



# Structureseal

A highly effective waterproofing composite, of high strength green coloured geotextile, and sodium bentonite.

## BENEFITS

- Pre-applied tanking systems
- Suitable for wet weather and low temperature applications
- Quick and easy to apply
- Does not require additional drainage or protection
- Primers and adhesives not required

## APPLICATIONS

Waterproofing and vapour proofing of:

- Basements and sub-structures
- Retaining walls
- Ground floors

## APPLIED TO

- Concrete
- Compacted earth
- Sand blinding
- Formwork
- Piling

The logo for RIW, consisting of the letters 'RIW' in a bold, white, sans-serif font, centered within a dark blue oval with a white glow effect.

**Structureseal**

## DESCRIPTION

RIW Structureseal is a highly effective waterproofing composite, of high strength green coloured geotextile, and sodium bentonite. The high swelling sodium bentonite is encapsulated between a non - woven and woven geotextile. A 'needle-punch' process, interlocks the geotextiles together forming an extremely strong composite that maintains the equal coverage of bentonite, as well as, protecting it from inclement weather and construction related damage.

When wetted, unconfined bentonite can swell up to 15 times its dry volume. When confined under pressure the swell is controlled, forming a dense, monolithic, impervious waterproofing membrane. The swelling action of RIW Structureseal can self-seal small concrete cracks caused by ground settlement, concrete shrinkage, etc. RIW Structureseal forms a strong mechanical bond to concrete, when the geotextile fibres are encapsulated into the surface, of insitu concrete.

RIW Structureseal contains zero VOC's ( Volatile Organic Compounds ) and can be installed in almost any weather condition.

## TYPICAL USES

RIW Structureseal is designed for below ground vertical and horizontal structural foundation surfaces. Typical applications, include backfilled concrete walls, structural slabs and boundary line construction.

When designing Type A structures ( as classified in BS 8102 : 1990 ), the system installed correctly is capable of providing the levels of protection required for Grades 1, 2, 3 & 4 basements.

Boundary line construction applications, include secant and contiguous piling, skin wall, metal sheet piling, sprayed concrete finishes and stabilized earth retention walls.

Applications may include structures under continuous or intermittent hydrostatic pressure.

**Notes :** RIW Structureseal is not recommended to waterproof masonry construction, and must never remain permanently exposed.

The 'gelling' of RIW Structureseal is adversely affected by the presence of electrolytes, and if present, or the product is being used in chemically contaminated areas, the system should be pre-hydrated prior to placing concrete or backfilling.

Backfill material should not contain chalk or limestone, unless the product is pre-hydrated.

## DURABILITY

Subject to normal conditions of use RIW Structureseal will provide an effective barrier to the transmission of liquid water and water vapour for the life of the structure.

## SPECIFICATION

J40 - Flexible Sheet Tanking / Damp Proofing in accordance with NBS Clause 285.

Please consult RIW Ltd. for further information.

## INDEPENDENT AUTHORITY

RIW Structureseal, as a system, has been awarded a British Board of Agrément Certificate No. 02 / 3953 covering its use in waterproofing and damp-proofing underground structures.

## ANCILLARY PRODUCTS

RIW produce a range of ancillary products for use with RIW Structureseal which include :-

**RIW Waterstop** - a flexible, expanding bentonite - based waterstop, for use in non - moving concrete construction joints. See separate data sheet.

**RIW Sealing Compound** - a trowel grade sodium bentonite compound, used as a detailing mastic around penetrations and corner transitions. See separate data sheet.

**RIW Granules** - chemically treated sodium bentonite granules, which swell upon contact with water, and are used as a detailing accessory product. See separate data sheet.

**RIW Washers** - a 'soft-washer' fastener, ( 40mm hardened nail with 30mm diameter pre - mounted washer ) for securing the RIW Structureseal to concrete, etc., by hand nailing or shot - firing.

**RIW Staple Gun** - a manual stapler, for fixing sheets of RIW Structureseal together at lap positions, etc.

**RIW Cementseal** - cement base waterproof coating applied by hand or spray as a continuity membrane through the foundation bearing plane.

## CONSTRUCTION

### GENERAL

All construction should conform to the Building Regulations, Codes of Practice and British Standards in current use at the time the building is being constructed. In particular it is recommended that reference is made to BS 8102 : 1990

### PREPARATION

**Floors :** Substrate should be smooth and compacted as necessary to a minimum of 85% modified proctor density.

Concrete surfaces should be free of voids and sharp projections.

Surface irregularities should be removed before installation.

**Walls :** Honeycombing and other surface voids must be filled with a suitable strength mortar, or RIW Sealing Compound as necessary.

Bolt holes must be filled with a proprietary non - shrink mortar or grout, as necessary.

## PERFORMANCE & COMPOSITION

RIW STRUCTURESEAL		
Property	Test Method	Typical Value
Bentonite Mass per Unit Area	ASTM D 3776 ( modified )	4.88 kg / m <sup>2</sup>
Peel Adhesion to Concrete	ASTM D 903 ( modified )	2.5 kN per metre width
Hydrostatic Pressure Resistance	ASTM D 5385 ( modified )	70 metres
Permeability	ASTM D 5084	1 x 10 <sup>-9</sup> cm / sec
Grab Tensile Strength	ASTM D 4632	422 N
Puncture Resistance	ASTM D 4833	445 N
Low Temperature Flexibility	ASTM D 1970	Unaffected at -32°C

The above performance figures are typical values and should not be considered a product specification.

**Boundary Line Construction :** General, gradually undulating surfaces are acceptable, sudden changes in level, such as ridges and hollows, are not.

Concrete surfaces shall be free of large voids or projections.

Voids, pits, and cracks in excess of 20mm, shall be solid filled to a flush condition, using cement grout, or RIW Sealing Compound to suit.

Projections greater than 20mm shall be removed, or smoothed flush.

### APPLICATION

**General :** Install RIW Structureseal, in strict accordance with the installation guidelines, using ancillary products as and where recommended.

Install RIW Structureseal, over the properly prepared substrate, with the lighter ( woven ) geotextile face toward the concrete to be waterproofed, and the dark green ( spun ) side facing outwards.

Overlap all adjoining edges a minimum of 100mm, and stagger adjacent roll ends by no less than 300mm, to avoid four way laps.

Staple or nail edges together as required, to prevent any displacement before and during concrete placement.

Cut RIW Structureseal to provide a tight fit around all applicable penetrations ( pipes, piles, etc ). Install RIW Waterstop around all pipes, as a "puddle flange" within the concrete. Finish all penetrations through the RIW Structureseal, with a 40 x 40mm fillet of RIW Sealing Compound, around the cut edges. See Detail 1 & 6.

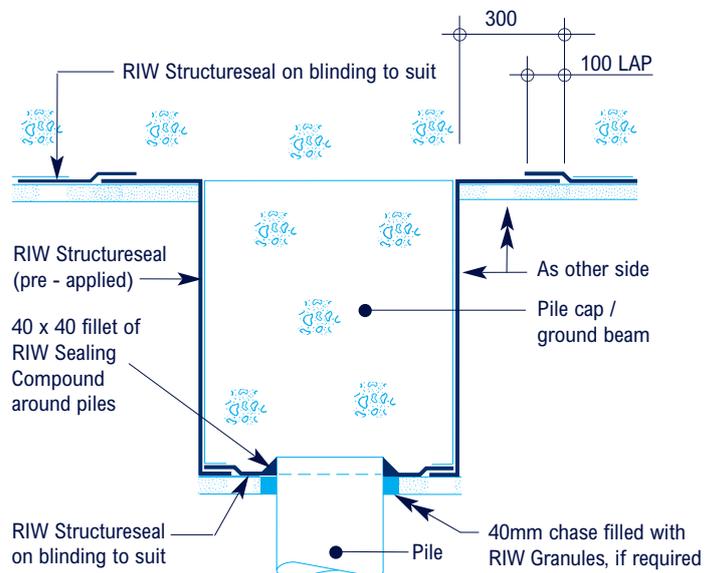
Install RIW Waterstop as necessary in all applicable horizontal, and vertical, concrete construction joints.

Horizontal installation surfaces shall be free of excessive\* standing water, particularly where a concrete under - blinding layer is not utilised. ( \* RIW Structureseal can be installed in almost all inclement weather conditions, providing the quality / accuracy of the installation is not affected, eg ; RIW Structureseal floating, RIW Waterstop submersed, etc ).

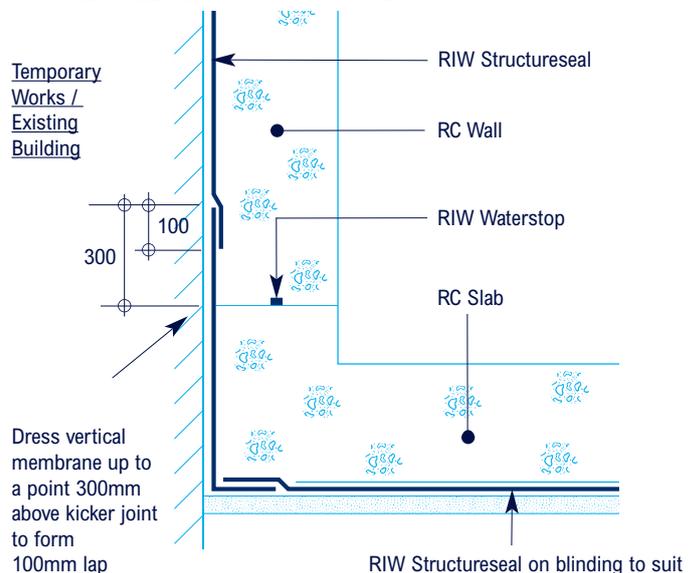
Schedule installation of waterproofing materials to permit prompt placement of backfill material or concrete.

For applications not covered below, please contact RIW Ltd's Technical Department for advice and specific installation guidelines.

### DETAIL 1 TYPICAL SLAB DETAIL AT FOUNDATIONS, PITS, ETC.



### DETAIL 2 TYPICAL WALL FLOOR JUNCTION AT EXISTING



## SPECIFIC USES

### FLOOR SLABS

RIW Structureseal is recommended for use under structural reinforced concrete slabs 150mm thick or greater on compacted earth substrate or concrete blinding layer. Install the product around all foundations, ( ground beams, pads, pile caps, etc ). See Detail 1.

RIW Structureseal should not extend into foundation bearing planes ( pile caps, ground beams, pads etc ), but should completely envelop them. Where this is not possible / desirable, a painted or cement based waterproofing system can be used as a continuity 'membrane' through the bearing plane and the product can be sealed to this. See ancillary products.

Where a concrete blinding layer is not used, detail an additional 40mm chase filled with RIW Sealing Compound around the penetration under the RIW Structureseal.

Where boundary line construction, such as secant / contiguous piling, metal sheet piling, skin wall, etc., is used as the outside shuttering, continue the under - slab RIW Structureseal installation, up the boundary line a minimum of 300mm above the top edge of the floor slab, foundation, or kicker level. The extra 300mm is very important since there is no access to the outer edge after the concrete pour, and the top 100mm is to be kept free of concrete splashes, etc., to enable a 'clean lap' later. See Detail 2.

### CONCRETE RETAINING WALLS

RIW Structureseal can be applied to backfilled walls in two ways : mechanically fastening to cast concrete just prior to backfilling ( post - applied ), or preferably, by utilising the peel - adhesion properties of the system ( pre - applied ). The needle - punched geotextile fibres, which have been forced from the dark green ( spun ) side through the bentonite and lighter ( woven ) side, will be trapped within the wet concrete, and allow the RIW Structureseal to remain firmly attached to the concrete, after the formwork has been removed.

All through bolt holes, etc., must be filled, from the outside, using a proprietary non-shrink grout or similar, covered in a "mushroom" of RIW Sealing Compound, either prior to the RIW Structureseal ( post - fixed ) application, or prior to backfilling ( pre - fix / peel - adhered application ), where additional 'patching' will be required, using a 200 x 200mm patch.

Backfill material shall be of compactable soils, which are free of construction debris. Backfill shall be clean, well graded, and compacted every 300mm, to 85% modified proctor ( as defined by ASTM 1557 ), and meet the following general specifications :

- No rocks, stones or boulders, larger than 50mm.
- 90% minimum soil particles, smaller than 5mm.
- 10% maximum soil particles, finer than 74 microns. ( 200 mesh )

Terminate RIW Structureseal, on the concrete structure, below ground level. Integrate the system with a damp proof course / cavity tray, by means of placing a 300mm wide band of RIW Sheetseal 226, over the termination point, a minimum of 150mm. The lap should be enhanced, by the inclusion of a 50 x 5mm bead of RIW Sealing Compound. RIW Flexiseal should then be lapped over the RIW Sheetseal 226, and be continued up to dpc, as required. See Detail 5.

**Pre - Applied :** Apply RIW Structureseal to timber formwork, either horizontally or vertically, by nailing or stapling as required. Ensure all laps face downwards, as applicable. Extend RIW Structureseal the full depth of the formwork, so that the product laps 100mm over the RIW Structureseal already cast into the slab edge and wall kicker. Allow no less than 300mm at the top of the formwork, to provide ground slab continuity later, if required.

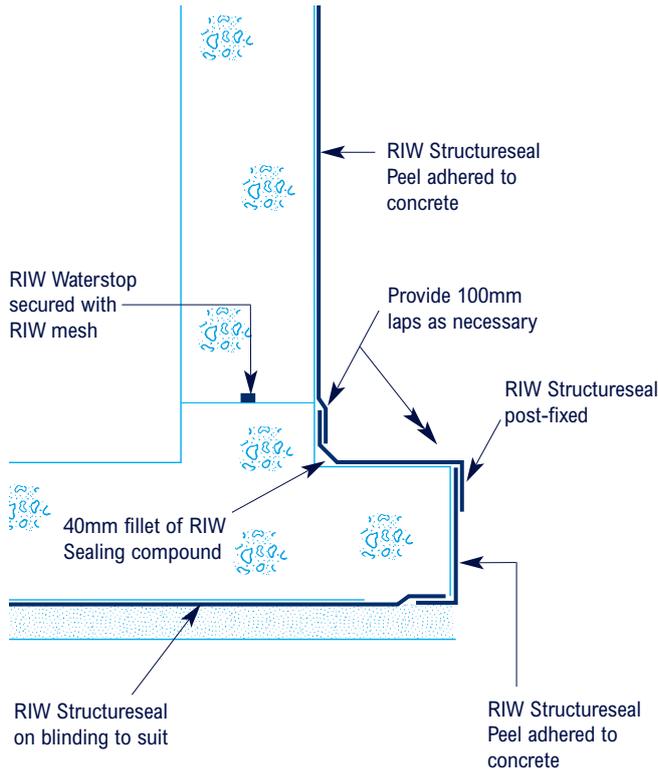
Position formwork, as required, and tie / space forms, penetrating the RIW Structureseal as necessary. Normal concrete practice is sufficient in terms of striking times for formwork, but due care should be taken to ensure that RIW Structureseal remains bonded to green concrete.

Where a slab ' toe ' exists, and the under - slab RIW Structureseal has terminated at the top edge of slab, additional RIW Structureseal will be required to link under - slab / edge of slab RIW Structureseal with wall RIW Structureseal. Apply a 40 x 40mm fillet of RIW Sealing Compound, at the internal wall / slab corner, and place additional RIW Structureseal over the slab toe. This should lap 100mm over the edge of slab RIW Structureseal, and continue over the toe terminating under the un - bonded wall RIW Structureseal ' flap ' at the back of the kicker. See Detail 3.

**Post - Applied :** Apply RIW Structureseal vertically or horizontally against concrete, starting with a 100mm lap at the under - slab / edge of the RIW Structureseal ( peel - adhered to concrete ). Use RIW Washers for fixing, and follow the general application guidelines, ensuring that all laps face downwards, as applicable. The lighter ( woven ) side, should be against the concrete, with the dark green ( spun ) side facing the installer.

Provide a 40 x 40mm fillet of RIW Sealing Compound, at all horizontal and vertical internal corners, prior to application of the RIW Structureseal.

**DETAIL 3**  
TYPICAL SLAB TOE DETAIL



**BOUNDARY LINE CONSTRUCTION**

RIW Structureseal is used to waterproof various types of boundary line construction, including metal sheet piling, secant and contiguous piling, skin wall, sprayed concrete and stabilized - earth retention walls. See Detail 4. Sprayed concrete finishes can be applied directly onto the RIW Structureseal.

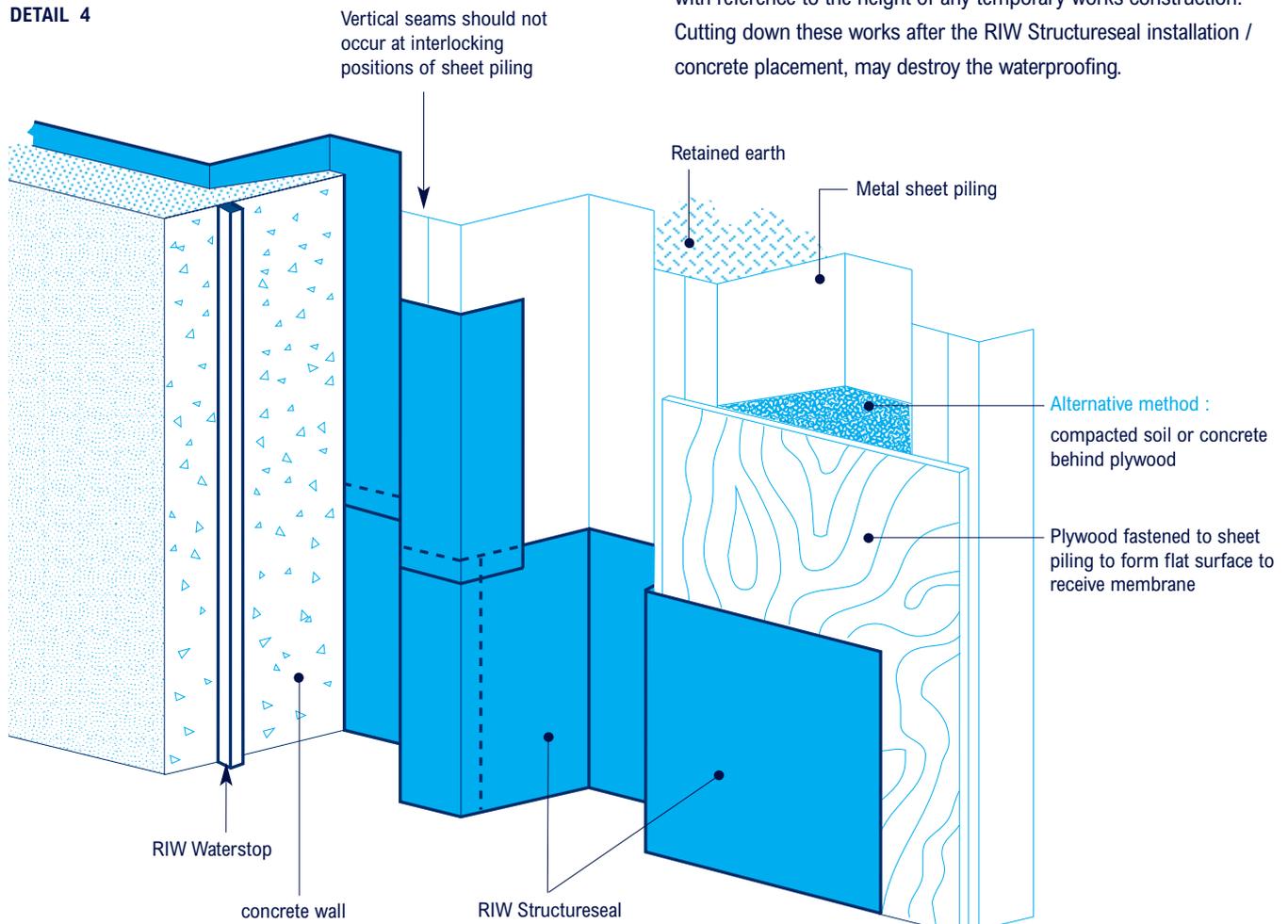
When working against the boundary line, always start with the vertical installation, prior to installing RIW Structureseal under the slab.

Apply the bottom run of RIW Structureseal lengthways / horizontally against the boundary line construction, approximately 1000mm from the substrate / blinding level, allowing 150mm of RIW Structureseal to extend under the slab. On profiled boundary lines ( metal sheet piling, secant and contiguous piling, etc ) the 150mm base ' flap ' will need to be cut and splayed as necessary, to allow the material to lay flat.

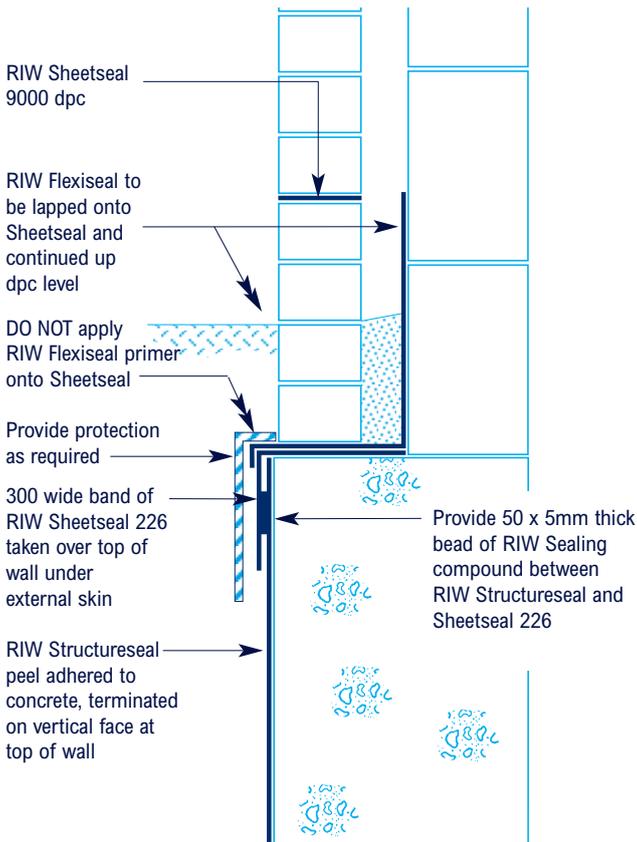
Use RIW Washers for fixing, and follow the general application guidelines, ensuring that all laps face downwards, as applicable. Ensure that the RIW Structureseal closely contours the application surface. For secant piling, locate fixings close to cleavages. On contiguous piling, ensure that soil columns between piles are cut back to no less than one third of the pile diameter, to create a fixing cleavage, and reduce the likelihood of soil dislodging behind the membrane.

Due consideration should be given to termination levels and details, with reference to the height of any temporary works construction. Cutting down these works after the RIW Structureseal installation / concrete placement, may destroy the waterproofing.

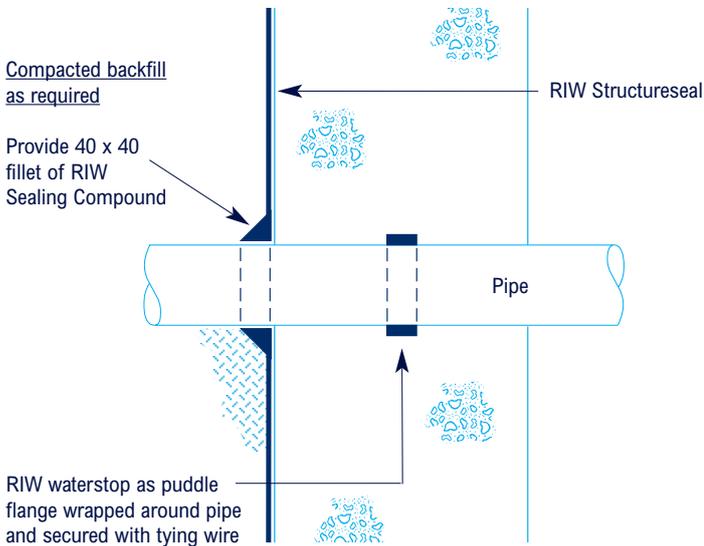
**DETAIL 4**



**DETAIL 5**  
**TYPICAL LINKING DETAIL TO DPC LEVEL**



**DETAIL 6**  
**TYPICAL PIPE ENTRY DETAIL**



**SUPPLY**

**AVAILABILITY**

All RIW products can be obtained through builders merchants or approved stockist. A list of approved stockists is available from RIW Ltd's offices.

**PACKAGING**

RIW Structureseal is 6.4mm thick, and supplied in 1.1 wide x 5m long rolls.

The product is packaged ; 35 rolls per pallet. ie : 192.5m<sup>2</sup>  
Each roll weighs approximately 35 - 40kg.

RIW Washers : packaged in boxes of 500 No. including fixing nails

RIW Staple Gun and RIW Staples :  
Gun - packaged singly. Staples - packaged in boxes of 2500 No.

**Recommended usage for washers:**

General ; 4 - 5 No. per square metre, mainly for laps at 400mm centres.

Profiled Boundary Walls ; 6 - 10 No. per square metre, to allow close contouring.

**STORAGE**

RIW Structureseal and all associated ancillary products must be stored in dry conditions, under cover, and away from possible contact with water. Store products above 4° C, prior to use.

**TECHNICAL SERVICES**

The RIW Technical Department is available to advise on individual projects and to prepare or assist in the preparation of specifications and drawings. A list of experienced applicators of RIW materials is available from RIW Ltd's offices.

The information in this literature was correct at the time of going to press. However, we are committed to continually improving our products and reserve the right to change product specifications.

For the latest information, please consult RIW Limited. Conditions of use are beyond our control, therefore we can not warrant the results to be obtained.



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