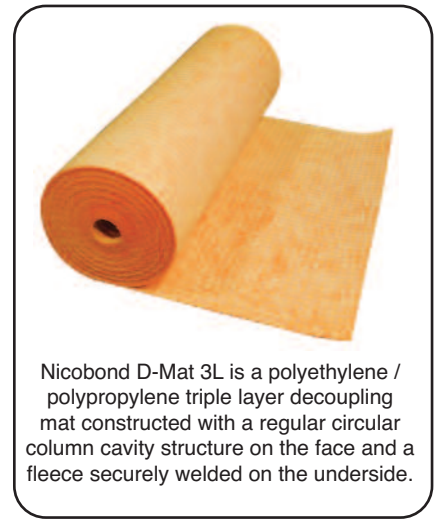
\* Subject to our standard delivery schedule.

\*\* Subject to terms and conditions, please ask for a copy of the N&C Nicobond warranty if required.

# D-Mat 3L

## Decoupling Mat for Tiles and Natural Stone

Tiling onto a cracked floor or green screed couldn't be easier.  
Use Nicobond D-Mat 3L, the reliable solution for tiling to problem substrates.

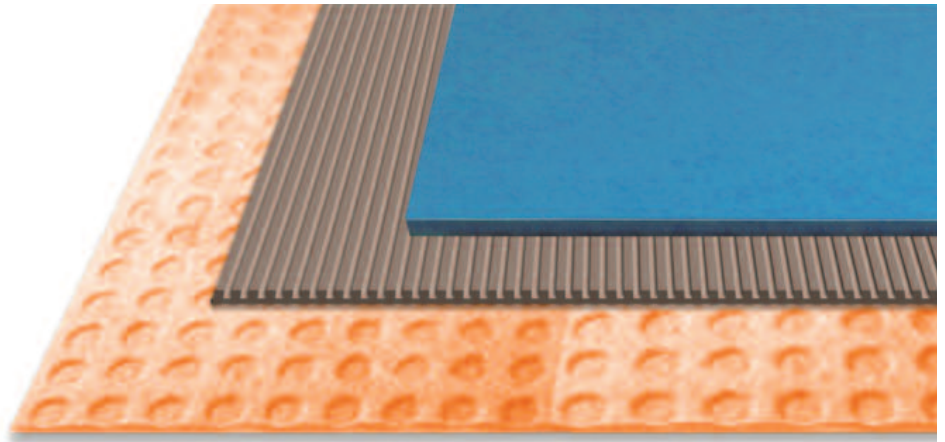


Ceramic, porcelain and natural stone tiles are used widely as an attractive, durable, easy to clean and largely maintenance free floor covering. The use of hard flooring is increasingly being used as an option that offers added value and enhanced quality to any project, residential or commercial.

Unfortunately cracking of tiles does occur and indeed this can be for all sorts of reasons from insufficient adhesive being applied to the back of the tiles, thereby creating voids to inadequate surface preparation in all its forms.

A conventional construction program allows for the concrete slab to be placed and allowed to cure for a period of approximately 6 weeks, a sand and cement screed is often applied as a topping and this requires a further 3 weeks to cure.

In certain situations the work program does not allow for this timeframe and given that the tile installer takes a risk then the shrinkage within the base could easily cause cracking or tenting of the tiles. The fact that D-Mat 3L can be laid once the screed is sufficiently hard to accept foot traffic is an obvious benefit.

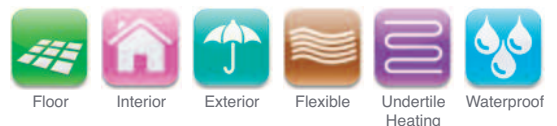
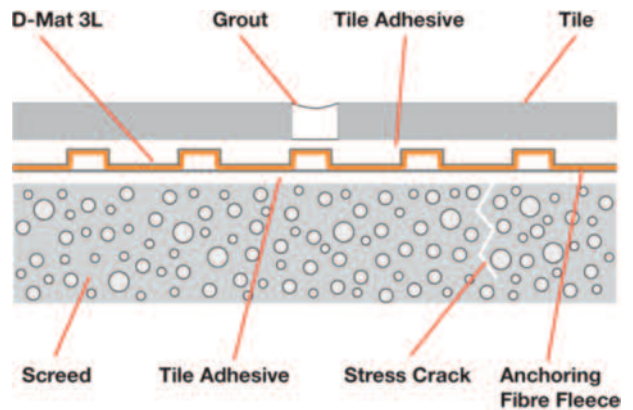


The use of D-Mat 3L as a decoupling layer can therefore offer a real contribution to preventing damage and cracking of tile installations. In many cases cracks emanating from a concrete bed or screed will migrate to the surface resulting in an unsightly floor and one in need of potentially costly repair.

In instances of only slight linear deformation of the surface D-Mat 3L has excellent crack bridging properties, under test conditions, according to FDF - Merkblatt (08.2004) D-Mat 3L performed extremely well until the test apparatus caused total rupture of the membrane.

### Features and benefits

- Tough and durable
- Textured fleece surface for improved adhesion
- Tile onto green screed
- Thickness: 3mm
- Prevents the transfer of stresses in tiles
- Watertight membrane (waterproof)
- Easy to lay and cut
- Lightweight
- Suppresses cracks in screed
- Accommodates movement
- Load bearing
- Can be used over timber





Movement Joints should be installed in accordance with British Standard 5385 and these should always be followed through to the tiled surface.

Nicobond D-Mat 3L is a versatile, decoupling mat that acts as an uncoupling membrane for problematic substrates. It has superb crack bridging properties which help to prevent the transfer of stresses between the substrate and the tiled surface, preventing damage and cracking of tile installations.

The triple layer mat also functions as a waterproof and water vapour equalization membrane through its grid like construction which allows it to be used in wet areas such as the bathroom or swimming pools projects.

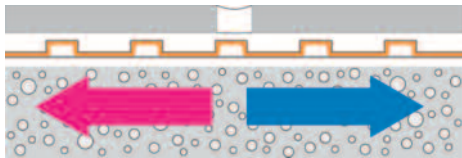
## Product Data

Colour	Orange
Size	1m x 30m roll - 1m x 10m roll
Thickness of material	3mm
Density	Approx 550gm per m <sup>2</sup>
Void volume between dimples	1.56l/m <sup>2</sup>
Number of dimples per m <sup>2</sup>	Approx 2,500 per m <sup>2</sup>
Service temperature	-40°C to 80°C
Resistant to	Alkali, chemicals, fungus bacteria & decay
Tensile Adhesion Test to EN 1348:	0.22 N/mm <sup>2</sup>
Crack Bridging to FDF-Merkblatt (08.2004):	No tile failure until total rupture of the membrane
Determination of Watertightness to EN 1928:	Method A, water pressure 2kPa for 24 hours.
Packaging	Protect from direct sunlight.

## Functions

### Uncoupling

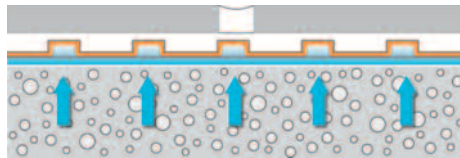
Separates the floor covering from the substrate and prevents the transfer of stresses to the tiled surface in order to neutralize a deformation or crack caused by shrinkage in the substrate. The D-Mat 3L bridges the cracks and does not allow the transfer of this energy to the tiled surface. This enables a green screed to be tiled onto as soon as it can be walked on, without leaving an impression in the screed.



D-Mat 3L neutralises stresses

### Equalising Vapour Pressure

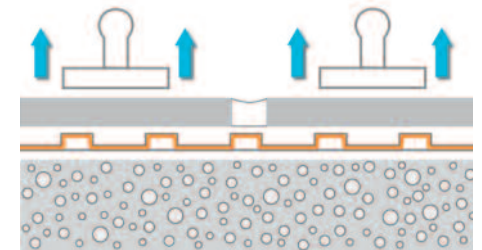
Prevents the buildup of residual moisture through the cavity structure on the underside of the mat through the air channels which allow moisture to evaporate and thereby neutralises vapour pressure.



Air channels to neutralise vapour pressure

### Adhesive Performance

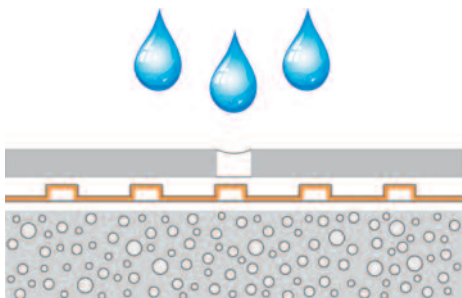
The textured surface of the polypropylene fleece facilitates improved adhesion to D-Mat 3L, with a bond strength of 0.22N/mm<sup>2</sup> it surpasses similar systems on the market



Fleeced surface for improved adhesive performance

### Waterproofing

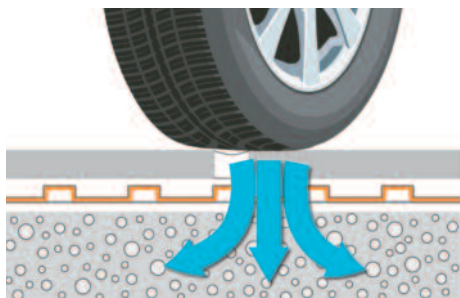
Manufactured from polyethylene, Nicobond D-Mat 3L is a waterproof membrane. Used in conjunction with Nicobond Wet Room Waterproof Liquid Membrane, tapes and other components a waterproof floor can be created.



Durable polyethylene for water proofing

### Load Bearing

In spreading the adhesive over the surface it is important to ensure the cavities are completely filled. Applied loads are transmitted directly to the substrate and makes the D-Mat 3L highly load resistant.



Transfers dynamic and static loads direct to the substrate.

### Timber

Used as an intermediate layer over wood sheets and boards where possible movement at board junctions could otherwise, lead to cracking of the floor tile.



D-Mat 3L neutralises stress



A durable and lightweight decoupling mat and anti fracture membrane for the secure fixing of tiles on to most substrates

## Application

### Concrete and Sand Cement Screeds

The drying process for concrete and screed bases is quite lengthy, usually drying at the rate of one millimeter per day, for the first 50mm, followed by an increasing time thereafter. During the curing process cracking can occur which is mainly caused by restraint to early thermal contraction and drying shrinkage.

*BS 5385 states that:*

*"At least six weeks should be allowed under good drying conditions for the structural floor to undergo initial drying shrinkage. If a levelling screed is subsequently to be applied, the levelling screed should be left for a further three weeks."*

*"Where tiling is on a separating layer directly over the structural floor, the period of six weeks is not critical."*

Nicobond D-Mat 3L will absorb the inherent stresses between the concrete and the tile covering enabling tiles to be installed as soon as the concrete or screed is hard enough to walk on

A further advantage of D-Mat 3L is that as it is a membrane it will enhance the properties of the screed, the membrane will slow down the drying time of the screed thereby reducing the effect of curling in the screed – this can be a particular

problem with floating and unbonded screeds and in so doing minimise any shrinkage cracks which may occur. In situations where there are minor defects or cracks of approx 2 -3mm then D-Mat 3L can be bonded direct to the floor and tiled over.

### Anhydrite/Calcium Sulphate

#### Based Screeds

Direct fixing of tiles to Gypsum based screeds can be achieved by using Nicobond Gypfix where the screed has a residual moisture content of a maximum 85% RH or 1% by weight. In situations where the moisture content is below 2%, Nicobond D-Mat 3L is a viable alternative.

Gypsum based screeds are sensitive to moisture and would therefore benefit from protection against additional moisture penetration.

### Timber floors, plywood, chipboard, orient strand board (OSB).

Nicobond D-Mat 3L should be used for floors which are rigid but subject to lateral movement and deformation through the influence of moisture or changes in atmospheric humidity. To overcome issues of deflection in floors we recommend Nicobond Plastic Ply, our self adhesive timber reinforcing sheet. All timber floors must be

prepared in accordance with BS 5385.

Tongue and groove plank floor boards fixed in accordance with BS5385 and having sufficient load bearing capability may be considered as a substrate. The timbers should have reached the equilibrium moisture content prior to installing D-Mat 3L. Previous notes relating to timber floors apply.

### Flooring Grade Asphalt

The surface should be sanded to provide a mechanical key and thoroughly cleaned. It will be necessary to slurry prime the surface using a bonding coat consisting of 1 volume Nicobond Primer, 1 volume of water and 1 volume of Nicobond C2 S1 category adhesive. Allow to set and then install the D-Mat 3L as usual.

### Synthetic Resin

The floor must be examined to ensure it is load bearing for the purpose, sanded to provide a mechanical key and thoroughly cleaned. It will be necessary to slurry prime the surface using a bonding coat consisting of 1 volume Nicobond Primer, 1 volume of water and 1 volume of Nicobond C2 S1 category adhesive. Allow to set and then install the D-Mat 3L as usual.



## Test Data

Test Summary	Standard	Issue
Determination of tensile adhesive strength after dry storage, water immersion, lime water immersion and heat ageing	according to DIN EN 1348	11.2007

## Test Conditions

Specimen Structure (from bottom to top)	Material	Mixture Ratio	Other Specifications
Subgrade	concrete slab (40x40x4cm)	according to DIN EN 1323	-
Primer	Nicobond Primer	0.25 l/1.0 l H <sub>2</sub> O	Application with paintbrush drying time 1h
Lower bonding (subgrade-decoupling)	Nicobond Rapidflex	5kg/1.1 l H <sub>2</sub> O	Floating-process 6mm pitch
Decoupling	Nicobond D-Mat 3L	-	-
Upper bonding (decoupling - tiles)	Nicobond Rapidflex	5kg/1.1 l H <sub>2</sub> O	Floating-process 6mm pitch
Tiles	Stone tiles (5 x 5cm)	according to DIN EN 14411 Gruppa Bla	After installation with 2kg load for 30 secs

## Test results

Tile No	Dry Storage	Water Immersion	Lime water Immersion	Heat Ageing
Mean	0.22 N/mm <sup>2</sup>	0.18 N/mm <sup>2</sup>	0.17 N/mm <sup>2</sup>	0.22 N/mm <sup>2</sup>

## Crack bridging ability test according to FDF-Merblatt (0.82004)

### Test Conditions

Specimen Structure (from bottom to top)	Material	Mixture Ratio	Other Specifications
Subgrade	concrete slab (40x20x4cm)	according to DIN EN 1323	-
Primer	Nicobond Primer	0.25 l/1.0 l H <sub>2</sub> O	Application with paintbrush drying time 1h
Lower bonding (subgrade-decoupling)	Nicobond Rapidflex	5kg/1.1 l H <sub>2</sub> O	Floating-process 6mm pitch
Decoupling	Nicobond D-Mat 3L	-	-
Upper bonding (decoupling - tiles)	Nicobond Rapidflex	5kg/1.1 l H <sub>2</sub> O	Floating-process 6mm pitch
Tiles	Stoneware (10x10x8cm)	according to DIN EN 14411 Gruppa Bla	after installation with 2kg load for 30 secs
Grouting	Nicobond Flexible Grout Plus	1kg/0.23 l H <sub>2</sub> O	Joint width 5mm

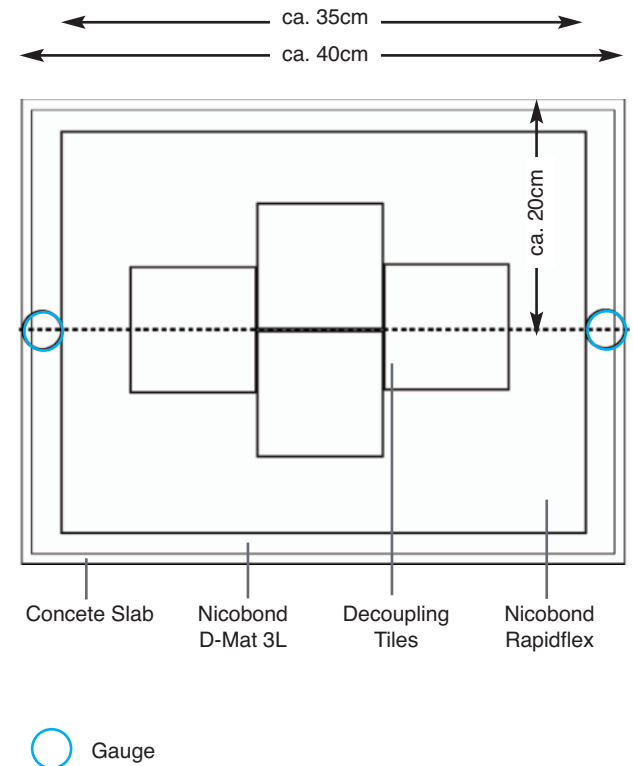
## Crack Bridging Ability Test

After a storage of 32 days in standard conditions at 23°C and 50% relative humidity, a crack between the two concrete slabs was generated by a path-controlled test machine without applying an external load.

The crack enlargement was measured by 2 gauges, directly attached to the butt-joint of the concrete slabs (see figure 1). During or directly after the crack enlargement, the ceramic coat was checked optically for damage (breaking of edges, tile fracture).

### Schematic: Representation of specimen

figure 1



### Test Results

The ceramic coating showed no failure until the total rupture of the decoupling. (figure 2).



Crack widening and total rupture of decoupling

## D-Mat 3L with Underfloor Heating

Underfloor heating has the potential to cause cracking in tiles. Nicobond D-Mat 3L is compatible with both underfloor and undertile heating systems.

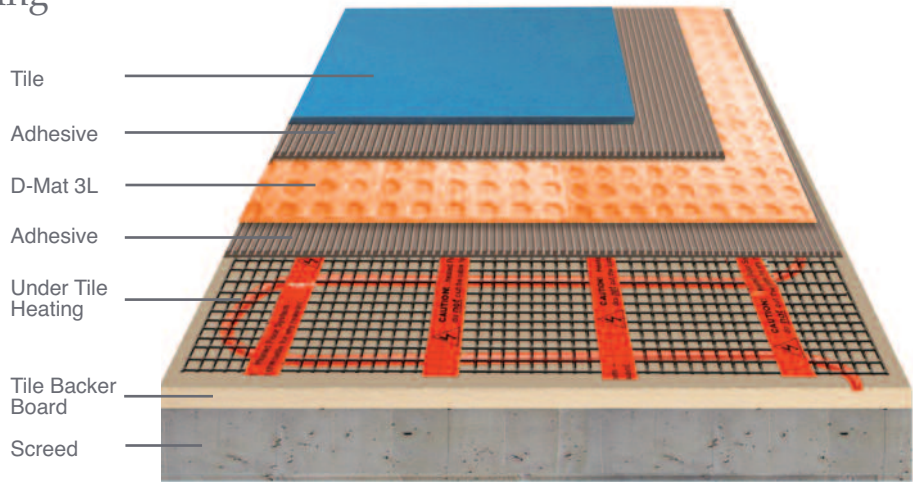
The air channels created in the grid structure of D-Mat 3L allow for a rapid and even distribution of heat beneath the tiling. The installation will follow normal practices for commissioning and the heating may be applied, 7 days after fixing for ceramic, porcelain and 10 days for natural stone.

British Standards, BS5385 Part 5:2009 Design and installation of terrazzo, natural stone, agglomerated tiles and slabs Code of Practice states:

*“Where electric undertile heating is used in conjunction with adhesive, an uncoupling membrane should be used. The heating cables can be positioned above or below the membrane and should follow the membrane manufacturer’s instructions.”*

For electric undertile heating systems, it is possible to lay the D-Mat 3L either above or below the heating cable or mat.

D-Mat 3L does not create a thermal barrier, therefore it will not inhibit heat transfer or reduce the performance of the heating system. However to be most effective in its function as a decoupling mat then the heating cable or mat should be applied direct to the substrate prior to installing D-Mat 3L. This allows D-Mat 3L to isolate the floor tiles from the heated substrate which will prevent stresses from damaging the tiled surface.



To provide a flat and level surface for the D-Mat 3L, apply a layer of smoothing compound or tile adhesive over the cable or mat and then install the D-Mat 3L over this. Tiling will then continue in the usual way using a suitable C2 and S1 category adhesive.

In situations where the D-Mat 3L has been installed then it is necessary to create a level base on which to lay the undertile heating system. This can be achieved by filling the cavities in the D-Mat 3L with adhesive and floating a thin even layer of adhesive over the surface.

The function of this is two fold  
a) to provide a sound, level base  
b) to isolate the heating wires from the polyethylene mat.

Care must be taken during installation of the tiles to ensure that sufficient adhesive is applied to cover the heating cables and to ensure tiles are solidly bedded thus avoiding any air pockets or voids beneath the tiles.

To maintain an efficient heating system the adhesive bed should not be more than 10mm thick.

## Wet Room Tanking

D-Mat 3L performs admirably as part of a wet room tanking system, complying with the requirements of EN 1928 Determination of Watertightness, so is classed as a waterproof membrane.

The installation procedure will follow the standard instructions but Nicobond Wet Room Waterproof Tape and Nicobond Wet Room Waterproof Internal and External Corners must be used to seal the joints between adjacent lengths of D-Mat 3L and to bridge the Wall and Floor junctions.

Test	Standard	Issue	Result as Enclosure No.
Determination of watertightness	DIN	07.2000	A1

### Test Parameters

Number of tested specimen	3
Diameter of specimen	200mm
Exposed specimen diameter	150mm
Method	A
Water pressure	2kPa
Duration per specimen	24h
Application standard	DIN EN 13967 (03.2007)

Test Summary	Standard	Result
Determination of watertightness	DIN EN 1928 07.2000	The material is classified as watertight



### Notes

Nicobond D-Mat 3L cannot rectify deficiencies in the substrate, adhesive, tile or installation such as but not limited to: Structurally unsound substrates, deflection limits (Tile Council of America stipulates L/360), substrates with unsuitable surfaces for a particular installation such as but not limited to those that are not flat or adequately prepared according to the recommendations given in BS 5385 and BS 8204.



## Installation Instructions

Surfaces to be tiled should be rigid, dimensionally stable, sound, level, capable of taking the applied load, clean and free from laitance, paints, salts, grease, dust and any contamination which may prevent adhesion.

Once the D-Mat 3L has been laid, consideration must be given to the tiles being installed. If it is a high traffic area then the corresponding tile type of suitable thickness and durability should be selected.

The contact surface area of the D-Mat 3L is approximately 50% of the total surface area, this can be a factor where high point loading is anticipated and sufficiently durable tiles must be selected. The minimum tile size recommended is 50 x 50mm.

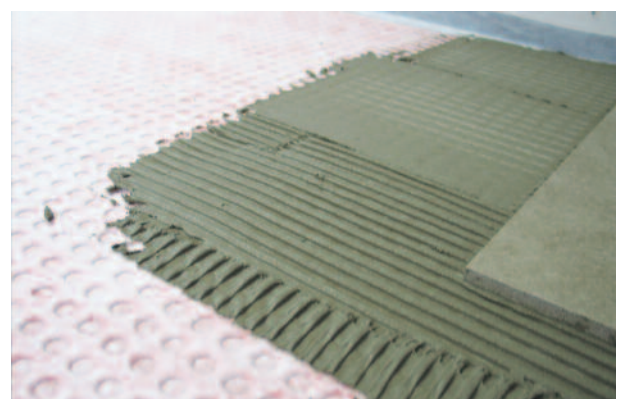
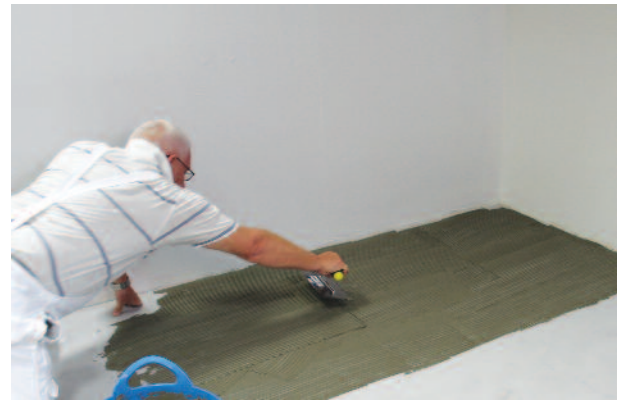
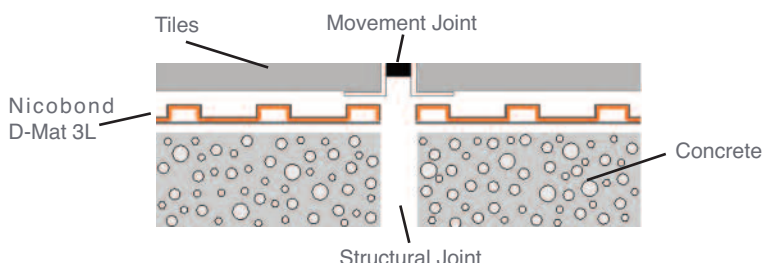
## Application

- 1 Plan the layout of D-Mat 3L so that any movement joints in the substrate are carried through to the tile surface. Refer to BS 5385 for more information on location and placement of movement joints.
- 2 Cut D-Mat 3L to the appropriate length using scissors or a utility knife
- 3 Apply a thin layer of Nicobond Rapidflex or C2 S1 category adhesive to the substrate using a 4 x 4mm notched trowel. And bed the fleece on the underside of the mat firmly into the wet adhesive.
- 4 Use a float or similar flat trowel to smooth out the D-Mat 3L to ensure the fleece is firmly embedded into the adhesive.
- 5 With the D-Mat 3L placed into position, it is recommended to readjust the alignment by pulling it slightly to make it taut. Butt joint the adjacent lengths of D-Mat 3L and secure together with Nicobond Jointing Tape or Waterproof Tape.
- 6 Once the D-Mat 3L has been fitted it should be protected from heavy loads so as not to disturb the early bond strength development. Place running boards down the centre to provide protection.
- 7 Tiles can be installed immediately after the initial adhesive set has taken place.
- 8 During setting out of the tiles, avoid lining up grout joints with the adjoining edges of the D-Mat 3L.
- 9 Apply a layer of Nicobond Rapidflex or similar C2 S1 category adhesive to the top surface of the D-Mat 3L using the straight edge of the notched trowel, press the adhesive firmly into the round cavities to create a solid bed. The adhesive can then be floated over the surface and notched with the appropriate trowel.
- 10 Fix dry tiles immediately as appropriate to ensure they are solidly embedded into the wet adhesive and free from voids.
- 11 Floors should not be opened to traffic until the adhesive has hardened.

## Movement Joints

Movement joints must be inserted as appropriate and follow existing structural joints. Intermediate joints may be required in larger floors and those subject to significant thermal changes, i.e. direct sunlight or underfloor heating. In these areas the floor should be divided up by movement joints into bays of size not greater than 40m<sup>2</sup> with an edge length not greater than 8m.

Perimeter movement joints should be inserted where tiling abuts restraining surfaces such as perimeter walls, columns, curbs and steps. If tiling onto a green screed, D-Mat 3L would need to be cut to both edges of the Movement Joint and then tiled onto. In all cases reference should be made to British Standards 5385.



# Disconnecting

## Disconnecting Sheet for Floor Tile Installation

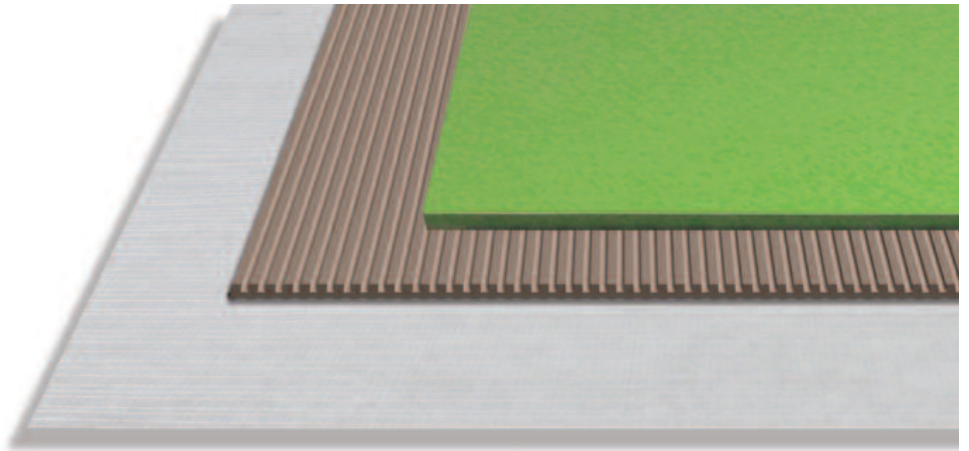
For laying a temporary tiled floor in a rented or commercial property or for tiling over a contaminated floor.



Supplied in roll form, Nicobond Disconnecting Sheet is a synthetic fabric with a bonded mesh combination which disconnects the installation from the substrate.

The Nicobond Disconnecting Sheet allows floor tiles to be laid in temporary accommodation, showrooms and exhibition areas where tiles can be installed, then subsequently lifted and removed easily with no damage or penetration to the subfloor.

Designed to be used in areas where a temporary solution for bedding tiles is required, it is also ideal as an uncoupling membrane where the condition of the floor does not facilitate good adhesion between the tile adhesive and the substrate such as old or contaminated screeds, tiled or painted surfaces.

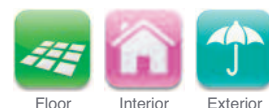
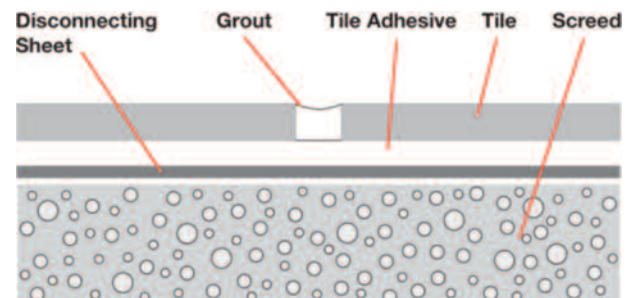


### Suitable Applications:

- Old layers of tiles
- Old adhesive bed
- Old cement screed
- Heated screed
- Magnesite and poured asphalt screed
- Painted surfaces
- Fixed parquet flooring
- PVC and plastic flooring

### Features and benefits

- Quick and easy to Install
- Strong and durable
- Synthetic fabric with a bonded mesh
- Thickness: 0.7mm
- Corrosion resistant
- Suitable for underfloor heating
- Colour: white/opaque





## Installation Instructions

### Surface Preparation

Surfaces should be rigid, dimensionally stable, sound and clean. Uneven substrates should be made good using a suitable Nicobond smoothing or levelling compound. Any loose or sharp particles which might damage the sheet should be removed by brush or vacuum prior to installation.

### Application

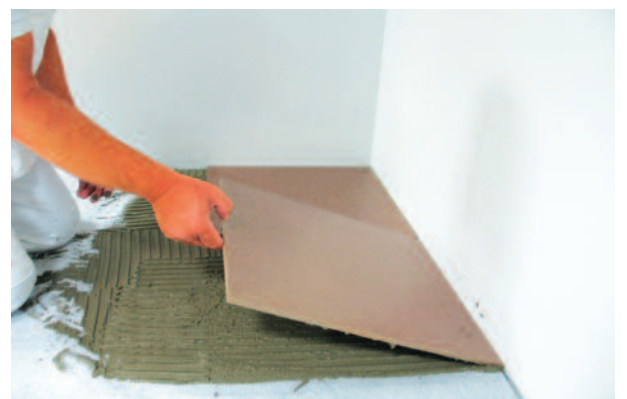
- 1 Lay the Nicobond Disconnecting Sheet into position on the floor with the mesh side upwards. The sheet can easily be cut to size using scissors or a utility knife. Ensure there are no creases and that each sheet abuts the next and does not overlap.
- 2 Tape the sheets together using Nicobond Jointing Tape. Perimeter joints must be maintained to ensure the sheet and adhesive bedding remains isolated from the wall junctions.
- 3 A pourable adhesive such as Nicobond Large Format Floor Tile Adhesive is recommended to give good connection to the mesh on the sheet.

### Product Data

Fabric	Polyethylene (Polyester)
Mesh	Poly Fibre
Roll Length	50 metres
Roll width	1 metre
Mass	220gm/m <sup>2</sup>
Thickness	0.7mm
Tensile strength MD & CD machine and cross direction	700N/5cm
Elongation at break	4%
Colour	White/Opaque
Shelf Life	Up to 1 year unopened

### Notes

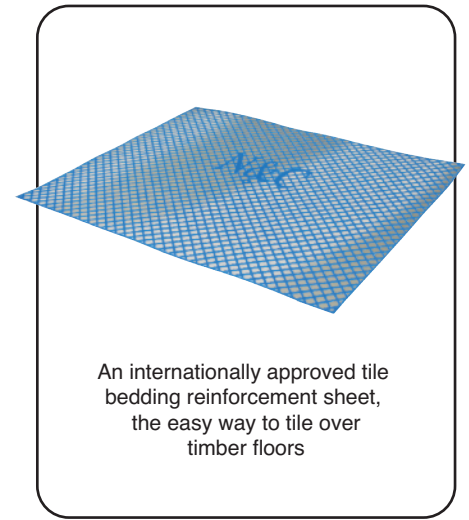
Not suitable for bonding tile in industrial applications.  
New cement screed should be 7 days old and /or have a residual moisture content of 0.5%



# Plastic Ply

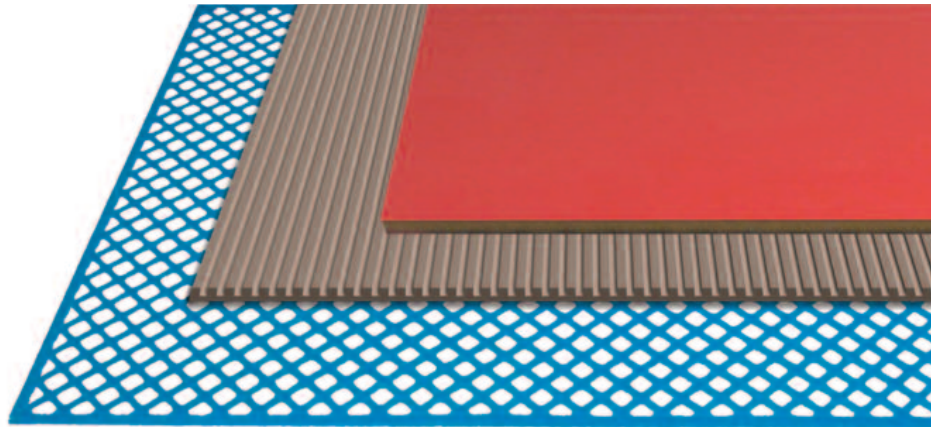
## Timber Floor Reinforcing Sheet

Prevents floor tiles & grout from cracking when tiling on to a timber floor.  
Stops the need for a step as only 2mm thick.



British Standards state “Timber is not considered to be a suitable base for floor tiling in wet, frequently damp, or high humidity areas, unless appropriate precautions are taken (BS 5385-4). Noggins might be required between joists in order to achieve the required rigidity. The limit of deflection normally permitted for domestic timber floors (see BS 5268-2) might be too great to avoid damage to tiling systems.”

Plastic Ply is a strong durable sheet material which effectively counteracts deflective forces in a timber floor.



A timber reinforcing sheet that facilitates the bonding of ceramic, porcelain and natural stones to timber floors. With its honeycomb structure, Plastic Ply counteracts deflective forces which prevents fractured or cracked tiles caused by the natural movement of timber, as well as point load.

Most buildings today are constructed from timber frames. When installing tiles, a sub floor is required to protect the tiles from damage and stress from movement.

Damage to tiles occur such as cracks or being uplifted due to the natural characteristics of timber such as warping, rotting and shrinking (average new building loses 3m<sup>3</sup> of water in the first month).

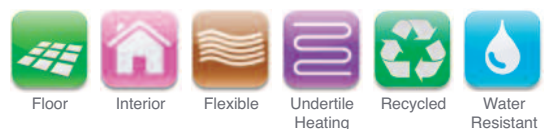
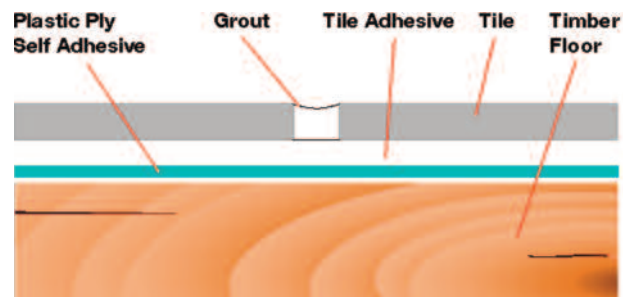
For many years the tiling industry struggled with objections from clients about raising floor levels when tiling over timber surfaces. Some in the industry tried using crack mats or disconnecting systems but these were not designed to counter

the level of deflection which can be found in timber floors.

N&C Nicobond created a revolution in the marketplace with the introduction of Nicobond Plastic Ply, the world's first timber reinforcing system. This allows the floor to be raised by only 2mm, where the tiles can then be tiled directly onto the surface.

### Features and benefits

- Easy to cut and install
- Self adhesive sheets
- Strong durable material
- Ready to tile onto immediately
- Size of sheet 600 x 500mm
- Thickness: 2mm
- Moisture resistant
- Time saving
- Compatible with undertile heating
- Does not rot or warp



# Appraisal of a Building Product

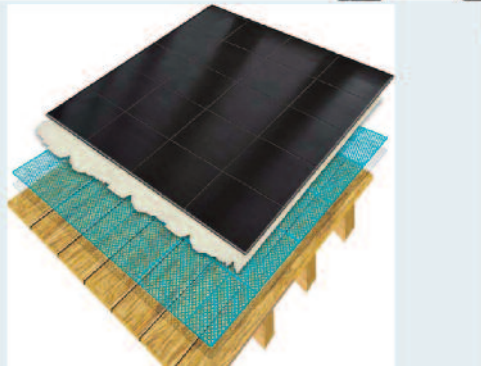


## The N&C Nicobond Plastic Ply Timber Floor Reinforcing Sheet



### Contents

- 1 General Information
  - 1 Specific Performance with the Building Code
  - 2 Description of Product
  - 2 Trade Literature
  - 2 Scope & Limitations
- 2 Detailed Information
  - 2 Technical Description
  - 2 Storage & Handling
  - 2 How to Install the Product
- 2 Basis of Appraisal
  - 3 Product QA Information
- 4 Verification of Compliance
- 5 Conditions of this APPRAISAL
- 6 Contact Details



## Basis of Appraisal

[BEAL use the Compliance Verification Procedure to demonstrate compliance with the relevant clauses of the NZ Building Code based on a risk-analysis procedure.]

### Clause B1 - Structure

The ability of the Nicobond Plastic Ply System to provide the support of the tiles and natural stone over timber flooring was assessed by way of a range of tests carried out at the BEAL facilities.

### B2 - Durability

For assessing the durability of the Nicobond Plastic Ply System, an evaluation of Durability for the following was carried out:

- The expected durability of the materials used in the Plastic Ply
- The durability of the nominated tile adhesives
- The durability of the nominated waterproofing membrane
- The durability of the nominated sealer

### E3 - Internal Moisture

The Nicobond Plastic Ply System was assessed for functional performance based on a range of tests carried out at the BEAL facilities.

The Nicobond Plastic Ply System was also evaluated in practical building situations to assess the following:

- Ease of installing the system
- Potential risks of non performance when being installed
- Any external factors that could effect the quality of the installed product
- Ease of repair or maintenance (where applicable)
- The impact of other building products/systems when in contact
- Comparison with other similar Products. These assessments and tests demonstrated compliance with the requirements of Clause E3 (Internal Moisture) of the NZ Building Code.

### F2 Hazardous Building Materials

BEAL considered the materials used in the installation of Nicobond Plastic Ply System, and concluded that no threat is presented. Installers of the Nicobond Plastic Ply System shall wear appropriate protective clothing.

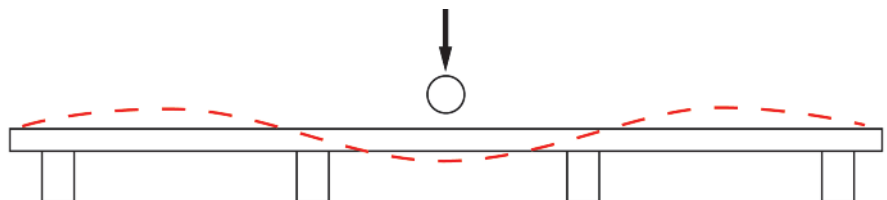
### Product QA Information

- The overseas manufactured Plastic Ply sheet, is manufactured to an inhouse standard.
- All aspects of the supply, installation and maintenance shall be as described in the New Zealand representative's Building Product Quality Plan. [Required by BEAL to demonstrate continuous compliance with the NZ Building Code.]

### Key Testing Procedures

Objective: To assess the ability of the Nicobond Plastic Ply when installed over nominated timber substrates T & G Floor boards/Chipboard/Plywood to deflect 1.6mm (L/360) when performing as a complete system, preventing the fracture of the finish tiled floor.

Test Method: A point load was exerted onto the test floor at a rate of 1mm/min to achieve the L/360 deflection, where L equals the span length (see drawing below).



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## Specific Performances with the NZ Building Code

### Clause B1 - Structure

The Nicobond Plastic Ply System when used in accordance with this Appraisal will meet Performance Requirements of B1.3.2 of the New Zealand Building Code.

### Clause B2 - Durability

The Nicobond Plastic Ply System when used in accordance with this Appraisal will meet Performance B2.3.1(c) 5 years, B2.3.1 (c) 5 years and B2.3.2 of the New Zealand Building Code.

### Clause E3 - Internal Moisture

The Nicobond Plastic Ply System when used in accordance with this Appraisal will meet Performance requirement of E3.3.3 of the New Zealand Building Code.

### Clause F2 – Hazardous Building Materials

The product contains no hazardous materials complying with clause F2.3.1 of the Building Code.

Floors have been designed with joists spaced at 600mm centres, therefore the the maximum deflection in the floors should be no more than 1.6mm. All floors should not exceed the deflection criteria of L/360, as recommended by The Tile Council of North America


Criteria: All floors should be able to resist a deflection of 1.6mm (L/360) with no visible signs of failure. i.e. tiles cracking.

Result : No failure occurred when the floors were deflected at 1.6mm. The floors were then subjected to maximum deflection of up to 10mm at which point the tiles cracked down the centre under the point load at up to 6.7mm deflection. In a test bed constructed in such a way that the grout line was at the centre the floor achieved a maximum deflection of 10mm, with the observation that there was hairline cracking in the grout.


Comment: The results showed that when the floors are subjected to a downward pressure to form a 1.6mm deflection, the Plastic Ply system prevents the fracture of the finished tiled floor over all nominated timber floor substrates constructed with timber joists at 600mm centres, and in conjunction with Nicobond Rapidflex Adhesive. On average the floors required a deflection of more than 3 times the required deflection before failure occurred; generally through the cracking of tiles.




# The problems with conventional methods of tiling to timber floors




**15mm Plywood**  
Large, heavy sheets, awkward to work with. Have to be conditioned, cut with a saw, primed and then screwed down. Plywood is sensitive to moisture and humidity changes and is prone to shrinkage and warping. At 15mm thickness it also creates a step which is not desirable.



**18mm Chipboard**  
Large sheets which are awkward to place. The sheets are easy to damage, costly to replace and have to be screwed down. Chipboard is moisture sensitive and is not a suitable material to tile directly onto. At 18mm thickness they also create a step which often requires a door to be cut down.



**Polyethylene/Plastic Separating Systems**  
These are designed as disconnecting systems, not reinforcing sheets and although they are well suited to control lateral movement they are not good for controlling deflection. They are also supplied in large rolls which are not easy to handle on site, and need to be bonded with adhesive to the timber base, adding more additional cost in both material and time.



**Fibre Cement Based Boards**  
Large sheets which can be awkward to place. The sheets are easy to damage and have to be cut with a saw, creating a lot of dust and screwed down. At varying thickness from 6 - 15mm thickness they also create a step which is not desirable.

Sub Floor	Size	Thickness	Weight	Moisture Resistance	Installation
Plywood	2400x1200	15mm (min)	Heavy	Low	Conditioned, cut, sawed and screwed
Chipboard	2400x1200	18mm	Heavy	Low	Conditioned, cut, sawed and screwed
Polyethylene separating system	Large rolls	4 - 8mm	Heavy	High	Bonded with adhesive
Fibre cement based boards	2400x1200	6 - 15mm	Heavy	High	Cut, sawed and screwed
Plastic Ply	600x500	2mm	Light	High	Peel off backing and stick to floor

## Design Standards 8.3

NHBC 2011 Standard - Chapter 8.3 Floor finishes Design Standards 8.3 - D4 and Sitework Standards 8.3 - S3.

Plastic Ply now features as an integral part of this important standard



tile bedding reinforcement sheets used in accordance with the manufacturer's recommendations.

## Product Data

Eco	50% recycled
Material	Blue polyethylene
Bonding	Self adhesive
Sheet size	600 x 500mm
Thickness	2mm
Packaging	Supplied in packs of 4 sheets per pack (1.2m <sup>2</sup> ). Outers of 12 packs per box (14.4m <sup>2</sup> )
Shelf Life	Up to 1 year unopened

### Notes

Nicobond Plastic Ply is designed for use on timber floor surfaces only. For tile installations using Nicobond D-mat 3L, please contact our technical team for advice prior to fixing.

Approved under T915 by the Building Element Assessment Laboratory of New Zealand - Building Code Compliant. There are no equivalent British Standards for this category of products.



## Installation Instructions

Installing Nicobond Plastic Ply couldn't be easier. Make sure existing boards are rigid, stable and capable of supporting additional loads without flexing. Boards should have sufficient ventilation beneath them. Any loose boards should be secured with appropriate sized screws (not nails) prior to applying N&C Nicobond Plastic Ply. If there is excessive flexing or movement within the floor the addition of extra noggins may be required.

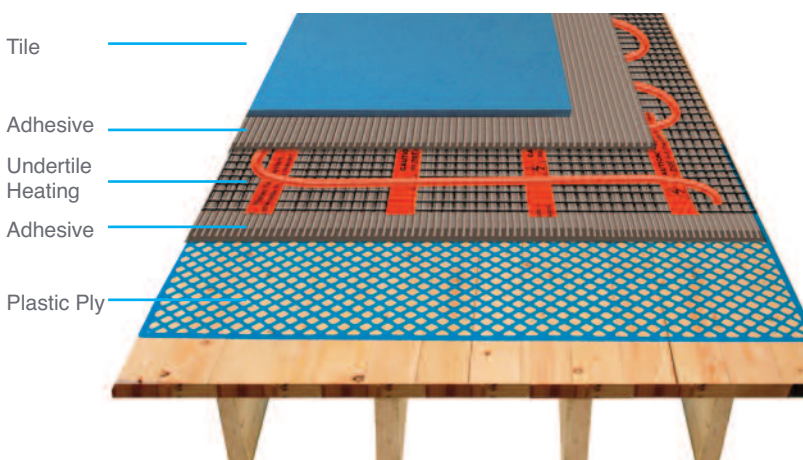
## Application

- 1 Ensure floor is clean and dust free
- 2 Prime timber and allow to dry
- 3 Remove release paper
- 4 Cut the Plastic Ply using scissors
- 5 Lay the Plastic Ply sheeting directly to the floor in a brick like formation
- 6 Cover Plastic Ply with Nicobond Rapidflex Adhesive
- 7 Fix tiles
- 8 Grout using Nicobond Flexible Grout Plus or Nicobond Starlike Grout



## Application with undertile heating

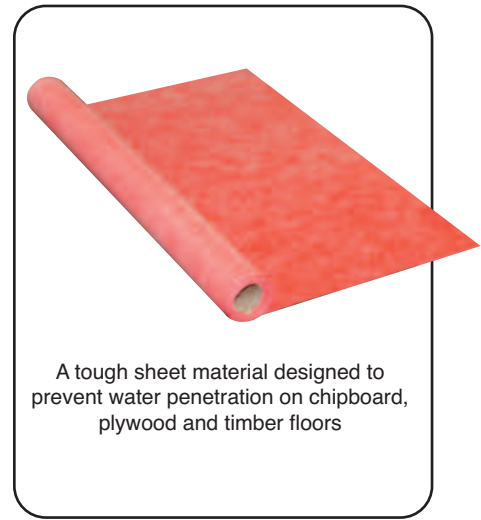
- 1 Ensure floor is clean and dust free
- 2 Prime timber and allow to dry
- 3 Remove release paper
- 4 Cut the Plastic Ply using scissors
- 5 Lay the Plastic Ply sheeting directly to the floor in a brick like formation
- 6 Cover Plastic Ply with Nicobond Rapidflex Adhesive or a layer (3mm minimum) of Nicobond Rapid Latex Screed Plus and allow to dry
- 7 Install electric undertile heating following the manufacturers instructions
- 8 Fix tiles
- 9 Grout using Nicobond Flexible Grout Plus or Nicobond Starlike Grout



# Tanking

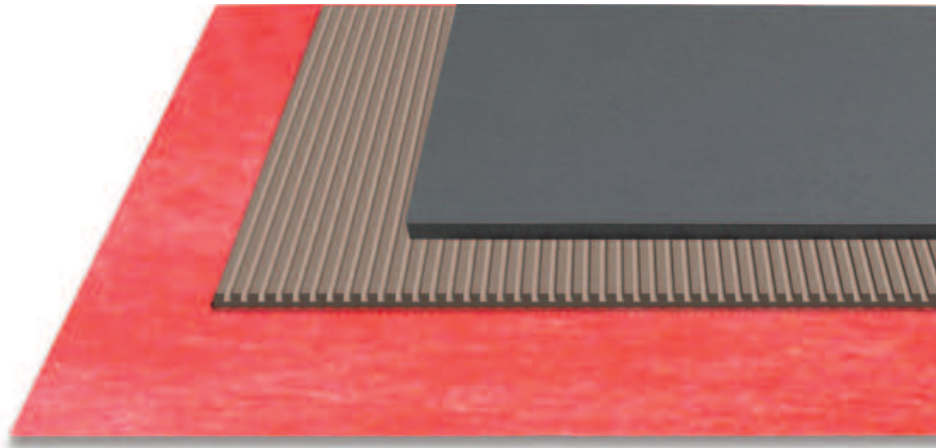
## Wet Room Tanking Sheet

Nicobond Wet Room Tanking Sheet part of the Wet Room Tanking System



A sheet membrane tanking material which when used in conjunction with Nicobond Plastic Ply and other components forms a system for covering surfaces subject to movement such as chipboard, plywood and timber floor boards. Made from UV resistant polyethylene and faced with glass fibre fleece Nicobond Wet Room Tanking Sheet offers superb protection against moisture penetration, has high flexibility and is part of a total solution for a watertight barrier.

Offers protection against moisture penetration as part of a watertight barrier solution that also includes key components such as waterproofing tape, internal and external corners and pipe collars.



## Wet Room Components

### Waterproof Tape

A key component in the Nicobond Wet Room System. A strong polyethylene material backed with a self adhesive butyl rubber layer, the tape is used for bridging and reinforcing internal corners and floor and wall joints. Simply remove the backing release paper and press the tape firmly into position.

### Waterproof Internal and External Corners

To ensure complete waterproofing in internal and external corners use the special pre-formed angled corners. Simply remove the backing release paper and press the tape firmly into position

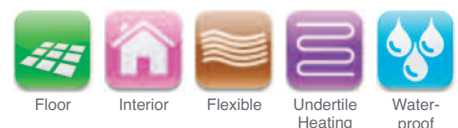
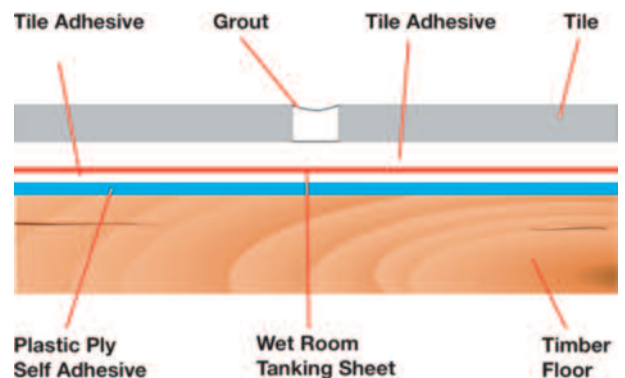
### Waterproof Pipe Collars

For efficient sealing around pipework, valves and drainage outlets. Available as a small or large collar with pre-cut holes. Simply remove the backing release paper and press the tape firmly into position



## Features and benefits

- Excellent protection against water penetration
- UV resistant polyethylene
- Colour: red
- Cover surfaces subject to movement such as chipboard, plywood and timber floors
- Part of the Nicobond Wet Room Tanking System
- Good crack bridging properties
- Low vapour permeability





## Installation Instructions for Timber Floors

### Application

- 1 Ensure floor is clean and dust free
- 2 Prime timber and allow to dry
- 3 Install the Plastic Ply in a brick like formation
- 4 Cover Plastic Ply with Nicobond Rapidflex and embed the tanking sheet into the wet layer of adhesive
- 5 Cover joints between adjacent sheets with Nicobond Wet Room waterproof tape
- 6 Cover Plastic Ply with Nicobond Rapidflex Adhesive
- 7 Fix tiles
- 8 Grout using Nicobond Flexible Grout Plus

### Application with Undertile Heating

- 1 Ensure floor is clean and dust free
- 2 Prime timber and allow to dry
- 3 Install the Plastic Ply in a brick like formation
- 4 Cover Plastic Ply with Nicobond Rapidflex and embed the tanking sheet into the wet layer of adhesive
- 5 Cover joints between adjacent sheets with Nicobond Wet Room waterproof tape
- 6 Cover the tanking sheet with Nicobond Rapidflex Adhesive
- 7 Install electric undertile heating following the manufacturers instructions
- 8 Fix tiles
- 9 Grout using Nicobond Flexible Grout Plus



### Product Data

Colour: Tanking sheet Tape Corners Pipe collars	Red Grey - self adhesive Grey - self adhesive Grey - self adhesive
Pack Size Tanking sheet Tape Corners Small pipe collar  Large pipe collar	10mtrs x 750mm wide 20mtrs x 80mm wide 120 x 120mm 100 x 100mm precut hole 11mm dia 375 x 375mm precut hole 39mm dia
Operating temperature	5°C - 70°C

# Acoustic

Acoustic Matting for Reduction of Sound

Complies with Building Regulations Document E.

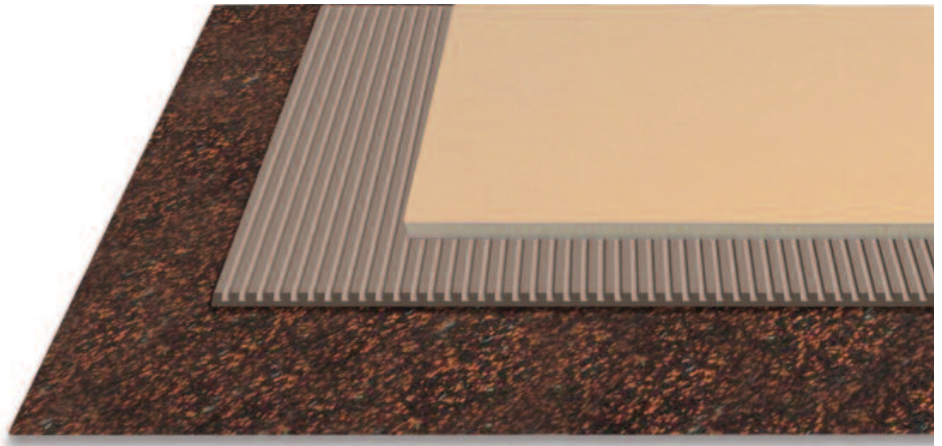


Nicobond Acoustic Matting – Designed as part of a sound reduction system to comply with Building Regulations 2010 Document E. Manufactured from a fine granulate of recycled rubber with cork and PU elastomeric bonding agent, supplied in blue granulate and beige cork having a fine granulate structured surface. Flexible sheet underlay with good lay-flat properties. Allows installation of underfoot comfort, acoustic and thermal insulation on poorly insulated surfaces. Makes flooring flexible and warm underfoot. In staircase areas, prevents transfer of sound and premature floor covering wear from impact.

Designed to be part of a sound reduction and thermal insulation system on poorly insulated surfaces, Nicobond Acoustic Matting enables flexibility, warmth in floors preventing the transfer of sound and premature floor covering wear from impact.

The transmission of noise is often cited as a major cause of disturbance. In order to lessen this intrusion measures have been taken to improve building standards through revision to building regulations.

This resulted in publication of 'The Building Regulations 2010 Resistance to the Passage of Sound Approved Document E July 2003 edition' incorporating 2004 and 2010 amendments.



This sets out the standard for improving sound insulation for internal walls and floors and affects dwelling houses, flats and rooms for residential purposes. This encompasses flats and maisonettes, apartments, hostels, residential homes, hotels and student accommodation.

Hospitals and refurbishments of historical buildings are exempt and schools are catered for in Section 1 of Building Bulletin 93 'The Acoustic Design of Schools'.

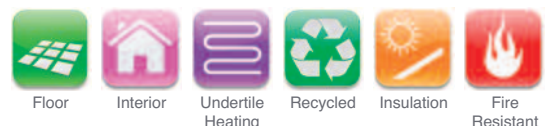
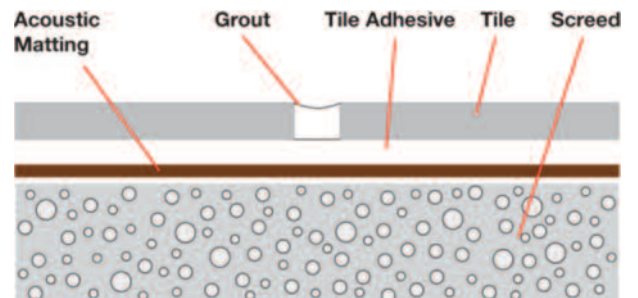
In addition to addressing acoustic issues it was also realised that the system must demonstrate adequate impact resistance.

This to be determined by testing the 'Acoustic Sound Reduction System' by using either a 'Schmidt Concrete Test Hammer' or applying a 'Rebound test'.

Based on data produced by the then British Ceramic Research Association a reading of 0.55 Minimum coefficient of restitution or 35 Minimum Rebound reading (%) was deemed to be satisfactory for light duty or domestic applications. The Nicobond system achieves a Minimum Rebound reading of 47 thus proving to be very durable and able to withstand medium duty levels of dynamic and impact loading.

## Features and benefits

- Easy to cut and install
- Excellent acoustic and thermal properties
- Can be used under tiles, stone, vinyl, wood, carpet
- Thickness: 3mm
- Compatible with undertile heating systems
- Fully recycled
- Zero ODP (Ozone depleting potential)
- Zero GWP (Global warming potential)
- Reduces 18dB





## Installation Instructions

The substrate must be level, sound, and free from cracks, dry, clean and free from materials that would impair adhesion. Test the substrate in accordance with applicable standards. If required thoroughly vacuum the surface, then prime and apply Nicobond smoothing compound, according to substrate type and occupational use.

## Application

- 1 Apply a layer of general purpose vinyl adhesive to the concrete base, following the manufacturer's instructions.
- 2 Lay the Nicobond Acoustic Mat and smooth out with a light roller to remove any air bubbles.
- 3 Cover joints between mats with crack tape to prevent tile adhesive penetrating to the base which could cause a sound bridge.
- 4 Once the floor adhesive is dry, insert a strip of Acoustic Matting around the perimeter at wall/floor junctions to isolate the floor.
- 5 Apply the tile adhesive following recommended procedures.
- 6 Ensure final perimeter joints are filled with a suitable mastic sealant

## Product Data

### Dimension/Tolerances

Length	Supplied in rolls 20mtrs x 1mtr wide +/- 1.5% (DIN 7715 part 2 class M4)
Available thickness	3mm
Dimensional tolerance	± 1.5%
Density	Approx 700 kg/m <sup>2</sup>

### Physical Properties

Tensile strength	Approx 0.8 N/mm <sup>2</sup>
Elongation at break	3mm approx 34%
Compression test to DIN EN ISO 3386-2	CC 1057kPa CC 5152kPa CC >12500kPa
Compressive at 10% pressure: (DIN 53421)	0.69 N/mm <sup>2</sup> E-Module 30.6 N/mm <sup>2</sup>
Coefficient of friction (dry)	Average 0.66 (GS-V-28)
Service temperature range	-40°C to +110°C
Environment behaviour	Limited resistance to acid and alkali solution

Final Performance: 11 mm glazed tile covering ISO 140-8: 1998

Thickness	3mm
DLW	18dB
Thermal conductivity	Vh Ca. 0.12 W/m K
Flammability rating	B2

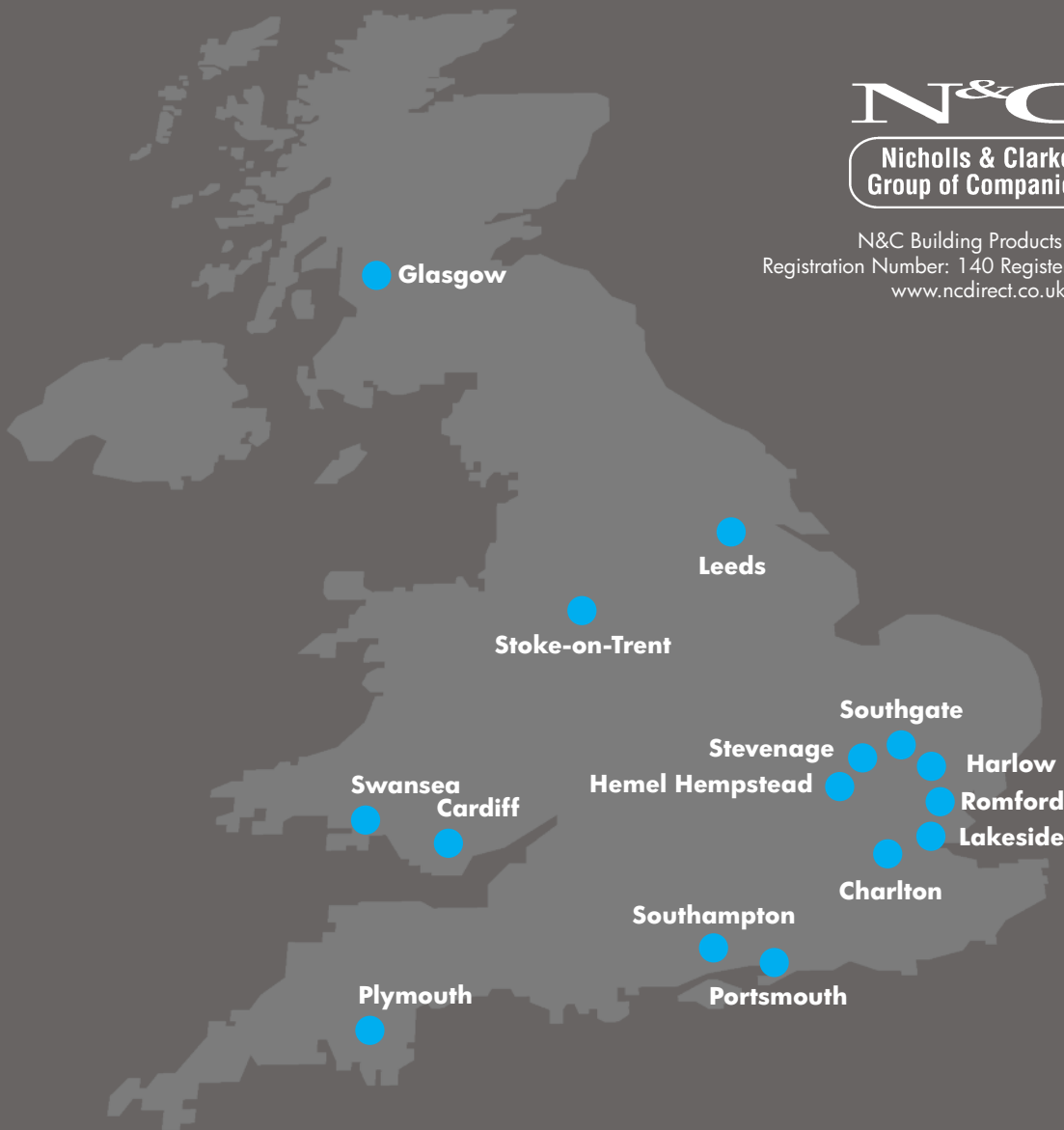


## Notes

# N&C

**Nicholls & Clarke  
Group of Companies**

N&C Building Products Ltd.  
Registration Number: 140 Registered in England  
[www.ncdirect.co.uk](http://www.ncdirect.co.uk)



## Distribution Centres Trade Counters & Showrooms

N&C Building Materials  
41-51 Freshwater Road  
Chadwell Heath  
**Romford**  
Essex RM8 1SP  
Tel: 020 8586 4600  
Fax: 020 8586 4646

Unit C1 Cothill Trading Est  
Plympton  
**Plymouth PL7 1SR**  
Tel: 01752 339724  
Fax: 01752 342746

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Fax: 01782 575641

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Fax: 0141 880 1212

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Fax: 01489 779701

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Gelder Road  
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Fax: 0113 224 4631

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Fax: 020 8361 4757

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Edinburgh Way  
**Harlow**  
Essex CM20 2HW  
Tel: 01279 621980  
Fax: 01279 621981

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Bugsby Way, **Charlton**  
London SE7 7SJ  
Tel: 020 8269 5960  
Fax: 020 8269 5961

Unit 1 Cliffside Trade Park  
Motherwell Way, **Lakeside**  
West Thurrock  
Essex RM20 3LE  
Tel: 01708 680180  
Fax: 01708 680181

T/A AG Ceramics  
Arlington Business Park  
Whittle Way, **Stevenage**  
Hertfordshire SG1 2BD  
Tel: 01438 315400  
Fax: 01438 740338

T/A Tile Shapes  
9 Maxted Road  
**Hemel Hempstead**  
Hertfordshire HP2 7DX  
Tel: 0845 2606 025  
Fax: 0845 2606 026

Unit 8D Pompey Centre  
Fratton Way, Southsea  
**Portsmouth PO4 8TA**  
Tel: 02392 894599  
Fax: 02392 894598

Unit 5 Tower Court  
St David's Road  
Swansea Enterprise Park  
**Swansea SA6 8QL**  
Tel: 01792 797337  
Fax: 01792 774019