

4422WT SEALCO GREENSEAL ECOTUFF® TPO GREEN ROOF WATERPROOFING MEMBRANE

1. GENERAL

This section relates to **Sealco Ltd EcoTUFF®** membrane roofing, bonded to:

- construction plywood, including all underlays and accessories
- concrete, including all underlays and accessories.
- Trapezoid steel roofs, incl all underlays and accessories.

1.1 RELATED WORK

Refer to ~ for ~

1.2 ABBREVIATIONS AND DEFINITIONS

Refer to the general section 1232 INTERPRETATION & DEFINITIONS for abbreviations and definitions used throughout the specification.

The following abbreviations apply specifically to this section:

| | |
|-----|--|
| TPO | Thermoplastic Polyolefin (reinforced rubber sheet) |
| PIR | Polyiso (polyisocyanurate) |

Documents

1.3 DOCUMENTS

Refer to the general section 1234 REFERENCED DOCUMENTS. The following documents are specifically referred to in this section:

| | |
|-------------------------------|---------------------------------------|
| NZBC E2/AS1 | External moisture |
| AS/NZS 2269.0 | Plywood - Structural - Specifications |

1.4 MANUFACTURER/SUPPLIER DOCUMENTS

Manufacturer's and supplier's documents relating to this part of the work:
EcoTUFF® Product Manual
Standard detailed drawings

Manufacturer/supplier contact details

| | |
|------------|--|
| Company: | Sealco Ltd |
| Web: | www.sealco.co.nz |
| Email: | info@sealco.co.nz |
| Telephone: | 03 366 9495 (head office) or 0508 SEALCO |
| Mobile | 027 544-5532 |

Warranties

1.5 WARRANTY - MANUFACTURER/SUPPLIER

Provide a material manufacturer/supplier warranty
25 years: for materials

- Provide this warranty on the manufacturer/supplier standard form.
- Commence the warranty from the date of completion of application.

Refer to the general section 1237 WARRANTIES for additional requirements.

1.6 WARRANTY - APPLICATOR

Installer's warranty for the system under normal environmental and use conditions against failure.
5 years: Execution warranty

- Provide this warranty on the installer's standard form.

Refer to the general section 1237 WARRANTIES for additional requirements.

Requirements

- 1.7 QUALIFICATIONS
Roofing work to be carried out by Licensed Building Practitioners who are also licensed applicators approved by Sealco Ltd.
- 1.8 NO SUBSTITUTIONS
Substitutions are not permitted to any specified Sealco Ltd system, or associated components and products.
- 1.9 PROJECT REGISTRATION
Contact Sealco Ltd to confirm that the project has been registered.
Web: www.sealco.co.nz/register
Telephone: 03-366 9495 or 0508 SEALCO
If the project has not been registered, telephone and provide all required details.

Performance

- 1.10 PRE-INSTALLATION MEETING
Convene a meeting between the applicator, contractor, all associated consultants and Sealco Ltd to ensure all parties know what is required for effective performance of the system.
- 1.11 SPECIAL DETAILS
Where a standard detail does not exist, or if a standard detail cannot be applied, an approved alternative must be obtained from Sealco Ltd before proceeding with the installation.
- 1.12 TEST
Where possible, flood test horizontal applications with a minimum 50mm depth of water for 24 hours. Make good any lack of water tightness when the surface is completely dry.
- 1.13 PERFORMANCE
Accept responsibility for the weather-tight performance of the completed roofing system, including all penetrations through the roof and junctions with walls and parapets. All penetrations to comply with [NZBC E2/AS1](#) and Sealco Ltd recommendations.
- 1.14 QUALITY ASSURANCE
Maintain quality necessary to assure that work is performed in accordance with this specification and the qualifying requirements of Sealco Ltd. Ensure that Sealco Ltd's Quality Control sheets are completed fully and faithfully for each installation area.

2. PRODUCTS

Materials

- 2.1 ECOTUFF® TPO SHEET
Single ply TPO reinforced membrane bearing the manufacturer's mark. Refer to SELECTIONS for type and thickness.
- 2.2 PRIMER
50/50 mixture of solvent and EcoTUFF® adhesive
- 2.3 ECOTUFF® SEALANT
SEALCO specially formulated TPO sealant for general purpose flashing.
- 2.4 ECOTUFF® TPO FLASHING
SEALCO unreinforced flashing for use in corners, heat welded to EcoTUFF® TPO. Unreinforced T joint covers used to seal T joint sections in EcoTUFF® TPO sheet.
- 2.5 ECOTUFF® ADHESIVE
SEALCO TPO contact adhesive system.

- 2.6 ECOTUFF® CUT EDGE SEALANT
SEALCO specially formulated TPO sealant for EcoTUFF® cut edge finishes.
- 2.7 ST7 TRAPEZOID STEEL TRAY ROOFING
Used as substrate for insulated roof systems.
- 2.8 VAPOUR BARRIER
Vapour barrier to eliminate any vapour rising up into the insulation and membrane.
- 2.9 POLYISO INSULATION
Polyiso insulation for use on warm roof applications.

Components

- 2.10 EDGE TRIM
Aluminium drip edge trim 3m and 5m lengths Sealco Ltd details to suit the specific location.
- 2.11 ROOF VENT
SEALCO ventRite TPO vent as supplied and required by Sealco Ltd.
- 2.12 DROPPER
SEALCO drainRite TPO dropper as supplied and required by Sealco Ltd.
- 2.13 SCUPPER
SEALCO drainRite Scuppers in 65mm, 100mm and 200mm widths as supplied and required by Sealco Ltd.
- 2.14 OVERFLOW DROPPER
SEALCO drainRite TPO overflow dropper as supplied and required by Sealco Ltd.
- 2.15 PIPE BOOTS
SEALCO flashRite moulded unreinforced pipe boots as supplied and required by Sealco Ltd. Designed to fit 20mm-150mm penetrations. Boots are welded to substrate and mechanically clamped and sealed around pipes.
- 2.16 GREENSEAL MAXISTUD ROOF DRAINAGE CELL
Plastic drainage cell sheet with cups and drainage holes to ensure retention of sufficient water to support plant growth while draining excess water.
- 2.17 GREENSEAL Q-DRAIN PEBBLE BALLAST DRAINAGE CELL
Plastic drainage cell & geotextile designed for the purpose of draining water from membrane system.
- 2.18 FILTER FABRIC
Geotextile filter fabric manufactured from recycled plastic. Installed to prevent soil or similar getting into the drainage cell preventing flow of water.
- 2.19 WARMSEAL INSULATION PANELS
Lexboard polyiso rigid insulating panels comply with AS 1366. Panel size 80mm thick x 1200mm wide x 2450mm long providing an R value of 2.58. Installed onto the substrate with WarmSEAL foam adhesive or insulation screws and washers.

3. EXECUTION

Conditions

- 3.1 STORAGE
Take delivery of Sealco Ltd EcoTUFF® branded rolls, undamaged and allow for site handling facilities where required. Store membranes and accessory materials under conditions that ensure no deterioration or damage. Ensure all tapes and adhesives are within their expiry dates. Note: Some of the EcoTUFF® materials are Class 3 flammable goods.

- 3.2 CONFIRM LAYOUT
Confirm layout as detailed on drawings. If not detailed on the drawings, confirm the layout to suit site conditions, and Sealco Ltd specification.
- 3.3 WEATHER
Apply EcoTUFF® membrane system in dry atmospheric conditions and only when the air or substrate temperature is 6°C and above.

Application – Substrate preparation and installation

- 3.4 PRELIMINARY WORK
Ensure that preliminary work, including formation of falls, flashing rebates, grooves, ducts, provision of battens and fillets and fixing of vents and outlets to levels, is complete and properly constructed to enable the system to work as intended. No timber fillets are required. This work and the substrate to be smooth, clean and dry.
- 3.5 ACCEPTANCE OF SUBSTRATE
Confirm that the substrate complies with the [NZBC E2/AS1](#) for the relevant substrates and Sealco Ltd documents, including fillets, sumps, outlets and projections, and ensure work is of the required standard. Ensure the fall complies with E2/AS1 including correct fall to rainwater outlets to avoid ponding,
- Lay roofs to a minimum fall of 1:30 (2°) to [NZBC E2/AS1](#), 8.5.1 a.
- Lay decks to a minimum of 1:40 (1.5°) to [NZBC E2/AS1](#), 8.5.1 b.
- Lay gutters to a minimum fall of 1:100 (0.57°) to [NZBC E2/AS1](#), 8.5.1 c.
- 3.6 CONCRETE SUBSTRATE
Ensure concrete substrate has been allowed to cure for at least 28 days and has a moisture content of less than 75% RH before commencing application. Prepare the surface, including vacuum cleaning and acid etching as necessary to leave smooth, clean, dry and free of debris. Install grid tapes in 600mm x 600mm grid for venting that lead to one-way vents or other suitable approved venting outlet. No mortar fillets are required.
- 3.7 PLYWOOD SUBSTRATE
Plywood to be minimum 17.5mm thick square-edged sheets and complying to [AS/NZS 2269.0](#), minimum CD structural grade with the sanded C side upwards. Treated H3 with waterborne CCA treatment and kiln dried after treatment. Lay with staggered joints (brick bond) with all edges of the sheets fully supported. Chamfer all external edges with a minimum radius of 5mm. Fix with glue and 10 gauge x 50mm stainless steel countersunk head screws, with all sheets tight butted. DO NOT fit internal corner fillets. Fix at 150mm centres on edges and 200mm in the body of the sheets. Plywood and the timber substructure to have a maximum moisture content of 20% when the membrane is installed. Plywood must not be LOSP treated.
- 3.8 WARM ROOF INSULATION SUBSTRATE (INCL TRAPEZOID STEEL)
Install trapezoid steel tray roof as per manufacturers specifications. Screw spacings as per steel tray pattern. Lay out insulation panels in brick bond pattern and fix with either adhesive or screw fixings. Screw fixing spacings are to be 300mm around exterior and 400mm through the centre of the board. Apply Sealco Peel & Stick vapour barrier over steel tray as required. See Sealco WarmSEAL specification for further information.
- 3.9 VAPOUR BARRIER
Lexshield Peel & Stick vapour barrier to be installed over the substrate and under the insulation. Vapour barriers eliminate moisture from the structure to rise up into the insulation. BituBOND Adhesive may be used on concrete & plywood substrates as a vapour barrier.
- 3.10 ACCOUSTIC UNDERLAY
Metal rubber sheets to reduce noise impact from above. Installed on top of the substrate and under the insulation and can be used as a vapour barrier (as above).

Application - laying EcoTUFF®

- 3.9 GENERAL - PLYWOOD SUBSTRATE
Tape plywood joints using a polyethylene bond-breaker 36mm tape. Run out the EcoTUFF® membrane and allow to relax for 20 minutes before laying. Do not stretch sheets or tapes when laying.
- 3.10 GENERAL - CONCRETE SUBSTRATE
Run out the EcoTUFF® membrane and allow to relax for 20 minutes before laying. Do not stretch sheets or tapes when laying. Apply grid tapes to concrete substrate (for venting purpose) to Sealco Ltd installation requirements.
- 3.11 SET-OUT
Neatly set out rolls starting at the lowest point of the roof and run perpendicular to the roof pitch. Allow for 40mm side laps and end laps. Pre-plan the work to keep the number of membrane laps to a minimum. EcoTUFF® rolls to be relaxed prior to installation.
- 3.12 APPLY ADHESIVE
Apply EcoTUFF® TPO adhesive to the substrate at a rate of 1.5m² per litre by brush or roller ensuring good even coverage. and Leave to tack dry before bonding the two surfaces together.
- 3.13 BONDING LAPS
Clean laps where required with weathered lap cleaner, form all laps at 40mm cover using the Leister heat welder carefully heat both mating surfaces at the back of the lap evenly at the same time whilst firmly rolling the on top of the sheet with the hand roller. Using the Leister heat welder make your final run by placing the nozzle between the sheets at the front lap area, heat both surfaces (to the point of melting the mating surfaces) and creating a bonded lap of 40mm. Firmly roll the lap with a lap roller immediately and test the lap joint on completion with a lap probe.
- 3.14 MINOR MOVEMENT JOINTS
Lay membrane across joint but leave unbonded underneath EcoTUFF® on both sides of the joint. Refer to Waterproofing Systems technical dept for a specially designed movement joint detail.
Unbonded width: ~mm
- 3.15 INSPECT
Inspect and test lap joints on completion with lap probe ensuring the lap is fully bonded
- 3.16 PENETRATIONS
Use a heat gun (Leister) to form and finish upstands, downturns, penetrations, sumps and vents to conform to the EcoTUFF® Product Manual and [NZBC E2/AS1](#). Use the gun to form and heat weld flashing patches to the exterior of the EcoTUFF membrane.
- 3.17 PENETRATIONS AND JUNCTIONS
Check that adjoining walls and parapets are prepared ready for the installation of the roofing. Confirm that openings have been prepared ready for the installation of skylights and other penetrations through the roof.
Required work includes the following:
- roofing installation neatly finished to all sides of openings and to all wall and parapet junctions.
- installation of flashings (those required to be installed prior to installation of penetrating elements and/or wall linings).
- 3.18 INSTALL OVERFLOWS AND SUMPS
Install SEALCO flowRite overflows and drainRite sumps to Sealco Ltd installation details.
- 3.19 INSTALL ROOF VENTS
Install SEALCO ventRite TPO vent for roof space/moisture venting to Sealco Ltd installation details.

- 3.20 **INSTALL DROPPER**
Install SEALCO drainRite TPO dropper to Sealco Ltd installation details.
- 3.21 **INSTALL SCUPPER**
Install SEALCO drainRite TPO scupper to Sealco Ltd installation details.
- 3.22 **INSTALL OVERFLOW DROPPER**
Install SEALCO drainRite TPO overflow dropper to Sealco Ltd installation details.
- 3.23 **INSTALL PIPE BOOT**
Install SEALCO flashRite pipe boots to Sealco Ltd installation details.
- 3.24 **MOVEMENT JOINTS**
Install required movement joints to Sealco Ltd details.

Accessories

- 3.25 **PAVER SUPPORTS - ADJUSTABLE WITH LEVELLING HEAD**
Install SEALCO ecoJack Adjustable Paver Supports with levelling head to Sealco Ltd installation details. Install 1.5mm thick EPDM rubber as impact isolation pads to prevent wear on the EcoTUFF® membrane system.

Finishing

- 3.26 **FOOT TRAFFIC**
Foot traffic is to be limited during and after laying. Providing access boards for later operations and remove when no longer needed. Protect and maintain roofing until completion of the contract works.
- 3.27 **DRAINAGE TO GREEN ROOF**
Lay drainage cell with cups facing downward and overlap adjacent sheets by 100mm (or 3 cups). Across the top of the drainage cell lay the geotextile filter fabric ensuring fabric is lapped 100mm to prevent ingress of soil. Tape the geotextile filter fabric to the wall to prevent soil entering the drainage cell. Ensure the entire area is covered and that there is sufficient drainage to remove excess water from the installation. Do not walk on or place heavy materials onto the drainage cell. Once geotextile cloth drainage layer is in place overlay surface with 25mm grit sand prior to covering with soil.
- 3.28 **SOIL COVER**
Cover the GreenSEAL™ membrane system with 25mm to 300mm of soil depending on the planting requirements.
- 3.29 **PEBBLE BALLAST**
Cover the GreenSEAL™ membrane system with decorative pebbles or similar.
- 3.30 **ACCESS BOARDS**
Provide access boards for later operations and remove when no longer needed.
- 3.31 **ECOTUFF® TPO WALKWAY PADS**
Walkway pads and rolls for direct fix to EcoTUFF® for high trafficable areas.
- 3.32 **ACCEPTANCE**
Sign off acceptance of completed areas using the Sealco Ltd Quality Control sheets.
- 3.33 **SUBSEQUENT WORK**
Make good any damage by other trades by welding an EcoTUFF® patch to the installed membrane neatly to maintain the appearance of the covering as originally laid.

Completion

- 3.34 **ROUTINE CLEANING**
Carry out routine trade cleaning of this part of the work including periodic removal all debris, unused materials and elements from the site.

3.35 DEFECTIVE OR DAMAGED WORK
Repair damaged or marked elements. Replace damaged or marked elements where repair is not possible or will not be acceptable. Leave work to the standard required for following procedures.

4. SELECTIONS

For further details on selections go to www.sealco.co.nz.
Substitutions are not permitted to the following, unless stated otherwise.

Materials

4.1 ECOTUFF® TPO ROOFING MEMBRANE

| | |
|----------------------|-------------------------------------|
| Location: | ~ |
| Manufacturer: | Sealco Ltd |
| Type/brand: | EcoTUFF® TPO |
| Thickness: | 1.5mm minimum |
| Colour: | ~ |
| Drainage cell: | GreenSEAL Drainage Cell |
| Drainage Protection: | GreenSEAL Q-Drain protection mat |
| Geotextile fabric: | Geotextile filter fabric of 140 gsm |
| Soil: | ~ |
| Pebble Balast: | ~ |

Accessories

4.2 PAVER SUPPORTS - ADJUSTABLE WITH LEVELLING HEAD

| | |
|-----------|---|
| Location: | ~ |
| Supplier: | Sealco Ltd |
| Brand: | EcoJack Adjustable Paver Supports with levelling head |
| Type: | ~ |
| Size: | ~ |

4.3 GENERAL OUTLET ACCESSORIES

| | |
|-----------|-------------------------------|
| Location: | ~ |
| Supplier: | Sealco Ltd |
| Brand: | DrainRITE, FlowRITE, VentRITE |
| Type: | ~ |
| Size: | ~ |