FORZAFLEX RR.



Technical Data Sheet | **Root-Resistant Torch-Applied APP-Modified Bitumen Mineral Cap Sheet — UV Exposed** | **Issue date: 25 August 2026**

Description

FORZAFLEX RR is a root-resistant APP-modified bitumen cap sheet incorporating anti-root additives blended through the bitumen itself rather than applied as a surface treatment. It is the cap sheet of the FORZAFLEX torch-applied system wherever the waterproofing sits beneath soil and living plants — planter boxes, green roofs, landscaped podiums and plaza decks.

Roots attack a membrane in two ways that ordinary waterproofing is not designed for: chemically, by secreting acids that break down the binder, and mechanically, by exerting sustained pressure over years into any weakness in a lap or detail. The additive system addresses the chemical pathway by making the bitumen inhospitable to root growth, and the high-strength non-woven polyester composite carries the mechanical load. The micro-mineral surface is fully UV stable, so the same sheet serves the planted zones and the exposed zones of a roof without a change of product.

Advantages

- Root resistant — anti-root additives prevent root penetration and biological attack in planted systems.
- Classified CLASS I under AS 4654.1-2012 through NATA-accredited testing.
- Fully UV stable micro-mineral surface — may be left exposed, so the programme is not held hostage to the landscaping sequence.
- Strongest certified UV result in the FORZAFLEX range — extensibility retained through ultraviolet exposure.
- Certified through water immersion, detergent immersion and heat ageing.
- Cyclic movement passed — 50 cycles with no rupture, crazing or tearing.
- Certified dimensional stability — no change through two full humidity and temperature cycles.
- High certified field seam strength.
- Very low certified water vapour transmission.
- Fully torch-bonded to the base ply — no loose-laid layer and no lateral water path between plies.
- Immediate watertightness — the sheet is sealed as it is rolled, with no cure period.
- One cap sheet for planted and exposed areas of the same roof.

Uses and Approved Basis

- Planter boxes and raised planting beds.
- Green roofs and landscaped podiums.
- Plaza decks beneath soil and planting systems.
- Retaining walls adjacent to landscaped areas.
- Below-ground structures requiring root resistance.
- Roof and podium areas where planted and exposed zones adjoin and a single cap sheet is preferred.
- Exposed roof areas within a landscaped scheme, where the micro-mineral surface remains the finished surface.

Approved basis: classified CLASS I under AS 4654.1-2012 by NATA-accredited Report No. 589-1, installed as the cap sheet of a multi-layer torch-applied system designed in accordance with AS 4654.2-2012. Root resistance is established by the anti-root additive system and is not classified under an Australian Standard — where a project specification requires certified root resistance to a nominated test method, confirm the current position with FORSPEC Technical Services. Certified abrasion results qualify the membrane for MAINTENANCE ACCESS ONLY — it is not a trafficable membrane.

System Components

FORZAFLEX RR is the cap sheet of a multi-layer torch-applied waterproofing system. Approved system components:

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System Components (continued)

- FORZAFLEX BASE 3mm — the base or intermediate ply beneath the cap sheet.
- FORZAPRIME — bitumen primer for concrete, masonry and metal substrates, where the cap sheet is applied direct to the substrate rather than over a base ply.
- FORZAFLEX MINERALE 4.5 — the standard mineral cap sheet, used where root resistance is not required.
- Protection board — installed over the cured membrane before any drainage, growing medium or planting is placed.
- Drainage cell and geotextile filter fabric — FORSPEC-approved, installed above the protection board.
- Engineered soil or planter system — as specified by the landscape designer.
- Non-combustible overlay board — mandatory where the substrate is combustible; torch application direct to combustible substrates is prohibited.
- Concrete reinstatement — FORSPEC concrete repair system such as FORBUILD 100 or FORCRETE 100.

FORZAFLEX RR replaces the standard cap sheet wherever root resistance is required. The final system configuration must be designed to suit project exposure, planting and drainage requirements. Use only the components above, applied per their current TDS, to maintain system compliance and warranty eligibility. Substitution of non-FORSPEC components voids system warranty eligibility.

Standards Compliance

STANDARD	TITLE	RESULT	EVIDENCE
AS 4654.1-2012	Waterproofing membranes for external above-ground use — Part 1: Materials	CLASS I (low extensibility) — all durability criteria including ultraviolet exposure: pass	Report No. 589-1 — NATA-accredited to ISO/IEC 17025
AS 4654.1 Appendix B	Resistance to cyclic movement (CSIRO moving joint test)	PASS — 50 cycles completed, no rupture, crazing or tears	Report No. 589-1
AS 4654.2-2012	Waterproofing membranes for external above-ground use — Part 2: Design and installation	Systems to be designed and installed in accordance with this standard (NCC Deemed-to-Satisfy)	—
AS 1580.403.2 — abrasion, non-trafficable	Depth of abrasion, CS-10 wheel, 500 cycles	0.099 mm — meets the requirement for a non-trafficable membrane (limit 0.2 mm)	Report No. 589-1, per AS 4654.1 Paragraph 2.3.1
AS 1580.403.2 — abrasion, trafficable	Depth of abrasion, H-22 wheel, 1000 cycles	0.539 mm — DOES NOT meet the requirements for a trafficable membrane (pedestrian limit 0.2 mm). Maintenance access only.	Report No. 589-1, per AS 4654.1 Paragraph 2.3.2
ASTM C794	Bond strength to unprimed concrete	21.72 N †	Report No. 589-1
ASTM D6207	Dimensional stability to changes in humidity and temperature	No changes observed over two full cycles	Report No. 589-1
ASTM E96	Water vapour transmission, desiccant method	0.03 g/m²/24 h	Report No. 589-1
Root penetration resistance	Resistance to root penetration and biological attack	Provided by the anti-root additive system. No Australian Standard classification currently held.	Forspec R&D *
AS/NZS 4020	Products in contact with drinking water	Potable-water contact requires written confirmation from FORSPEC Technical Services.	—

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Standards Compliance (continued)

National Construction Code: for external above-ground waterproofing — flat roofs, terraces, balconies and podiums above internal spaces — AS 4654.1 and AS 4654.2 apply under NCC Volume One Part F1 and NCC Volume Two Clause H2D8. The designer is responsible for confirming the compliance pathway applicable to the project.

Approved Substrates

FORZAFLEX RR is normally installed over a fully bonded FORZAFLEX BASE 3mm ply. Where the design applies it direct to a prepared substrate, the following apply.

SUBSTRATE	REQUIREMENT
FORZAFLEX BASE 3mm	The standard substrate. Fully bonded, inspected and free of defects, blisters and unfused laps. No priming required.
Concrete	Fully cured, minimum 28 days. Concrete Surface Profile 3–6. Dry, sound and free of laitance, curing compounds and contaminants. Primed with FORZAPRIME.
Cement render and screed	Fully cured, sound and non-friable. Dry at the time of priming. Primed with FORZAPRIME.
Masonry and blockwork	Sound, joints struck flush and made good. Primed with FORZAPRIME.
Metal	Rigid, clean, free of oil, oxide and mill scale. Primed before membrane installation.
Timber and combustible substrates	Torch application direct to a combustible substrate is PROHIBITED. A suitable non-combustible overlay board must be installed first.
Damp, green or uncured concrete	NOT APPROVED. Trapped moisture vaporises under the torch and blisters the membrane.
Substrates with inadequate falls	NOT APPROVED. Minimum 1:100 to drainage outlets with no ponding. Drainage is critical beneath planting — standing water beneath a planter is a design failure the membrane cannot correct.

Commencement of installation constitutes acceptance of the substrate by the applicator.

Technical Data

PROPERTY	VALUE	TEST METHOD / BASIS
Product type	Root-resistant APP-modified bitumen torch-applied mineral cap sheet	—
Reinforcement	High-strength non-woven polyester composite	—
Upper surface	Micro-mineral, UV stable	—
Lower surface	Thermofusible polyethylene film	—
Root resistance	Anti-root additive system — prevents root penetration and biological attack	Forspec R&D *
Membrane classification	CLASS I (low extensibility)	AS 4654.1 — Report 589-1
Control elongation at break	39%	AS 1145.3 — Report 589-1

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Technical Data (continued)

PROPERTY	VALUE	TEST METHOD / BASIS
Control tensile strength	2.31 MPa	AS 1145.3 — Report 589-1
Cyclic movement	Pass — 50 cycles, no rupture, crazing or tears	AS 4654.1 App. B — Report 589-1
Abrasion — non-trafficable	0.099 mm depth of abrasion (CS-10 wheel, 500 cycles)	AS 1580.403.2 — Report 589-1
Abrasion — trafficable	0.539 mm — does not meet trafficable requirements. Maintenance access only.	AS 1580.403.2 — Report 589-1
Bond strength to unprimed concrete	21.72 N †	ASTM C794 — Report 589-1
Field seam strength	286.37 N/25 mm	AMTM005 — Report 589-1
Dimensional stability	No changes observed	ASTM D6207 — Report 589-1
Water vapour transmission	0.03 g/m²/24 h	ASTM E96 desiccant method — Report 589-1
Temperature resistance	0.09 g/m²/24 h after cycling from −16.3°C to 85°C	AMTM004 — Report 589-1
Nominal thickness	4.0 mm	EN 1849-1
Roll size	10 m × 1 m — 10 m² gross per roll	—
Approximate roll weight	45 kg	—
Rolls per pallet	20	—
Service temperature range	−15°C to +85°C	Report 589-1 conditioning range
UV exposure	Fully UV stable — may be left exposed	Report 589-1
Application method	Torch-applied heat welding by propane gas torch or approved torching equipment	—
Application temperature	5°C to 40°C ambient. Do not torch in rain, on wet substrates or in high wind.	*
Minimum side lap	75 mm	—
Minimum end lap	150 mm	—
End lap stagger	Minimum 1 m between adjacent sheets	—
Minimum upturn height	150 mm unless specified otherwise	—
Minimum substrate fall	1:100, draining positively to outlets	—
Shelf life	24 months from manufacture, stored as specified	*
SDS	Chemwatch 9024-62 — refer to the current Safety Data Sheet at www.forspec.com.au	—

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Technical Data (continued)

Certified durability test results — Report 589-1, AS 4654.1 Appendix A

CONDITION	ELONGATION AT BREAK	TENSILE STRENGTH	PASS REQUIREMENT	ASSESSMENT
Control (AS 1145.3)	39%	2.31 MPa	< 60% for Class I	CLASS I
Water immersion (56 days)	40%	2.25 MPa	≥ 10% (25% of control)	PASS
Detergent immersion (56 days)	34%	1.19 MPa	≥ 10% (25% of control)	PASS
Heat ageing	33%	2.32 MPa	≥ 20% (50% of control)	PASS
Ultraviolet exposure	36%	2.58 MPa	≥ 16% (40% of control)	PASS

Elongation at break after ultraviolet exposure measured 36% against a control of 39% and a pass requirement of 16% — the membrane retains its extensibility through UV exposure with negligible loss, and tensile strength after UV exposure exceeded the control value.

† Bond strength is reported as the raw peel force recorded by the laboratory on an unprimed concrete block. Site bond over FORZAPRIME-primed substrates will differ. The specimen width required to express this as N/mm is to be confirmed — refer to the Change Register.
Values citing Report 589-1 are certified results from NATA-accredited testing to ISO/IEC 17025. * Typical characteristic values determined by Forspec R&D on standard production material at 25°C and 50% relative humidity — not to be relied upon for engineering design without written confirmation from FORSPEC Technical Services.

Limitations

- NOT A TRAFFICABLE MEMBRANE. Certified abrasion depth is 0.539 mm against a 0.2 mm pedestrian limit. The membrane is suitable for MAINTENANCE ACCESS ONLY. Where pedestrian or vehicle traffic is required, design a separate trafficable wearing surface over the membrane.
- Classified CLASS I (low extensibility). Where the design requires a Class II or Class III membrane for movement accommodation, specify a higher-class FORSPEC membrane or design the movement detail accordingly.
- Root resistance protects the membrane; it does not substitute for a correctly designed planted build-up. Protection board, drainage cell, filter fabric and drainage falls must all be provided.
- Root resistance is not classified under an Australian Standard. Where a project specification requires certified root resistance to a nominated test method, confirm the current position with FORSPEC Technical Services.
- Never place growing medium, soil, ballast or planting directly on the membrane. A protection layer is mandatory.
- Torch application direct to combustible substrates is PROHIBITED. A non-combustible overlay board must be installed first.
- Torch-applied work is hot work. It must not proceed without a hot work permit, a fire watch and the fire safety measures set out in Hot Works and Fire Safety below.
- Do not torch onto wet, damp, green or uncured substrates. Trapped moisture vaporises under the torch and blisters the membrane.
- Do not torch onto wet or uncured primer. The primer must be tack-free and must not transfer to fingers.
- Do not overheat. Excessive heat degrades the bitumen, damages the polyester reinforcement and may impair the anti-root additive system.
- Insufficient heat produces a cold bond that looks acceptable and is not adhered. Correct bitumen bleed-out is the only reliable field confirmation of fusion.
- No cold joints, fish-mouths or open seams are permitted at any lap. A lap that has not fused is the pathway a root will find.
- Not compatible in direct contact with polystyrene insulation, PVC membranes or plasticised sheet materials without an approved separation layer.
- Bitumen fume is classified as a suspected carcinogen. Torch application generates fume and must be carried out with the controls set out in Safety Precautions and First Aid.
- Application must be carried out by trained and experienced waterproofing applicators using approved torch-applied membrane techniques.

Surface Preparation

Where FORZAFLEX RR is installed over FORZAFLEX BASE 3mm, the base ply is the substrate and must be complete, inspected and free of defects before the cap sheet is run. A defect in the base ply beneath a planter is unreachable once the build-up is placed.

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Surface Preparation (continued)

- Base ply acceptance — confirm the FORZAFLEX BASE 3mm ply is fully bonded with no blisters, unfused laps, fish-mouths or mechanical damage. Rectify every defect before the cap sheet is laid.
- Substrate acceptance — where applied direct, confirm the substrate is structurally sound, rigid and fully cured. Commencement of installation constitutes acceptance of the substrate.
- Cleaning — remove all dust, laitance, curing compounds, oils, grease and loose material by mechanical means and vacuum clean.
- Repairs — repair cracks, voids, blowholes and honeycombing with a compatible repair material, such as FORBUILD 100 or FORCRETE 100, and allow to cure fully.
- Protrusions — grind off sharp edges, fins and protrusions that would damage the membrane from beneath.
- Surface profile — concrete must present a Concrete Surface Profile between 3 and 6.
- Falls and drainage — verify a minimum fall of 1:100 toward drainage outlets before any membrane is laid. Drainage beneath planting is critical: standing water beneath a planter accelerates root activity at the membrane surface and is a design failure the membrane cannot correct.
- Moisture — the substrate must be dry and free of surface moisture. Trapped moisture will vaporise under the torch and blister the membrane.
- Combustible substrates — install a suitable non-combustible overlay board. Torch application direct to combustible substrates is prohibited.

Priming

- Over FORZAFLEX BASE 3mm — no priming required. The cap sheet torch-bonds directly to the base ply.
- Over concrete, masonry and metal — apply FORZAPRIME at the coverage rate stated in its TDS.
- Apply evenly by roller, brush or spray, achieving complete coverage with no misses and no pooling.
- Allow the primer to dry fully before the membrane is applied. It must be tack-free and must not transfer to fingers.
- Do not torch onto wet or uncured primer — solvent trapped beneath a torched ply will blister.
- Re-prime any area that has been rained on, walked over or contaminated after priming.

Membrane Layout and Laps

- Install starting from the lowest point of the area, so every lap sheds water rather than facing into the flow.
- Lay sheets perpendicular to the direction of fall.
- Pre-cut and dry-lay sheets to confirm alignment before any torching begins.
- Side laps: minimum 75 mm.
- End laps: minimum 150 mm.
- Stagger end laps between adjacent sheets by a minimum of 1 metre. Never align end laps across the run to create a cross joint.
- Offset the cap sheet laps from the base ply laps beneath — never stack a cap lap directly over a base lap.
- Plan the layout so laps are minimised in the deepest planting zones, where root pressure is highest and access for future inspection is lowest.
- Allow rolls to relax before torching. A sheet welded under tension will stress the laps as it recovers.

Torch Application

The weld is the waterproofing, and under a planted build-up it is also the root barrier. A lap that has not fused is the pathway a root will find, and it will not be reachable once the soil is in.

STAGE	REQUIREMENT	CHECK
Equipment	Propane gas torch or approved torching equipment, serviced and leak-tested before use.	Hoses and fittings checked
Heating	Heat the underside polyethylene film evenly until the bitumen reaches a molten state. Keep the flame moving; never dwell in one place.	Film fully molten, no scorching
Rolling	Roll the membrane forward steadily while maintaining consistent heat, keeping the roll square to the run.	Steady, even advance

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Torch Application (continued)

STAGE	REQUIREMENT	CHECK
Bleed-out ahead of the roll	A continuous molten bitumen flow of approximately 6–12 mm must be visible ahead of the roll. This is the working confirmation of fusion.	6–12 mm molten flow visible
Adhesion	Ensure full fusion to the underlying base ply or primed substrate across the full sheet width, not only at the laps.	No hollow or drummy areas
Lap bleed-out	Bitumen bleed-out of 3–6 mm must be visible along every side and end lap.	3–6 mm bleed at all laps
Overheating	Do not overheat. Excessive heat degrades the bitumen, damages the reinforcement and may impair the anti-root additive system.	No blistering, no scorch
Cold bonds	Insufficient heat produces a bond that appears sound and is not adhered. Where bleed-out was not achieved, cut out and reinstate.	Bleed-out achieved at every metre
Seams	No cold joints, fish-mouths or open seams are permitted. Reheat and roll down any lifted edge immediately.	All seams closed and sealed

Joints and Detailing

- Upturns — carry the membrane a minimum of 150 mm up every upstand and parapet, and above the finished soil level in every planted area, unless a greater height is specified.
- Internal and external corners — reinforce every corner with an additional torched detailing piece before the field sheets are run in.
- Penetrations — fully dress and seal every penetration with compatible detailing membrane, torched and rolled down to the penetration. Irrigation lines, lighting conduits and drainage risers through a planter are all penetrations and all require detailing.
- Terminations — mechanically fix and seal where required. Never leave a free membrane edge unsealed, and never terminate below the finished soil level.
- Movement joints — detail separately with a compatible expansion detail. Never torch the membrane flat across a movement joint.
- Drainage outlets — dress the membrane down into the outlet body so water enters the drain and not the lap. Outlets beneath planting must remain accessible for maintenance.
- Complete all detailing and inspect every detail before any protection or planting build-up is placed.

Seam Inspection and Quality Control

Inspection is the last opportunity to find a defect. Once the protection board, drainage cell and growing medium are placed, the membrane is unreachable without removing the landscape.

- Inspect every lap along its full length once cool. Bitumen bleed-out of 3–6 mm must be continuous — a lap without bleed-out has not fused.
- Probe all lap edges with a blunt seam probe. The probe must not enter the lap at any point.
- Inspect the full membrane area for blisters, fish-mouths, wrinkles, scorching, punctures and mechanical damage.
- Sound the membrane for hollow and drummy areas indicating incomplete adhesion.
- Cut out and reinstate any defective lap or damaged area with a torched patch lapped a minimum of 150 mm on all sides, and re-inspect the repair.
- Confirm every upturn, corner, penetration, outlet and termination is fused and sealed, and that upturns extend above the finished soil level.
- Record the inspection and all repairs on the project quality records before flood testing and before any protection is placed.

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Coverage and Yield

MEASURE	VALUE	BASIS
Roll size	10 m × 1 m	—
Gross area per roll	10 m^2	10 m × 1 m
Effective width at 75 mm side lap	0.925 m	1.000 m − 0.075 m
Effective length at 150 mm end lap	9.85 m	10.00 m − 0.15 m
Effective area per roll	Approx. 9.1 m^2	0.925 m × 9.85 m
Rolls per 100 m^2	Approx. 11	100 m^2 ÷ 9.1 m^2
Rolls per pallet	20 — approx. 182 m^2 effective	20 × 9.1 m^2
Approximate weight per 100 m^2	Approx. 495 kg	11 rolls × 45 kg

Effective area accounts for minimum side and end laps only. Upturns, corner reinforcement, detailing pieces, penetration collars and cutting waste all consume additional material. Planter boxes are lap-intensive relative to their floor area because of the upturn to every wall — allow substantially more than 10% over the effective area on planters and small landscaped bays. Where the system requires a FORZAFLEX BASE 3mm ply beneath, allow the same quantity again for the base ply.

Weight matters on a podium or roof: at approximately 495 kg per 100 m^2 for the cap sheet alone, confirm the structural allowance for the membrane, protection, drainage and saturated growing medium with the project engineer before ordering.

Drying, Curing and Testing Times

FORZAFLEX RR is torch-bonded and seals as it is rolled — there is no cure period. The times below are the working sequence at 25°C and 50% RH.

STAGE (AT 25°C, 50% RH)	TIME
Bond development	Immediate — the sheet is sealed as it is rolled
Cooling before seam probing	Approx. 30 minutes, or until the membrane is cool to the touch
Cooling before maintenance foot traffic	Approx. 30 minutes; the membrane is soft and marks easily while warm
Flood testing	After all laps and detailing are complete and inspected
Placement of protection board	After a successful flood test
Placement of drainage cell, filter fabric and growing medium	After the protection board is in place
Planting	After the full build-up is complete

In hot weather the membrane remains soft for substantially longer and is vulnerable to marking and scuffing by foot traffic and by protection board being dragged across it. In cold weather the sheet is stiff and requires more heat to achieve bleed-out — increase heat input rather than slowing the roll to a stop.

Flood Testing

Flood test after all laps and detailing are complete and inspected, and before any protection board, drainage, growing medium or planting is placed. This is the last practical opportunity to test — once the landscape build-up is in, a leak can only be located by removing it.

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Flood Testing (continued)

Plug all drains and outlets and install temporary barriers to contain the water. Flood to a minimum depth of 50 mm at the highest point of the membrane and retain the water for 24 hours, inspecting the underside, perimeter and any adjacent occupied space for leakage throughout. On completion, release the water, remove plugs and allow the surface to dry before covering.

Where the area cannot be flooded, test by controlled hose flooding at the design flow for a minimum of 30 minutes at each detail, working from the lowest point upwards with the underside under observation. Rectify any defect by torched patch repair, re-inspect and re-test before proceeding. Conduct testing in accordance with the project specification and AS 4654.2.

Protection and Planted Build-Up

FORZAFLEX RR is root resistant, not indestructible. The protection and drainage layers above it are what stop mechanical damage, and root resistance does not substitute for a correctly designed build-up.

- Protection board — install over the cured, flood-tested membrane before any other layer. Place it, do not drag it; a board dragged across a warm membrane will scuff and score the surface.
- Drainage cell — install above the protection board to move water off the membrane and prevent standing water beneath the planting.
- Geotextile filter fabric — install above the drainage cell to prevent the growing medium migrating into and blocking the drainage layer.
- Engineered soil or planter system — place as specified by the landscape designer, over the completed protection and drainage build-up.
- Never place growing medium, soil, ballast or planting directly on the membrane.
- Never allow plant, wheelbarrows or bobcats onto the unprotected membrane during landscaping works.
- Exposed areas — where the membrane remains exposed within a landscaped scheme, no covering is required; the micro-mineral surface is fully UV stable and is the finished surface.
- Maintenance access — provide dedicated walkway protection to all plant, access and maintenance routes. The membrane is not a trafficable surface.
- Inspection — keep drainage outlets accessible for maintenance. Inspect annually and after severe weather, and after any change to the planting scheme.

Hot Works and Fire Safety

Torch application is hot work. On a construction site it is one of the highest fire-risk activities carried out, and the risk continues after the torch is extinguished.

- Obtain a hot work permit from the principal contractor before any torch is lit, and comply with every condition of that permit.
- Survey the work area before starting. Identify combustible materials, cavities, service penetrations, insulation, cable trays and voids where flame or heat can travel out of sight.
- Remove combustible materials from the work area, or protect them with non-combustible screens where removal is not practicable. Existing planting, mulch, dry vegetation and timber planter surrounds are combustible and are a particular risk on landscaped work.
- Never torch direct to a combustible substrate. Install a non-combustible overlay board first.
- Maintain a serviceable fire extinguisher and a charged hose at the work face at all times.
- Post a dedicated fire watch during the works and maintain it for a minimum of 60 minutes after the last torch is extinguished, or longer if the permit requires. Smouldering ignition in a concealed cavity or in dry vegetation commonly develops well after work stops.
- Inspect the area, including the underside and any adjacent voids, before leaving site.
- Shut off and isolate gas cylinders when not in use. Store cylinders upright, secured and in a ventilated area away from the work face.
- Leak-test all hoses, regulators and fittings before use and inspect them daily.
- Do not carry a lit torch between work areas.
- Do not torch near sprinkler heads, smoke detectors or fire dampers without first isolating them through the principal contractor and reinstating them on completion.

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Clean Up

Remove offcuts, packaging and core tubes from the work area as the work proceeds. Bituminous offcuts left on a warm roof adhere to the membrane and are difficult to remove without damage, and offcuts left in a planter will be buried by the build-up.

Clean bitumen from tools and equipment with a bitumen-compatible solvent permitted by the Safety Data Sheet, handled in accordance with the Work Health and Safety Regulations, with ignition sources controlled. Mask and protect adjacent finished surfaces before starting rather than attempting to clean cured bitumen off them afterwards.

Do not allow solvent, bitumen residue or wash water to enter sewers, stormwater systems, planting beds or waterways. Manage and dispose of all washings in accordance with the relevant State or Territory environment protection legislation and local council requirements.

Container and Waste Disposal

Membrane offcuts, core tubes and packaging are disposed of as construction waste in accordance with local council regulations. Do not burn bituminous offcuts or packaging under any circumstances — combustion generates dense toxic smoke and bitumen fume.

Dispose of solvent residues, contaminated rags and empty primer containers in accordance with those products' Safety Data Sheets, the WHS Regulations, the relevant State or Territory EPA requirements and local council regulations. Solvent-contaminated rags present a fire risk and must be stored in a sealed metal container pending disposal. Empty gas cylinders are returned to the supplier. Never discharge to sewer, stormwater, soil, planting beds or waterways.

Quality Records

Record and retain the following as part of the project quality assurance records and as a condition of warranty eligibility:

- Batch numbers and roll numbers of all FORZAFLEX RR installed, and of the base ply, primer and ancillary components used.
- Base ply inspection record confirming the FORZAFLEX BASE 3mm was complete and defect-free before capping.
- Substrate type, preparation method and photographic evidence where the cap sheet was applied direct to substrate.
- Substrate falls verified before laying, and confirmation of positive drainage to outlets.
- Primer applied, coverage rate achieved, and confirmation the primer was tack-free before torching.
- Membrane layout record showing sheet direction, lap positions, lap widths, end lap stagger and offset from the base ply laps.
- Confirmation that continuous bitumen bleed-out was achieved ahead of the roll and along every lap.
- Seam inspection records covering the full length of every lap, and details of every defect cut out and reinstated.
- Detail register — every upturn, corner, penetration, outlet and termination, with upturn heights recorded against finished soil levels.
- Hot work permit references, fire watch records and confirmation of the post-work fire watch period observed.
- Flood test date, method, duration, result and any rectification carried out and re-tested — completed before any protection or planting was placed.
- Record of the protection, drainage and filter layers installed above the membrane, with dates.
- Name and licence details of the applicator, torch operator competency records, and sign-off of each hold point.

Storage

Store rolls upright on end, on pallets, on a clean flat surface. Do not stack rolls horizontally and do not stack pallets — a bituminous roll stored on its side will flatten, take a permanent set and may block together in warm conditions.

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Storage (continued)

Protect from direct sunlight, rain and weather. If stored outdoors, cover with opaque waterproof sheeting; clear sheeting concentrates heat and can soften or block the rolls. Store away from ignition sources, heat and oxidising agents. In hot conditions store under cover and away from the sun in every case.

Shelf life is 24 months from manufacture when stored as specified. Store away from food, drink and animal feedstuffs, and stock rotate on a first-in, first-out basis.

Safety Precautions and First Aid

ACTFLEX FORZAFLEX RR — is classified per its current Safety Data Sheet. Read the Safety Data Sheet in full before use — it is available at www.forspec.com.au and governs in the event of any inconsistency with this document. This product is classified as a HAZARDOUS CHEMICAL and NON-DANGEROUS GOODS under the WHS Regulations and the ADG Code, signal word DANGER. Chemwatch 9024-62. Hazard statements: H315 causes skin irritation; H318 causes serious eye damage; H335 may cause respiratory irritation; H336 may cause drowsiness or dizziness; H351 SUSPECTED OF CAUSING CANCER. Body contact hazard rating: High. Read the Safety Data Sheet in full before use.

Handling

Bitumen fume generated during torch application is a suspected carcinogen — exposure must be minimised, not merely tolerated. Work only in a well-ventilated area, position yourself upwind of the fume, and use mechanical extraction and the respiratory protection specified in the Safety Data Sheet where ventilation is limited or the work is enclosed. Planter boxes, lift-over pits and sunken landscaped bays can behave as confined spaces where fume accumulates — never torch in a confined space without a confined-space assessment and continuous atmospheric monitoring. Wear protective gloves, protective clothing, eye protection and face protection. Molten bitumen at torching temperature causes severe deep burns and adheres to skin — wear long sleeves, gauntlet-style heat-resistant gloves and safety footwear, and never work above your head with molten material. Avoid breathing fume and avoid all skin and eye contact. Do not handle until all safety precautions have been read and understood. Wash all exposed skin thoroughly after handling and before breaks. Take off contaminated clothing and wash it before reuse — do not take contaminated work clothing home. Roof, podium and planter work requires fall protection and edge protection in accordance with the WHS Regulations. Refer to Hot Works and Fire Safety above for the fire control measures that apply to every torch-applied installation.

First aid

- Molten bitumen burns — cool the affected area immediately with copious cold running water for at least 20 minutes and continue cooling on the way to hospital. DO NOT attempt to remove adhered bitumen from the skin; it is sterile and removal tears the burned tissue. Cover with a clean wet dressing and seek immediate hospital treatment, advising the treating clinician that the burn is adhered hot bitumen.
- Eyes — this product causes serious eye damage. Hold the eyelids apart and flush continuously with running water for at least 15 minutes, moving the eyelids to ensure complete irrigation. Transport to hospital or a doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
- Skin — remove all contaminated clothing including footwear and flush the skin and hair with running water and soap. Seek medical attention if irritation occurs.
- Inhaled — remove the person from the contaminated area to fresh air, lay them down and keep them warm and rested. Seek medical attention without delay if drowsiness, dizziness or breathing difficulty occurs.
- Swallowed — do NOT induce vomiting. Rinse the mouth with water and seek immediate medical attention.
- Fire — evacuate, raise the alarm and attack only a small incipient fire with the extinguisher at the work face. Bituminous membrane fires generate dense toxic smoke; do not enter smoke to fight a developed fire.

contact.

(02) 8021 3517 info@forspec.com.au 22/872 Canterbury Road, Roselands 2196 NSW (Head Office) www.forspec.com.au

Safety Precautions and First Aid (continued)

POISONS INFORMATION CENTRE: 13 11 26 (Australia-wide, 24 hours)

Keep Out of Reach of Children

In an emergency call 000.

Warranty

Standard Product and Performance Warranty: Forspec Protective Coatings Pty Ltd as Trustee for Forspec Protective Coatings (ABN 11 204 033 631) warrants that ACTFLEX FORZAFLEX RR — will be free from manufacturing defects and will not fail under normal usage for a period of ten (10) years from the date of purchase, when installed and used strictly in accordance with this Technical Data Sheet and Forspec's written instructions. This warranty covers the supply of the product only; it does not cover installation, application or workmanship. Remedies are limited, at Forspec's discretion, to replacement of the defective product (or defective portion) or a refund of the purchase price. The full terms, conditions and exclusions are set out in the Forspec Standard Product and Performance Warranty, available at www.forspec.com.au — key conditions include application by a suitably qualified and, where required by law, licensed applicator; use within shelf life; and installation as part of a Forspec approved system without non-approved third-party products.

Project and system warranties: extended project-specific warranties are available at the request of the applicator and must be applied for using the Forspec Warranty Request Form prior to commencement of works. Issue is subject to Forspec approval and is conditional on the use of the complete specified FORSPEC system, application in strict accordance with the current TDS by suitably qualified applicators, and completion of the project quality records described above. The warranty period and terms are as stated in the issued warranty certificate.

Claims: notify Forspec in writing within thirty (30) days of discovery of the alleged defect and within the warranty period, by post to 22/872 Canterbury Road, Roselands NSW 2196 or by email to info@forspec.com.au, including proof of purchase, installation details (date, location, installer), a description of the defect with supporting evidence, and your contact details. Forspec may inspect the site, perform testing and collect samples before determining a claim.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

Data Sheet Currency

This Technical Data Sheet is valid for three (3) years from the issue date shown above, unless superseded earlier. It supersedes all previous versions. It is the responsibility of the customer and the applicator to confirm that this document and the corresponding Safety Data Sheet are the current versions, available at www.forspec.com.au.

contact.

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Conditions of Use, Product Disclaimer, and Statement of Responsibility

1. Accuracy of information. The information in this document is provided in good faith by Forspec Protective Coatings Pty Ltd as Trustee for Forspec Protective Coatings (ABN 11 204 033 631) ('Forspec Protective Coatings') and is, to the best of its knowledge, true and accurate at the date of issue. Forspec Protective Coatings reserves the right to amend this document without notice as part of its continuous product development.

2. Suitability and user responsibility. Substrates, site conditions, workmanship and conditions of use are beyond Forspec Protective Coatings' control. No representation or warranty is made as to the suitability of the product for any particular application. The user must determine the suitability of the product for the intended use by their own assessment and, where appropriate, testing prior to application.

3. Currency of document. It is the responsibility of the customer and the applicator to confirm that this document and the corresponding Safety Data Sheet are the current versions, available at www.forspec.com.au. This document supersedes all previous versions.

4. Compliant use and application. The product must be used strictly in accordance with this document, the relevant Australian Standards, the National Construction Code and all applicable laws and regulations, and must be applied by suitably qualified personnel.

5. Statutory guarantees. Nothing in this document excludes, restricts or modifies any consumer guarantee, right or remedy conferred by the Australian Consumer Law (Schedule 2 of the Competition and Consumer Act 2010 (Cth)) or any other statutory right that cannot lawfully be excluded.

6. Limitation of liability. To the fullest extent permitted by law: (a) all other warranties, conditions and representations, express or implied, are excluded; (b) the total liability of Forspec Protective Coatings for any claim arising out of or in connection with the supply or use of the product is limited, at its election, to the replacement of the product, the supply of an equivalent product, or the refund of the purchase price paid; and (c) Forspec Protective Coatings will not be liable for any indirect, special or consequential loss, including loss of profits, arising from the use of, or inability to use, the product.

7. Advice and recommendations. Any advice, recommendation, information or assistance provided by Forspec Protective Coatings, whether verbal or written, is given in good faith but without liability beyond that stated in clause 6.

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