

WINTER 2014



## SPECIALIST PRODUCTS FOR CONSTRUCTION





[www.facebook.com/wallbarn](http://www.facebook.com/wallbarn)



[www.twitter.com/wallbarn](http://www.twitter.com/wallbarn)



## CONTENTS:

## PAGE

### SUPPORT SYSTEMS:

17mm HIGH PLASTIC SUPPORT PADS.....	4
14mm HIGH PLASTIC SUPPORT PADS.....	5
9mm HIGH RUBBER SUPPORT PADS.....	6
5mm RUBBER DISCS, 3-8mm WEDGE SHAPED DISCS, CROSS SPACERS .....	7
LEVELLING SHIMS FOR FIXED HEIGHT SUPPORTS .....	8
ASP – ADJUSTABLE SUPPORT PADS FOR PAVING .....	9
ASP EXT – EXTRA .....	13
MEGAPADS FOR PAVING .....	14
TD SUPPORT PADS FOR TIMBER DECKING .....	16
TD MEGAPADS FOR DECKING .....	19
SLOPE CORRECTORS FOR ASP, TD & MEGAPADS .....	20

### COVERINGS:

TIMBER DECKING TILES .....	22
----------------------------	----

### MEMBRANES:

PRO-SEAL – SELF-ADHESIVE WATERPROOFING MEMBRANE .....	26
PROTECTO-BOARD – PROTECTION FOR BITUMINOUS WATERPROOFING .....	28
PROTECTO-DRAIN – HDPE PROTECTION & DRAINAGE MEMBRANE .....	30
PROTECTO-DRAIN 8 .....	30
PROTECTO-DRAIN G8 .....	31
PROTECTO-DRAIN 20 .....	32
PROTECTO-DRAIN 20P .....	33
PROTECTO-DRAIN 60P .....	34
PROTECTO-DRAIN ACCESSORIES .....	35
PROTECTO-DRAIN TECHNICAL DATA .....	36
GEOTEXTILE FABRICS .....	38
GEOTEXTILE FABRICS TECHNICAL DATA .....	40

### ROOF DRAINAGE:

TPE DRAINAGE OUTLETS .....	46
TPE CORNER OUTLETS .....	47
TPE COLLARS .....	52
TPE VENTS .....	54
EPDM OUTLETS .....	57
PVC OUTLETS .....	61
PVC COLLARS .....	65
PVC VENTS .....	66
ACCESSORIES – LEAF GUARDS, GRAVEL EXCLUDERS, CLIPS, EXTENSIONS & PATCHES .....	68

### GREEN ROOFS & LIVING WALLS:

GREEN ROOF SYSTEMS .....	74
M-TRAY MODULAR GREEN ROOF SYSTEMS .....	77
EXTENSIVE GREEN ROOF SYSTEMS .....	80
BIO-DIVERSE GREEN ROOF SYSTEMS .....	82
INTENSIVE GREEN ROOF SYSTEMS .....	83
LIVING WALL SYSTEMS .....	85
THE WALLBARN VERTIFLORA MODULAR SYSTEM .....	86

### PROJECTS AND CASE STUDIES:

KEY PROJECTS .....	90
--------------------	----



PROTECTS JOINT

PROTECTS JOINT

FLAT ROOFING

STRUCTURAL  
ENGINEERING

# SUPPORT SYSTEMS

SUPPORT RADE

WATERPROOFING

# SUPPORT PADS FOR PAVING

WALLBARN SUPPORT PADS ARE DESIGNED TO SUSPEND PAVING SLABS OFF THE WATERPROOFED DECK. THIS ALLOWS WATER TO DRAIN BETWEEN AND BENEATH THE SLABS PREVENTING LOCALISED FLOODING ON THE TERRACE.

The major advantage of using support pads is that no mechanical fixings are required. The waterproofing membrane is not pierced or interrupted in any way and the paving slabs can be taken up at any time if the deck beneath needs to be inspected. The weight of the slab holds the whole system in place. It is a much faster, cleaner and easier way to lay paving onto concrete decks than by bedding them into mortar.

## 17MM HIGH PLASTIC SUPPORT PADS

The standard, most commonly used support pad Wallbarn offers is the 17mm high plastic support pad. The plastic ring shaped pad is a simple design, but very hard wearing and tough. It is easy to store, handle and install.

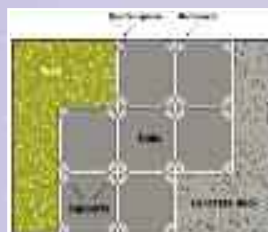


The pad is placed beneath the paving slab so that the corner of the slab rests on a segment of the support and is held into place by the right-angled positioning lugs. Four corners will sit onto one support pad and the whole system is held securely in place by the weight of the slab.

Wallbarn plastic support pads are injection moulded high density polypropylene made from recycled plastic. They are circular in shape with a hollow middle and a smooth, flat underside. The upper side has reinforcing bars around the face of the circle to help support the weight of the slab. The pad has four positioning lugs - small bars emerging from the face of the support in a cross formation. These give a 5mm wide gap between each paving slab, allowing water to drain effectively in between each slab to the deck beneath. This means there is no standing water on top of the slabs and the rainwater can be channelled and collected efficiently.

The lugs also ensure clear, consistent spacing between each slab, which gives uniform, straight paving line. This creates an attractive, superior finish to paved areas. There are a series of small holes around the edge of the support pad for drainage, meaning no water will collect either within the support itself or in the central hole. This is important as standing water can attract insects or lead to bad odours.

The plastic supports are made in four quadrants joined together with a small link. They can be easily snapped into segments of a half or quarter to support paving slabs up to edges or around corners. This eliminates wasting a whole support for one small section, a major advantage over other support pads on the market. It will also give a tidier finish to details.



## 14MM HIGH PLASTIC SUPPORT PADS

**PLASTIC SUPPORT PADS ARE AVAILABLE IN DIFFERENT HEIGHTS TO GIVE GREATER FLEXIBILITY TO DESIGNERS AND APPLICATORS.**

Wallbarn can supply a polypropylene support pad which is 14mm high. Manufactured in exactly the same way as the 17mm support and made from the same recycled material, these supports share the same properties but are slightly thinner.



This gives installers a slightly more cost effective option when laying suspended paving.

Plastic support pads are truly adaptable, and a large range of coverings can be placed onto them. They can be used to suspend Wallbarn hardwood timber tiles as well as concrete paving slabs. A natural, luxurious finish can be created much easier than by installing long plank decking and is more cost effective. As well as the standard concrete pressed slabs common on many public walkways, these pads are ideal for use with natural stone and promenade tiles. This can produce a truly high-class finish to roof decks and terraces.



Wallbarn recommends that slabs or tiles are at least 30mm thick. Users must be sure that the tile is strong enough to be suspended, and is heavy enough to remain stable once in situ. Users should contact the slab manufacturer for clarification. Where applicators are laying thinner tiles or very large slabs, it is very easy to snap off all the positioning lugs to create a smooth ring and place the pad underneath the centre of the slab for extra support.

If the slabs are laid in a complicated pattern, a support can have some or all of the lugs removed to create a T junction to support three slabs in a staggered formation.

For additional height, applicators can stack both the 17mm and 14mm plastic supports one on top of another. The lugs will be housed within the drainage cavity of the pad above, and the corner of the slab laid on top as normal.

However, Wallbarn recommends that a maximum of two pads are stacked up. A larger number of pads stacked up can lead to instability, so Adjustable Support Pads should be chosen where greater heights are required.



### TECHNICAL DATA

MATERIAL	INJECTION MOULDED RECYCLED POLYPROPYLENE
BEARING CAPACITY	400KG
OUTER DIAMETER	150MM
INNER DIAMETER	80MM
HEIGHT OF SUPPORT PAD	17MM
	14MM
LUG HEIGHT	10MM
LUG THICKNESS / GAP BETWEEN SLABS	5MM
THICKNESS OF DRAINAGE CHANNELS	9MM
THICKNESS OF DRAINAGE HOLES	8MM

For both 17mm and 14mm high plastic support pads, any minor differences in the level of the paving slab can be arrested by fitting plastic levelling shims onto the upper side of the disc. They are available 1mm, 2mm and 3mm thick. Further details can be found on page 8.

## 9MM HIGH RUBBER SUPPORT PADS

**WALLBARN OFFERS SUPPORT PADS MANUFACTURED FROM RUBBER FOR APPLICATORS WHO DESIRE A SOFTER MATERIAL TO INTERFACE WITH THE DECK BENEATH.**

A 9mm thick disc made from a synthetic rubber compound is available as an alternative to the plastic support pads. The rubber is a much tougher, more durable material, and the disc is a solid ring, so can tolerate much higher weight than the plastic pads.

Being made from rubber, the pad is much softer and more flexible than polypropylene. This makes the pad ideal for laying onto more delicate surfaces such as insulation, mastic asphalt and single ply.



The material is flexible and has a great deal of elasticity. The pad is also manufactured with a curved underside at the edges, which means there is less risk of the pad digging into the deck beneath.

The soft profile of the rubber pad also makes it ideal for use with very hard surfaces, and it has been laid successfully directly onto surfaces such as fibreglass and glass without any risk of causing scratches or damage. The rubber compound also helps prevent the pad from slipping on the sub-surface.

The pad is manufactured with four lugs on the upper side which keep the slabs in position. The lugs are 5mm wide, which ensures a good level of drainage between each slab and helps maintain a straight paving line along the area. Again there is no mechanical fixing of the slabs or pads, and applicators do not have to point between the slabs. This saves a great deal of time when laying flags onto a large area. As the slabs are not bedded into mortar, significant savings are made in both labour and extra weight on the roof. It is also a far less messy way to install paving.

The pads can either be cut with a sharp knife if installers wish to butt the slabs right up to the wall or upstand, or a small border of washed pebbles can be laid around the perimeter as a border.



### TECHNICAL DATA

MATERIAL	SYNTHETIC RUBBER COMPOUND
BEARING CAPACITY	8,000KG
OUTER DIAMETER	120MM
INNER DIAMETER	55MM
HEIGHT OF SUPPORT PAD	9MM
LUG HEIGHT	9MM
LUG THICKNESS / GAP BETWEEN SLABS	5MM
THICKNESS OF DRAINAGE CHANNELS	4MM PER CHANNEL (2 CHANNELS)

## 5MM RUBBER DISCS

Where applicators have very restricted height thresholds, Wallbarn can offer a solution in the form of 5mm thick rubber discs laid in conjunction with cross spacers.



The solid circular discs are made from PVC with a smooth finish.

Separation of each slab is achieved with a loose laid cross spacer. These are available in various thicknesses and further details are given below.

## 3-8MM WEDGE SHAPED RUBBER DISCS



Wedge shaped discs are also available. They are similar to the 5mm discs but wedge shaped instead of being flat. They slope from a thickness of 8mm at the highest down to 3mm.

On areas where there is only a very small threshold, it is possible to use two of these wedge shaped discs together to act as an alternative adjustable pad. More a shock absorber or membrane protection than an actual support, they can be slid towards or away from each other to create different thicknesses, achieving a range from 3mm (where one has been used on its own, up to

11mm, where two have been stacked on top of each other completely).

A better use for these items are as slope correctors beneath fixed height support pads. Simply placed onto the deck with a plastic or rubber ring loose laid on top without fixings, they can take out the fall in the deck to ensure that the support pad is completely vertical and straight, and the paving does not tilt in any way.

## CROSS SPACERS

The discs described above are all flat pads without integrated separation lugs. Where they are being used for paving, it is advisable that loose laid cross spacers are placed on the centre of the disc to achieve the accurate, straight paving line. These polypropylene two-part pieces are slotted together to create a small cross shape, which can be fitted into the junction between four paving slabs to ensure they remain straight and in place. Therefore, regular paving can still be achieved even when using flat discs. The cross spacers are available 3mm, 4mm and 5mm thick. All of these sizes will ensure adequate drainage, the gaps between the paving slabs depends more on the wishes of the designer.



## TECHNICAL DATA



### RUBBER 5MM DISC

MATERIAL	PVC OR EPDM
BEARING CAPACITY	8,000KG
DIAMETER	150MM
THICKNESS	5MM



### WEDGE SHAPED RUBBER DISC

MATERIAL	PVC OR EPDM
BEARING CAPACITY	8,000KG
DIAMETER	150MM
THICKNESS	3-8MM WEDGE



### CROSS SPACER

MATERIAL	WHITE POLYPROPYLENE
HEIGHT	9MM
LUG THICKNESS / GAP BETWEEN SLABS	3MM
	4MM
	5MM

## LEVELLING SHIMS FOR FIXED HEIGHT SUPPORTS

LEVELLING SHIMS IN A NUMBER OF DIFFERENT SIZES ARE AVAILABLE TO USE IN CONJUNCTION WITH BOTH PLASTIC AND RUBBER SUPPORT PADS.

There may be occasions where installers are laying fixed height support pads, but reach an area where a slightly different thickness of clearance is required. This can happen where the thickness of the actual paving slab alters slightly from one flag to another, where the deck underneath changes or where an unexpected door threshold occurs, for example. These minor changes can be addressed with the use of levelling shims.

Levelling shims have been designed to fit on top of all fixed height support pads and will make up those small differences in the level. To avoid one of the slabs rocking, applicators can simply hang a levelling shim onto the support pad to make up the difference.

1mm & 2mm shims

3mm shims



Shims are available 1mm, 2mm and 3mm thick. They are loose fitted and held in place by the positioning lugs. The 3mm thick shim has a slightly different shape to the 1mm and 2mm shims, but all three are suitable for all of the fixed height supports. The shims will overhang the rubber ring slightly, but this is no issue. The weight of the slab will ensure that the whole system is held in place properly.

All shims can be snapped apart into a half shape or into quarters where only one corner needs extra support. This is often required where just one of the flags becomes unsteady and needs bringing up to the level of the others.

Multiple shims can be stacked onto a support pad, but care should be taken that the lug does not become engulfed as this will affect the paving guide and compromise straightness. There needs to be enough of the lug showing for the slab to butt up to.



### RUBBER ACOUSTIC / ANTI-SHOCK SHIMS



These shims are styled in the same design as the standard plastic 3mm shim, but are made from PVC instead of plastic. They are 2.5mm thick and can be placed onto both fixed height support pads, ASP adjustable supports and TD timber decking supports.

They act as an effective vibration or sound control layer. They can deaden the sound of pedestrian traffic over tiles or timber decking (very useful when terraces are being installed on top of dwellings below) and give extra protection by preventing the risk of vibration damaging the tiles over time.



### TECHNICAL DATA

#### PLASTIC LEVELLING SHIMS

MATERIAL	RECYCLED POLYPROPYLENE
OUTER DIAMETER	150MM
THICKNESS	1MM - TO FIT 9MM, 14MM & 17MM SUPPORTS
	2MM - TO FIT 9MM, 14MM & 17MM SUPPORTS



#### PLASTIC LEVELLING SHIMS

MATERIAL	RECYCLED POLYPROPYLENE
OUTER DIAMETER	150MM
THICKNESS	3MM - TO FIT 9MM, 14MM & 17MM SUPPORTS



#### RUBBER ANTI-SHOCK SHIM

MATERIAL	PVC
OUTER DIAMETER	150MM
THICKNESS	2.5MM - TO FIT 9MM, 14MM, 17MM & ASP SUPPORTS

# ADJUSTABLE SUPPORT PADS FOR PAVING

WHERE A VERY HIGH CLEARANCE IS REQUIRED, AND TO COPE WITH CONTINUOUS CHANGES TO THE CONCRETE DECK BENEATH, ADJUSTABLE SUPPORT PADS ARE THE BEST WAY TO ENSURE TOP QUALITY FINISHES TO ROOFS, BALCONIES AND TERRACES.



Best practice for roof and terrace design is to ensure the deck is built to a fall to allow proper drainage. Where a very high clearance is required, and to create the highest level finishes the best way to arrest the continual change to the deck level is to use adjustable support pads.

Unlike fixed height supports, which can only be altered in height by adding shims, changes in level that are irregular, very large or continual can easily be accommodated using ASP adjustable supports for paving.

These adjustable supports create a completely flat upper surface on roofs built-to-falls in the safest, most efficient way.

The robust supports are manufactured from injection moulded polypropylene and can tolerate loads of 400kg per unit. They are made from virgin material. Wallbarn has to use virgin material for all adjustable supports to ensure that the weight tolerance and strength is consistent.

Unfortunately the consistency of the material cannot be guaranteed when using recycled plastic as the sources and quality cannot always be traced and measured. Beware claims of strength performance on moving parts when using recycled plastic.

As this is a suspended system, there is no risk of the delicate waterproofing membrane beneath being pierced or damaged. The weight of the slabs is spread through the base plates. If the deck ever needs to be inspected, the system can be taken up easily.

The cavity also presents opportunities to hide unsightly objects, such as water pipes, electricity cables, drainage outlets and manholes beneath the paving slabs.



They can be used with pressed concrete slabs and tiles, natural stone and timber decking tiles. In fact anything which has a straight edge can be used in conjunction with ASP adjustable support pads. The head plate holds the corner of four slabs. It has four integrated positioning "lugs" which the slabs will butt up to. These lugs provide a clear space between each slab which allows the drainage of rainwater between and beneath them. They also give a clear paving line, so the slabs can be laid in a straight line quickly and easily.

They range in height from 25mm up to 220mm. We can also supply a smaller 22mm support as part of our MEGAPADS range, please see page 14. A large range in height is often required where drainage channels or pipework need to be overlaid, and a seamless finish can be achieved since the head plates and baseplates are identical, so the finished paving is consistent in look across the area.



Slope correctors can be fitted to the baseplates of all ASP supports. Please see page 18 for more information.

The support pad is made up of four sections:



The base plate is a solid, round base measuring 200mm in diameter. In the centre of the base is a round collar in which the stem and nut will sit. It is designed so that the weight will pass down the stem and onto the outside of the collar, and then pass down along the diagonal arms spreading out

across the face of the base plate. This ensures that the weight is spread to the maximum possible area and does not concentrate on the core (with the risk of digging into the membrane beneath).

The stem is manufactured with a thread to accommodate the nut fixing. The nut can be twisted up and down on the screw thread to adjust the height of the support pad. Installers can adjust the height either before laying the slabs and set the levels with a laser, or can level up the paving by hand once the slabs are in situ. Wallbarn can supply our "Easykey" to help twist the collar if required. The height range of each stem is marked in a small hole at the top.

The headpiece slots into place on top of the stem. It is designed to hold the corners of four slabs, held in place by the four positioning lugs.

## HEADPIECES

The standard headpiece measures 2.2mm wide and 18mm high. This will hold a 50mm slab in place effectively and gives a sufficient amount of drainage between slabs. Wallbarn can offer variations to this standard headpiece, according to the needs of the client.



standard headpiece    4mm wide lugs    10mm wide lugs    flat headpiece    Short lugged headpiece    2 lugged headpiece

If installers are looking for a larger gap between the paving slabs, a 4mm wide lug can be supplied which will allow a greater amount of water to pass through the gaps. This may be required where there is a risk of sand or dirt clogging up the gaps, for example.

A 10mm wide lug is also available, although designers should be sure that such a large gap does not present a trip hazard in some instances.

If very large paving slabs are being installed, or if thinner tiles or more delicate softer stone is being used (such as slate) then it is recommended that a support pad is placed underneath the centre of the slab to give added support. A flat headed support should be used in this instance. The headpiece is completely flat, so will not scratch the paving or interfere with the levels.



Where thinner tiles are being installed, the standard height lugs may be too visible for a truly fine finish. A shorter, 10mm high lugged headpiece is available should this be the case.

If irregular paving patterns are being laid, often a slab will need supporting, not only at the corners but also in a T junction or across a larger span. In these instances, the two lugged headpiece can be fitted onto the support pad to allow just two slabs to be supported at the edge. These headpieces are also useful when paving directly up the parapet wall (please see the section below).

You can fit loose fitting cross spacers onto these supports if you require a wider gap between the slabs. Cross spacers (featured on page 5) are available 3mm, 4mm or 5mm wide.



## PAVING UP TO THE EDGE – MINI BASES

Paving directly up to the wall and around corners is neat and easy using Wallbarn Mini Bases for ASP adjustable supports.



Mini Bases are designed for use with the ASP range. They have a 150mm diameter base which means both base and head can be butted up against the upstand or parapet wall without a gap between the slab and the wall.

The slabs placed against the wall are properly supported and stable. The weight passes through the centre of the baseplate and onto the deck in a consistent manner. There is no risk of the slab tipping up as it is not overhanging.

The 120mm diameter headpiece has two lugs instead of four so two slabs or tiles are resting on each support. This creates a neat finish. The positioning lugs still provide for adequate and ensure uniform paving across the area. The baseplates will fit any height of ASP support pad and the strength and weight tolerance is the same as with the standard bases. Point loading is slightly increased, however.

Mini Bases are also suitable for very small tiles, where a 200mm diameter base would be too large underneath to neatly position the slabs. Tiles and slabs as small as 20cm can be laid using the Mini-bases. **Ask for MINI BASES for edges and perimeters.**



Two of the positioning lugs will need to be removed from the headpiece so that two (rather than the normal four) paving slabs will sit onto it. Customers can order our special 2 lugged headpiece (featured on page 10) These can be butted up to the wall.

The other side of the paving slabs positioned up against the wall will rest on support pads in the normal manner – i.e. one corner on each quadrant of the support pad. The paving can then be extended across the rest of the deck area.

Support pads are a useful way of laying slabs as ballast for insulation in the inverted waterproofing system. The support pads create a separation between the flags and the insulation, preventing the flags damaging the insulation boards in any way. The manner in which the base plates spread the weight of the slabs ensures that they do not dig into the insulation boards.

As long as a suitably heavy paving slab is used, the insulation will be held in place and the area above can be utilised. This is a major advantage to the old fashioned method of using pebbles as ballast (which also carried the risk of stones getting beneath the insulation and possibly damaging the waterproofing membrane).



The adjustable supports are ideal for areas where a seamless terrace or walkway is required but the concrete has been cast with multiple steps or ridges. Even large differences in the height of the deck can be alleviated, creating one level across the whole area.

By suspending the paving off the deck, truly beautiful finishes can be achieved on flat roofs and structural decks.



## ASP EXT – EXTRA

Wallbarn has developed the EXT EXTRA support pad in order to give greater flexibility for installation of suspended slabs.

The ASP EXT EXTRA ranges from 210 to 380mm.

This extended height support pad has an extra-large threaded stem measuring 170mm. This gives installers a huge range in height variation across the area. This means they can choose one product for decks even with very large differences in height, instead of having to calculate multiple sizes.

A separate extension shank is supplied as part of the kit which is slotted into central core of the baseplate, allowing the weight to be passed consistently and centrally. The threaded stem (complete with headpiece) fits onto the extension shank to make up the unit.

Slope correctors and 150mm diameter Mini Bases can be fitted as normal.



ASP adjustable support pads for paving are available in the following sizes:

CODE	HEIGHT	DIAMETER OF HEAD	DIAMETER OF BASE	LUG WIDTH	LUG HEIGHT	WEIGHT TOLERANCE
MEGA 22	22-30MM	PLEASE SEE OUR SECTION ON MEGAPADS OVERLEAF FOR FULL DETAILS				
MEGA 28	28-37MM					
ASP 25 F	25MM FIXED	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 35 F	35MM FIXED	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 35	35-50MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 50	50-70MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 65	65-100MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 95	95-130MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 125	125-160MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 155	155-190MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 185	185-220MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 210 **	210-245MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 240 **	240-275MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 270 **	270-305MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 300 **	300-335MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG
ASP 330 **	330-365MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400K
ASP EXT						
EXTRA 210 **	210-380MM	120MM	200MM, 150MM*	2.2MM # , 4MM, 10MM	18.5MM #, 10MM	400KG

\* Special MINI BASE – standard baseplate is 200mm diameter

# Please note – Standard positioning lugs are 2.2mm thick and 18.5mm high, non-standard headpieces available as follows:

- Special lug widths- 4mm and 10mm wide.
- Special lug height 10mm high
- Headpieces with 2 lugs running in the same direction
- Flat headpieces with no lugs.

\*\* Two part kit – part A = headpieces, baseplates and stems, part B = extension shank

Please see page 20 for information on slope correctors

## MEGAPADS FOR PAVING

MEGAPADS OFFER INSTALLERS A MUCH LARGER RANGE OF HEIGHT WHEN LAYING PAVING SLABS. THEY ARE ALSO A MORE HEAVY DUTY SUPPORT, ALLOWING GREATER WEIGHT TO BE BOURNE ONTO THEM.



The Megapad range is available from 22mm at the lowest right up to 620mm at their highest. The individual pads have a much larger range of adjustment than the ASP range, which can make installation simpler since a smaller number of different sized units can be chosen even for very large falls.

They are heavy duty and extremely hard wearing with a weight tolerance of 800kg; double that of the ASP or TD range.

Not only are they fully adjustable, but once the desired height is achieved, they can be locked into place, so that the thread does not start to unwind itself (with the possible risk of the slabs becoming unlevel).

Some roof finish designs call for a very high cavity beneath the paving slab, and there can be complicated areas where steps and many multi-levels across the deck are present or where voids are required to cover services, ducts and gulleys. Drainage integrity is maintained between and below the slabs without interference with the top deck.

Megapads are the optimum product for such areas and provide a uniform, standard support mechanism across the entire area with an identical interface between slab and deck.



The Megapad units are made up of fixed sections (called Towers) which click into the sheath securely, and an adjustable section on the top end of the support which holds the headpiece. The amount of height adjustment depends on the size of the unit. The taller Megapads have a height range of 100mm each.



Each section is locked into place using the "Multi-function Easy Key". The key is used to help turn the supports at the thread, but also click into "locking holes" once the desired height is achieved and lock the threads. Additional collars are then wound up and down to brace the thread in place.

This ensures that none of the elements work their way loose over time and the upper surface is completely secure.

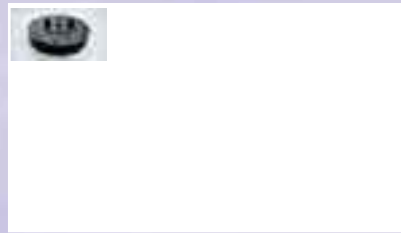


## MINI MEGAPADS

Megapads are available in smaller sizes – 22-30mm and 28-37mm and are suitable for both paving and timber decking.

Manufactured in a similar manner to the higher range Megapads, these polypropylene units have a flat headpiece and base plate measuring 150mm in diameter. The lug separators are supplied as separate units, which clip into the central hole to provide the 2mm gap between paving slabs.

The integrated thread in the central column allows for height adjustment. If a wedge is required, a loose fitting rubber disc (shown on page 5) can be placed underneath. These mini Megapads can also be fitted with TD headpieces for use with decking. Please see page 19 for more details.



## PAVING UP TO THE EDGE



Edges and end-of-runs can be paved more effectively and securely with the Megapad system. The lug headpiece is removable, the support pad can be turned upside down and the lug head unit is placed onto the bottom of the base plate.

The base plate is 200mm in diameter, so when turned upside down it exceeds the diameter of the (old) head piece and can butt up to the wall completely. Therefore the paving slab sits securely onto the plate and does not overhang the supporting columns. The headpiece will support two (rather than four) slabs in this case. The slabs are thus fully supported and stable and are in direct contact with the wall without problems. The weight and force is directly vertical and down through the shaft. Even at their maximum height these supports are stable and secure.



They are designed to be easy to install and adjust. For complicated areas slabs can be installed and then final minor adjustments can be made by



hand when the slabs are in situ, without the need for constant re-setting.

They work very well on areas where there are large differences in the deck level. Megapads are designed to incorporate slope correctors, wedge shaped discs which clip onto the underside of the baseplate where the fall of the deck needs to be addressed. Please see page 18 for more details.

**IMPORTANT** – Megapads are now available with a TD timber decking joist headpiece. Please see page 19 for details.

CODE	HEIGHT	DIAMETER OF HEAD	DIAMETER OF BASE	LUG WIDTH	LUG HEIGHT	REVERSIBLE?	WEIGHT TOLERANCE
MEGA 22	22-30MM	150MM	150MM	2.2MM	18.5MM	NO	800KG
MEGA 28	28-37MM	150MM	150MM	2.2MM	18.5MM	NO	800KG
MEGA 35	35-50MM	150MM	200MM	2.2MM	18.5MM	NO	800KG
MEGA 50	50-75MM	150MM	200MM	2.2MM	18.5MM	NO	800KG
MEGA 75	75-120MM	150MM	200MM	2.2MM	18.5MM	NO	800KG
MEGA 115	115-220MM	150MM	200MM	2.2MM	18.5MM	YES	800KG
MEGA 215	215-320MM	150MM	200MM	2.2MM	18.5MM	YES	800KG
MEGA 315	315-420MM	150MM	200MM	2.2MM	18.5MM	YES	800KG
MEGA 415	415-520MM	150MM	200MM	2.2MM	18.5MM	YES	800KG
MEGA 515	515-620MM	150MM	200MM	2.2MM	18.5MM	YES	800KG

Slope correctors can be fitted to Megapads - please see page 20 for more information.

# ADJUSTABLE SUPPORT PADS FOR TIMBER DECKING

WALLBARN SUPPLIES THE TD RANGE – SPECIFICALLY DESIGNED FOR SUSPENDED TIMBER DECKING ON ROOFS AND BALCONIES.



A considerable amount of roof finishes are now completed using timber decking rather than paving slabs. There is renewed interest in decking areas, as developers seek more efficient use of the building footprint and outdoor space (for example for designated smoking areas) becomes more important.

Since many waterproofing systems are fairly delicate, to simply lay timber directly onto the membrane runs too much risk of damage. Wallbarn's TD range was developed to provide a solution to this problem. The strong polypropylene pads raise the decking off the roof deck, allowing proper drainage, preventing the timber digging into the membrane, and keeping the wood out of standing water, helping to prevent rotting.

Wallbarn found that roofing contractors wanted to be in control of this element of construction since warranties can be at stake, so we developed an easy, fast system so roofing contractors can do the work themselves. Because the supports are adjustable, applicators do not need to cut multiple thicknesses of timber to create a level surface, they simply turn the thread on the telescopic stem.



The system is simple – the pads are loose laid onto the deck, the heights are adjusted at the stem across the deck by hand to ensure the upper surface is level, a joist framework is constructed sitting on top of the supports, and the top layer of decking planks are fixed to the joist frame. It is designed to be loose fitted. The supports are not drilled or bonded to the deck and the joists sit on them without being fixed. The weight of the timber and the fixings will hold everything stable and in place.

The void between the decking and the roof can be used to hide items such as water pipes, electrical wiring and drains. Attractive light or water features can also be incorporated into the decking fairly easily. The end result can be stunning.

The adjustable supports are similar in most ways to the paving pads, apart from the design of the headpiece. We manufacture a headpiece with pegs positioned in the corners, either 40mm or 60mm apart. This means a 2 inch joist or batten can fit in between the pegs or lugs easily and there is a little extra room in case some of the timber is twisted or swollen.

The battens are laid onto the supports **no more than 600mm apart.**

We recommend that only properly pressure treated wood is used, since these supports are used on outdoor decks. Cross battens are screwed into place to give a framework which is sturdy and weight bearing. It is sometimes advisable to also fix the joists to the parapet wall or upstand for additional strength. The decking planks – the timber which will be visible to the end users, is screwed onto the joist framework.



## APPLICATION

Timber decking is laid, using TD supports, in the following manner:



After waterproofing and insulation is installed, a geotextile membrane is loose laid on top



The support pads are laid out 600mm apart and adjusted so that the headpieces are level



A 50mm wide joist or batten is fitted on top of the headpiece in between the lugs



A framework of timber joists is created with the planks and cross battens fixed securely to give a strong, stable frame



The whole area is covered by the timber joist framework right up to the edges. This frame should be able to withstand weight and vibration



The decking layer is then fixed onto the joists using wood screws.



A small gap between each plank of decking should be made to help with drainage. A stunning finish can be achieved with a natural, luxurious look to the terrace. The decking runs seamlessly up to the border, planters and door threshold.



CODE	HEIGHT	DIAMETER OF HEAD	DIAMETER OF BASE	WIDTH BETWEEN LUGS	LUG HEIGHT	WEIGHT TOLERANCE
MEGA 22	22-30MM	PLEASE SEE OUR SECTION ON MEGAPADS FOR FULL DETAILS				
MEGA 28	28-37MM					
TD 25 F	25MM FIXED	120MM	200MM	40MM, 60MM, 90MM OR TD MOBILE	18.5MM	400KG
TD 35 F	35MM FIXED	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 35	35-50MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 50	50-70MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 65	65-100MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 95	95-130MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 125	125-160MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 155	155-190MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 185	185-220MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 210 **	210-245MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 240 **	240-275MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 270 **	270-305MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 300 **	300-335MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
TD 330 **	330-365MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG
ASP EXT						
EXTRA 210 **	210-380MM	120MM	200MM	40MM, 60MM, 90MM OR MOBILE	18.5MM	400KG

\*\* Two part kit – part A = headpieces, baseplates and stems, part B = extension shank

Please see page 20 for information on slope correctors

REMEMBER TO LAY TD SUPPORTS A MAXIMUM OF 600mm APART TO AVOID OVERLOADING THE SYSTEM

## 90MM WIDE JOIST HEADPIECE

Wallbarn also has a headpiece with the two placement lugs 90mm apart for all TD support pads.

The headpiece is clicked into place in the same way as the 40mm /60mm headpiece, and is priced the same. Wallbarn can therefore give a much greater amount of flexibility to installers as they can be assured that even larger sized battens will not slip off their mounting.

Having a larger batten in place allows for more weight displacement through the system, but care should always be taken not to overload the support pads. Each pad tolerates 400kg. Wallbarn recommends a maximum span of 600mm between support pads.



## FLAT HEADED ADJUSTABLE SUPPORTS FOR USE WITH TIMBER DECKING



If a very wide joist beam is being used and even the 90mm gap on TD supports is not sufficient, a flat headed support pad can be used to hold the joist. These headpieces are 120mm in diameter and completely smooth.

They give extra support without anything protruding up from the surface and potentially interfering with the levels. Provided that the joists are fixed together with cross battens and built into a framework, the whole structure will be sturdy, weight bearing and secure. Flat headed support pads can also be used beneath the centre of paving slabs where extra support is needed, for example, very large (over 600mm) flags or thinner tiles. They are priced at the same level as the ASP and TD range.

They give extra support without anything protruding up from the

## TD MOBILE – MOVEABLE HEADPIECE FOR TIMBER JOISTS

A major improvement in the way timber decking can be installed has been developed with the launch of the TD MOBILE headpiece.



The new moveable headpiece allows installers to fix battens to the headpiece more easily, more securely and with more options available to house different sized pieces of timber.



The headpiece clicks into place on top of the stem in the same way as all other headpieces, but the side bar can be detached and moved along the face of the headpiece to adjust the width from 30mm up to 90mm.

There are small holes in the side bar which allow screws to be passed through the headpiece and into the joists themselves. With the joists fixed to the supports and the decking fixed to the joists the whole decking system becomes very stable and secure. The measurements are clearly marked at 30mm, 50mm, 70mm and 90mm apart, ensuring that installers achieve exact spacing along the decking line. The load will always remain on top of the central axis, preventing movement or tilting.

TD MOBILE supports are available from 35mm up to 380mm high. Full height range available (including the EXTRA range) can be found on pages 13 & 17.

This new mobile system is seen as far more secure and versatile than the traditional TD headpiece and is priced at a premium.

# TD MEGAPADS – FOR TIMBER DECKING

## NEW TD TIMBER DECKING HEADPIECES FOR MEGAPADS – LESS UNITS REQUIRED PER M<sup>2</sup>

Wallbarn can also announce a brand new headpiece for Megapads specifically for timber decking.

The headpieces click into the centre of the flat head of all Megapads to house a timber joist securely in the same way that the TD headpiece does for our other adjustable range. The distance between the lugs is 60mm which will house a 2 inch joist.

Because the Megapads can withstand a load of 800kg per unit, when using them for timber decking a larger span between each unit can be allowed, and with less Megapads being required, a significant cost saving can be achieved. The extended range of adjustment (105mm for the larger sizes) means that less different sizes are required than for the TD support range, making purchasing an easier task. The locking mechanism on the stems also means that there is no risk of the supports starting to unwind themselves, which may cause changes in the level and instability.

Ask for **Megapad TD** when laying timber decking.



CODE	HEIGHT	DIAMETER OF HEAD	DIAMETER OF BASE	DISTANCE BETWEEN LUGS	LUG HEIGHT	REVERSIBLE?	WEIGHT TOLERANCE
MEGA TD22	22-30MM	150MM	150MM	60MM	18.5MM	FLAT HEAD	800KG
MEGA TD28	28-37MM	150MM	150MM	60MM	18.5MM	FLAT HEAD	800KG
MEGA TD35	35-50MM	150MM	200MM	60MM	18.5MM	FLAT HEAD	800KG
MEGA TD50	50-75MM	150MM	200MM	60MM	18.5MM	FLAT HEAD	800KG
MEGA TD75	75-120MM	150MM	200MM	60MM	18.5MM	FLAT HEAD	800KG
MEGA TD115	115-220MM	150MM	200MM	60MM	18.5MM	YES	800KG
MEGA TD215	215-320MM	150MM	200MM	60MM	18.5MM	YES	800KG
MEGA TD315	315-420MM	150MM	200MM	60MM	18.5MM	YES	800KG
MEGA TD415	415-520MM	150MM	200MM	60MM	18.5MM	YES	800KG
MEGA TD515	515-620MM	150MM	200MM	60MM	18.5MM	YES	800KG

Slope correctors can be fitted to Megapads.

## FLAT HEADED MEGAPADS

Megapads can also be used to support very large timber decking by simply removing the lug connector entirely. This creates a completely flat headpiece 150mm in diameter, which gives installers more flexibility for very large sections of timber.

Because Megapads can tolerate a greater amount of weight – 800kg each – the system is more secure. A far greater amount of height range is achievable with Megapads, which make them suitable for very complicated areas which designers want to cover with one seamless timber decking layer.



## SLOPE CORRECTORS



Slope correctors are wedge shaped levellers which are clipped or fitted onto the base plate of the adjustable support pads. They are suitable for use with ASP, TD and Megapad supports; including the new mini-Megapads, ASP MBs with the 150mm diameter base plate, the ASP EXT and ASP EXT EXTRA range.

They are designed to arrest the fall of the roof or deck beneath – even “flat roofs” will be built to a fall for drainage, and by having these wedges attached underneath, the support pads remain completely vertical and straight, which ensures the force of gravity runs directly vertical, preventing tilting and keeping the support pad more stable.



They are very easy to apply to the base plate. For the 200mm diameter base plates a simple clip mechanism fixes around the lip of the plate. All 150mm base plates have a groove inside the perimeter which slots into a series of rings situated on the slope corrector. More than one slope corrector can be applied if required as one can clip onto another very easily.

They can be used with both timber decking supports and paving supports. The height of the support pad can still be adjusted once these are in place, and the material is the

s a m e polypropylene as used for the support pads (although they contain an element of recycled material).



Slope correctors are available in three sizes, with a 1%, 2% and 3% gradient. The clip design and diameter of the corrector is the same for all three gradients, it is simply the amount of slope which is different.

The gradient or slope is measured as a percentage. The deck is most commonly laid to a fall around 1 in 40, so a 2% slope corrector is normally chosen. Additional slope correctors can be added where required.

Full measurement details are as follows:

CODE	OUTER DIAMETER	INNER DIAMETER	PERCENTAGE SLOPE	DEGREE OF SLOPE	TO FIT	WEIGHT TOLERANCE
SLOPE 1	200MM	82MM	1%	0.57°	ASP, TD, FLAT HEADED ASP,	800KG
SLOPE 2	200MM	82MM	2%	1.11°	TD MOBILE, MEGAPADS, ASP MB,	800KG
SLOPE 3	200MM	82MM	3%	1.71°	ASP-EXT & ASP-EXT-EXTRA	800KG

STRUCTURAL  
ENGINEERING

## COVERINGS

SUPPORT PADS

WATERPROOFING

## TIMBER DECKING TILES

**TIMBER DECKING TILES PROVIDE THE EASIEST SOLUTION TO LAYING TIMBER DECKING ONTO ROOF DECKS AND TERRACES.**

By using suspended hardwood decking tiles installers can combine the natural, attractive finish of wood with the ease and speed of laying paving slabs.

Traditionally laying timber decking directly onto these deck surfaces led to additional costs of employing specialist carpenters and presented concerns of the timber damaging the waterproofing membrane which it came into contact with.

Hardwood timber decking tiles installed in conjunction with Wallbarn support pads offer an ideal alternative. Installers avoid the need to lay joist frames and drill planks into place. They are ideal when only a low height threshold is available.



The tiles measure 500 x 500 x 30mm and are mounted onto ASP or Megapad supports. The crucifix shaped positioning lugs hold the square edges securely in place.

The tiles are suspended on the supports in the same way as a paving slab. The weight of the tiles holds the system in place. The major advantage of this system is that if the deck beneath ever needs to be inspected, a tile can be easily lifted up. Unsightly objects such as roof drain outlets, pipework and services can be covered and accessed at any time. Beautiful finishes can be achieved with the minimum of disruption and labour.

### TYPE OF TIMBER AVAILABLE



Wallbarn has specially chosen timber which is ultra-hard and dense to repel moisture and rotting, with smooth grains that are unlikely to splinter or scratch on the surface, resistant to insect and mildew damage, and are extremely strong and weight bearing. The main types of timber used are:

**Ipe** from Brazil is one of the toughest most durable woods available. It has a greenish brown appearance and because of its tight grain is recognised for its high resistance to mildew, termites and rotting. It is very low maintenance and is used extensively in marine and exterior construction due to its resistance to water. It dries very well and becomes extremely hard, which means it has to be pre-drilled and cut with a mechanical saw. It carries a Class A fire rating and will last well over 25 years. It is nicknamed "ironwood".

**Sucupira** is also from Brazil and is again is extremely hardwearing timber. Chestnut coloured, it is a little more course in the grain than ipe and is a little less strong, but is still ideal for external decking in the UK climate and will last for 20 years.

Further timber is also available as non-stock items, including **Green Heart**, **Garapa**, **Cumaru** and **Massaranduba**. Wallbarn can also source timber tiles in different timber if there is a specific requirement.

All timber used in Wallbarn hardwood timber tiles has been selected to withstand long-term exposure to the UK weather. They are resistant to decay and water ingress and provide a superior, permanent wood finish on exterior decks. The timber will fade in colour over time and become silvery grey in the sunlight. Natural oil can be used to enhance the original colour should users wish, although varnish or lacquer is not recommended. Wallbarn hardwood timber decking tiles can be used on a wide range of applications from small domestic rooftop decks to large-scale public areas.

They are the easiest, most cost effective way of installing top quality hardwood decking on rooftops and terraces.



Using hardwood timber tiles and adjustable supports is a far easier way to achieve the correct level on terraces. Whether tiles are being laid in conjunction with materials such as the green roof section (pictured left) or laid up to a safety rail or damp proof course (right) this system achieves accurate levels easily, saves a great deal of labour and avoids the need for constant cutting of timber joists and re-measuring.

## FSC® CERTIFIED TIMBER

Wallbarn has achieved **Forest Stewardship Council®** Chain of Custody certification. This means Wallbarn is certified to supply FSC certified timber. The FSC scheme means that the certified timber can be traced back to well-managed forests in accordance with the rules of The Forest Stewardship Council. Every party, from the grower to the processor to the manufacturer of the tiles to the end user is tracked and audited to ensure that they have complied with the ethical and well managed forest practices laid down by the FSC. The whole chain is monitored.



FSC 100% Chain of Custody certified timber - number SGS-COC-007242.

Only fully certified companies within the Chain of Custody can use the official FSC logo against FSC certified timber. FSC credited timber is clearly distinguished and marked as separate from non-FSC timber and the mark can only be used with FSC material.

Please contact us for full details of compliance to FSC Chain of Custody and ask what we can offer.



The timber decking tiles can be cut into shapes to fit around awkward areas, edges and details without becoming unstable, due to the reinforced underside. The grain is smooth and uniform in most cases, so sawing and drilling is possible. However, because the timber is so dense and strong Wallbarn recommends that carbide tipped saw blades are used when cutting the tiles. Saw blades will become blunt very quickly when working these types of timber. Wallbarn recommends pre-drilling all holes before screwing into the wood.

All the tiles are manufactured with a reinforced underside. Each end has an additional plank fixed with rust-resistant screws. A diagonal cross beam provides extra strength and durability.

Border planks made from the same timber can be fitted to the edges of the tiles to help give an attractive finish.



## TIMBER DECKING TILES TECHNICAL DATA

RAW MATERIAL	IPÉ	CUMARU	GARAPA	GREEN HEART	MASBARANDUBA	SUCUPIRA
BOTANICAL NAME	LAPACHO, TABEBUIA SPP.	DIPETERYX OODORATA	APULEIA LEUCOCARPA	LAURACEAE, OCOITEA RODIAE	MANILKARA SPP, SAPOTACEAE	BOWDICHIA SPP, LEGUMINOSAE
DENSITY	GREEN 960 KG/M3 DRY 994 KG/M3	GREEN 910 KG/M3 DRY 1,138 KG/M3	GREEN 670 KG/M3 DRY 830 KG/M3	GREEN 970 KG/M3 DRY 1,427 KG/M3	GREEN 833 KG/M3 DRY 1000 KG/M3	GREEN 940KG DRY 780KG
BENDING STRENGTH	1,579 KG/CM2	1,925 KG/CM2	1,917 KG/CM2	1,278 KG/CM2	1,193KG/CM2	1,588KG/CM2
CRUSHING STRENGTH (GREEN)	1,825 KG/CM2	725 KG/CM2	1,917 KG/CM2	634 KG/CM2	380 KG/CM2	554 KG/CM2
SPECIFIC GRAVITY	0.92	1.08	0.86	0.9	0.85	0.85
HARDNESS	1,671 KG	1,606 KG	740 KG	66	0.97	1
SHEARING STRENGTH	114 KG/CM2	1,138 KG/CM3	129 KG/CM2	1,072 KG	980 KG	973 KG
WEIGHT	994 KG/CM3	994 KG/CM3	835 KG/M3	1,030 KG/CM3	1,110 KG/M3	1,35KG/CM2
RADIAL SHRINKAGE	6.6%	5%	4.4%	7.5%	6.8%	5.6%
TANGENTIAL SHRINKAGE	8%	7.6%	8.5%	8.2%	11%	8.4%
VOLUMETRIC SHRINKAGE	13.2%	12%	1.4%	17%	19%	15.1%
COLOUR	DARK GREEN TO DARK BROWN	CHESTNUT HONEY COLOUR TO REDDISH BROWN	YELLOWISH BEIGE TO YELLOWISH BROWN	YELLOWISH BROWN TO OLIVE COLOUR	LIGHT RED, BECOMING DARKER IN TIME	REDDISH DARK BROWN
TEXTURE	FINE, TIGHT GRAIN	UNSTRESSED FIBROUS	FINE, SMOOTH GRAIN	FINE, UNIFORM GRAIN	FINE, STRAIGHT GRAIN	MEDIUM, IRREGULAR GRAIN BUT TURNS EASILY
DURABILITY	VERY HARD, ALMOST COMPLETELY RESISTANT TO TERMITES, FUNGUS, MARINE ATTACK AND DAMP	RESISTANT TO FUNGAL AND MARINE ATTACK, HIGH RESISTANCE TO DECAY	RESISTANT TO TERMITES, MARINE ATTACK, FUNGI AND DECAY	HIGHLY RESISTANT TO TERMITES AND DECAY FUNGI	RESISTANT TO DECAY FUNGI AND TERMITE, LOW RESISTANCE TO AMRINE ATTACK	RESISTANT TO FUNGI AND TERMITES
ANTICIPATED LIFESPAN	OVER 25 YEARS	OVER 20 YEARS	UP TO 15 YEARS	OVER 20 YEARS	10 YEARS	UP TO 20 YEARS
SIZE OF TILE	500 X 500MM	500 X 500MM	500 X 500MM	500 X 500MM	500 X 500MM	500 X 500MM
THICKNESS OF TILE	30MM	30MM	30MM	30MM	30MM	30MM
WEIGHT OF TILE	5.7KG	5KG	4KG	4.75KG	4.5KG	5KG
SAWING CHARACTERISTICS	REGULAR BUT BLUNTS MACHINERY QUICKLY DUE TO EXTREME HARDNESS	DIFFICULT, SPLITS DUE TO IRREGULAR GRAIN	RELATIVELY EASY	RELATIVELY EASY WITH A STRAIGHT GRAIN BUT BLUNTS MACHINERY QUICKLY DUE TO HARDNESS	DIFFICULT - PRONE TO SPLITTING AND WARPING	DIFFICULT DUE TO IRREGULAR IRREGULAR GRAIN, CAN SPLIT AT ENDS
DRILLING CHARACTERISTICS	EASY BUT BLUNTS MACHINERY QUICKLY DUE TO EXTREME HARDNESS	EASY WITH DEFECTS, HIGH QUALITY DRILL BITS REQUIRED	EASY BUT HIGH QUALITY DRILL BITS REQUIRED	EASY WITH DEFECTS, HIGH QUALITY DRILL BITS REQUIRED	GOOD - DRILL'S EASILY WITH LITTLE DEFECT	GOOD - PRE BORING NECESSARY
FINISHING CHARACTERISTICS	GOOD - SMOOTH	GOOD WITH MINOR DEFECTS	GOOD - SMOOTH	GOOD - SMOOTH	GOOD BUT CAN CAUSE MINOR SPLINTERING	GOOD - SMOOTH
DRIVING CHARACTERISTICS	EASY WITH LITTLE OR DEFECTS	EASY WITH SMALL DEFECTS	SLOW WITH LITTLE OR NO DEFECTS	SLOW WITH A RISK OF DEFECTS	DIFFICULT AS THE WOOD IS PRONE TO SPLITTING, WARP AND CASE HARDENING	FAST WITH LITTLE OR NO DEFECTS
FIRE RATING	CLASS A	HIGH RESISTANCE	HIGH RESISTANCE	CLASS A	CLASS A	

# MEMBRANES

# WALLBRAN PRO-SEAL

AN EASY TO USE SELF-ADHESIVE WATERPROOFING MEMBRANE FOR DRY, CURED CONCRETE FOR TANKING AND PODIUM DECKS.



Pro-seal is a new damp-proof and waterproofing membrane from Wallbarn.

It is a cold applied, easy to install sheet membrane made from elastomeric modified bitumen, designed as a fast, effective waterproofing solution for both horizontal and vertical surfaces.

It has excellent adhesion and flexibility properties and can accommodate some movement. It has high tensile and puncture resistance, possesses superior tear strength, and can be installed without any requirement for special tools or techniques.

It can be used on areas such as roofs, basements, wet areas, canals, culverts and civil engineering works. It is especially suited to tanking and subterranean waterproofing on a vertical plane.



Pro-seal has the following advantages:

- It is a much faster, cleaner way to seal and secure structural concrete than with liquid membranes
- It is safer than using super-heated materials
- It is non-toxic and safe to handle
- It is easy to handle and install, cutting out mess
- Multiple sheets can be bonded together to form a single membrane
- It is reinforced with an integrated mesh
- It ensures a consistent, uniform thickness

Pro-seal is a reinforced membrane manufactured with an HDPE film backing on one side. The other side is covered with a slip release paper layer which is peeled off before the membrane is applied to the surface. The paper ensures that the bitumen does not become contaminated with dirt or grit, or stick to itself on the roll, making it much easier to measure and install. Once the first section of the bitumen is positioned into place the paper can be peeled off. This design helps ensure that applicators can install a viable, reliable waterproofing membrane quickly and effectively onto concrete surfaces.

Application is fast and simple. The membrane can be cut into shapes easily and because of the self-healing properties of the material, multiple sheets can be joined together to form one seamless membrane across the structure. **It is essential that a bitumen primer is used on the concrete prior to pro-seal being installed.**





Pro-seal is not a tacky material, unlike some other bitumen sheet membranes, and a fair amount of pressure is needed to bond the membrane to the surface. A wooden roller is recommended for installation. The bond will increase over time. It is important that none of the membrane gets snagged onto the structure before applicators wish to fix it into position as this may compromise the seal. The slip paper ensures this does not happen until the applicators wish to do so.

Pro-seal comes in a thickness of either 1.5mm or 2mm. It is extremely tough and durable. Unlike many other self-adhesive membranes on the UK market, all Wallbarn Pro-seal membranes are manufactured with an integrated reinforcement mesh, made from either glass fibre or polyester. This gives them far superior tensile strength and puncture resistance, whilst still maintaining full flexibility.

Please note that Wallbarn Pro-seal is not suitable for wet, damp or uncured concrete structures. Always ensure the concrete is dry.

It is advisable that the Pro-seal membrane is covered with some sort of protection. Wallbarn Protecto-board can be torch-bonded to the waterproofing, or Protecto-drain HDPE membrane is suitable for areas which may require drainage management. Please see the following sections in this brochure.



## TECHNICAL DATA

PRODUCT	GB 1550 & 2000	PB 1600 & 2100	TEST METHOD	TOLERANCE
ROLL LENGTH	15M	15M	EN 1848-1	<-1%
ROLL WIDTH	1M	1M	EN 1848-1	<-1%
STRAIGHTNESS	PASS	PASS	EN 1848-1	<20MM
THICKNESS	1.5MM	1.6MM	ASTM D 5147 EN 1849-1	-0.2MM
MASS PER UNIT AREA	1.6 KG/M2	1.7 KG/M2	EN 1849-1	+10%
REINFORCEMENT CARRIER	GLASS FIBRE - 50GSM	POLYESTER - 150GSM		
	100 MICRONS HDPE			
TEAR RESISTANCE				
• LONGITUDINAL	230 N	475 N	ASTM D 1004	
• TRANSVERSE	220 N	275 N	ASTM D 1004	
ELONGATION AT BREAK				
• LONGITUDINAL	55%	55%	EN 12311-1	15%
• TRANSVERSE	75%	75%	EN 12311-1	15%
MEMBRANE TENSILE STRENGTH				
• LONGITUDINAL	6.8 N/MM 425 N/5CM	10.4 N/MM 650 N/5CM	ASTM D 638 EN 12311-1	-20%
• TRANSVERSE	5.2 N/MM 325 N/5CM	7.2 N/MM 450 N/5 CM	ASTM D 638 EN 12311-1	-20%
RESISTANCE TO STATIC LOADING (METHOD A)	15 KG	20 KG	EN 12730 MIN	
RESISTANCE TO IMPACT	300 MM	700 MM	EN 12691 MLV	
ADHESION TO				
• SELF	1.8 N/MM	1.8 N/MM	ASTM D 1000	
• PRIMED CONCRETE	1.8 N/MM	1.8 N/MM	ASTM D 1000	
LOW TEMPERATURE FLEXIBILITY	-15°C		ASTM D 5147	
			EN 1109	
WATER ABSORPTION	0.15%	<0.15%	ASTM D 5147	
WATER VAPOUR TRANSMISSION	0.1 g/24HR/M2	0.1 g/24HR/M3	ASTM E 154	
WATERTIGHTNESS TO LIQUID WATER	PASS		EN 1928-1	>60KPA
CHEMICAL RESISTANCE	CONFORMS		ASTM D 543	
PUNCTURE RESISTANCE	244 N/60MM	245 N/60MM	ASTM E 154	
SOFTENING POINT	> 105 DEG. C.		ASTM D36	
REACTION TO FIRE	EUROCLASS F		EN 13501-1	
PEEL STRENGTH				
• SELF	1.8 N/MM	1.8 N/MM	STM D 1000	
• CONCRETE	1.8 N/MM	1.8 N/MM	STM D 1000	

## BITUMINOUS PROTECTO-BOARD

**PROTECTO-BOARD IS A SHEET MEMBRANE WHICH PROTECTS DELICATE BITUMINOUS MEMBRANES FROM DAMAGE.**

This semi flexible board is a convenient way to ensure adequate protection to waterproofing membranes against damage caused by site traffic, other trades, mechanical damage from backfill and ground settlement.

Made from a mixture of synthetic fibres saturated with at least 75% bitumen, Wallbarn Bituminous Protecto-board is completely waterproof and provides superior impact and abrasion resistance. It is lightweight and easy to handle, and can be cut, shaped and installed in a wide variety of applications and areas. It is particularly suited to vertical applications as it can be bonded to concrete or the waterproofing membrane effectively without interfering with the seal.

Wallbarn Bituminous Protecto-board is available 3mm and 6mm thick. It is suitable for use with bituminous waterproofing systems.



It is highly adaptable. It can be spot bonded using adhesive, fixed with double sided bitumen tape, or heat bonded to the surface. Multiple sheets can be bonded together to form a uniform layer, and because of its light weight, it can be held in the vertical position in the long term.

The material is supplied in 1m x 2m sheets. Each sheet is covered both sides with a polyethylene film. This film also avoids the bitumen bleeding onto other surfaces and ensures against the sheets sticking together in warmer weather when stored on a pallet.

Protecto-board is suitable for basement tanking, podium decks, roofs, tunnels, waterways and civil engineering projects. By installing a protection membrane applicators can have an added assurance that waterproofing membranes will be protected over time, and they can avoid the unnecessary expense and trouble of having to investigate and identify future leaks on the completed structure.

They can be used as a permanent layer, part of the waterproofing system, or as a temporary protection which is removed after the passing trades have finished.



The most effective way to install Protecto-board is to heat bond to the surface requiring protection. This gives a secure bond and complete coverage, with no risk of dust, stones or water passing behind the protection and potentially affecting the membrane.

The boards are flexible enough to manipulate and shape around particular details. The sheets can be scored or cut with a sharp knife to fit around corners and multiple layers can be fitted on top of one another to give extra protection on susceptible areas.



Protecto-board is designed to be user friendly and easy to install. Unlike some other bituminous boards on the market, the bitumen content is held within the structure of the board, and will not bleed out of the fibres. This cuts down on a considerable amount of mess for both surrounding structures and personnel handling the product during installation. Being relatively lightweight also helps the installation process.

The boards are very tough and durable and can withstand concrete pour easily. Even shingle is successfully repelled. The boards are rot-proof and will not delaminate even when immersed in water, unlike many card fibre based protection boards on the market. They are intended to provide long term protection for waterproofing systems.



PROPERTIES	TEST METHOD	UNITS	TYPICAL VALUES	
THICKNESS	EN 1849-1	MM	3.1	6.1
DIMENSIONS	EN 1848-1	M	2 X 1 M	2 X 1 M
MASS PER UNITS AREA	EN 1849-1	KG/M2	4.09	8.34
BITUMEN CONTENT			>75%	>75%
SOFTENING POINT			115-130°C	115-130°C
POLYTHENE FILM		μ	15	15
RESISTANCE TO STATIC LOADING (METHOD A)	EN 12730	KG	25	25
RESISTANCE TO IMPACT	EN12691	MM	>700	>700
PUNCTURE RESISTANCE	ASTM E - 154	N/MM	1,474N / 37MM	1,497N / 34MM
WATERTIGHTNESS TO WATER	EN 1928-1	KPA		>400

## PROTECTO-DRAIN

PROTECTO-DRAIN IS A PREFORMED HDPE MEMBRANE DESIGNED TO PROTECT DRAINAGE LAYER, FOUNDATION WALLS AND SUBTERRANEAN DRAINAGE COURSES AND HELP CHANNEL WATER EFFECTIVELY.



Made from high density polyethylene (HDPE), this hard wearing, flexible membrane is designed to direct water away from the surface of the structure towards the appropriate drainage system. It is very tough but lightweight and easy to handle, making it very adaptable and suitable for a large number of applications. It is also completely safe and contaminant free, and can be used safely with water courses.

It is ideal for vertical surfaces and protects the waterproof membrane from abrasion and puncture damage caused by backfilling.

Its cupped structure creates a permanent air gap between the wall and the backfill which helps to reduce pressure points and helps in the ventilation of the building and problems of damp. Gravity will encourage the water to flow down the surface and into the sump or drain constructed beneath. It is also an effective damp-proof layer on horizontal surfaces. It is fungus and rot-proof and completely safe with drinking water.

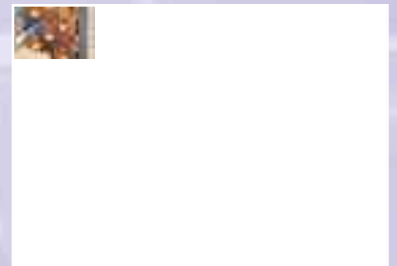
### PROTECTO-DRAIN 8

Protecto-drain 8 is a single membrane fixed to the wall with its cups facing towards the backfill. It spreads the weight of the soil and prevents point loading onto the structure. The 8mm high cups create an air gap between the structure and the earth backfill, helping to ventilate it effectively. Providing that the membrane is properly sealed at the edges, Protecto-drain 8 can create a viable waterproofing membrane in itself. It is best suited, however, as an extra protection and ventilation layer, covering an existing waterproofing seal.

Protecto-drain 8 is very flexible, and can be folded and shaped around awkward areas and details without compromising the seal. Because it is so lightweight, it is ideal for fixing to the vertical plane. It is easy to cut around details and edges and multiple sheets can be fitted together.

It should be fitted so that it emerges above the surface ground level to ensure the air gap does not become blocked or flooded. Each sheet should be overlapped by 20cm, with the egg box shaped cups slotting neatly into one another, producing a good fit.

The sheets are fixed to the structure either by passing nails through special sealing plugs onto battens or by using a double sided bitumen tape at the edges of the sheets and across the joints. Using tape across the joints is advised to ensure a proper seal throughout the whole area. Protecto-drain 8 is available as a standard 550gsm membrane. Special lightweight or heavy duty versions are also available.



## PROTECTO-DRAIN G8



Protecto-drain G8 is suitable for areas with a much greater amount of water passage and pressure through the ground.

It has a 100gsm geotextile fabric bonded to one side. This gives additional protection to the membrane and also helps to filter out particles but allow the water to pass through the fabric and into the air gap drainage chamber. With moisture passing through the geotextile but no soil moving, the area around the structure is effectively drained but the ground remains stable and firm, greatly reducing the risks of subsidence or hydrostatic pressure building up.

This membrane is designed for a water management, rather than water prevention system. Any subterranean structure will come into contact with significant moisture, so a way to channel this moisture away from the concrete is required. A suitable exit for the water should always be designed into the waterproofing system.



As the water drains vertically down the membrane, it should be channelled into a perforated pipe. The geotextile fabric can be pulled away from the HDPE membrane at the bottom of the structure to wrap around the pipe with the HDPE membrane passing beneath it. This way all the moisture will collect in the pipe but still be kept away from the structure.

The drainage pipe should be fitted to either a natural drain or a pump to ensure the water moves away from the structure effectively.

Protecto-drain G8 is ideal for planters and tanking. It is essential to avoid vegetation becoming waterlogged in planters but at the same time ensuring an even flow of moisture through the soil so that flood channels are not created in the planter, which can also damage the roots of the plants. It can be manipulated into tight spaces to provide a complete lining for planters, waterproofing and protecting the structure. The sheets can be overlapped to provide a continuous seal and the geotextile fleece ensures particles do not clog up the drainage holes and the water run-off is filtered.



Because the membrane is rot-proof, Protecto-drain G8 is an effective lining for planters in the long-term. The water running out of the planter will also not become contaminated by Protecto-drain G8 as the material is completely safe with drinking water. Protecto-drain G8 has also been used successfully on a horizontal plane as a drainage membrane beneath blockwork and paving slabs. The rainwater runs through the slabs and insulation, then through the geotextile fabric and runs along the HDPE membrane into the roof outlet. This prevents standing water puddling on top of the slabs and gives effective drainage.



## PROTECTO-DRAIN 20



Protecto-drain 20 is a 1mm thick HDPE membrane which is useful for larger scale areas of tanking and sealing. It has a larger cup size of 20mm which allows a greater amount of ground water to pass along the membrane.

It is ideal as a lining membrane on bridges and tunnels, and a whole manner of civil engineering works. The flexible and easy-to-bond nature of the material makes it easy to install, and it can cope with larger quantities of ground water and drainage quite easily. The HDPE material will not pollute the water running off in any way, which means that water can be directed, managed and recycled for a whole manner of uses.

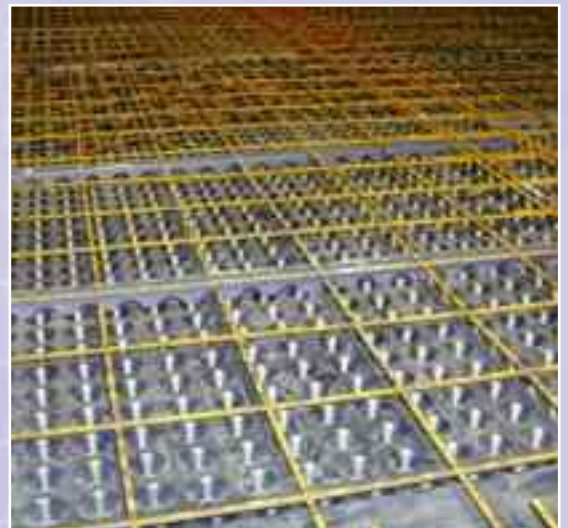
Protecto-drain 20 offers a much simpler, but often more effective way to manage and control subterranean water than many expensive systems and concepts. By sticking to simple principles of not stopping water but redirecting it, hydrostatic pressure points are prevented. By designing an “egg-box” profile, blockages are prevented and a greater amount of water can pass along the membrane. This profile also allows very easy sealing of the membrane, as multiple sheets can be “clipped into place” by overlapping the cups and sealing the joints with adhesive tape.

In vertical applications it is very good as a waterproofing and protection layer between layers of concrete.



It is tough enough to tolerate a wet concrete pour without risk of damage. When installed between two layers of concrete the cupped profile ensures a constant air gap between the two concrete layers, meaning the fabric of the building is sealed at the sides, so there is no risk of damp creeping into the concrete even if the building is subterranean in part.

It is used extensively in horizontal installations beneath the initial concrete slab layers, where it is effective in preventing seepage water from below entering the foundations. Each individual sheet can be bonded together by overlapping the cups and sealing with tape, meaning the layer is completely waterproof. Since it is flexible, any undulations and imperfections in the ground below can be accommodated without risk to the seal. Rebar can be laid directly onto the membrane without damage and concrete can be poured.



Protecto-drain G20, a 20mm HDPE membrane with a 100gsm geotextile bonded one side, is also available.

# PROTECTO-DRAIN 20P



Protecto-drain 20P was developed for use as a reservoir and drainage layer in green roof construction. It is placed on top of the waterproofed, protected concrete deck and sits beneath a filter layer, the soil substrate and vegetation layers on extensive green roof systems.

The HDPE membrane is manufactured with the same 20mm cups, but the area between the cups is perforated. On a horizontal plane, this allows water to fill up in the cups helping to sustain the roots with any excess water escaping through the holes and able to run away beneath the membrane into the drainage outlet.

This is a simple but effective way of holding a modest amount of water beneath the root systems but preventing the area becoming waterlogged, which will kill the plants. Because of the egg-box shape of the membrane, a constant air gap beneath the HDPE is maintained, allowing the excess water to pass easily without clogging.



The water held in the cups can then be drawn back up through the filter layer to nourish the vegetation above. This means that a constant level of water can be held in the reservoir cups, but rainwater is efficiently removed effectively and quickly from the roof, which will not become overloaded (never underestimate the weight of standing water). It is important to remember, however, that these materials alone do not provide a drought resistant system. Regular watering and maintenance is required for all roof gardens and green roofs.

Wallbarn Protecto-drain 20P is lightweight and easy to transport and install, making it ideal for rooftop applications. It is the perfect product for either large-scale roofs or small domestic projects. Large amounts of membrane can be installed in a day, as operatives can simply roll it out across

the deck and overlap the edges quickly and easily. By installing the soil substrate immediately, the membrane is properly ballasted. Protecto-drain 20P is suitable for EXTENSIVE green roofs. This includes sedum roofs, wildflower and biodiverse roofs, grasses and dwarf plants, where soil substrates are up to a depth of 200mm.



## PROTECTO-DRAIN 60P



For INTENSIVE green roofs installers will need to use Wallbarn Protecto-drain 60P as the drainage membrane.

Protecto-drain 60P is a rigid board made from recycled polypropylene, not HDPE. The cups are 60mm deep. With larger cups and more perforations, this membrane holds a greater amount of water and has higher drainage capacity, meaning the membrane is suitable where higher soil substrates, and a much larger degree of drainage is required.

The membrane itself is 2mm thick. It has very good weight tolerance and compressive strength. The higher air gap beneath the green roof system means that a larger amount of water can pass through the system, reducing the risk of or hydrostatic pressure on the surface below.

With higher substrate depths available, more variety of plants and vegetation can be planted on a green roof, including grasses, shrubs and trees.

The frame is rigid, tough and weight bearing, and is designed so that each tray, measuring 500 x 500 x 60mm, can clip onto its neighbour, making installation fast and easy. Protecto-drain 60P can be cut easily to fit around details on the roof.



The edges and base feet are rounded to prevent damage to the waterproofing membrane beneath. Applicators can walk across the membrane without problems due to its strength. It is so stable in fact, that structures can even be built onto it if required.

Once the deck is waterproofed and protected, Protecto-drain is laid down. The soil/substrate is then installed onto the membrane up to the level required. Care must be taken to ensure that the particles do not clog up the cups so either a geotextile filtration layer should be loose laid onto Protecto-drain 60P or coarse aggregate with no fine particles should be installed as an intermediate layer before laying soil-type material.



# PROTECTO-DRAIN ACCESSORIES AND SPECIAL PRODUCTS

## ACCESSORIES

Protecto-drain flexible HDPE membranes can be fitted to the structure using special fixing buttons, which fit into the dimples of the membrane. A nail is passed through the centre, and the buttons seal the hole made by the nail, helping to keep the membrane watertight.

For longer fixings a specialised pin can be used to pass through the membrane. Again, it is self-sealing and the shaft is ribbed to maintain a strong bond into the structure.

Double sided bitumen tape is also available for securing sheets together or bonding the membrane to a dry structure. Being bitumen based, the tape has very strong adhesion and is waterproof, not becoming affected by damp.



## PROTECTO-DRAIN – SPECIAL PRODUCTS

Wallbarn can offer variations on the standard Protecto-drain membranes, dependant on the technical requirements of the project.

### PROTECTO-DRAIN 8 LIGHTWEIGHT & PROTECTO-DRAIN 8 HEAVY DUTY

Protecto-drain 8 is available in a lightweight 450gsm variety where strength is not so much of an issue and clients may require a more cost effective material.

Wallbarn can also supply Protecto-drain 8 Heavy Duty for higher technical performance. We have supplied Protecto-drain 8 Heavy Duty in 700gsm and 900gsm. These superior membranes are 1mm thick rather than the standard 0.6mm thick and have superior crushing strength and puncture resistance. They have been used successfully as protection membranes for waterproofing and concrete pour on many high-specification projects. They are used where high loadings are expected, such as railways and airports.

### PROTECTO-DRAIN PL8 – PLASTER GRADE MEMBRANE

Protecto-drain can be manufactured with a polyester mesh bonded to one side. Plaster and rendering can be laid onto the membrane and adheres to the surface, allowing internal walls to be constructed. Tile adhesive can also be installed onto the mesh.

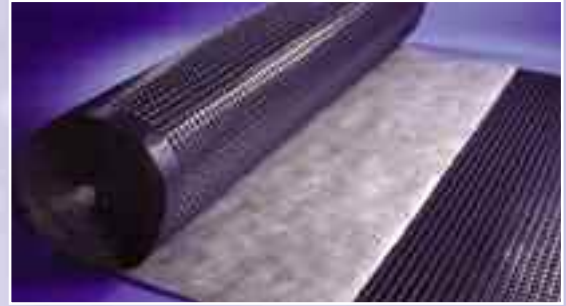
This material is very useful for internal tanking and basement rooms where the HDPE membrane acts as a waterproofing and damp-proofing layer, and the internal plaster can then be installed on top. Protecto-drain plaster grade material is ideal for retro-fitting of rooms in basements and underground installations.

As well as the regular HDPE / mesh version, a membrane incorporating the HDPE membrane, the polyester mesh bonded one side and a geotextile fabric bonded the other side. This geotextile gives a protection and cushioning layer to prevent any risk of the waterproofing or delicate membrane immediately behind the Protecto-drain becoming damaged.

A range of white fixing studs and edging strips specifically for the plaster grade membrane is available.



# PROTECTO-DRAIN TECHNICAL DATA



	PROTECTO-DRAIN 8	PROTECTO-LIGHTWEIGHT	PROTECTO-DRAIN 8 HEAVY DUTY	PROTECTO-DRAIN G8	TEST METHOD
MATERIAL	HIGH DENSITY POLYETHYLENE (HDPE)				
COLOUR	BLACK				
MEMBRANE THICKNESS (APPROX)	0.60MM	0.50MM	1MM	0.60MM	CALIBRATED MEASURING TAPE
DENSITY	550GSM	420GSM	900GSM	650GSM	CALIBRATED MEASURING TAPE
COMPRESSION	250KN/M2	170KN/M2	300KN/M2	250KN/M2	MDV
LENGTH	20M	20M	20M	15M	CALIBRATED MEASURING TAPE
WIDTH	2M	2M	2M	2M	CALIBRATED MEASURING TAPE
CUP HEIGHT	8MM	8MM	8MM	8MM	MDV
NUMBER OF CUPS	1500 PER M2	1500 PER M2	1710 PER M2	1500 PER M2	MDV
AIR VOLUME BETWEEN CUPS (APPROX. )	5.5 L/M2	5.5 L/M2	5.5 L/M2	14 L/M2	MDV
HORIZONTAL DRAINAGE CAPACITY	4.6 L/M2/S	4.6 L/M2/S		4.6 L/M2/S	MDV
RESISTANCE TO WATER PENETRATION			W1		EN 1928
TENSILE STRENGTH - MD			≥340 N/50MM	≥330 N/50MM	EN 12311-2
TENSILE STRENGTH - CMD			≥350 N/50MM	≥335 N/50MM	EN 12311-2
ELONGATION - MD			≥44.9 N	≥28.7 N	EN 12311-2
ELONGATION - CMD			≥35 N	≥26.2 N	EN 12311-2
RESISTANCE TO STATIC LOADING	NO PERFORATION AT 200 N/24HRS				EN 12730
DURABILITY	PASSED				EN 1296 & EN 13984
EXPOSURE TO LIQUID CHEMICALS	PASSED / WATERPROOF				EN 1847
RESISTANCE TO IMPACT			≥410MM	≥410MM	EN 12691
RESISTANCE TO TEARING - MD			≥343 N	≥332 N	EN 12310
RESISTANCE TO TEARING - CMD			≥352 N	≥349 N	EN 12310
WATER PERMEABILITY				FILTER WEBBING 100 L/M2	
TEMPERATURE TOLERANCE	-30°C TO +80°C				MDV
RESISTANCE TO CHEMICALS	ROT-PROOF, RESISTANT TO FUNGUS AND BACTERIA. WILL NOT LEACH CHEMICALS. NOT HARMFUL TO DRINKING WATER. NO HEALTH HAZARDS UNDER NORMAL USE.				
BIOLOGICAL CHARACTERISTICS					
PHYSIOLOGICAL CHARACTERISTICS					
WARRANTY	ROT-PROOF FOR 20 YEARS				
FIRE CLASSIFICATION	B2 (B1 AVAILABLE BY SPECIAL REQUEST)				DIN4102

THIS DATASHEET REPRESENTS THE CURRENT KNOWLEDGE OF THE PRODUCT, BUT MAY BE REVISED BY WALLBARN IN THE FUTURE. IT IS THE DUTY OF THE CUSTOMER AND INSTALLER TO BE CLEAR THAT THIS PRODUCT IS SUITABLE FOR THE PURPOSES IT IS USED FOR. THIS TECHNICAL DATASHEET MAY BE REVISED OR CHANGED AT ANY TIME WITHOUT PRIOR NOTICE. IT IS THE DUTY OF THE CUSTOMER AND INSTALLER TO BE SURE THEY POSSESS THE LATEST VERSION OF THE DATASHEET.



# PROTECTO-DRAIN TECHNICAL DATA



MATERIAL	PROTECTO-DRAIN 20	PROTECTO-DRAIN 20P	PROTECTO-DRAIN 60P	TEST METHOD
	HIGH DENSITY POLYETHYLENE (HDPE)		RECYCLED POLYPROPYLENE	
COLOUR		BLACK		
MEMBRANE THICKNESS (APPROX)	1MM	1MM	2MM	CALIBRATED MEASURING TAPE
DENSITY	550GSM	550GSM	4 KG PER M2	CALIBRATED MEASURING TAPE
COMPRESSION	180 KN PER M2	180 KN PER M2	60 KN PER M2	MDV
LENGTH	20M	20M	500MM	CALIBRATED MEASURING TAPE
WIDTH	1.9M OR 2M	1.9M OR 2M	500MM	CALIBRATED MEASURING TAPE
CUP HEIGHT	20MM	20MM	60MM	MDV
NUMBER OF CUPS / HOLES			500 HOLES PER M2	MDV
AIR VOLUME BETWEEN CUPS (APPROX)	14 LITRES PER M2	14 LITRES PER M2	35 LITRES PER M2	MDV
HORIZONTAL DRAINAGE CAPACITY	10 LITRES PER M2	10 LITRES PER M2	20 LITRES PER M2	MDV
HORIZONTAL DRAINAGE SURFACE	1MM		1,144CM3 PER M2	EN 1928
RESISTANCE TO STATIC LOADING	NO PERFORATION AT 200 N/24HRS			EN 12730
DURABILITY	PASSED			EN 1296 & EN 13984
EXPOSURE TO LIQUID CHEMICALS	PASSED / WATERPROOF			EN 1847
GREEN ROOF STANDARD COMPLIANCE	UNI 11235:2007			EN 12691
OTHER COMPLIANCE	BS EN 13252			EN 12310
TEMPERATURE TOLERANCE	-30°C TO +80°C			MDV
RESISTANCE TO CHEMICALS	ROT-PROOF, RESISTANT TO FUNGUS AND BACTERIA. WILL NOT LEACH CHEMICALS. NOT HARMFUL TO DRINKING WATER. NO HEALTH HAZARDS UNDER NORMAL USE.			
BIOLOGICAL CHARACTERISTICS				
PHYSIOLOGICAL CHARACTERISTICS				
WARRANTY	ROT-PROOF FOR 20 YEARS			
FIRE CLASSIFICATION	B2 (B1 AVAILABLE BY SPECIAL REQUEST)		B2	DIN4102

THIS DATASHEET REPRESENTS THE CURRENT KNOWLEDGE OF THE PRODUCT, BUT MAY BE REVISED BY WALLBARN IN THE FUTURE. IT IS THE DUTY OF THE CUSTOMER AND INSTALLER TO BE CLEAR THAT THIS PRODUCT IS SUITABLE FOR THE PURPOSES IT IS USED FOR. THIS TECHNICAL DATASHEET MAY BE REVISED OR CHANGED AT ANY TIME WITHOUT PRIOR NOTICE. IT IS THE DUTY OF THE CUSTOMER AND INSTALLER TO BE SURE THEY POSSESS THE LATEST VERSION OF THE DATASHEET.



# GEOTEXTILES

WALLBARN CAN SUPPLY A LARGE RANGE OF GEOTEXTILE FABRICS IN A NUMBER OF DENSITIES AND MATERIALS. THEY ARE IDEAL FOR A WIDE NUMBER OF USES – INCLUDING PROTECTION, DRAINAGE, FILTRATION, SOIL STABILISATION AND GREEN ROOFING.



These nonwoven fabrics are permeable membranes which allow water to pass through but hold the particles in place. The soil does not become saturated, thereby improving the strength and stability of the ground.

Geotextiles are extremely useful to help improve the condition of groundworks before starting construction. They are used extensively in road and rail construction and beneath concrete foundations and blinding layers. The makeup of the fabric is uniform throughout the roll, so no weak spots will be present in the layer.

Geotextiles also provide a very viable, flexible, permeable protection and cushioning layer on areas such as reservoirs and landfills. A preliminary layer can be installed to prevent soil movement and stones from piercing delicate membranes above.

They are extremely effective as subterranean soil stabilisation membranes. Either covering buried pipes or lining drains, they will ensure the passage of water without risk of land slippage, greatly improving the quality of the area.

They can also be used on areas where new built-up ground is being created, such as artificial islands and reclaimed land, to prevent subsidence before the soil is fully consolidated.



Wallbarn can supply a very large range of geotextiles, made from different materials in a whole host of densities and weights. We can select the exact product for the needs of the client and provide both the best technical performance and the most cost effective solution.

Geotextile fabrics are available manufactured in polypropylene or recycled polyester. The material is supplied packed into tight rolls and we can supply material in a variety of roll sizes, from 1 metre wide up to 6 metres wide for very large-scale projects.

These super-jumbo rolls make installation much faster and easier as there will be less individual rolls to sew or seal together – ideal for applications such as landfills.



The prime material supplied by Wallbarn is a **high tenacity polypropylene fabric (PPS)**. This has been designed to be flexible and permeable but has increased tensile and puncture strength, making it suitable for hard wearing applications such as landfills and reservoirs.

Its soft, cushioning properties mean it can be placed onto rough areas to prevent sharp objects from passing through into the system above but still allow the passage of water. This means sealing and waterproofing sheet membranes can be installed above them without the risk of ground settlement causing any damage above.



This material is also ideal for road and rail construction, as it can withstand the forces of heavy traffic over the long term.

The high tenacity PPS grade polypropylene fabric has also been used as an effective protection layer for waterproofing membranes including single ply sheet membranes. The cushioning effect is seen as a major advantage.

It has been used successfully as a separation layer in inverted waterproofing systems, protecting the insulation from damage caused

by the ballast. It can be used between layers of asphalt, in tunnels, foundations and airport runways. The properties exceed those of the leading brands on the market and very high performance can be achieved using these fabrics in a wide manner of applications.

A second grade of polypropylene fabric is available called **PPX**. This is manufactured in a similar way to the high tenacity product, but it has slightly lower mechanical properties.

The **PPEX** offers a more cost effective option for simple filtration or erosion control. Where there is not the requirement for such high tensile strength, a whole range of fabrics are available which still match the performance of many of the leading geotextiles in the market in a wide range of densities and roll sizes.



## **RECYCLED POLYESTER GEOTEXTILE**

Designers and installers can choose a more sustainable option by using recycled polyester fabrics on some applications. Although these materials do not have the tensile strength and mechanical properties of the virgin fibre materials, where strength is not so much of an issue, recycled polyester fabrics can be used as an effective separation and filtration layer.

They have proved popular in applications such as green roof systems and temporary protection layers. Wallbarn uses recycled polyester fabrics within its own green roof systems, details of which can be found later in this brochure. Wallbarn can supply a white recycled polyester fleece, coded PEI, or a multi-coloured polyester fabric, coded PEC. Technical details are given on pages 42 and 43.



All Wallbarn geotextile fabrics are manufactured under ISO 9001:2000 standards and comply with Directive 89/10/EEC 1988 (as amended by 93/68/EEC 1993). We can supply fabrics suitable for a whole manner of purposes, from from 65gsm to 1200gsm in a large range of strengths and roll sizes. Fabrics can be coloured and engineered so that the UV resistance is extended beyond the standard 15 days should any fabric be exposed for prolonged periods.

# PPS POLYPROPYLENE GEOTEXTILE FABRICS

PHYSICAL PROPERTIES	TEST METHOD	UNIT																					TOLERANCE	
WEIGHT		GM/CM <sup>2</sup>	90	100	105	120	125	140	150	170	180	200	220	230	250	260	320	400	500	600	800	1000	1500	± 10%
THICKNESS	20KPA	EN ISO 9863-1	MM	0.60	0.65	0.70	0.75	0.90	1.00	1.00	1.10	1.20	1.30	1.30	1.40	1.45	1.70	2.20	3.00	3.50	4.20	4.80	7.50	± 20%
	200KPA	EN ISO 9863-2	MM	0.50	0.50	0.55	0.60	0.65	0.75	0.85	0.90	0.90	1.00	1.10	1.10	1.025	1.30	1.50	1.90	2.40	2.80	3.90	4.50	± 20%
200KPA	EN ISO 9863-3	MM	0.40	0.40	0.40	0.50	0.55	0.55	0.65	0.70	0.70	0.75	0.90	0.90	1.00	1.10	1.30	1.50	1.90	2.10	3.10	4.00	5.60	± 20%

## MECHANICAL PROPERTIES

TENSILE STRENGTH	MD	EN ISO 10319	KNM	6.5	6.0	8.0	9.0	9.0	10.5	11.5	13.0	13.5	14.0	16.0	17.0	18.0	24.0	28.0	35.0	40.0	52.0	68.0	85.0	- 10%
	CMD	EN ISO 10319	KNM	6.5	6.0	8.0	9.0	9.0	10.5	11.5	13.5	14.0	16.0	17.0	17.5	19.0	20.5	27.0	34.0	42.0	50.0	64.0	80.0	- 10%
ELONGATION AT MAX LOAD	MD	EN ISO 10319	%	65	52	65	65	65	65	65	65	65	65	65	65	65	65	65	75	75	80	90	100	± 30%
	CMD	EN ISO 10319	%	70	55	70	70	70	70	70	70	70	70	70	70	70	70	70	70	80	80	90	100	± 30%
ENERGY INDEX	MD	EN ISO 10318	KJM/CM <sup>2</sup>	2.2	2.0	2.7	3.0	3.0	3.5	3.9	4.6	4.6	5.2	5.6	5.7	6.2	6.8	8.6	10.5	14.9	23.2	33.3	53.8	± 20%
	CMD	EN ISO 12236	KN	1.1	1.1	1.2	1.4	1.4	1.8	1.9	2.2	2.3	2.5	2.8	2.9	3.3	3.4	4.3	5.5	6.5	7.5	9.5	14.0	- 10%
DYNAMIC PUNCTURE RESISTANCE (CONE DROP TEST)	MD	EN ISO 13433	MM	38	38	34	30	32	26	24	22	20	18	16	15	14	14	12	7	4	0	0	0	+ 20%
	CMD	EN 14574	N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	150	200	420	440	440	480	600	700	900	1100	1200	- 20%	
GRAB RESISTANCE	MD	ASTM D 4632	N	360	410	430	525	580	680	765	875	1050	1250	1550	1900	2050	2800	4000	9000	2500	3200	6200	- 15%	
	CMD	ASTM D 4632	N	390	430	490	580	790	870	970	1050	1250	1550	1900	2050	2800	4000	9000	2500	3200	6200	9000	- 15%	
GRAB ELONGATION	MD	ASTM D 4632	%	60	60	60	60	60	60	60	65	70	75	75	75	75	80	85	90	90	90	90	90	± 20%
	CMD	ASTM D 4632	%	70	70	70	70	70	70	70	75	75	75	75	75	80	85	90	90	90	90	90	90	± 20%
TRAPEZOID TEARINGS STRENGTH	MD	ASTM D 4533	N	90	110	110	170	220	240	240	260	260	260	260	260	260	290	350	430	530	830	1030	- 20%	
	CMD	ASTM D 4533	N	110	130	130	190	240	240	260	260	260	260	260	260	260	290	350	430	530	830	1030	- 20%	

## HYDRAULIC PROPERTIES

VELOCITY INDEX VI	EN ISO 11058	MMS	120	80	110	110	100	90	90	70	70	60	60	60	55	55	55	55	30	25	25	25	25	- 30%
PERMEABILITY COEFFICIENT NORMAL TO THE PLANE	EN ISO 10318	LM/CM S	120	110	110	100	90	70	60	60	60	60	60	55	55	55	55	30	25	25	25	25	- 30%	
	EN ISO 10318	S-1	2.40	1.60	2.20	2.00	1.80	1.38	1.30	1.40	1.20	1.10	1.10	1.10	1.10	1.10	1.10	0.60	0.50	0.50	0.50	0.30	- 30%	
COEFFICIENT OF PERMEABILITY NORMAL TO THE PLANE	EN ISO 10318	MS	1.44	1.04	1.43	1.10	1.50	1.62	1.60	1.60	1.54	1.44	1.40	1.43	1.60	1.02	1.10	1.50	2.10	1.92	2.25	2.25	- 30%	
	EN ISO 10318		83	77	77	56	45	42	45	42	38	34	29	23	17	12	10	7	7	7	7	7	- 30%	
IN-PLANE FLOW CAPACITY AT 20KPA	MD	EN ISO 12956	CM <sup>2</sup> /S	0.80	0.80	0.80	0.80	0.80	0.80	1.60	1.60	1.60	2.10	2.10	2.10	2.30	2.30	2.50	3.20	5.00	7.80	8.50	9.00	- 30%
	CMD	EN ISO 10318	LM S	0.80	0.80	0.80	0.80	0.80	0.80	1.60	1.60	1.60	2.10	2.10	2.10	2.30	2.30	2.50	3.20	5.00	8.50	9.00	9.00	- 30%
OPENING SIZE	EN ISO 12956	UM	90	89	90	90	85	70	70	60	60	60	60	60	60	55	55	50	50	50	40	40	40	± 30%

## DURABILITY PROPERTIES

WEATHERING RESISTANCE	EN 12224	TO BE COVERED WITHIN 1 DAY FROM THE DAY OF INSTALLATION																				
OXIDATION RESISTANCE	EN ISO 13438	FORECAST MINIMUM DURABILITY OF 5 YEARS FOR ALL NON-REINFORCEMENT APPLICATION IN NATURAL GROUNDS WITH 4<PH<9 AND SOIL TEMPERATURE <25°C																				

THE VALUES GIVEN ARE AN AVERAGE OBTAINED IN OUR LABORATORIES AND IN OFFICIAL TESTING INSTITUTES. THE CONFIDENCE LEVEL IS 95%. WE RESERVE THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE.



# PPX POLYPROPYLENE GEOTEXTILE FABRICS

PHYSICAL PROPERTIES	TEST METHOD	UNIT																	TOLERANCE				
THICKNESS	2KPA	EN ISO 9863-1	MM	1.20	1.30	1.80	2.50	3.30	4.00	4.40	5.50	7.00	8.50	8.50	8.50	8.50	8.50	8.50	8.50	8.50	±	10%	
	20KPA	EN ISO 9863-1	MM	1.00	1.10	1.60	2.00	2.70	3.30	3.80	5.00	6.30	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	7.80	±	20%
	200KPA	EN ISO 9863-1	MM	0.80	0.90	1.20	1.60	2.00	2.50	2.90	3.90	4.70	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.30	±	20%
<b>MECHANICAL PROPERTIES</b>																							
TENSILE STRENGTH	MD	EN ISO 10319	KNM	4.0	5.0	10.0	14.0	18.0	26.5	29.0	32.0	34.0	37.0	-	-	-	-	-	-	-	-	-	15%
	CMD	EN ISO 10319	KNM	4.5	7.0	14.0	19.0	26.0	37.5	43.0	50.0	53.0	57.0	-	-	-	-	-	-	-	-	-	15%
ELONGATION AT MAX LOAD	MD	EN ISO 10319	%	70	80	80	80	85	90	90	95	95	95	±	±	±	±	±	±	±	±	±	25%
	CMD	EN ISO 10319	%	80	85	85	85	90	95	95	100	100	100	±	±	±	±	±	±	±	±	±	25%
ENERGY INDEX	MD	EN ISO 10318	KJM/G	1.6	2.5	5.0	6.8	9.6	14.8	16.7	20.0	21.2	22.9	±	±	±	±	±	±	±	±	±	25%
	CMD	EN ISO 10318	KJM/G	1.0	1.2	2.0	2.8	3.8	5.3	5.8	7.2	9.0	12.0	-	-	-	-	-	-	-	-	-	10%
DYNAMIC PUNCTURE RESISTANCE (CONE DROP TEST)	MD	EN ISO 13433	MM	22	20	13	9	6	3	2	0	0	0	+	+	+	+	+	+	+	+	25%	
	CMD	EN ISO 13433	MM	22	20	13	9	6	3	2	0	0	0	+	+	+	+	+	+	+	+	25%	
PYRAMID PUNCTURE RESISTANCE	MD	EN 14574	N	N/A	150	300	340	400	600	700	1100	1400	1600	-	-	-	-	-	-	-	-	-	20%
	CMD	EN 14574	N	N/A	150	300	340	400	600	700	1100	1400	1600	-	-	-	-	-	-	-	-	-	20%
GRAB RESISTANCE	MD	ASTM D 4632	N	390	400	700	740	780	860	890	950	980	1040	-	-	-	-	-	-	-	-	-	15%
	CMD	ASTM D 4632	N	420	450	750	810	870	980	1030	1130	1180	1280	-	-	-	-	-	-	-	-	-	15%
GRAB ELONGATION	MD	ASTM D 4632	%	70	90	90	90	90	90	90	90	90	90	±	±	±	±	±	±	±	±	±	20%
	CMD	ASTM D 4632	%	90	100	100	100	100	100	100	100	100	100	±	±	±	±	±	±	±	±	±	20%
TRAPEZOID TEARING STRENGTH	MD	ASTM D 4533	N	150	170	280	320	360	440	480	560	600	650	-	-	-	-	-	-	-	-	-	20%
	CMD	ASTM D 4533	N	170	210	320	360	400	480	520	600	640	720	-	-	-	-	-	-	-	-	-	20%
<b>HYDRAULIC PROPERTIES</b>																							
VELOCITY INDEX VI	MD	EN ISO 11058	MWS	80	70	35	25	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	30%
	CMD	EN ISO 11058	MWS	80	70	35	25	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	30%
PERMEABILITY NORMAL TO THE PLANE	MD	EN ISO 10318	LMQ S	80	70	35	25	20	20	20	20	20	20	-	-	-	-	-	-	-	-	-	30%
	CMD	EN ISO 10318	S-1	1.60	1.40	0.70	0.50	0.40	0.40	0.40	0.40	0.40	0.40	-	-	-	-	-	-	-	-	-	30%
COEFFICIENT OF PERMEABILITY NORMAL TO THE PLANE	MD	EN ISO 10318	MS	1.92	1.82	1.26	1.25	1.32	1.60	1.76	2.20	2.80	3.40	-	-	-	-	-	-	-	-	-	30%
	CMD	EN ISO 10318	MS	1.92	1.82	1.26	1.25	1.32	1.60	1.76	2.20	2.80	3.40	-	-	-	-	-	-	-	-	-	30%
HYDRAULIC GRADIENT	MD	EN ISO 10318	µM	42	38	28	20	15	13	11	9	7	6	-	-	-	-	-	-	-	-	-	30%
	CMD	EN ISO 10318	µM	42	38	28	20	15	13	11	9	7	6	-	-	-	-	-	-	-	-	-	30%
OPENING SIZE	MD	EN ISO 12956	µM	80	70	55	50	50	45	45	40	40	40	±	±	±	±	±	±	±	±	±	30%
	CMD	EN ISO 12956	µM	80	70	55	50	50	45	45	40	40	40	±	±	±	±	±	±	±	±	±	30%
<b>DURABILITY PROPERTIES</b>																							
WEATHERING RESISTANCE	EN 12224	TO BE COVERED WITHIN 1 DAY FROM THE DAY OF INSTALLATION																				-	
OXYDATION RESISTANCE	EN ISO 13438	FORECAST MINIMUM DURABILITY OF 5 YEARS FOR ALL NON-REINFORCEMENT APPLICATION IN NATURAL GROUNDS WITH 4<PH<9 AND SOIL TEMPERATURE <25°C																				-	

THE VALUES GIVEN ARE AN AVERAGE OBTAINED IN OUR LABORATORIES AND IN OFFICIAL TESTING INSTITUTES. THE CONFIDENCE LEVEL IS 95%. WE RESERVE THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE



# PEI RECYCLED POLYESTER GEOTEXTILE FABRICS

PHYSICAL PROPERTIES	TEST METHOD	UNT																			TOLERANCE	
THICKNESS	2KPA	EN ISO 9863-1	MM	1,00	1,20	1,40	1,80	2,40	3,50	4,00	4,50	5,00	6,00	±	10%							
	20KPA	EN ISO 9863-2	MM	0,80	1,00	1,20	1,60	2,00	2,30	2,40	2,80	3,20	3,50	±	20%							
	200KPA	EN ISO 9863-3	MM	0,40	0,60	0,80	1,20	1,40	1,50	1,50	1,60	1,70	1,80	±2	0%							
<b>MECHANICAL PROPERTIES</b>	TENSILE STRENGTH	MD	EN ISO 10319	KNM	1,5	2,0	3,2	5,5	6,0	7,5	8,0	12,0	16,0	25,0	-	10%						
		CMD	EN ISO 10319	KNM	2,0	2,5	3,8	7,5	9,0	11,0	12,0	14,0	20,0	30,0	-	10%						
	ELONGATION AT MAX LOAD	MD	EN ISO 10319	%	60	60	60	60	70	70	70	80	80	80	±	30%						
		CMD	EN ISO 10319	%	70	70	70	70	80	90	90	90	90	90	±	30%						
	ENERGY INDEX	MD	EN ISO 10318	KJM/G	0,6	0,7	1,1	2,1	2,8	3,7	4,3	5,5	7,7	11,7	±	20%						
		CMD	EN ISO 10318	KJM/G	0,6	0,7	1,1	2,1	2,8	3,7	4,3	5,5	7,7	11,7	±	20%						
	STATIC PUNCTURE RESISTANCE	MD	EN ISO 12236	KN	0,3	0,4	0,8	1,0	1,4	1,8	1,9	2,2	3,8	5,5	-1	0%						
		CMD	EN ISO 12236	KN	0,3	0,4	0,8	1,0	1,4	1,8	1,9	2,2	3,8	5,5	-1	0%						
	DYNAMIC PUNCTURE RESISTANCE (CONE DROP TEST)	MD	EN ISO 13433	MM	>50	4	30	20	10	6	4	2	1		+	20%						
		CMD	EN ISO 13433	MM	>50	4	30	20	10	6	4	2	1		+	20%						
PYRAMID PUNCTURE RESISTANCE	MD	EN 14574	N	N/A	N/A	N/A	250	300	450	500	600	700	800	-	20%							
	CMD	EN 14574	N	N/A	N/A	N/A	250	300	450	500	600	700	800	-	20%							
GRAB RESISTANCE	MD	ASTM D 4632	N	150	200	380	470	560	720	800	950	1100	1250	-	15%							
	CMD	ASTM D 4632	N	170	220	420	530	620	760	820	970	1150	1350	-	15%							
GRAB ELONGATION	MD	ASTM D 4632	%	70	70	70	70	70	70	70	70	70	70	±	20%							
	CMD	ASTM D 4632	%	80	80	80	80	80	80	80	80	80	80	±	20%							
TRAPEZOID TEARINGS STRENGTH	MD	ASTM D 4533	N	80	90	150	170	200	270	300	350	400	450	-	20%							
	CMD	ASTM D 4533	N	90	100	170	230	260	320	360	410	460	510	-	20%							
<b>HYDRAULIC PROPERTIES</b>																						
VELOCITY INDEX VI	EN ISO 11058	MWS	95	80	60	40	40	40	40	40	20	20	20	-	30%							
PERMEABILITY COEFFICIENT NORMAL TO THE PLANE	EN ISO 10318	LM/G S	95	80	60	40	40	40	40	40	20	20	20	-	30%							
PERMITTIVITY	EN ISO 10318	S-1	1,90	1,60	1,20	0,80	0,80	0,80	0,80	0,80	0,40	0,40	0,40	-	30%							
COEFFICIENT OF PERMEABILITY NORMAL TO THE PLANE	EN ISO 10318	M5	1,90	1,92	1,68	1,44	1,92	2,80	3,20	1,80	2,00	2,40										
HYDRAULIC GRADIENT	EN ISO 10318		50	42	36	28	21	14	13	11	10	8										
OPENING SIZE	EN ISO 12956	µM	65	60	55	45	45	45	45	45	40	40	40	±	30%							
<b>DURABILITY PROPERTIES</b>																						
WEATHERING RESISTANCE	EN 12224	TO BE COVERED WITHIN 1 DAY FROM THE DAY OF INSTALLATION																				
OXIDATION RESISTANCE	EN ISO 13438	FORECAST MINIMUM DURABILITY OF 5 YEARS FOR ALL NONREINFORCEMENT APPLICATION IN NATURAL GROUNDS WITH 4<PH<9 AND SOIL TEMPERATURE <25°C																				

THE VALUES GIVEN ARE AN AVERAGE OBTAINED IN OUR LABORATORIES AND IN OFFICIAL TESTING INSTITUTES. THE CONFIDENCE LEVEL IS 95%. WE RESERVE THE RIGHT TO MAKE CHANGES AT ANY TIME WITHOUT NOTICE







PROTECTO-JOINT

PROTECTO-JOINT

FLAT-ROOFING

# DRAINAGE OUTLETS AND VENTS

## DRAINAGE OUTLETS AND VENTS

WALLBARN INTRODUCES A RANGE OF ROOF OUTLETS AND DRAIN CONNECTORS TO ENSURE COMPLETE WATERPROOF INTEGRITY AROUND DRAINAGE HOLES ON ROOFS AND PODIUM DECKS. ALSO AVAILABLE ARE VENTS TO AERATE WATER VAPOUR FROM THE SLAB.

The junction between drain pipes and the holes cast into the slab are the areas most susceptible to water ingress, since the maximum amount of water run-off is coming into contact with them. Therefore, it is essential that the deck structure is completely sealed around and into these details, to prevent leakage.

We have a number of different products to cater for the drainage and aeration requirements for a waterproofed concrete deck:

- **Drain connectors for circular downpipes** cast in the middle of the concrete deck
- **Corner fittings** for holes on the junction of horizontal and parapet wall
- **Collars**, to fit around pipework which is emitting from the deck
- **Vents and aerators**, which draw vapour out of the concrete
- **Accessories**, including leaf guards, corner patches and extensions

Drain connectors are essential on a flat roof or podium deck as the rainwater run-off needs to be managed in some way. Obviously the more drainage outlets cast into the deck, the less risk of ponding during a deluge. However watertight the deck itself is, if these drainage holes are not also watertight, there is a large risk of moisture seeping into the fabric of the building, causing long-term damage to the structure and its content.

It is vital, therefore, to ensure that something strong, flexible and fully bonded is secured seamlessly as part of the waterproofing seal. It must also enter the drainage hole, connect to and overlap the actual HDPE pipe within that hole.

Wallbarn outlets and vents are manufactured in rubber and TPE, so offer a more flexible, lightweight and cost effective alternative to the heavy stainless steel outlets on the market. Our connectors, outlets and collars are available in a variety of materials including TPE (a polypropylene/ EPDM compound), EPDM and PVC.

Wallbarn recommends that outlets are installed at least every 25-30m<sup>2</sup> on a roof deck or balcony.



## DRAIN CONNECTORS AND OUTLETS IN TPE

TPE is a compound of rubber and polypropylene, developed as a cost effective way to waterproof and protect drainage holes and outlets on roofs and balconies in conjunction with bituminous waterproofing membranes. The material is tough, flexible and durable.

The resilient TPE material is UV stable and resistant to deterioration by normal atmospheric elements and ground salts. It can withstand temperature of 120°C and will not become brittle at very low temperatures.

These outlets, collars and vents are ideal for SBS and APP bituminous membranes, including built-up (felt), mastic asphalt, hot melt and other liquid applied membranes.



## TPE CORNER FITTINGS

It is essential that the area around the drainage holes has a dedicated reinforced detail guarding the drainage hole. Contractors cannot simply rely on continuing a small piece of the waterproofing into the hole and “hoping for the best”.

The key range drainage outlet connector is manufactured with a perforated flange, which is designed so that the unit is sandwiched between two layers of bituminous waterproofing membrane. The material can tolerate the application of hot liquid or even a torch-gun coming into contact with it. The membrane will ooze through the holes to bond both layers to each other, giving an extremely secure “over-and-under” bond.

The shaft of the outlet then connects to the HDPE drain pipe by slotting inside it. This ensures that the area is completely waterproofed around and into the drain pipe, so that there is no risk of water creeping behind the drainage hole and causing a leak.

The spigot pipe is round and slightly recessed, with a small drop from the horizontal border flap to encourage the water to flow into the pipe immediately and not pond around the mouth and possibly creeping back behind the outlet. The pipe or shank is slightly angled down to create a fall, encouraging faster flow of the water down the pipe. The shank itself is 500mm long, so it can cross through a large section of wall. Extension shanks are available if required.

These corner units can be fitted to either vertical downpipes at the edge of the retaining wall, or on a horizontal plane through the upstand or wall to then connect to the external downpipe.



## THE CORNER OUTLET IS INSTALLED AS FOLLOWS:

The outlet was installed into the drainage hole over an existing layer of bituminous felt in this instance, where a new bituminous membrane was being installed on top of insulation, which was laid onto an existing felt membrane. A patch of felt was installed (centre) on top of the existing membrane and torch bonded to it. It is important that the bitumen on the top of this patch is exposed. The upper side of the patch was also torch-heated so that the bitumen became tacky on the upper side.



The outlet was then placed on top of the patch when the bitumen was still tacky and pressed into it firmly (top right). Some of the bitumen oozed through the perforations.

A second layer of felt was installed immediately on top of the flange (and the patch beneath it) whilst the bitumen was still tacky and again was torch-heated so that the bitumen on this upper layer also liquified slightly. This means that the two layers of felt bonded to each other around the edge but also through the holes in the flange of the outlet, giving an extremely strong “over-and-under” bond.



The entire roof deck and the upstand was finished with a layer of torch-on felt which had been laid over the outlet. The area around the outlet hole was dressed with the felt membrane (right) so that the whole area was sealed and the roof had a suitable fall into the drainage hole.

### THEY ARE MEASURED AS FOLLOWS:

D1 is the diameter of the outlet drainage hole

D2 is the height of the (recessed) outlet drainage hole from the horizontal level

D3 is the inner diameter of the shank or outlet pipe at the bottom

L is the inner length of shank or outlet pipe

F1 is the width of the border flap or flange around the underside of the outlet hole

F2 is the height of the border flap or flange to the left and right, and above the outlet hole

F3 is the width of the flange or border flap across the face



WALLBARN CODE	CATEGORY	D1	D2	D3	L	F1	F2	F3
030-360-500-050	50MM	50	43	44	500	110	140	260
030-360-500-063	63MM	63	56	57	500	130	175	304
030-360-500-075	75MM	75	68	69	500	130	175	304
030-360-500-080	80MM	80	74	76	500	130	175	304
030-360-500-090	90MM	90	83	84	500	130	215	304
030-360-500-100	100MM	100	94	96	500	130	175	304
030-360-500-110	110MM	110	103	104	500	130	215	304
030-360-500-125	125MM	125	118	119	500	130	260	360

## ANGLED TPE CORNER OUTLET FITTINGS WITH RECTANGULAR MOUTH



These TPE corner fittings are an alternative design to the regular corner fittings featured earlier. They are not manufactured with a perforated flange, but have a ribbed profile across the whole flange / border which will help the liquid membrane to grip the surface.

They are manufactured with a 45° angle at the mouth of the outlet to help catch and direct more water into the outflow pipe off the roof. They have a square or rectangular opening at the mouth of the pipe. The flange is slightly inclined around the shank so that the outlet hole itself “juts out” away from the wall. Acting in the same way as a fillet in the junction between wall and floor, this angle pulls the water coming down the wall away from the corner and directs it into the mouth of the pipe or shank more effectively.

We recommend a sandwich installation; so that one coat of waterproofing membrane, or one layer of felt / adhesive, is laid onto the bare concrete. The outlet is installed in place; and then the second coat of adhesive / membrane is laid on top. The liquid will spread into the grooves and grip the outlet surround, also bonding to the other coat of membrane around the edges of the unit. This ensures a proper, secure fit.

To improve adhesion the connector and the surrounding concrete should be prepared with a coat of primer.

This corner fitting is suitable and ideal for both horizontal and vertical drains. The shank is 425mm long.

They are available in two versions, with the mouth of the outflow pipe being either 65 x 100mm, or 100 x 100mm for a greater amount of water flow.

### THEY ARE MEASURED AS FOLLOWS:

A is the height of the outlet drainage hole

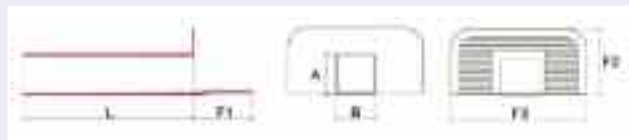
B is the width of the outlet drainage hole

L is the inner length of the shank or outlet pipe

F1 is the width of the border flap or flange in front of the outlet hole

F2 is the height of the border flap or flange above the outlet hole

F3 is the width of the flange or border flap across the face



WALLBARN CODE	CATEGORY / NAME	A	B	L	F1	F2	F3
030-301-065-100	45° ANGLE - 65X100MM	65	100	425	150	160	340
030-301-100-100	45° ANGLE - 100X100MM	100	100	425	150	160	340

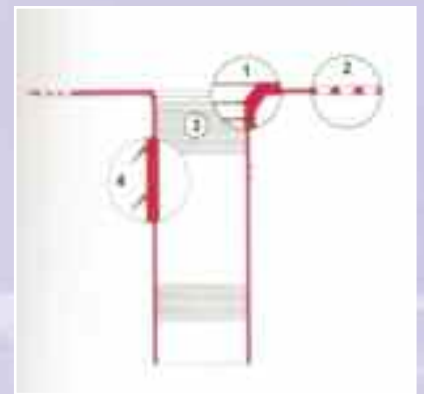
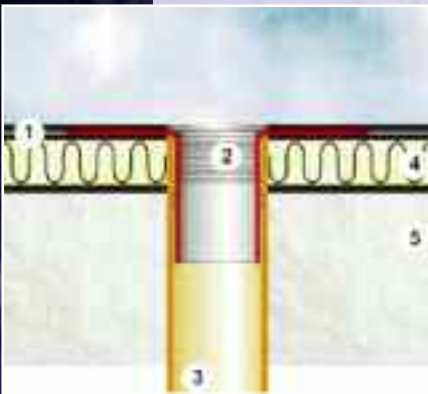
## TPE CIRCULAR DRAINAGE OUTLETS

The circular drain connector is used for downpipes and outlets on a roof or terrace within the main body of the concrete deck.

Made from TPE, these outlets are for use where a circular hole is cast into the concrete deck. The area is fully waterproofed around the hole and into the hole with a first layer / coat of membrane. The connector is then inserted into the hole, and a second coat / layer of membrane is installed on top of the flap (flange).

The connectors are manufactured with a perforated flange so the membrane oozes through to bond to itself in a sandwich situation, ensuring a very secure bond.

The shank is 240mm long and is designed to fit inside an HDPE pipe tightly.



The shank or pipe is manufactured to a slight cone shape, making it easier to press into the hole and helping to prevent the connector rising out of the hole.

There are two rings (4) on the shank which help to ensure that as it is pressed into the hole no water can pass back up the pipe, acting as a further drain trap.

At the mouth of the shank there are a series of ribs and serrations (3) along the inside, which ensure a leaf guard or gravel-excluder can be fitted into the connector securely.



The connector should not come into direct contact with the bare concrete, as this risks the chance of water passing beneath the rubber profile and ingressing into the structure. The connector sits between two layers of waterproofing.

For two coat liquid applied membranes this can be achieved fairly easily without disrupting the waterproofing process.

For sheet membranes the best practice is that an additional layer of membrane should be applied and adhered to the area.

The first layer can be installed and fully bonded, the outlet is inserted into the hole, then a patch of membrane is fitted above and around the outlet. It should be fully bonded to the flange of the outlet and the first layer of membrane by adhesive or heat-bonding to achieve a fully watertight bond.

**THEY ARE MEASURED AS FOLLOWS:**

H is the height of the spigot or shank

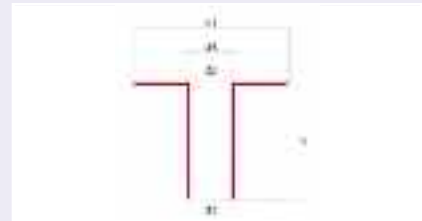
D1 is the outer diameter of the flange or surrounding ring

D2 is the inner diameter of the pipe at the top

D3 is the inner diameter of the pipe at the bottom

D4 is the outer diameter of the pipe at the top

**which needs to be smaller than the inner diameter of the HDPE drainpipe**



WALLBARN CODE	CATEGORY	D1	D2	D3	D4	H
030-050-240-040	40MM	235	26	24	31	240
030-050-240-060	60MM	235	48	43	53	240
030-050-240-075	75MM	320	65	61	70	240
030-050-240-080	80MM	280	69	64	74	240
030-050-240-090	90MM	320	77	73	82	240
030-050-240-100	100MM	300	89	84	94	240
030-050-240-110	110MM	320	91	87	96	240
030-050-240-125	125MM	320	114	109	119	240
030-051-240-125 SPECIAL FOR HDPE PIPE	125MM	320	111	106	116	240
030-050-240-140	140MM	380	127	122	132	240
030-050-240-150	150MM	380	136	131	141	240
030-050-240-160	160MM	380	146	141	151	240
030-050-240-200	200MM	440	185	180	190	240

**NON-PERFORATED CIRCULAR OUTLETS IN TPE**

Wallbarn also offers a range of non-perforated circular outlets in TPE, but these will not offer the “over-and-under” bond provided for by the perforated range.

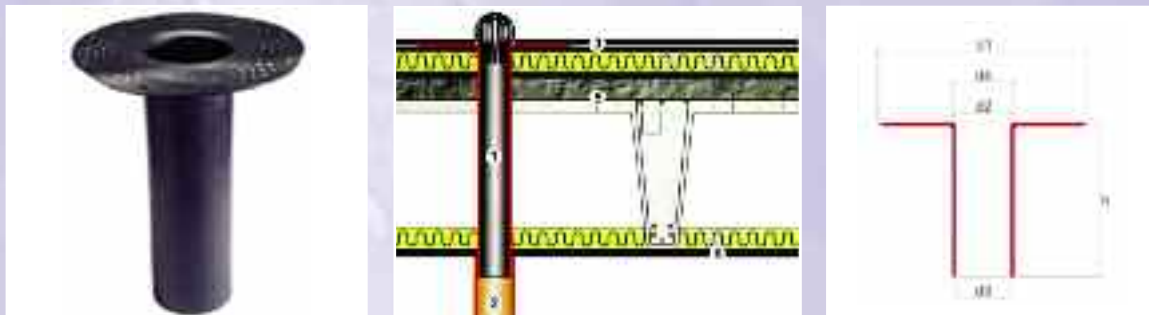
The flange is ribbed to help adhere to the membrane and can offer a slightly more cost effective alternative.



WALLBARN CODE	CATEGORY	D1	D2	D3	D4	H
030-040-240-040	40MM	235	26	24	31	240
030-040-240-060	60MM	235	48	43	53	240
030-040-240-075	75MM	320	65	61	70	240
030-040-240-080	80MM	280	69	64	74	240
030-040-240-090	90MM	320	77	73	82	240
030-040-240-100	100MM	300	89	84	94	240
030-040-240-110	110MM	320	91	87	96	240
030-040-240-125	125MM	320	114	109	119	240

## EXTRA-LONG DRAIN CONNECTORS IN TPE

Wallbarn can also supply drain connectors with a 600mm long shank, where outlet pipes are passing through things such as thick insulation or industrial metal roofs. Fitted and secured in exactly the same way as the standard drain connector, being sandwiched between two layers of waterproofing membrane, they are designed to pass through the entire section of roof and into the downpipe, and so eliminate the need for multiple connections and extension fittings (which always carry the risk of leaks around each connection).



WALLBARN CODE	CATEGORY	D1	D2	D3	D4	H
030-160-600-080	80MM	370	65	63	72	600
030-160-600-090	90MM	370	74	72	81	600
030-160-600-100	100MM	370	85	83	92	600
030-160-600-110	110MM	390	93	91	100	600
030-160-600-125	125MM	390	107	105	114	600
030-160-600-140	140MM	420	125	123	132	600
030-160-600-150	150MM	420	135	133	142	600
030-160-600-160	160MM	420	138	136	145	600
030-160-600-200	200MM	460	178	176	185	600

## LEAF GUARDS & GRAVEL EXCLUDERS

Leaf guards or gravel excluders should be fitted into the mouths of the circular drainage outlets to prevent the drainpipes clogging up over time.

Further details are available in the ACCESSORIES SECTION.

## PIPE COLLARS IN TPE

**COLLARS ARE FITTED AROUND THE OUTSIDE OF PIPEWORK WHICH EMERGES FROM THE TOP OF THE CONCRETE DECK.**

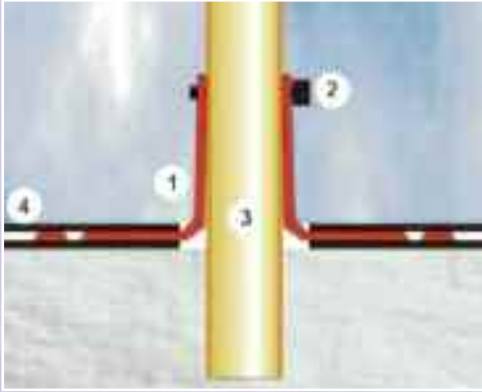
These sorts of pipes include bad odour vents and stand pipes. It is critical that these pipes are completely waterproofed as they emerge from the deck since water ingress will flow directly into an interior section of the building, such as a bathroom.

Collars will fit around the outside of an HDPE pipe (as opposed to the connectors and outlets which slot into the inside of a standard drain pipe) and completely seal the junction between the hole and the pipe. They are again manufactured with a slightly conical shape, so that they are easier to fit, and they help direct water outwards away from the pipe and hole.



It is essential that the correct size of collar is chosen, as it needs to fit around the outer diameter of the HDPE pipe (which may be measured in Imperial measurements) but it should not be so large that gaps exist between the pipe and collar, as this may cause movement.

The TPE collars are manufactured with a perforated flange, for installation with the sandwich method. The deck should be waterproofed around the pipe as it stands out from the deck, with a first coat or "patch" and the collar is then fitted over the top whilst the first layer / coat is still tacky.



The membrane will ooze through the holes in the perforated flange. The second layer of waterproofing is installed, with the membrane bonding to itself (in the same way as described for drainage connectors), so that the membrane is bonded under and over the collar, ensuring a complete seal.

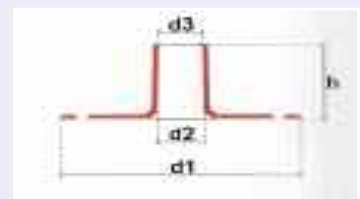
The jubilee clip is fixed around the collar at the top end to secure the whole area.



They are measured as follows:

**MEASUREMENTS:**

- H is the height of the collar
- D1 is the outer diameter of the flange or surrounding ring
- D2 is the inner diameter of the collar at the bottom
- D3 is the inner diameter of the pipe at the top **which needs to be larger than the outer diameter of the HDPE drainpipe**



WALLBARN CODE	CATEGORY	D 1	D 2	D 3	H
030-380-060-030	30MM	154	32	30	60
030-380-060-040	40MM	154	42	40	60
030-380-060-060	60MM	194	62	60	60
030-380-060-080	80MM	194	82	80	60
030-380-090-100	100MM	234	102	100	90
030-380-090-120	120MM	234	122	120	90
030-380-090-140	140MM	274	142	140	90
030-380-090-160	160MM	274	162	160	90

**JUBILEE CLIP / STAINLESS STEEL FIXING BAND**

Jubilee clips will be required when fitting pipe collars, which are available in both TPE and PVC.

Please see our ACCESSORIES SECTION for more details.

## VENTS & AERATORS IN TPE

**TPE VENTS ARE DESIGNED TO HELP DRAW VAPOUR OUT FROM THE CONCRETE SLAB BENEATH, TO HELP THE STRUCTURE TO BREATHE.**

All concrete will retain an element of moisture within its mass after the construction process, and it is important that once the roof is waterproofed, there is still a way for water vapour to escape from the concrete slab.



If not, there is a risk that this retained moisture can build up pressure points beneath the waterproofing membrane and bulge out of the top of the structure, causing the waterproof seal to bubble, blister or even burst.

Therefore, vents are an essential part of a waterproofed concrete deck. Wallbarn recommends a vent is placed at least every 25m<sup>2</sup>.

The vent is placed directly onto the bare concrete beneath the waterproofing membrane and insulation. The underside of the flange will be in direct contact with the concrete.

There are a series of ribs along the underside of the round base plate (or flange) and this encourages the movement of vapour along the base and into the tube (or flue) in the centre of the vent. It will act to draw the air which might appear between the slab and the membrane.



The membrane will then be applied over the base of the vent. This creates a "flue" which helps to draw the vapour out of the concrete.

The top of the pipe or flue has three lateral holes to allow the vapour to escape into the atmosphere. It is covered by a hood or cap which overlaps the internal holes, preventing rainwater entering the system but still allowing the passage of vapour.

Being TPE, the vent can be bonded to liquid bituminous membranes or suitable adhesives. The membrane will be installed across the top of the flange, and the grooved upper surface of the base plate / flange helps give a secure bond.

Wallbarn can supply three types of vent. The standard vent (on the left hand side) has a flue of 240mm high and approximately 75mm in diameter. This is the most common type of vent produced.

A shorter, broader vent can also be produced for deck areas where for some reason a shorter pipe is required (if the deck is to be covered with suspended decking for example and the designers wish for the vents to be hidden). Another alternative is an extra-long vent pipe, at 400mm. This may be required for areas where some sort of covering is placed onto the deck and the hood / cap needs to be exposed.

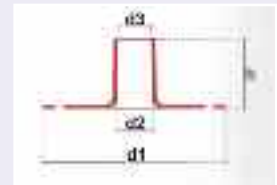


**MEASUREMENT IS AS FOLLOWS:**

D1 is the diameter of the base plate / flange

D2 is the diameter of the flue or pipe at the bottom of the vent

D3 is the diameter of the flue or pipe at the top (where it meets the cap / hood)



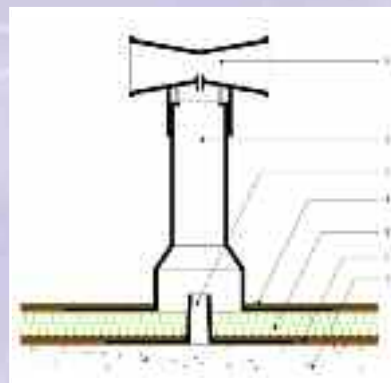
All these vents are UV stable and resistant to the elements. They are designed to be extremely tough and durable, and are guaranteed to last for at least 15 years.

WALLBARN CODE	NAME	D1	D2	D3	H
030-420-240-075	STANDARD VENT 240MM HIGH	320	76	73	240
030-460-160-125	SHORT VENT 160MM HIGH	390	125	73	160
030-460-400-125	EXTRA-LONG VENT 400MM HIGH	390	125	73	400

**SPECIAL DOUBLE AERATOR – FOR INSULATED ROOFS**

**WALLBARN CAN NOW OFFER A NEW DOUBLE AERATOR SPECIFICALLY DESIGNED FOR INSULATED ROOFS.**

This new concept is the double aerator, comprising two vents, for areas where both the concrete deck and the insulation need to be aerated and ventilated. Here a “special” 100mm high vent is placed onto the bare concrete beneath the waterproofing, and beneath the insulation; and another standard aerator is placed on top of the insulation.



They will be bonded beneath the waterproofing membrane so that the underside of the flange is in direct contact with the concrete or the insulation board. This maximises the amount of draw from the structure.

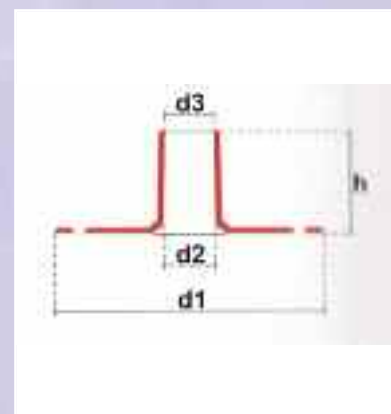
It is important to order both of these products together and also order an appropriate hood or cap for the top vent.



on to concrete slab beneath waterproofing membrane



on top of insulation boards beneath membrane



WALLBARN CODE	NAME	D1	D2	D3	H
030-500-100-065	SHAFT 100	320	67	64	100
030-500-220-065	SHAFT 220	320	67	64	220

## CAPS FOR VENTS



There are two designs of hood / flue – a standard round cap; and a special ESTRAER® funnel shaped hood.

The ESTRAER® aerator hood is a cone-shaped device designed to increase the amount of moisture sucked out of the concrete structure, drawing a far greater amount of vapour than the traditional cap. It can be used with both TPE and PVC vents shafts, and is tough and durable, but very easy to fit.

The ESTRAER® cap is clicked onto the shaft of the vent and the two cone-shaped trunks are positioned so that they face the prevailing wind direction. There is a small cylinder on the inside of the head which acts as a suction chamber and helps, as the air moves through the cones, to draw vapour up and into the funnels above. This internal mechanism acts as a flue and helps to suck up a far greater amount of moist air through the shaft and out through the funnels.

The cones can be fitted onto all the different sizes and types of vent shaft available, and are suitable for both TPE and PVC vents. They should be ordered at the same time as the vent shaft.

The standard cap is measured so that D1 is the diameter of the cap at the top; D2 is the diameter at the bottom (where it slots onto the pipe) and H is the height of the cap.

WALLBARN CODE	NAME	D1	D2	H
030-500-900-080	STANDARD CAP (BLACK)	106	110	80
030-500-900-010	ESTRAER® CAP (BLACK)	75	82	140

The special ESTRAER® cap is measured so that D1 is the diameter of the cap at the bottom (where it slots onto the pipe); D2 is the diameter of the funnels at each side; and H is the overall height of the cap including the funnels.

### STANDARD



### ESTRAER®



## EPDM MATERIALS:

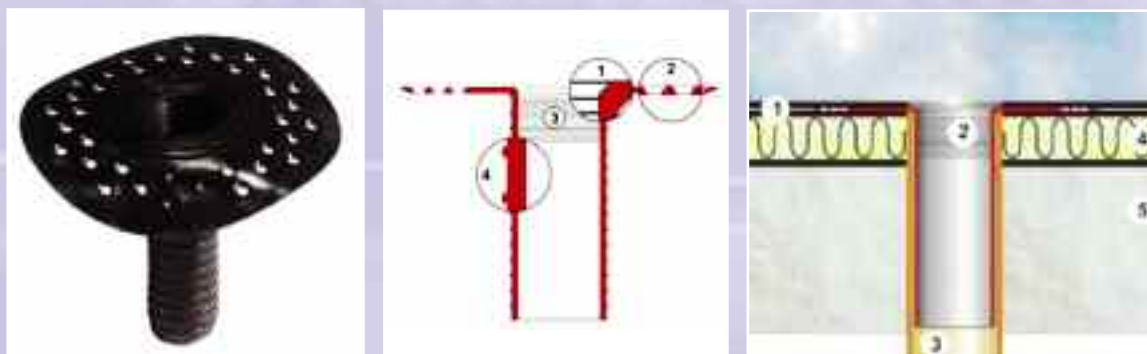
### EPDM DRAIN CONNECTORS AND OUTLETS

**WALLBARN CAN OFFER OUTLETS IN A SUPERIOR MATERIAL - EPDM - A FAR MORE ROBUST, FLEXIBLE DRAINAGE CONNECTOR.**

EPDM drain connectors provide a tougher, more durable seal around outlet drainage holes than the TPE products. More expensive than the TPE material, it is still suitable for bituminous and EPDM waterproofing systems and is fitted in the same manner. It can tolerate more movement in the structure without risk of splitting.

It is designed to be secured around the drainage hole and sandwiched between two layers of waterproofing membrane. Again, the outer ring or flange is perforated, so that the liquid membrane can ooze through the holes and provide an over-and-under bond. This ensures a fully watertight bond.

The mouth of the shank has a series of internal serrations so the gravel guard or leaf excluder can be fitted easily and securely. The shaft has a series of ribs going the whole way down to improve the fit into the pipe.



The spigot is 250mm long and is inserted down inside of the HDPE drainpipe. This gives ample assurance that no water can back up behind the rubber and onto the deck. The spigot is slightly cone shaped and ribbed. This helps with installation into the hole, and prevents water passing back up behind the spigot.

The EPDM material remains extremely flexible even at low temperatures, and will tolerate 120°C, so it is ideal for being applied in hot melt membranes. The material is UV stable, and resistant to ozone and other atmospheric chemicals.

These connectors are suitable for liquid applied SBS and APP bitumen, mastic asphalt and EPDM membranes. Adhesion can be improved by using a primer.

Available sizes (measured in mm) are as follows:

WALLBARN CODE	CATEGORY	D1	D2	D3	D4	H
095-050-250-040	40MM	248	28	25	34	250
095-050-250-050	50MM	258	38	35	44	250
095-050-250-060	60MM	271	51	48	57	250
095-050-250-075	75MM	283	63	60	69	250
095-050-250-080	80MM	332	68	65	74	250
095-050-250-090	90MM	332	77	74	83	250
095-050-250-100	100MM	332	88	85	94	250
095-050-250-110	110MM	332	98	95	104	250
095-050-250-125	125MM	332	113	110	119	250
095-050-250-140	140MM	347	128	125	134	250
095-050-250-160	160MM	367	148	145	154	250
095-050-250-200	200MM	406	186	183	192	250

## CIRCULAR ROOF OUTLET DRAIN CONNECTORS WITH SMOOTH FLANGE FOR MECHANICAL FIXING

Circular outlets are also manufactured with a smooth flange for bonding, adhesion or mechanical fixing.

Although not giving the “over and under” bond of the perforated range, these outlets can be secured into a circular drainage hole. The spigot is 240mm long and is inserted down inside of the HDPE drainpipe. This gives ample assurance that no water can back up behind the rubber and onto the deck. The spigot is slightly cone shaped and ribbed. This helps with installation into the hole, and prevents water passing back up behind the spigot.



### INSTALLATION

Waterproof the area around the drainage hole. This can be done either by installing a patch around the area



or by waterproofing the entire deck in the normal manner. Insert the correct size of outlet connector into the hole so that it is covering the waterproof membrane. Secure the connector either by using fixings or adhesive.

Then prepare the area for another layer of waterproofing membrane so that the outlet connector is encapsulated in a “sandwich”. To ensure that the second coat of waterproofing bonds properly, the area should be primed. Here a patch of the same type of membrane is installed and adhered across the face of the outlet connector, completely covering the flange and bonding to both it and the first layer of waterproofing membrane beneath. By doing this the water cannot get behind any parts of the connector



and enter the structure. Once the membrane / adhesive is cured a hole may need to be cut to reveal the drain pipe, and a leaf guard or gravel excluder is inserted into the hole. The outlet is then finished. Above is an example of the circular outlet with a smooth flange, where the surround is bonded to the waterproofing membrane.



**The circular outlets with smooth flange are available in the following sizes:**

WALLBARN CODE	CATEGORY	D1	D2	D3	D4	H
090-040-240-040	SMOOTH 40MM	235	26	24	31	240
090-040-240-060	SMOOTH 60MM	235	48	43	53	240
090-040-240-075	SMOOTH 75MM	320	65	61	70	240
090-040-240-080	SMOOTH 80MM	320	69	64	74	240
090-040-240-090	SMOOTH 90MM	320	77	73	82	240
090-040-240-100	SMOOTH 100MM	320	85	80	90	240
090-040-240-110	SMOOTH 110MM	320	91	87	96	240
090-040-240-125	SMOOTH 125MM	320	111	106	116	240
090-040-240-140	SMOOTH 140MM	380	127	122	132	240
090-040-240-150	SMOOTH 150MM	380	136	131	141	240
090-040-240-160	SMOOTH 160MM	380	146	141	151	240
090-040-240-200	SMOOTH 200MM	380	185	180	190	240

## EPDM DRAIN CONNECTOR WITH ANTI-SMELL SIPHON

**WALLBARN INTRODUCES A MAJOR ADVANCE IN WATER MANAGEMENT - THE IDEAL DRAINAGE OUTLET FOR TRAFFICKED DECKS.**



When constructing high end roof terraces or public walkways, designers and users do not want to have to contend with bad odours coming up from hidden drain pipes.

Wallbarn can supply a variation on the design of the standard drain connector in EPDM which incorporates the perforated flange and spigot, but also contains a siphon mechanism to help eliminate bad smells and odours emitting from the drainpipe up to the roof or deck.

As water drains off the roof it will fall into a well-type holding basin, effectively sealing the drainpipe. Only when a larger amount of water flows in will the water level rise above the internal lips and run down into the shaft and into the HDPE drainpipe. It works in a similar way to a U bend beneath a sink unit.

### MEASUREMENT IS AS FOLLOWS:

H is the height of the spigot or pipe

H1 is the height of the well – where the water will collect to block out the bad smells, and the excess flow into the pipe

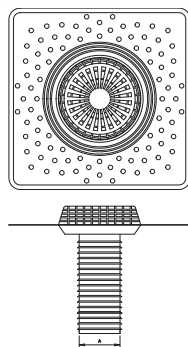
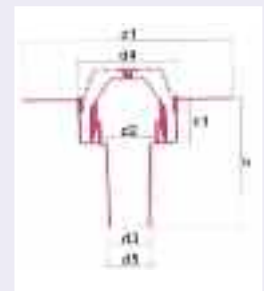
D1 is the outer diameter of the flange or surrounding ring

D2 is the inner diameter of the pipe at the top

D3 is the inner diameter of the pipe at the bottom

D4 is the outer diameter of the well at the top and also the outer diameter of the leaf guard

D5 is the outer diameter pipe at the top



Where the roof deck is being used as a leisure area, users can be assured that any “drain smells” are blocked out.

Sizes (measured in mm) are as follows:

WALLBARN CODE	CATEGORY	D1	D2	D3	D4	D5	H	H1
095-150-250-080	80MM	360	73	64	172	78	250	76
095-150-250-100	100MM	360	92	83	172	97	250	76
095-150-250-110	110MM	360	101	92	172	106	250	76

## EPDM CORNER FITTINGS

**WALLBARN HAS CORNER OUTLETS AVAILABLE IN EPDM – MANUFACTURED WITH A SMOOTH FLANGE.**

Wallbarn also supplies corner fittings in EPDM material for drainage holes in the junction between the horizontal and vertical plane. Again, the volume of water involved means a fully waterproofed area is essential.

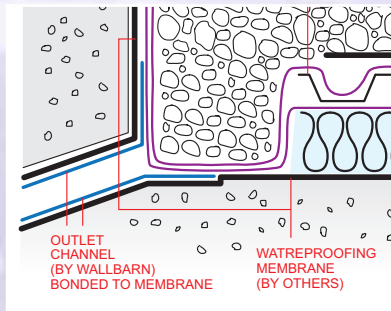
The mouth of these drainage outlets is rectangular rather than round. They can be used in both vertical downpipes or on a horizontal plane.

They are designed to be bonded to EPDM and bituminous membranes. They are bonded in a sandwich type of installation so the flap is secured between two layers of liquid waterproofing to ensure a good bond.

Although the flap or flange is not perforated, the surface has a textured surface so the membrane (or adhesive, which can also be used) will still grip onto the material, ensuring a good bond.



They ensure that the area is completely waterproofed around and into the drain pipe, so that there is no risk of water creeping behind the drainage hole and causing a leak.



The actual hole is either square at 100 x 100mm wide, or rectangular at 65 x 100mm. The pipe or shank is slightly angled to encourage the flow of water away from the mouth and down the pipe. The shank is 425mm long, and being made from EPDM the connector is extremely tough, fully flexible and resistant to UV deterioration and chemical salts.

### MEASUREMENT IS AS FOLLOWS:

- A is the height of the outlet drainage hole
- B is the width of the outlet drainage hole
- L is the length of the shank or outlet pipe
- F1 is the width of the border flap or flange around the underside of the outlet hole
- F2 is the height of the border flap or flange to the left and right, and above the outlet hole
- F3 is the width of the flange



WALLBARN CODE	CATEGORY	A	B	L	F1	F2	F3
090-300-065-100	65 X 100MM	65	100	425	150	160	340
090-300-100-100	100 X 100MM	100	100	425	150	160	340

## PVC MATERIALS: CIRCULAR OUTLETS IN PVC

**WALLBARN CAN SUPPLY A FULL RANGE OF OUTLETS MANUFACTURED FROM PVC, ENSURING FULL COMPATIBILITY WITH SYNTHETIC MEMBRANES.**

The PVC range of outlets follow the same format as those made from TPE and EPDM, but they are not manufactured with perforated flanges, rather smooth borders.

This is because PVC outlets are either welded or adhered to the waterproofing membrane, forming a seamless bond.

However, they should only be used with compatible waterproofing membranes, so installers and specifiers should be sure to check with the waterproofing manufacturer before purchasing.

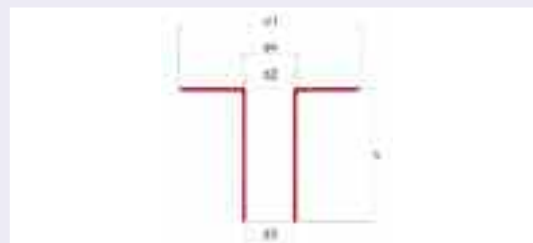
The shaft is similar in design to the TPE outlet and inserted into an HDPE drainpipe. There are ribs on the outer side to help grip the HDPE drainpipe, and on the inner edge at the top there are a series of serrations to hold a leaf guard or gravel excluder.

The PVC circular outlets are measured in the same way as the other materials, but please ensure the code numbers are correct when ordering:



### MEASUREMENT IS AS FOLLOWS:

- H is the height of the spigot or pipe
- D1 is the outer diameter of the flange or surrounding ring
- D2 is the inner diameter of the pipe at the top
- D3 is the inner diameter of the pipe at the bottom
- D4 is the outer diameter of the pipe at the top



WALLBARN CODE	CATEGORY	D1	D2	D3	D4	H
120-040-240-040	40MM	235	26	24	31	240
120-040-240-060	60MM	235	48	43	53	240
120-040-240-075	75MM	320	65	61	70	240
120-040-240-080	80MM	280	69	64	74	240
120-040-240-090	90MM	320	77	73	82	240
120-040-240-100	100MM	300	89	84	94	240
120-040-240-110	110MM	320	91	87	96	240
120-040-240-125	125MM	320	114	109	119	240
120-041-240-125	125MM	320	111	106	116	240
<b>SPECIAL FOR HDPE PIPE</b>						
120-040-240-140	140MM	380	127	122	132	240
120-040-240-150	150MM	380	136	131	141	240
120-040-240-160	160MM	380	146	141	151	240
120-040-240-200	200MM	440	185	180	190	240

## EXTRA-LONG CONNECTORS

**EXTRA-LONG CONNECTORS  
ARE AVAILABLE FOR  
INDUSTRIAL ROOFS.**

Again, these extra-long units are very similar to the TPE outlet connectors, and are manufactured from PVC. The flange is smooth rather than perforated, but will be fully heat bonded or stuck to the waterproofing membrane using approved adhesive.

The code numbers will differ due to the different material so care must be taken when ordering.



WALLBARN CODE	CATEGORY	D1	D2	D3	D4	H
120-150-600-080	80MM	370	65	63	72	600
120-150-600-090	90MM	370	74	72	81	600
120-150-600-100	100MM	370	85	83	92	600
120-150-600-110	110MM	390	93	91	100	600
120-150-600-125	125MM	390	107	105	114	600
120-150-600-140	140MM	420	125	123	132	600
120-150-600-150	150MM	420	135	133	142	600
120-150-600-160	160MM	420	138	136	145	600
120-150-600-200	200MM	460	178	176	185	600

## LEAF GUARDS & GRAVEL EXCLUDERS

Leaf guards or gravel excluders should be fitted into the mouths of the drainage outlets to prevent the drainpipes clogging up over time.

**Further details on both these products can be found in the ACCESSORIES SECTION.**

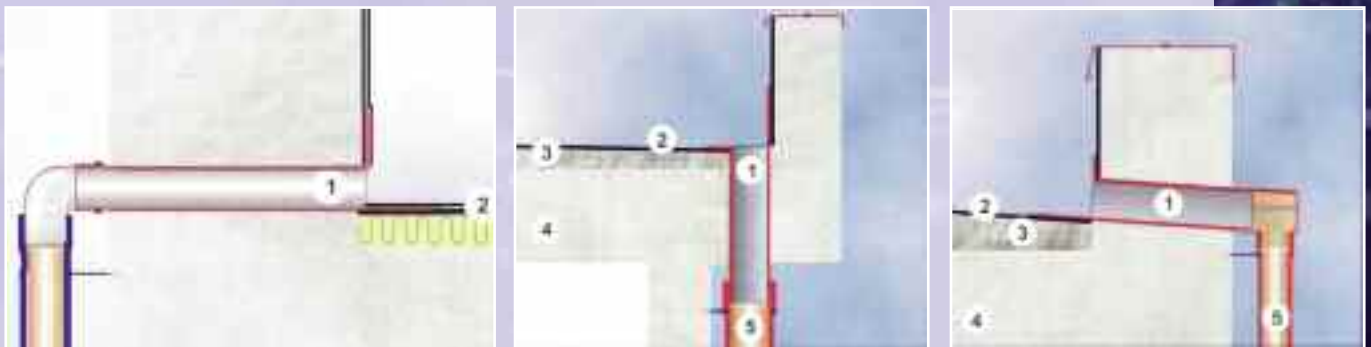
## CORNER OUTLETS IN PVC

A FULL RANGE OF CORNER OUTLETS ARE ALSO AVAILABLE IN PVC. THESE ARE MANUFACTURED WITH RECTANGULAR SHAFTS AND ARE SUITABLE FOR OUTLETS THROUGH PARAPET WALLS.

Wallbarn supplies corner outlets in PVC with a rectangular mouth.

Again, the flange is not perforated in the same way as the TPE outlets, but as with all PVC outlets will be fully bonded to the PVC waterproofing membrane.

This design tends to be favoured for pre-cast corner fitting situated between the horizontal deck and the parapet wall or upstand. The corner unit is versatile and adaptable, as it can be used for vertical downpipes as well as horizontal outlets.



These outlets are available in two versions, with the mouth of the outflow pipe being either 65 x 100mm, or 100 x 100mm for a greater amount of water flow.

### MEASUREMENT IS AS FOLLOWS:

A is the height of the outlet drainage hole

B is the width of the outlet drainage hole

L is the inner length of the shank or outlet pipe

F1 is the width of the border flap or flange in front of the outlet hole

F2 is the height of the border flap or flange above the outlet hole

F3 is the width of the flange or border flap across the face



The rectangular corner fittings are available in the following sizes:

WALLBARN CODE	CATEGORY / NAME	D1	D2	L	F1	F2	F3
120-300-065-100	65 X 100MM	65	100	425	150	160	340
120-300-100-100	100 X 100MM	100	100	425	150	160	340

The shank is 425mm long. Connections can be made easily to HDPE pipework for seamless, waterproof drainage systems.

## CORNER OUTLETS WITH A CIRCULAR SHAFT

WALLBARN ALSO OFFERS CORNER OUTLETS WITH A ROUND SHANK - FOR FITTING INTO HDPE DRAINPIPES.



Both the rectangular mouth and the circular mouth outlets can be used on the horizontal or vertical plane. Installers need to ensure that the fall of the roof directs water effectively into the drain pipe without ponding and that the outlet connector is fixed to the drainpipe properly once inside / through the wall.

**The circular mouth outlets are measured as follows:**

D1 is the diameter of the outlet drainage hole

D2 is the height of the (recessed) outlet drainage hole from the horizontal level

D3 is the width of the flange

L is the inner diameter of the shank or outlet pipe at the bottom

F1 is the width of the border flap or flange around the underside of the outlet hole

F2 is the height of the border flap or flange to the left and right, and above the outlet hole

F3 is the width of the flange or border flap across the face



**Please note that the length of the shank is 500mm, slightly longer than the shank of the rectangular mouth outlets.**

WALLBARN CODE	CATEGORY	D1	D2	D3	L	F1	F2	F3
120-350-500-050	50MM	50	43	44	500	110	120	260
120-350-500-063	63MM	63	56	57	500	130	175	304
120-350-500-075	75MM	75	68	69	500	130	175	304
120-350-500-090	90MM	90	83	84	500	130	215	304
120-350-500-110	110MM	110	103	104	500	130	215	304
120-350-500-125	125MM	125	118	119	500	130	260	360

## PVC COLLARS



Collars manufactured from PVC are also available for installation as part of a full PVC waterproofing membrane system. They are fitted around the outside of the pipework which emerges from the top of the concrete deck, things such as foul air vents and stand pipes. Obviously it is important that the small cavity between the cast concrete and the HDPE pipe emitting from the hole is fully sealed, which is why collars are fitted over the whole area and bonded to the waterproofing membrane.

The collars will fit around the outside of an HDPE pipe (as opposed to the connectors and outlets which slot into the inside of a standard water pipe) and are secured using a **jubilee clip** supplied by Wallbarn. They are manufactured in a slightly conical shape, so that they are easier to fit, and also help direct water outwards away from the pipe and onto the horizontal plane.

As this is a PVC system the collar will be fully bonded to the PVC waterproofing membrane with heat.

The flange of the collar and the membrane beneath are torch-heated until soft, then the two elements are pressed together so that they adhere to one another

It is essential that the correct size of collar is chosen, as it needs to fit around the outer diameter of the HDPE pipe snugly as gaps may cause the system to move.

The jubilee clip is fixed around the collar at the top end to secure the whole area at the end of the process.

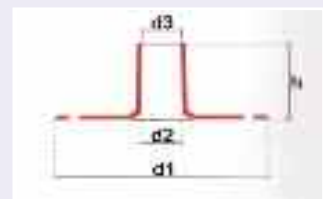


H is the height of the collar

D1 is the outer diameter of the flange or surrounding ring

D2 is the inner diameter of the collar at the bottom

D3 is the inner diameter of the pipe at the top **which needs to be larger than the outer diameter of the HDPE drainpipe**



WALLBARN CODE	CATEGORY	D1	D2	D3	H
120-370-060-010	10MM	154	11	10	60
120-370-060-030	30MM	154	32	30	60
120-370-060-040	40MM	154	42	40	60
120-370-060-060	60MM	194	62	60	60
120-370-060-080	80MM	194	82	80	60
120-370-090-100	100MM	234	102	100	90
120-370-090-120	120MM	234	122	120	90
120-370-090-140	140MM	274	142	140	90
120-370-090-160	160MM	274	162	160	90

## JUBILEE CLIP / STAINLESS STEEL FIXING BAND

Please see our **ACCESSORIES SECTION**.

## VENTS & AERATORS IN PVC

Wallbarn also supplies vents in PVC, for use with compatible synthetic waterproofing membranes. They are designed to aerate the concrete and help the structure to breathe.

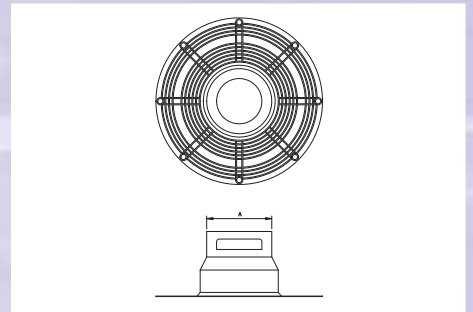
As with the TPE Vents for bituminous membranes, PVC decks will also require sufficient aeration to avoid vapour build-up and potential blistering of the waterproofing membrane. The vent is designed to draw this moisture away from the concrete slab. It is placed onto the bare concrete beneath the waterproofing membrane and insulation.



These vents are installed in a different manner to the TPE varieties in that they will be heat-bonded to the PVC waterproofing membrane, or be bonded with a suitable adhesive, beneath the main membrane. Applicators should get advice from the waterproofing manufacturer for the best installation technique.

The membrane is applied over the base of the vent. This creates a “flue” which helps to draw the vapour out of the concrete.

There are a series of ribs along the underside of the round base plate (or flange) to encourage the vapour movement. The ribs on the underside stop about 5 cm from the edge of the base or flange in order to help with the bond between the PVC membrane and the unit.



The top of the pipe or flue has three lateral holes to allow the vapour to escape into the atmosphere. It is covered by a hood or cap which overlaps the internal holes, preventing rainwater entering the system but still allowing the passage of vapour.

Wallbarn recommends a vent is placed at least every 25m<sup>2</sup>.

As with the other material, Wallbarn can supply the PVC vent in three different sizes. The standard vent (on the left hand side) has a flue of 240mm high and approximately 75mm in diameter. This is the most common type of vent produced.

A shorter, broader vent can also be produced if a shorter pipe is required or the extra-long vent pipe, at 400mm is also available.



Please see our [CAD Images](#) section on our website for more help in detailing these areas.

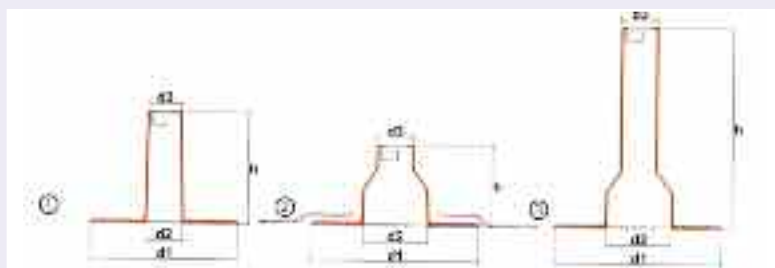
The PVC vents are UV stable and resistant to the elements. They are designed to be extremely tough and durable, and are designed for long-term durability.

Measurement is as follows:

D1 is the diameter of the base plate / flange

D2 is the diameter of the flue or pipe at the bottom of the vent

D3 is the diameter of the flue or pipe at the top (where it meets the cap / hood)



WALLBARN CODE	NAME	D1	D2	D3	H
120-420-240-075	STANDARD VENT 240MM HIGH	320	76	73	240
120-460-160-125	SHORT VENT 160MM HIGH	390	125	73	160
120-460-400-125	EXTRA-LONG VENT 400MM HIGH	390	125	73	400

### CAPS FOR VENTS

Installers will also need to ensure they purchase a cap or hood for all of these vents.

The black plastic caps will fit onto the PVC vent shafts easily and are fully compatible. There are two designs of hood / flue – a standard round cap; and a special **ESTRAER®** funnel shaped hood. This comprises of two conical funnels which join up at a central hole at the top of pipe, and create an extra suction on the pipe, helping to draw out a greater amount of vapour and air from the concrete.



The standard cap is measured so that D1 is the diameter of the cap at the top; D2 is the diameter at the bottom (where it slots onto the pipe) and H is the height of the cap.

The special **ESTRAER®** cap is measured so that D1 is the diameter of the cap at the bottom (where it slots onto the pipe); D2 is the diameter of the funnels at each side; and H is the overall height of the cap including the funnels.



WALLBARN CODE	NAME	D1	D2	D3	H
030-500-900-080	STANDARD CAP (BLACK)	106	110		80
030-500-900-010	ESTRAER® CAP (BLACK)	75	82		140

## ACCESSORIES:

A NUMBER OF DIFFERENT PRODUCTS ARE AVAILABLE TO WORK BOTH IN CONJUNCTION WITH THE OUTLETS AND VENTS AND ALSO FOR USE WITH WATERPROOFING MEMBRANES GENERALLY.

### LEAF GUARDS

LEAF GUARDS AND GRAVEL EXCLUDERS ARE REQUIRED FOR CIRCULAR ROOF OUTLETS TO PREVENT THE HDPE DRAINPIPE BECOMING BLOCKED OVER TIME, LEADING TO FLOODING.

Wallbarn offers leaf guards in a number of different materials which ensure that water can drain efficiently.

Wallbarn leaf excluders are made from zinc-plated iron, copper or plastic.

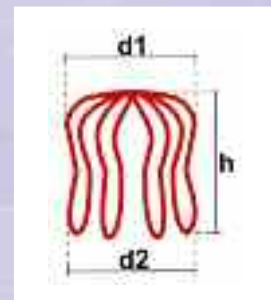
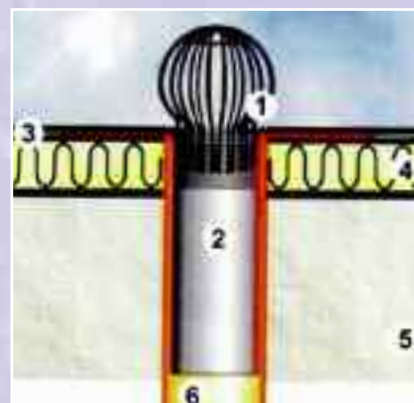
These leaf guards can fit into all the different designs of circular outlets and connectors. They are compatible with all the different materials manufactured.

They are manufactured with 12 rods at the bottom. They are flexible and spring loaded, and have a slightly serrated edge.

The leaf guard is inserted into the top of the hole. The serrated edges will grip onto the inside of the drain connector or outlet, which has a series of small ridges around the inside rim of the shaft. This helps lock the guard into place.

They do not need to be stuck into the hole. As the water flows into the pipe the pressure will be downwards, so the guard will remain in place without issue.

They can be removed, however, by squeezing the sides of the cage frame to narrow the bottom edges.



WALLBARN CODE	NAME	D1	D2	H
210-015-125-010	ZINC IRON LEAF GUARD	120	115	110
210-015-125-020	COPPER IRON LEAF GUARD	120	115	110
210-020-080-125	PLASTIC LEAF GUARD	140		160
210-015-125-030	STAINLESS STEEL LEAF GUARD	120	115	110

## GRAVEL EXCLUDERS

**GRAVEL EXCLUDERS ARE DESIGNED TO STOP HEAVIER OBJECTS FROM BLOCKING UP THE DRAINPIPE, ENSURING PROPER WATERFLOW INTO THE OUTLET.**

Gravel excluders work in the same way as the leaf guards, but they are more heavy duty, and can withstand the higher pressure and impact of gravel and stones.

They are manufactured from plastic, which is UV resistant and resistant to ambient atmospheric elements. The shaft fits into the outlet hole for a tight, secure fit. The HELIX excluder can have its spokes trimmed to fit the diameter of the pipe before being inserted. The SPIDER excluder is manufactured with its spokes turning upwards, to aid insertion and help grip the inside of the pipe, preventing it rising out.



WALLBARN CODE	NAME	D1	D2	H	H 1
210-030-075-200	HELIX GRAVEL EXCLUDER	208	230	50	220
210-030-080-200	SPIDER GRAVEL EXCLUDER	208	192	50	140
210-030-085-150	SOMBRA GRAVEL EXCLUDER	200		150	

## SQUARE LEAF GUARDS FOR CORNER OUTLETS.



Wallbarn now offers a strong, flexible plastic leaf guard designed for use with our range of through-wall and corner outlets.

Made from a durable and hardwearing plastic compound, they provide a secure fit into the mouth of the corner outlets to prevent drains becoming blocked.

They are simply inserted into the mouth of the hole and will remain in place without fixings or adhesive.

They can be easily cut to alter shape or reduce the size without affecting their performance, ensuring a proper fit.

Although manufactured with an angled side profile, ideally suited to the Mignon angled corner outlets (as seen on page 49), they are suitable for all types of corner roof outlet, when used with right-angled rectangular outlets or even circular holes.



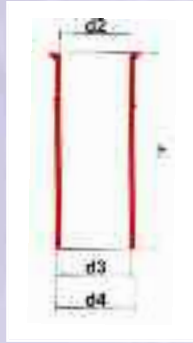
PRODUCT CODE	MATERIAL	WIDTH	INNER WIDTH	HEIGHT	CAVITY WIDTH*
210-030-090-010	PLASTIC COMPOUND	170MM	90MM	140MM	65MM

\*Distance from mouth of drainage pipe and edge of cage

## EXTENSION SHANKS IN TPE

Wallbarn supplies extension shanks designed to fix up with the drainage outlets to increase the reach into the parapet wall or drainage channel.

Often the ducts and channels will have to pass through a long run of concrete before reaching a suitable area to install the HDPE drainpipe, so an extension of a fully waterproof sealed connector will be required.



These extension shanks are specially designed to fit in with the full range of Wallbarn circular outlets. They are made from TPE but can still be used with EPDM and PVC outlets. They are manufactured to a slight cone shape, so the end of the circular outlet slots inside the top of the extension shank. The two membranes are bonded together using silicone adhesive.



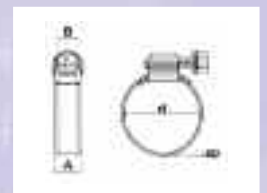
Installers of PVC waterproofing systems should always inform waterproofing manufacturer before using these two materials together in order check the status of the warranty.

WALLBARN CODE	NAME	D2	D3	D4	H
210-040-240-040	40MM EXTENSION PIPE	26	24	31	240
210-040-240-060	60MM EXTENSION PIPE	48	43	53	240
210-040-240-075	75MM EXTENSION PIPE	65	61	70	240
210-040-240-080	80MM EXTENSION PIPE	69	64	74	240
210-040-240-090	90MM EXTENSION PIPE	77	73	82	240
210-040-240-100	100MM EXTENSION PIPE	89	84	94	240
210-040-240-110	110MM EXTENSION PIPE	91	87	96	240
210-040-240-125	125MM EXTENSION PIPE	114	109	119	240
210-041-240-125	125MM EXTENSION PIPE - SPECIAL FOR HDPE PIPE	111	106	116	240

## JUBILEE CLIP / STAINLESS STEEL FIXING BAND

Jubilee clips will be required when fitting pipe collars, which are available in both TPE and PVC. These clips or bands are manufactured in stainless steel AISI 304 and secure the collars onto the foul air pipes emitting from the roof or deck.

They are a regular, simple design with the size of the band and the force of the clamp easily adjusted by turning the mechanism with a screwdriver.



Sizes are as follows:

WALLBARN CODE	NAME	DIAMETER RANGE (MM)	A	SP THICKNESS	B	TORQUE
210-370-009-008	INOX 9/8-16	8-16	9	0.6	7	8
210-370-009-025	INOX 9/25-45	25-45	9	0.6	7	8
210-370-009-050	INOX 9/50-70	50-70	9	0.6	7	8
210-370-009-070	INOX 9/70-90	70-90	9	0.6	7	8
210-370-009-090	INOX 9/90-110	90-110	9	0.6	7	8
210-370-009-110	INOX 9/110-130	110-130	9	0.6	7	8
210-370-009-140	INOX 9/140-160	140-160	9	0.6	7	8
210-370-012-135	INOX 12/135-165	135-165	12	0.6	7	8

## PATCHES IN TPE MATERIAL

Wallbarn supplies a range of acute and obtuse angles manufactured from TPE. They are fitted into difficult areas as an additional protection.

Often a liquid waterproofing membrane can either struggle to bond to a very sharp corner, or on an outer corner can be “scalped” as it is applied, leading to a much thinner layer than the rest of the area.

These areas of the concrete deck can be the most vulnerable to leakage, so extra protection and strength across such details is achieved by a flexible, durable “patch”, which will adhere to the liquid waterproofing membrane and can improve the integrity of the waterproof seal. **They are available in the following sizes:**



WALLBARN CODE	NAME	HEIGHT (MM)	ANGLE°
1. 030-540-050-095	ACUTE CORNER JOINT (SMALL) IN TPE	95	95
2. 030-540-050-130	ACUTE CORNER JOINT (LARGE) IN TPE	130	130
3. 030-540-550-095	OBTUSE CORNER JOINT (SMALL) IN TPE	95	95
4. 030-540-550-130	OBTUSE CORNER JOINT (LARGE) IN TPE	130	138
5. 030-540-550-100	SQUARE OBTUSE CORNER JOINT IN TPE	106	110
6. 030-540-900-013	TAPERED CONE COVERING 13MM AT TOP	75	82

## PATCHES IN PVC

**THE SAME TYPES OF JUNCTIONS AND SHAPES FOR BITUMINOUS MEMBRANES MANUFACTURED IN PVC FOR SYNTHETIC MEMBRANES.**

Wallbarn supplies the same type of reinforcement patches in PVC, for use with compatible synthetic sheet membranes.

Although most PVC membranes are manufactured in standard sheet form to a uniform shape, they may also require an additional layer around awkward details and areas which are likely to get scuffed or stretched.

These areas of the concrete deck can be the most vulnerable to leakage, so extra protection and strength across such details by a flexible, durable “patch”, which will adhere to the liquid waterproofing membrane, can improve the integrity of the waterproof seal.

In addition to the acute and obtuse angles, we also have on offer a “star-shaped” piece which can be manipulated in a large number of different shapes, ideal for very tricky corners and angles. **The patches are available in the following sizes:**



WALLBARN CODE	NAME	HEIGHT (MM)	ANGLE°
1. 120-540-050-095	ACUTE CORNER JOINT (SMALL) IN PVC	95	95
2. 120-540-050-110	CONICAL CORNER JOINT IN PVC	110	110
3. 120-540-050-130	ACUTE CORNER JOINT (LARGE) IN PVC	130	130
4. 120-540-550-095	OBTUSE CORNER JOINT (SMALL) IN PVC	95	95
5. 120-540-550-130	OBTUSE CORNER JOINT (LARGE) IN PVC	130	138
6. 120-540-900-013	TAPERED CONE COVERING 13MM AT TOP	75	82
7. 120-540-550-110	FULLY FLEXIBLE STAR-SHAPED JOINT	110	110

## COUPLINGS

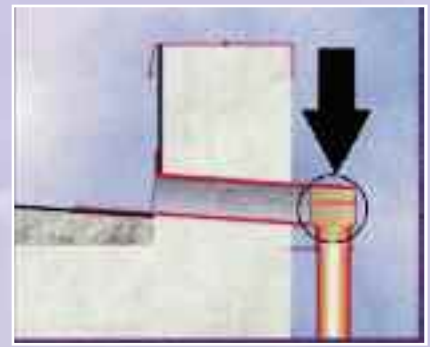
### SQUARE SHAPED SPIGOT

Wallbarn supplies a range of couplings for use in securing the drainage outlet to the HDPE drainpipe.

Couplings manufactured with a square mouth one side are designed for use where the through-wall outlet is connected via a right angle to a rounded drainpipe.

The square shaped spigot (such as the unit found on pages 49, 60 & 63) is placed inside the square mouth of the coupling and the rounded downpipe section is fitted inside the HDPE pipe.

A jubilee clip can be used around the drainpipe to give a secure fit. These units are available in a number of different sizes.



65mm high x 80mm wide

65mm high x 100mm wide

100mm high x 80mm wide

100mm high x 100mm wide



210-300-065-080



210-300-065-100



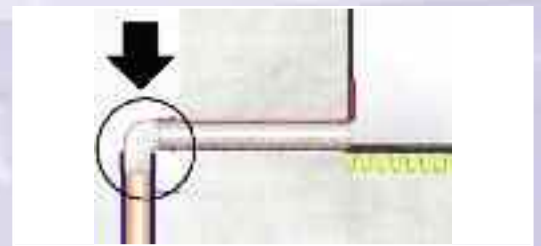
210-300-100-080



210-300-100-100

### RIGHT ANGLE COUPLING FOR USE WITH ROUND SPIGOTS

Wallbarn also supplies couplings for use with rounded spigots. Through-wall roof outlets (such as those found on pages 47 & 64) installed either vertically or horizontally can be fitted to the HDPE drainpipe using the right angled "elbow" coupling connector.



They are available in a variety of sizes:



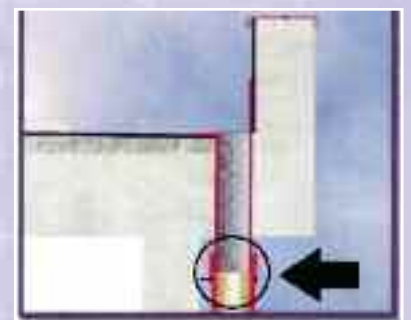
DIAMETER	CODE
50MM	210-350-050-050
75MM	210-350-075-075
90MM	210-350-090-090
110MM	210-350-110-110
125MM	210-350-125-125

### ROUND SPIGOT STRAIGHT COUPLING

A straight coupling is available for fixing a Wallbarn outlet with a round spigot to a round HDPE drainage pipe when the drainpipe is going in the same direction.

These can be used for through-wall outlets which have a round spigot (such as units on pages 47 & 64) and also downpipe and circular drainage outlets (such as units on pages 50, 51, 52, 57, 58, 59, 61 & 62).

The spigot again fits inside the coupling and additional secure fit can be achieved by tightening a jubilee clip around the outside.



DIAMETER	CODE
50MM	210-360-050-050
75MM	210-360-075-075
90MM	210-360-090-090
110MM	210-360-110-110
125MM	210-360-125-125



**GREEN ROOF  
SYSTEMS  
&  
ROOFTOP  
SOLUTIONS**

**WALLBARN IS THE UK'S LEADING INDEPENDENT MANUFACTURER, DESIGNER & PROVIDER OF GREEN ROOF SYSTEMS & BESPOKE ROOF LANDSCAPING SOLUTIONS.**

## **MODERN CONSTRUCTION IS CHANGING**

Green technologies are now being used more frequently to enhance buildings and provide a wide range of benefits that are now increasingly important as urban development continues to put pressure on a natural balance of nature, landscape and urban living.

Green roofs can be used to provide visual aesthetics to the construction project, to introduce nature back into cities and to mitigate the impact of densely populated urban areas.

Green roofs and living walls are a useful and increasingly easy and cost effective way to provide attractive, useful, environmentally friendly open spaces on otherwise 'lost' flat roofs and podium decks.

They are adaptable and can be designed for large or small areas on most structural roofs. However, truly understanding the horticultural requirements of introducing vegetation onto artificial surfaces is a discipline that is often misunderstood.



**WALLBARN IS UNIQUE – WE HAVE MANY YEARS OF PROVEN EXPERIENCE IN ALL ASPECTS OF ROOF GREENING AND VERTICAL LANDSCAPES. WE HAVE CULTIVATED A RANGE OF PRODUCTS TO SUIT APPLICATORS OF ALL LEVELS OF EXPERIENCE. WE PROVIDE MODULAR UNITS THROUGH TO INTENSIVE BUILT UP LANDSCAPES, INCLUDING A TOTAL RANGE OF ACCESSORIES AND COMPLIMENTARY MATERIALS. ALL THESE PRODUCTS AND SERVICES ARE AVAILABLE FROM A SINGLE SOURCE.**

---

#### **IMPROVING THE ENVIRONMENT**

---

- Provides valuable habitat
- Attracts insects, invertebrates and birdlife
- Absorbs CO<sub>2</sub>, pollution and dust particles
- Combats the Urban Heat Island Effect

---

#### **INSULATION**

---

- Reduces transmission of noise and vibration
- Thermal insulation – absorbs solar heat providing valuable cooling

---

#### **RAINWATER ATTENUATION**

---

- Absorbs rainwater in the substrate and from vegetation uptake
- Reduces the amount and speed of rainwater run-off
- Delays run-off before rainwater starts to escape from the roof
- Puts less pressure on drainage systems as a whole
- Enhances water harvesting systems

---

#### **BALLASTING INVERTED WATERPROOFING SYSTEMS**

---

- A valuable and attractive alternative to pebbles or concrete slabs on rooftops to hold down insulation boards or loose laid waterproof systems

---

#### **PROTECTING THE STRUCTURE AND WATERPROOFING LAYER**

---

- By covering the waterproofing membrane damage caused by UV, impact and abrasion, plant and bird infestation is prevented
- Reduces and regulates the temperature of waterproofing, reducing surface thermal movement

---

#### **OPTIMISING THE DEVELOPMENT FOOTPRINT**

---

- Provides additional green space and helps BREEAM ratings
- Provides an attractive feature for occupiers to utilise
- Brings a feeling of open space to high density environments
- Can help with the planning permission process
- Can increase the value of the development

---

#### **EASY TO INSTALL**

---

- All Wallbarn systems have been developed to accommodate straightforward, non-complex installation and build up – improves speed and reduces costs

## PRINCIPLES OF GREEN ROOF DESIGN

Green roof systems are constructed in several distinct layers, all of which are critical to provide sustainable long term vegetation and to minimise maintenance.

All green roofs need light, water, drainage, and correctly engineered soils. Without ALL of these elements the green roof vegetation will not thrive.

The relationship between the different layers is essential, however all green roofs are different so Wallbarn offers design advice to ensure correct specification every time.

The main elements above the waterproof or insulation layer are:



- Geotextile separation and protection layer \*
- Protecto-drain – perforated three dimensional cusped membrane – 8mm, 20mm or 60mm – for both water storage and drainage of excess water
- Geotextile filtration and separation layer \*
- Engineered growing medium / soil substrate (Sedum, Biodiverse and lightweight soil)
- Vegetation (Sedum, wildflower blankets, plug plants, cuttings and seed)

\*Wallbarn uses geotextile fabrics for filtration and separation, made from recycled needle punched polyester.

Substrate composition is very important to the success of a green roof system. Installers need to prevent overloading the roof but also sustain the vegetation to the correct growth level. The type of substrate depends on:

- Weight tolerance of the structure
- Type of vegetation being installed
- Depth of the substrate
- Artificial irrigation

Wallbarn has developed a number of different main substrate types, depending on these factors. We design and mix the exact make-up of the growing medium to suit the specific green roof design.

### TYPES OF GREEN ROOF

- M-TRAY - Modular extensive roofs
- Biodiverse & brown roof systems
- Extensive green roofs
- Intensive roof gardens

# M-TRAY

## MODULAR GREEN ROOF SYSTEMS

Wallbarn offers green roof systems in modular format, called M-TRAY which is supplied as a ready-grown, fully established sedum, sedum-and-wildflower and wildflower-only green roof in portable, easy-to-fit trays with all growing, filtration and drainage components included.



The vegetation has been grown onto the M-TRAYS for a minimum six months to ensure strong, well established, healthy plants, fully integrated into the intermediate layers. This means less shock or bedding-in time and less risk of wind uplift or erosion in the crucial time period after installation.

Each M-TRAY edge has lugs which can be clipped into the lug of the next tray or unit. The sedum grows above this level to help hide the joints. This interlocking system means that each M-TRAY is fitted securely to its neighbour with no need for sharp fixings and no synthetic upstands interfering with the sedum growth.



M-TRAY is 540mm x 540mm x 90mm deep. It is ideal for all roof types and it is simple and fast to install. M-Tray is the ideal solution for experienced and the non-professional installer alike, and especially suitable for roofs with very poor access.

Access to the roof is future-proofed. If there are problems with the deck beneath or inspection is required, one M-TRAY or section can easily be lifted out without any disruption to the whole roof.

The advantage of M-TRAY is flexibility. Getting access to the roof is not a disruptive and costly process, which is a huge advantage over loose lay systems. In loose lay designs the whole area may need to be destroyed when accessing the deck.



**Completed two-storey extension on high value domestic property retrofitted by access through adjacent window**

**M-TRAY has many distinct advantages:**

- Applicators do not need to contend with large amounts of loose substrate on the roof, with the risk of aggregate damaging the waterproof membrane, blowing away or clogging drains during installation
- Substrate depth and makeup is consistent across the whole area
- Mess is avoided on the roof and less packaging and waste is generated
- Modules are packed onto pallets for easy movement onto the roof
- It is ideal for areas with restricted access
- It is much faster, quicker and easier installation
- Expert landscaping knowledge is not required for installation
- The vegetation is fully established with strong, healthy growth
- Strong root structure reduces dependence on irrigation
- It is an instant green roof, with coverage of over 85%

The modules are pre-grown in our UK nursery. The vegetation has been grown in the modules for approximately six months, meaning it is strong, established and covers the area fully. It is an instant green roof.

For sedum roof systems we use a mix of six varieties of sedum, planted from cuttings and placed into a course mix of substrate anchoring the plants. We also produce a sedum-and-wildflower mix (top & bottom right) containing native plants which is designed to attract local wildlife into the area.



## INSTALLATION

The problems of getting living green roof systems onto roofs is made considerably easier by using M-TRAY modular systems from Wallbarn.

Each M-TRAY measures 540 x 540 x 90mm deep and weighs a maximum of 15kg saturated, so two installers can handle a module easily without any risk of the contents spilling out onto the roof.

The M-TRAYS are delivered shrink wrapped on pallets and can be craned up onto the roof safely, quickly and easily.

The design of the module includes a profiled underside containing drainage holes and an air gap beneath. This helps maintain the vegetation during transportation and allows free drainage. However, it is essential that the modules are installed as soon as possible as the living plants will start to deteriorate quickly without access to light and moisture.

First, protect the waterproofing by loose laying Wallbarn recycled polyester geotextile filter fabric. Wallbarn supplies a range of different geotextile fabrics and we recommend a fabric of at least 300gsm – code PEC-0300-Z. The units are laid onto this filter fabric/protection layer which helps filter the water run-off, so no particles run through the system and clog up the outlet pipes.



Then place each unit onto the deck and clip together.



Each unit has securing lugs, so one module can be fitted to the next to achieve a secure and seamless fit together. No mechanical fixings are needed to go through into the deck, meaning there is less disturbance to the waterproofing. The weight of the system will hold everything in place.



The edges of the vegetation can be enclosed using an aluminium angle which sits beneath the M-TRAY unit. A border of rounded pebbles is usually installed around the edges. This prevents the plants or their roots blocking the outlets.



M-TRAYS can easily be fitted around supported slabs or decking using Wallbarn support pads to give a continuous and seamless surface level. Large areas can be installed in a very short amount of time. Installation is clean and easy, the modules can be installed on completed or even occupied buildings without major disruption or mess.

## EXTENSIVE GREEN ROOFS

The extensive green roof is a simple, low maintenance type of green roof system. It provides an effective way of greening a roof deck and bringing a sense of nature to built-up areas.



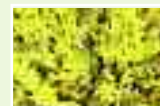
The main features of extensive green roofs are:

- Lightweight systems – can be as light as 50kg per m<sup>2</sup>
- Total build-up depth – 100-150mm thick
- Simple vegetation – mainly sedum
- Drought tolerant
- Saline tolerant
- Low maintenance requirement
- Irrigation systems optional

Extensive green roofs are often used on new build developments or to enhance existing buildings. Being comparatively lightweight, at typically 80kg per m<sup>2</sup> (saturated weight) they can be used on a large variety of structures.



The sedum plants we use have been selected to be easy to manage and do not need a large amount of watering, making them ideal for areas which may be overlooked but are difficult to access and maintain.



Our sedum blankets have been grown in our nursery for six months and are grown from a mixture of at least six different species of sedum. This ensures a consistent, all year round coverage of vegetation, with some plants providing colour changes and textures throughout the year. The flowering period is generally June to July.

Mixes of wildflowers, herbs and bulbs can also be incorporated into the blankets. We supply healthy, freshly cut sedum blankets with at least 85% coverage.

## INSTALLATION

Extensive green roof systems are built up in individual layers from the waterproofed deck or insulation layer (inverted roof).

Each component of the system is supplied in rolls and bags and delivered to site on pallets.

The build-up is made up as follows (From base upwards):

- Wallbarn recycled polyester geotextile filter fabric. Wallbarn supplies a range of different geotextile fabrics and we recommend a fabric of at least 300gsm – code PEC-0300-Z
- Protecto-drain. Flexible, cusped and perforated membrane (made from HDPE, available in various sizes – 8mm, 20mm or 60mm, depending on drainage / attenuation requirement). This is loose laid onto the geotextile, cup-side up. This collects water but also allows excess water to escape through the perforations into the roof outlets
- Wallbarn recycled polyester geotextile filter fabric, to allow water to pass through the system but to prevent substrate particulates from blocking the drain
- Lightweight engineered substrate (manufactured from a blend of crushed aggregate, expanded clay pellets, Microlot and green waste to form a gritty mineral based low nutrient mix)
- The sedum blanket is then rolled out onto the substrate and gently pressed into place. Alternatively, plug plants are installed over the surface



Wallbarn also has a sedum / wildflower mix blanket for use in extensive green roofs as a standard item. These blankets can also be plug planted with herbs and certain dwarf plants to add variety to the roof finish.

Parapets and upstands should be kept clear of plants, to avoid roots clogging outlets and vents, and to reduce fire risk. A border of rounded riverstone pebbles should be constructed around the edges.



Where there is an exposed edge with no parapet, a perforated aluminium angle is used to provide an edge to the green roof itself. The pebbles are then installed the other side. This ensures free flow of drainage water.

Extensive green roof systems, whether being the roll-out version or M-TRAY modular extensive roofs, can be constructed so that soft landscaping and hard landscaping fit seamlessly.



## BIODIVERSE & BROWN ROOFS

Biodiverse roofs and brown roofs are two different things:

- Biodiverse roofs are where seed or plants are introduced into the substrate at the time of construction
- A brown roof is where the substrate surface is left to self-vegetate from windblown and bird lime seed dispersal

After several years both type of roof may look the same as the vegetation reaches maturity.



They have become a popular type of roof garden finish in recent years as they are seen by many planners as a more natural, rugged urban feature and can offer a greater diversity of species as well as prolonged foraging for insects.

The concept of biodiverse roofs is that a plain, low nutrient environment is created at roof level.

Tough, hardy plants will start to germinate in the substrate in a natural way, replicating wild urban spaces that are found at ground level.

Wallbarn uses wildflower seeds that are mixed into the substrate, plug-plants or our new pre-seeded BeeMat (two layers of biodegradable fabric impregnated with wildflower seeds to guarantee an even spread, and to provide an ideal climate for germination).

Biodiverse roofs require fairly little maintenance. They still offer sound acoustic and temperature insulation properties to the building, and will help to attenuate water runoff from the rooftop to a significant degree. The substrate level is normally up to 150mm, which offers a medium weight build-up, usually no heavier than 120kg per m<sup>2</sup>.

Often objects such as rotting tree stumps, stones and rocks can be introduced onto the area to encourage insects and other wildlife.

Waste material from the construction process, such as crushed aggregate and concrete, can be introduced into the substrate, adding to a sense of recycling elements of the project.

However, caution must be exercised when using waste from the site to avoid contaminated material or sharp objects, which could damage the waterproofing being placed onto the roof.

Biodiverse roofs can be used to replicate and replace the ground terrain prior to construction taking place.

Wallbarn M-TRAY can be produced as biodiverse modular roof system by adapting substrate and vegetation type to suit the project requirements.



## INTENSIVE GREEN ROOFS

Intensive green roofs consist of much deeper substrates which give far greater scope to design and grow more interesting and elaborate gardens onto concrete decks.

They are more akin to traditional landscaping but positioned on a roof.



So long as the structure can support the weight, almost unlimited planting and landscaping can be achieved, including large shrubs, grassland, flowerbeds and even trees. Intensive green roofs tend to be areas where greater access and people traffic is envisaged.

Intensive green roofs offer considerable benefits to the urban landscape far and above anything a light sedum roof can offer. With the increased soil levels and intricate planting, natural gardens and parkland can be recreated on rooftop level.

Wallbarn provides design consultation to integrate hard and soft landscaping materials to maximise the project potential. We supply all components required for intensive green roof systems which allow the installer to purchase drainage materials, soils and other associated products from one single source. Issues such as increased weight, irrigation and maintenance need to be considered at early design stage.

- Intensive green roof systems magnify the environmental and aesthetic benefits of green roofs
- They offer greater biodiversity
- There is more dust and pollution absorption
- They give a higher level of water attenuation and delay of water run-off
- They give improved thermal and sound insulation benefits
- Lush, luxurious roof gardens have been proven to increase the value and accelerate the take-up of buildings when offered on the market. This can increase the speed of sale as well as rental yield
- The footprint of the building is being optimised. There is less wasted space in densely populated areas and there is increased amenity value

The build-up of intensive green roof systems differs from project to project and as such, Wallbarn should always be consulted at concept stage to advise on correct product selection and use, in particular in relation to the vast array of waterproof systems used in UK.



Wallbarn offers a complete range of solutions for green roofs and roof gardens from the smallest domestic terrace to large scale green roof and living wall projects, we can design the scheme and tailor the most suitable product for the client's needs.

All our live products are grown in British nurseries over a period of at least six months.



All these products are available from Wallbarn:



ASP support pads - adjustable height support pads to hold paving slabs – for hard landscaping areas on roof



Timber decking tiles – South American hardwood timber tiles to create fast, durable and beautiful timber terraces on roofs and podium decks



Fixed height supports - fixed height support pads for more cost effective suspended paving areas



Roof outlets & drain connectors - moulded synthetic outlets to protect and waterproof drainage outlets on roofs which are vulnerable to leaks. Designed to bond to the waterproofing



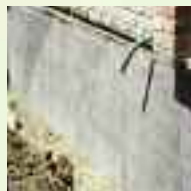
TD support pads - Adjustable supports to lift timber decking off the roof structure, protecting it from damage and keeping the timber decking away from standing water



Geotextile fabrics – for use within green roof systems as also as stabilization, filtration and protection membranes for landscaping, civil engineering and roofing projects



LIVING WALLS – full design, supply, installation and maintenance of internal and external living walls - for sedum, ivy, fern or mixed planting



Protecto-drain for vertical applications as a waterproofing, protection and drainage membrane for subterranean structures



Megapad & TD Megapads – heavy duty support pads for paving and decking. Each unit is capable of holding 800kg



Protecto-board – bituminous protection membrane to prevent punctures and abrasion to bituminous waterproofing



Protecto-drain – for horizontal uses including green roofs and structural drainage

# LIVING WALL SYSTEMS

## LIVING WALLS OFFER BUILDING DESIGNERS AND OWNERS A TOTAL NEW CONSTRUCTION FAÇADE CONCEPT

Living walls are an extension to the concept of green roofs. Buildings cannot only be covered on their tops by vegetation, but can have a huge variety of attractive, long-lasting, vegetation covering their walls, offering much more scope to green up the fabric of the building and the urban landscape.

Green walls have been a feature of buildings for many thousands of years. Plants growing from the soil at the base have been either left to cling onto the building structure or have been trained up trellis systems to create a green façade. They offer all the advantages of green roofs in terms of added value, water attenuation and insulation. However, since there is far more area on the sides of the building than on the rooftop, living walls can offer a far more obvious, relevant and luxurious experience to users on the ground.

By surrounding ground level walkways with fresh, natural plants, a real sense of nature can be brought to even the most restricted areas. They are extremely attractive, highly visible and completely versatile. By covering dull grey with vibrant green, they utilise densely constructed areas to the maximum.



Green walls used to be limited to only a few plant types capable of climbing up surfaces. This left little scope for these to be considered a real design feature. However, with

Wallbarn - VertiFlora Living walls the surface of any structure can be radically and beautifully enhanced. Wallbarn produce a wide range of façade types and the VertiFlora Living wall adds a new dimension to the range.

Wallbarn VertiFlora Living walls provide the following:

- Reduction in thermal loss, protects building from UV exposure
- Wind buffer, noise buffer
- Wildlife habitat
- BREEAM points
- Dust and pollution absorption, improvements to air quality
- Reduction in ambient temperature
- Mitigation of Urban Heat Island Effect
- Lighter weight than other modules on the market
- Beauty - greater flexibility of planting schemes – movement, texture and colour add value to the structure
- More targeted and more effective watering



## THE WALLBARN VERTIFLORA MODULAR SYSTEM

The Wallbarn VertiFlora Living wall is a lightweight, flexible modular system of soil pockets fixed to the structure of a wall or building façade. The planted and established panel is attached to a vertical structure or wall, enabling planting on the vertical face, and is delivered to site fully established and ready for installation. It creates an instant vertical garden.



9cm apertures



1 litre apertures



2 litre apertures

These smaller, lighter modules measure 1 metre wide by 250mm high, making it much easier to install than larger, heavier panels on the market. Because of the modularity, each VertiFlora cassette can be filled with different soils to accommodate most planting schemes in almost any location in the world. This gives designers a large amount of flexibility to create varied and interesting planting schemes across the wall.

The plant apertures of the VertiFlora system have been designed to use 9cm, 1 Litre and 2 Litre plants, bringing more scope for different planting schemes and allowing much larger plants to be used than other living wall systems on the market.

### FIXING

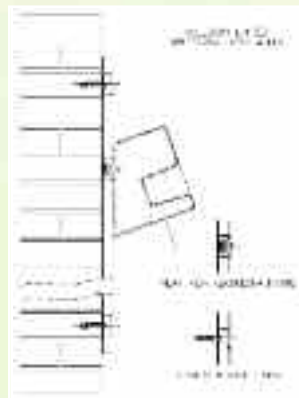
Each panel is secured to the structure through a series of fixing struts placed onto the wall. The moulded polypropylene panel is shaped so that the weight is drawn towards the structure, reducing the risk of damage. Plants are also less likely to fall out of the module and the root structure is better anchored as it is encouraged towards the back of the module. These panels are pre-grown with whatever plants the end user desires and each one has its own separate irrigation feed allowing a great deal of variety of planting.



Wallbarn VertiFlora Living wall panels can be used on exterior and interior walls, and the lightweight materials and uncomplicated nature of the fixings mean that maintenance and even replacement is an easy task.

Two bolts per module are inserted through the rear and loosely secured into spring washer nuts that are held in the Unistrut uprights

The modules are fixed to Unistrut fixing bars which are manufactured from mild steel and installed vertically. The side arms are turned at the end to prevent any sharp edges and measure 25mm for the standard size. The Unistrut is also available 40mm wide for angled or curved surfaces to prevent the module box touching the structure behind.



The module is fixed to the Unistrut.

A bolt and washer is placed through the back of each module before it is planted up. The bolt is fixed to the Unistrut using a spring loaded nut fixing.

Before the Unistrut bars are fixed, the structure should be lined with a damp-proof membrane to ensure no water ingress.

## IRRIGATION

The irrigation system for Vertiflora living walls will contain an automatic control unit, solenoid valves connected to zones, a timer, injection pumps for watering and fertilizers, filters, storage tanks, water pipes, pressure valves, shut-off switches and an electricity supply.

Each panel is irrigated at the top with a simple drip line running across the top which is connected to an integrated irrigation system (that can be linked to a BMS) or a simple domestic type application. A stop end on the drip emitter line is connected at the opposite end to the irrigation feed line (normally a 32mm line).

The type and scope of the irrigation system will depend greatly on the type of plants chosen, the levels of irrigation and fertilizer required, the size, aspect and complexity of the living wall, water quality, water pressure, human resources available and maintenance budgets.



Watering requirements can also be tailored to each individual module to suit the needs of different plant types.

VertiFlora uses water sparingly and efficiently reducing the amount and frequency of water required. Less is wasted at the bottom of the system and every plant in each module cassette is assured to have the same amount of irrigation

## SOIL MIX

The selection and type of plants will dictate the blend of soils for use in the Wallbarn VertiFlora Living wall. Most Living walls are inefficient with respect to water consumption and the Wallbarn substrate is blended to compliment the water efficiency of the VertiFlora Module design.

A balance between nutrient availability, drainage capacity and weight will be required for all plant species and Wallbarn can advise on correct blending. The Wallbarn VertiFlora Substrate is a calculated blend of many components which when combined form an ideal growing substrate for Living wall plants. The substrate contains coarse crushed aggregates, light expanded clay aggregate, peat and screened soil. The substrate should be used within the VertiFlora Living wall modules.



## MAINTENANCE

Each living wall, its plants and the local environment is different. Therefore a bespoke maintenance programme is required. After planting, regular weekly inspections should be carried out.

After the initial weekly monitoring and once the living wall is fully established, minimum monthly visits should be scheduled. The proper functioning of the irrigation system must be verified and each irrigation zone must be programmed according to the type of plants selected the local microclimate and the season.

## FULL DESIGN AND INSTALLATION PACKAGE BY WALLBARN:

Wallbarn provides a full service covering every aspect of living roof construction. This includes design advice, growing & planting, installation and ongoing maintenance. The steps are:

- **Initial development** – Office based work to fully understand client's wishes for the living wall to look like. This gives an outline of how the living wall will be constructed.
- **Site visits** – Usually a one-day visit to consider load bearing structures, sun / wind direction and other issues.

A further site visit immediately prior to installation may also be required.

- **Detailed design** – Office based work to advise on and approve planting schemes, weight tolerances irrigation, comprehensive schedule of works and other technical issues
- **Planting of modules** – Vegetation is planted into panels according to the agreed planting scheme. Although stocks of standard planting schemes are available, for bespoke designs the modules will need to be pre-grown.
- **Installation** – All construction and maintenance is carried out under strict Health & Safety and COSHH regulations. Power and water should be supplied before installation. A structurally sound, fully waterproofed vertical surface must be provided. This is a fairly quick (if delicate) process. Profiles, gutters and flashings are fixed. The irrigation systems will be fully tested and the living wall checked at the point of installation.
- **Maintenance** – It is essential that a full post-installation maintenance contract is agreed. Warranties will not be valid without maintenance packages. Specialist contractors oversee and monitor the living wall during the critical period after installation. Maintenance includes checks to irrigation lines, checking of plants for irrigation levels, pruning and replacement, application of fertilizer, insecticide and fungicide where required.

Ongoing maintenance will need to be carried out over the life of the living wall system to ensure that irrigation levels are consistent and the plants are in good condition.

## TECHNICAL SPECIFICATION

Unit/description	VertiFlora Standard	VertiFlora Slim
<b>Manufacture</b>	<b>Modules moulded in the UK from virgin HDPE</b>	
<b>Unit size</b>	<b>1000 wide x 250mm high x 206mm deep</b>	
<b>Measure</b>	<b>4 Modules per m<sup>2</sup></b>	
<b>Wall thickness</b>	<b>2mm</b>	
<b>Colour</b>	<b>Green</b>	
<b>Module weight empty</b>	<b>4.2kg per module</b>	<b>3.5kg per module</b>
<b>Soil volume</b>	<b>32 litres per module</b>	<b>25 litres per module</b>
<b>Maximum water capacity</b>	<b>4.3 litres</b>	<b>3.4 litres</b>
<b>Wet weight when filled</b>	<b>Approx. 25kg per module</b>	<b>Approx. 19kg per module</b>
<b>Plant aperture</b>	<b>9 cm (18 plants per module)</b>	<b>9 cm (18 plants per module)</b>
	<b>1 litre (8 plants per module)</b>	<b>1 litre (8 plants per module)</b>
	<b>2 litre (5 plants per module)</b>	<b>2 litre (5 plants per module)</b>

**WALLBARN OFFERS THE VERY LATEST IN LIVING WALL TECHNOLOGY TO THE UK WITH THE MOST FLEXIBLE SYSTEM ON THE MARKET, SUITABLE FOR BOTH INTERNAL AND EXTERNAL APPLICATIONS WHICH CAN BE MOUNTED ONTO ALMOST ANY WALL.**

**FURTHER DETAILS CAN BE FOUND IN OUR FULL LIVING WALL BROCHURE – PLEASE ASK FOR MORE INFORMATION.**

# CASE STUDIES



# KEY PROJECTS & CASE STUDIES

DETAILS OF WALLBARN PRODUCTS AND WHERE THEY HAVE BEEN SUCCESSFULLY INSTALLED ARE GIVEN IN THIS SECTION.

## THE ATHLETES' VILLAGE, OLYMPIC PARK, LONDON – 2011 ASP ADJUSTABLE SUPPORT PADS



Wallbarn was specified to supply ASP adjustable supports on the hard landscaping areas for this high profile project.

The balconies and courtyard areas surrounding the athletes' accommodation were covered with paving slabs mounted onto ASP support pads. The concrete decks had been built to falls to allow suitable drainage into the centre of the courtyards, and by twisting the telescopic threads on the stems the contractors were able to create

completely flat paved decks on one level across the entire courtyards area. Wallbarn supplied ASP supports for over 15,000m<sup>2</sup> of paving, along with TD supports for over 5,000m<sup>2</sup> of timber decking. The athletes' village was completed on time and on budget.



## 200 ALDERSGATE, CITY OF LONDON – 2010

### TD TIMBER DECKING SUPPORT PADS

Another high profile project in the heart of the historic City of London, in the shadows of St Paul's Cathedral. The developers of an office block wanted to fully utilise the fabric of the building to its maximum, and wished to turn an open terrace area

into a luxurious, safe, usable outdoor space. The waterproofed, protected concrete deck was laid to a fall, so adjustable TD supports were used to create a sturdy, flat structure to build the decking from. The levels were easy to achieve by twisting the stems which meant the timber battens were laid completely level. The joists were secured together in a framework and the Balou timber decking planks were fixed to the frame. None of the timber was in direct contact with the deck surface and a stunning finish was achieved, adding valuable space to the building.



## EMIRATES STADIUM, ARSENAL FOOTBALL CLUB, LONDON - 2006

### RUBBER FIXED HEIGHT SUPPORT PADS



Wallbarn's fixed height rubber support pads were specified on this project which was being carried out by main contractor Sir Robert McAlpine.

Wallbarn was the preferred supplier for the waterproofing contractor for this project and has had a long-term relationship with them.

Because the waterproofing was mastic asphalt, the designers were conscious of the risk of point loading onto the membrane which may become soft in the heat.

The rounded profile of the rubber pad along with the high elasticity and crushing strength, along with the soft nature of the rubber material itself, made the rubber pad a more suitable product to use on the surface than plastic disks.



## SHAFTSBURY AVENUE – LONDON WC2 – 2011

### ASP ADJUSTABLE SUPPORTS AND BLACK SUCUPIRA HARDWOOD DECKING TILES



Wallbarn timber decking tiles, mounted onto ASP support pads, were specified for a refurb project in the heart of London's Theatreland.

An existing asphalt roof was covered with a membrane and built to a fall. The ASP supports were set out on the surface and 30mm thick BLACK SUCUPIRA hardwood tiles from Brazil were placed on them. The support pads were adjusted so that the top of the tiles was completely flat and flush to the door thresholds, creating one seamless level from the interior out into the external space.

An imaginative layout was created by installing granite slabs at intervals across the deck. A beautiful finish was created which turned a bare asphalt deck into a stunning roof terrace overlooking London's West End.



## SOMERVILLE COLLEGE, OXFORD UNIVERSITY - 2009

### ASP ADJUSTABLE SUPPORT PADS



This historic building required the hard landscaping areas to be replaced, but the sensitivity of the site meant that minimal disruption was desired by the client.

The sandstone slabs were selected to match the texture and colour of the surrounding architecture. The old slabs were removed along with the mortar, and ASP supports were installed and adjusted so that the slabs could sit neatly onto them and be fitted into the correct position for the steps,

rooflights, door and gate thresholds and the upstands.

The project was completed within a very tight timeframe to the satisfaction of heritage authorities, the client and the students.



## NEW BULLRING DEVELOPMENT, BIRMINGHAM - 2003

### RUBBER FIXED HEIGHT SUPPORTS

Another specification gained through a longstanding relationship with the waterproofing sub-contractor. Sufficient, consistent drainage of the exposed walkways was required on this multi-level development.

Over 15,000m<sup>2</sup> of paving was laid over a period of nearly two years.

The 9mm rubber support pads were chosen as they were the most compatible with the mastic asphalt waterproofing system and were able to take the continual heavy loads of the large numbers of pedestrians present in the walkways and corridors of the shopping centre.

The pedestrian areas were still in very good condition in early 2011.



## MASDAR FIELD STATION, ABU DHABI - 2011

### PLASTIC FIXED HEIGHT SUPPORT PADS



Wallbarn were specified on this high profile project which was part of the Masdar Low Carbon City in Abu Dhabi.

The application was a field station for research into renewable and sustainable energy, and the area was over 20,000 m<sup>2</sup> of flat roofs and walkways.

Wallbarn polypropylene supports were chosen over other brands because the superior raw material meant the supports could withstand the severe heat and desert conditions without the risk of softening or becoming brittle.

By covering the roof deck with paving slabs the designers were able to extend the lifespan of the roof system as it was sheltered from the worst effects of the sun and heat and was fully ventilated due to the 14mm cavity between deck and slab



## KEW GREEN – PRIVATE DEVELOPMENT, LONDON – 2009

### SEDUM GREEN ROOF SYSTEM

This private development included a single storey extension to a domestic property with very restricted access.



The client wished to introduce nature to a built-up urban environment. A sedum extensive green roof system was installed onto the single ply deck.

A protection fleece was laid onto the membrane; Protecto-drain 20P was laid out then covered with a second geotextile filtration fleece, made from recycled polyester. The layers were all supplied in rolls which were easy to carry to site.

The aggregate was supplied in 20kg bags which ensured no mess was made in the house as it was transported. The sedum blankets were rolled out onto the substrate flush up to the level of the rooflight and well

watered. The plants were watered during initial settlement but then left to establish themselves. They thrived, producing strong growth and flowers in the summer months.



## OAKWOOD DEVELOPMENTS, LONDON - 2010

### TD TIMBER DECKING SUPPORTS

This project was a refurbishment of an existing building, where a previously bare felt roof was to be used as a roof terrace.



The waterproofing was re-laid, and then covered with insulation. TD supports were then installed 500 x 500m apart and wound up to achieve a flat level, ready for the supporting joist framework.

The timber joists were secured together and then the plank decking was fixed to the frame. Planters were installed at intervals which had drainage outlets fitted to the bottoms which allowed water to run beneath the decking, avoiding mess on the surface. Timber furniture and covered areas were installed on top of the decking.

A very pleasant finish was achieved on what had been a bare, ugly felt roof.



## IMPERIAL WHARF, LONDON - 2008

### PROTECTO-DRAIN G8



This prestigious residential and retail development in the Chelsea / Fulham area of London required a high end finish throughout, and with the development being very high density, it was essential that the whole area performed to the optimum and every piece of space was used to its maximum potential.

Throughout the courtyard areas the designers had introduced a series of planters to add nature and succulence to the hard landscaping and to try to absorb sound. As the vegetation would require substantial

irrigation an effective method of drainage was required. Protecto-drain G8, the HDPE dimpled membrane with a geotextile backing was installed as a protection and liner on the inside of the planters. This prevented damage to the waterproofing but also created a drainage gap between the wall and the soil. Water could drain through the geotextile and run down the profile of the membrane into the outlet, which would not become blocked or clogged since the geotextile filtered out all debris.

Protecto-drain G8 was also laid beneath the block paving, where water could pass between the block and through the geotextile then run horizontally above the concrete deck and into the drain. The silver sand between the blocks remained in place.



## PICTON PLACE, LONDON - 2009

### MEGAPADS

This very prestigious project just off Tottenham Court Road in London's West End featured a new penthouse being constructed as a new storey onto an existing flat roof. The scheme was overseen by architectural practice D-Raw.



The penthouse was surrounded by a roof terrace on all four sides. The deck had multiple changes of level and Megapads were chosen due to the large amount of adjustment possible in each unit, plus the fact that they could support a load of 800kg each.

Initially paving slabs were laid onto the terrace using Megapads. The applicators adjusted the height of the pads whilst the slabs were in situ, which speeded up installation greatly, and with the useful locking function on the threads, were confident that the slabs and decking would not become unlevel over time.



After the building was sold, the new owner decided to change the paving slabs and install hardwood timber decking throughout the terrace. Although the slabs were replaced, the contractors were able to re-use the Megapads to support the decking. The positioning lugs were removed to create a completely flat headpiece 150mm in diameter, which supported the joists. The planks were then fixed to the joists.

The client was delighted with the result and the seamless aspect from internal flooring through the glass doors onto the terrace was stunning.



## THE PEARL, DOHA, QATAR - 2010

### ASP ADJUSTABLE SUPPORT PADS



ASP adjustable supports were included in the drawings on this prestigious project in Doha by the architect, and the contractor found Wallbarn by searching online.

There are a series of large tower blocks built around the central harbour within this new "city" each with an elaborate dome at the top. The roof area around the dome and the tiered terraces beneath the top level needed to be paved to allow access to the roof.

There were multiple changes of level in the deck, which made ASP supports the ideal solution.

## AS SEEN ON TV

### SEDUM ROOF SYSTEM - 2011



Wallbarn's modular green roof system was featured on UK television channel ITV1's "Love Your Garden" programme, a primetime Friday night show featuring popular presenter, Alan Titchmarsh.

Wallbarn was approached by the production company, Spun Gold TV, for technical advice and support in the making of one of their programmes, which featured attempts to create a haven for nature in a small urban garden in London's Shepherd's Bush.

The garden shed was fitted with a sedum green roof system. Alan installed each component onto the roof

of the shed, including the protection fleece, HDPE drainage membrane, filtration layer, crushed brick substrate and finally the sedum blanket.

The owner of the garden was delighted with the results, and has stated how the garden now attracts a much larger number of insects, birds and other wildlife than before.

She said, "Amazing what you've done, even better than I imagined". I think we can safely say that she was amazed by the transformation created by the Wallbarn sedum product.

### SYDNEY, AUSTRALIA - 2010

#### TD DECKING SUPPORT PADS



Wallbarn was traced by Google search by a major timber flooring supplier and contractor based in Sydney.

The contractor usually handled internal wood flooring but had a large outdoor deck project in Sydney where they did not want to have to subcontract the installation to others.

They wanted sufficient clearance from the membrane to avoid damage. Adjustable TD supports were chosen ranging in height from 35mm up to 100mm. The area was significant and the contractor purchased almost 10,000 units.

The contractor's own site personnel were able to install the joist frame and top decking surface effectively in a very fast turnaround.

### COUTTS HOUSE, ISLE OF MAN - 2009



This project was a refurbishment of an existing residential project.

The contractor, Jigsaw Garden Design Ltd, sent us a letter shortly after completing the projects stating:

**"...The paving was laid using a combination of 9mm rubber and 14mm plastic pads although some slabs required a combination of both and several 1-2mm spacers. The underlying roof was a concrete slab topped**

**with uneven and pooling asphalt with...insulation. These foam boards had been laid 2 years previously and were variously cupped and bowed, floating on up to 2 inches of trapped water! ...**

**...I can categorically say that your Wallbarn products made an almost impossible task achievable and both Jigsaw Design and the client are extremely happy with the result..."**

Another satisfied customer.



THE FINEST QUALITY

THE FINEST QUALITY

THE FINEST QUALITY

THE FINEST QUALITY



[www.facebook.com/wallbarn](http://www.facebook.com/wallbarn)



[www.twitter.com/wallbarn](http://www.twitter.com/wallbarn)



**FOR MORE INFORMATION PLEASE CONTACT:**

WALLBARN LTD  
UNIT 16, CAPITAL BUSINESS CENTRE • 22 CARLTON ROAD • SOUTH CROYDON  
CR2 0BS • UK  
T: +44(0) 208 916 2222 • F: +44(0) 208 916 2223  
E: SALES@WALLBARN.COM • W: WWW.WALLBARN.COM