Bituthene® 5000

Composite Membrane Incorporating High Performance Moisture And Water Resistant Rubberised Asphalt With Tough, Puncture And Heat Resistant Polypropylene Reinforcing Mesh. Specially Developed For Use Under A Hot Applied Asphalt Concrete Wearing Course.

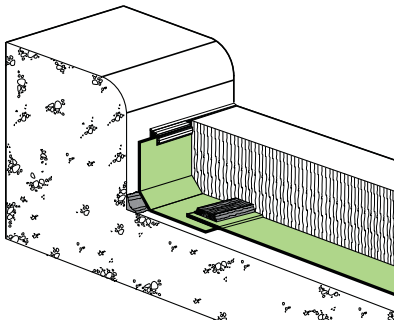
Features

- Cold applied - no heating plant or hot bitumen bedding adhesive required, self-adhesive overlaps provide continuity.
- Flexible - easily applied, conforms to changes in profile, accommodates shrinkage cracks up to 0.6mm.
- Robust - accepts road laying machinery.
- Pre-formed - guaranteed thickness, not subject to site variation.
- Mesh reinforced - provides dimensional stability and resistance to damage.
- Rubber/bitumen - self-adhesive, elastic compound provides bonding and transmission of braking forces to substrate, allows healing of small punctures.

Application

Bituthene 5000, also known as Heavy Duty Bituthene, is a waterproofing material incorporating high strength, heat resistant mesh embedded in a layer of self-adhesive rubberised asphalt. It is supplied in rolls interwound with special release paper which protects the adhesive surface until ready for use and allows easy handling during installation. Bituthene 5000 is supplied in rolls 1.00 m wide, 20.0 m long and in min. membrane thickness of 1.6 mm and 2.0 mm. The rubberised asphalt is covered with release paper that is removed during installation. The membrane is self-adhesive and cold applied. No special adhesive or equipment is necessary to form laps. Bituthene 5000 is an excellent waterproofing membrane for plazas, bridges, vehicular traffic structures, or parking decks to be overlaid with an asphalt concrete wearing course. It is adaptable for either new construction or repair applications. Bituthene S5000 strips are recommended for the restoration of concrete pavements with asphalt concrete overlays to prevent premature deterioration of asphalt paving over the transverse and longitudinal joints caused by reflection cracking and sub-base erosion. Bituthene 5000 membrane will remain flexible to perform over the extreme range of service temperatures expected on plazas, bridges, and parking decks. Its toughness and flexibility allow it to cycle over small cracks, even during critical winter months.

The membrane is highly resistant to water and deicing salt solutions. Electrical resistance



measurements on structures have been exceptionally high to indicate the effectiveness of Bituthene 5000 in preventing water migration into decks.

Installation

Surface Preparation

Smooth, monolithic concrete surfaces are required for proper membrane adhesion. Surfaces must be free of voids, spalled areas, loose aggregates, and sharp protrusions, with no coarse aggregate visible. Broom finishes must not be used. Concrete must be cured and dry before applications of Bituthene 5000.

Clean surface (broom, vacuum cleaner or compressed air) to remove dust, loose stones, and debris.

Priming

Apply Primer - Bituthene Primer to all concrete or masonry surfaces with a lambswool roller (6 ~ 8 m^2 per litre). Allow primer to dry one hour or until tack free. Prime only the area which will be covered with membrane in a working day. Areas not covered with membrane in 24 hours must be reprimed.

Temperature

Apply Waterproofing Membrane - Bituthene 5000 only in fair weather when air and surface temperature are above +5°C.

Slab Drainage and Joints

Provide proper pitch to drains and gutters. Bituthene 5000 should be laid from the low point to the high point with the membrane overlapped min. 50 mm

Performance

The material shall conform to the following requirements:

Property	Typical Test Values	Test Method
Thickness*	1.6 mm or 2 mm	-
Tensile Strength - mesh	10N/mm²	ASTM D882
Elongation - ultimate failure of rubberised asphalt	>100%	ASTM D412
Pliability at low temperature (-32°C)	No damage	ASTM D1970
Puncture Resistance - mesh	>900N	ASTM E-154

Typical Test Values may represent average values from samples tested. Test Methods noted may be modified.

Supply

Bituthene 5000	1.6mm Thick - 1.0m wide x 20.0m long/roll
	2.0mm Thick - 1.0m wide x 16.0m long/roll
Weight	Gross weight 40 kg
Bituthene Primer	18 litre/pail (6 ~ 8 sq m/litre)
Bituthene Mastic	850 cc cartridges/3 litre cans

in shingle fashion. Weep holes or drainage openings should be provided at the structural deck level to drain water which penetrates the asphalt concrete.

A 320 mm reinforcing strip of Bituthene 5000 must be applied over nonworking joints or cracks not exceeding 3 mm in width before applying the full coverage of membrane. Terminate Bituthene 5000 at expansion joints and seal terminations with Bituthene Mastic at the termination to ensure a tight seal. Steel finger joints or other expansion joints assemblies should be placed to the level of the asphalt concrete overlay.

Kerb and Termination Edges

Kerb flashing strips should be applied to a joint just below the height of the asphalt concrete overlay and a minimum of 150 mm on the deck. Then apply the first full sheet as close as possible to the kerb. A fillet should be provided at the kerb and parapets to avoid a sharp break at these points. The fillet material (latex modified cement mortar) should be well adhered to the deck and kerb or parapet. Performed cant strips are not recommended.

Compatibility

Bituthene 5000 is incompatible with certain fresh tars, pitches, liquid waterproofing, and sealants which contains tars or polysulfide polymer. Avoid direct contact of the adhesive layer of Bituthene 5000 or Bituthene Mastic with such systems.

Paving

The asphalt concrete overlay should be placed as soon as possible after application of Bituthene 5000, or Bituthene S5000. A minimum of 50 mm compacted overlay is recommended. The preferred asphalt concrete temperature in the paving machine hopper is 140°C to 160°C. Preformed protection courses such as roofing felts or asphaltic hardboard are not recommended. Paving must not be started following rain until the membrane surface is dry. Only asphalt concrete delivery equipment should be permitted on the membrane prior to placement of the asphalt concrete.

Flat tracked or pneumatic tire equipment may be used. In the event of skidding of the pneumatic tire machine during warm weather, broadcast a very small amount of fine sand or cement in the tire paths. Excess use of cement or sand could prevent adhesion of the asphalt concrete. Pavers should avoid stopping with a full hopper or build up of material in the auger. If a stop is necessary, use extreme care in restarting. Paver screeds should be preheated, but burners should not be on during paving.

Precautions

Care should be taken to minimise the possibility of pavement shoving on heavy traffic structures with more than a 4% grade. Bituthene S5000 strips over joints in T beam structures will not provide complete waterproofing. For such structures, 320 mm strips, followed by membrane coverage over the entire surface are required to provide a complete waterproofing system.

Health and Safety

Refer to relevant Material Health and Safety data sheets.

Quality Assurance

W. R. Grace (Singapore) Pte Ltd. is certified to ISO 9002 Quality Systems by SISIR (Singapore Institute of Standard & Industrial Research) for the manufacture of Bituthene Waterproofing Membranes under the registered certification number ISO 93-2-0269.

Specification

All areas so designated shall be waterproofed with a minimum 1.6 mm or 2.0 mm thick self-adhering membrane of rubberised asphalt integrally bonded to polypropylene mesh (Bituthene 5000 manufactured by W. R. Grace & Co.). Bituthene 5000 set pre-formed self-adhesive membrane shall be laid onto smooth concrete primed with Primer B1 and with minimum overlaps of 50 mm. Bituthene 5000 must be laid strictly in accordance with Manufacturers instructions and supplied by Grace Construction Products. For further information, contact your local Grace representative.

Grace Technical Services

For assistance with working drawings for projects and additional technical advice, please contact Grace Technical Services.

www.graceconstruction.com

Australia: Brisbane (61-7) 3277 7244 Hong Kong (852) 2675 7898 Japan (81-3) 5405 2991 Korea (82-32) 820 0800 Mainland China: Beijing (86-10) 6786 3488, Guangzhou (86-20) 3833 0775, Shanghai (86-21) 5467 4678 Singapore (65) 6265 3033 Taiwan (886-3) 461 5462 Thailand (66-2) 709 4470 Vietnam: Ho Chi Minh City (84-8) 7106 168

GRACE

Bituthene 5000 Elastomeric Sheet
Traffic Deck Waterproofing Membrane

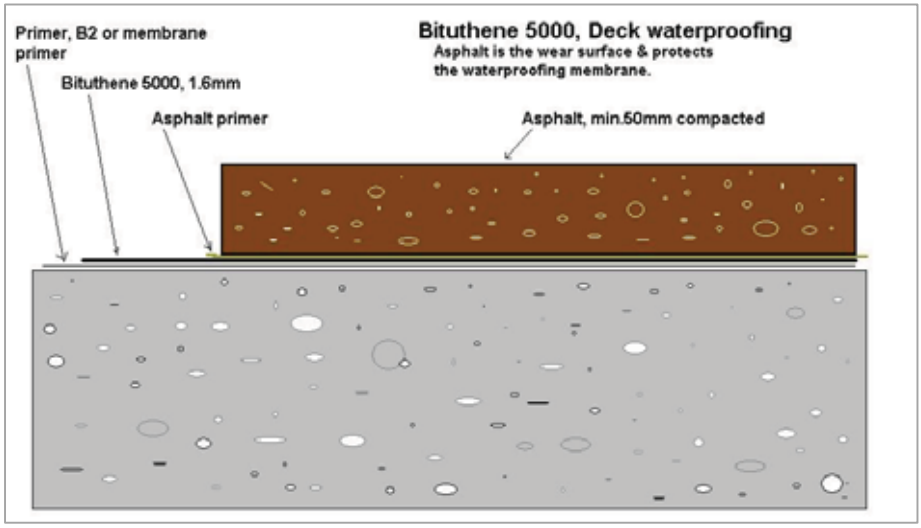
Bituthene 5000 is is a DPM (damp proof membrane) consisting of a modified bitumen sheet comprising of modified bitumen on a cross laminated polyethylene top facing which is a continuous reinforcement. It is overlaid with a minimum 50mm (compacted) hot asphalt which acts as a wear and protection layer.

Application areas:

- **Car park decks**
- **Car parks: Malls, office carpark areas, bridges, suspended access walkways and driveways.**
- **Under asphalt**

Features

- • Water proofing membrane. Bituthene 5000 prevents water from entering the building structure from the traffic deck.
  - Under asphalt , minimum 50mm compacted hot
  - Compliant product with E2/AS1 July 2005; section 12.0, 12.2.2.b
  - Used in New Zealand for over 35 years
  - 50 Year durability compliant; "Life of the building"
  - All joints sealed by permanent self adhesive.
  - Protected by the asphalt topping
  - 1.6mm thick
  - Water vapour resistance 891 MNs/g BS3177
  - Permeance: less than 2 ng/m2.s.Pa. ASTM E96[12].
  - Very highly elastic;very high ability to bridge joints and cracking movement in the concrete underneath the membrane.
- Protects concrete reinforcing from corrosion.



NUPLEX CONSTRUCTION PRODUCTS WWW.NUPLEXCONSTRUCTION.CO.NZ
PO Box 1 2841, Penrose, Auckland Telephone: 0-9-579 2029, Fax: 0-9-525 3709, Email: bpdsales@nuplex.co.nz

HAMILTON		PALMERSTON NORTH		WELLINGTON		CHRISTCHURCH	
Telephone:	0-7-847 8658	Telephone:	0-6-353 3685	Telephone	:0-4-477 7040	Telephone:	0-3-366 6802
Fax:	0-7-847 3766	Fax:	0-6-353 3632	Fax:	0-4-477 7039	Fax;	0-3-379 0279

Performance

The material shall conform to the following requirements:

Property	Typical Test Values	Test Method
Thickness*	1.6 mm or 2 mm	-
Tensile Strength - mesh	10N/mm²	ASTM D882
Elongation - ultimate failure of rubberised asphalt	>100%	ASTM D412
Pliability at low temperature (-32°C)	No damage	ASTM D1970
Puncture Resistance - mesh	>900N	ASTM E-154

Typical Test Values may represent average values from samples tested. Test Methods noted may be modified.

Materials

Bituthene 5000 roll 1 x 20m.. 1.6 mm thick.
Membrane primer 20Lt pail applied at 5m2 / Lt or Bituthene B2 primer for priming on wet surfaces.
Bituthene mastic for detail work.
Bituthene liquid membrane, LM3000, (two part polyurethane for sealing around penetrations.)

50mm compacted hot Asphalt (supplied by others) & Asphaltic primer

Producer Statement

Bituthene 5000 complies with the requirements of the NZ building code and any relating acts. Bituthene 5000 complies with E2/AS1 and durability under B2. The conditions under B2 (50years durability for elements that are inaccessible) are accepted and complied with providing all preparation and installation is carried out by Nuplex licenced contractors and all product installation details are followed.

BITUTHENE 5000 - SELF ADHESIVE SHEET BELOW Traffic asphalt

- Prime dry surfaces with minimum 1 coat of Nuplex Membrane Primer. Prime wet surfaces using Bituthene B2 primer. Maximum spread rate of the primer 6m2/litre.
- Install 300mm wide Bitustrip 5000 fillets where required.
- Install Bituthene mastic fillets to all internal corners.
- Install Bituthene 5000 membrane to all areas required to achieve a waterproof finish in accordance with the Grace technical data .
- Bituthene is to be continuous with minimum 50mm side and end laps. Overlaps must be firmly rolled to ensure complete adhesion.
- Seal top edge and all end laps using Bituthene Mastic or LM 3000.
- Seal all penetrations using Bituthene membrane LM 3000.
- Install Asphalt after appropriate primer
- Protect exposed Bituthene 5000 from UV using Bituthene Solarshield, Soprema Soprasolin or other suitable protection.

Note the following:

- *Must be installed by Licensed Nuplex Contractors who are members of The Nuplex Contractors Federation Inc.*
- *Install minimum 100 mm dia drain with openings to collect water at the base of any falls.*
- *Drain is to be placed 200mm below the interior basement floor level.*
- *Deck must have falls; minimum 1:200 fall to the outlet.*
- *Outlet must have access for cleaning the drain.*
- *Top of the Bituthene is to extend a minimum 150mm above ground level and finish into a*
- *sawn chase.*
- *Check Bituthene Membrane for faults or damage prior to installation of asphalt.*
- *Ensure finished ground surface falls away from the membrane .*

Caution

- *If the traffic topping is concrete , then use Bituthene 3000*
- *Do not use Bituthene 5000 if hot asphalt is not used. The hot asphalt seals the Bituthene laps.*
- *Some time after installation there may be signs of asphalt cracking or shoving in small areas. This is normal as the asphalt layer finds its stability point. Large slab areas will be subjected to normal under-slab expansion and contraction.*
  These can be minimized by:
  - Ensuring the thickness exceeds 50mm compacted in all areas
  - Compacting whilst hot (greater than 135c).

Asphalt being laid on Bituthene 5000.
The asphalt is laid in excess of 135°c and compacted while hot.

NUPLEX CONSTRUCTION PRODUCTS **WWW.NUPLEXCONSTRUCTION.CO.NZ**
PO Box 1 2841, Penrose, Auckland Telephone: 0-9-579 2029, Fax: 0-9-525 3709, Email: bpdsales@nuplex.co.nz

HAMILTON		PALMERSTON NORTH		WELLINGTON		CHRISTCHURCH	
Telephone:	0-7-847 8658	Telephone:	0-6-353 3685	Telephone	:0-4-477 7040	Telephone:	0-3-366 6802
Fax:	0-7-847 3766	Fax:	0-6-353 3632	Fax:	0-4-477 7039	Fax;	0-3-379 0279

Guidelines for Bituthene® 5000 Waterproofing Membrane

Description

Bituthene® 5000 is a waterproofing membrane consisting of a high strength, heat resistant mesh embedded in a layer of self-adhesive rubberized asphalt. The membrane is supplied in rolls interwound with a special release sheet which protects the adhesive surface.

Uses

Bituthene 5000 Waterproofing Membrane has been specifically designed to waterproof concrete structures that utilize an asphaltic concrete wearing surface such as on bridges, overpasses and parking decks. Bituthene 5000 Waterproofing Membrane protects the concrete structure from the corrosive affects of deicing salts.

For applications in which portland cement is used for the wearing course, use Bituthene 3000 or Bituthene 6000 Waterproofing Membranes. Consult the Bituthene waterproofing literature for more information on these products.

Advantages

The Bituthene 5000 Waterproofing Membrane has been uniquely formulated to perform under the most demanding conditions. The mesh strengthens and reinforces the system. The mesh and rubberized asphalt interact to form a tough membrane that remains flexible through a wide range of temperature and substrate movements. The tacky rubberized asphalt assures quick adhesion to the concrete deck. Asphaltic concrete will flow into the mesh when the asphalt mix is compacted on the membrane at the minimum temperature of 135°C (275°F).

The Bituthene 5000 Waterproofing Membrane provides a homogeneous waterproofing layer between the concrete deck and the asphaltic concrete overlay. Full adhesion of the Bituthene 5000 Waterproofing Membrane to the concrete deck prevents water migration under the waterproofing system. Bituthene Waterproofing Membrane is manufactured to stringent quality standards to insure a uniform waterproofing system. Bituthene 5000 Waterproofing Membrane is delivered ready to apply — no mixing, no flames and no fumes.

Another unique advantage is the ability of Bituthene 5000 waterproofing membrane to self-seal. Adjacent rolls of membrane are overlapped and, when rolled, form a watertight seam. Bituthene 5000 Waterproofing Membrane can be applied over active cracks, less than 6 mm (0.25 in.) in width, without any taping of the crack or special preparation. The membrane will withstand foot traffic and light construction traffic immediately after installation. Paving can commence as soon as the membrane is placed.

Properties

Bituthene 5000 Waterproofing Membrane shall comply to the following properties:

Property	Test Method	Typical Value
Thickness	ASTM D 3767	1.7 mm (0.065 in.) nominal
Tensile Strength	ASTM D 882	345 kN/m^2 (50 lb/$in.^2$)
Elongation, Mesh	ASTM D 882	25% minimum
Puncture Resistance, Mesh	ASTM E 154	890 N (200 Ib)
Flexibility, 180° bend over 6 mm (0.25 in.) mandrel at -4°C (25°F)	ASTM D 1970	Unaffected
Cycling Over 6 mm (0.25 in.) Crack at -4°C (25°F), 100 Cycles	ASTM C 836	Unaffected
Permeance	ASTM E 96	58 ng/m^2 sPa (1.0 perms)
Peel Adhesion	ASTM D 903	880 N/m (5 lb/in.)

Surface Preparation

Concrete must be structurally sound with a smooth, uniform surface. Surface shall be free of voids, spalled areas, loose aggregate and sharp protrusions with no coarse aggregate visible. New broom finishes are not recommended. Thoroughly clean all surfaces of old waterproofing, oil, grease or other contaminants. Surface defects should be corrected as directed by the project engineer. New concrete should be cured and dry for a minimum of 7 days. The membrane can be installed over new concrete in less than 7 days when using Primer B2. Dry time of new or patching concrete will vary with weather conditions and mix design.

Consult the project engineer for cure and dry times. Forms must be removed to allow proper drying of concrete. Concrete surface must be clean and dry prior to installation of the Bituthene 5000 Waterproofing Membrane.

New concrete may be cured with a clear, resin-based curing compound. Bituthene 5000 Waterproofing Membrane is not compatible with concrete treatments that contain oil, wax, silicone or pigment.

Surface Treatment

Treat all concrete surfaces to receive Bituthene 5000 Waterproofing Membrane with Primer B1, Prime B2 or Bituthene Deck Prep® Surface Treatment prior to the installation of the membrane.

Primer B1 & B2

Apply Primer B1 & B2 at a rate of 6-8 m^2/L. Primer can be applied with a lambs wool roller. Primer should dry one hour or until tack free. Primer will dry to a dark grey color. Prime only the area which will be covered with membrane in a working day. Areas not covered within 24 hours should be reprimed. Metal does not require priming but must be clean, dry and free of grease, oil, dirt, loose paint, rust or other contaminants. Fresh asphaltic concrete or thoroughly dry asphalt slurry seals do not require priming. Old, oxidized or dusty asphalt surfaces should be primed at a rate of 8-10.0 m^2/L.

Bituthene Deck Prep

Bituthene Deck Prep Surface Treatment is ideally suited as a leveling course and preparation treatment for rough, irregular concrete decks. Bituthene primers are not necessary when using Bituthene Deck Prep Surface Treatment.

All surfaces must be dry and free of dirt, grease, oil, dust or other contaminants. Bituthene Deck Prep Surface Treatment should be applied when ambient and concrete temperatures are above -4°C (25°F).

Cold temperatures will extend cure times. For application in ambient and concrete temperatures below 4°C (40°F), store Bituthene Deck Prep Surface Treatment in a warm area until use.

To prepare Bituthene Deck Prep Surface Treatment, add contents of Component B container and Component A and mix for at least 5 minutes or until uniform. Take care to assure thorough mixing. Poorly mixed material will not cure properly. Bituthene Deck Prep Surface Treatment may be mixed by hand however a low speed (150 rpm) mechanical mixer with flat paddle blades is preferable and will ease mixing.

Once mixed, Bituthene Deck Prep Surface Treatment must be spread by squeegee within 1.5 hours. Maximum time for application is longer at low temperatures. At higher temperatures thickening and curing will occur in less than 90 minutes. Material that has cured must be discarded in accordance with federal, state and local regulations. Bituthene Deck Prep Surface Treatment will cure to a tough, flexible rubber. Membrane installation can begin as soon as the Bituthene Deck Prep Surface Treatment has cured.

Drainage and Joints

The deck should be pitched towards gutters and drains. Weep holes or drainage openings should be provided at the structural deck level to drain water which permeates through the asphaltic concrete.

A 200 mm (8 in.) reinforcing strip of Bituthene 5000 Waterproofing Membrane must be applied over nonworking joints or cracks over 3 mm (0.125 in.) wide before applying the full coverage of membrane. Terminate Bituthene 5000 Waterproofing Membrane at expansion joints and seal terminations with Bituthene Mastic. At steel expansion dams, terminate Bituthene 5000 Waterproofing Membrane on the concrete deck and apply Bituthene Mastic at the termination to assure a tight seal. Steel finger joints or other expansion joint assemblies should be placed to the level of the concrete.

Placement of Membrane

Apply membrane so that side laps are in the direction of paving and shed water. End laps should be staggered. Membrane shall be pressed or rolled into place as the installation progresses to facilitate adhesion to the deck. Membrane shall be overlapped a minimum of 65 mm (2.5 in.) along the lateral side and 150 mm (6 in.) on end laps. If the installation can not be completed in a single working day, seal the perimeter of the membrane with Bituthene Mastic.

Application of the membrane shall begin and end on the horizontal surface. Vertical terminations along curb lines, expansion dams or any other protrusion shall receive a trowel of Bituthene Mastic. Mastic shall cover the edge of the membrane and extend no higher than the planned level of the wearing surface.

Inspection and Repair

Care shall be exercised to prevent damage to membrane. Any areas which are damaged shall be cleaned and patched to the satisfaction of the project engineer.

Repair blisters by puncturing and forcing out trapped air. Small punctures will self-seal. Tears or any other damage shall be treated by placing a patch of membrane over the damaged area. Patch shall extend in all directions a minimum of 100 mm (4 in.) from damaged area. If blisters develop during paving, relieve pressure by puncturing blister at the base of the blister.

Asphaltic Concrete Application

The asphaltic concrete pavement shall be placed as soon as possible after the installation of the Bituthene 5000 Waterproofing Membrane to reduce the risk of damage to the membrane. The thickness of the overlay will vary with service conditions, however, a minimum of 50 mm (2 in.) compacted overlay is recommended for most light traffic areas. Thicker overlays are recommended for heavy traffic areas or areas with severe environmental exposure.

The asphaltic concrete temperature in the paving machine hopper should range between 135°C (275°F) and 150°C (300°F). It should be noted that the temperature of the initial loads in the hopper may lose up to 5°C (40°F) en route to the deck due to thermal transfer to cold machinery. In all cases, initial compaction of the overlay should occur at a minimum asphaltic concrete temperature of 135°C (275°F) at the deck. Failure to compact the overlay at 135°C (275°F) or higher may result in premature deterioration of the asphaltic concrete overlay. Do not use any protection course between Bituthene 5000 Waterproofing Membrane and the asphaltic concrete overlay. Following rain, paving must be delayed until the membrane surface is dry.

While flat tracked paving equipment is preferred, either flat tracked or pneumatic tire equipment may be used. Equipment should be inspected prior to use for burrs, stones or sharp projections on tracks which could damage the membrane.

Asphaltic concrete should not be dumped in windrows on the membrane but should be delivered directly from the truck to the paver hopper. Pavers should avoid stopping with a full hopper or build up of asphaltic concrete in the auger. Paver screeds should be preheated to facilitate the movement of the asphaltic concrete but burners should be turned off prior to paving as flames may damage the membrane. The level of asphaltic concrete in the auger should be kept just below the level of the auger shaft.

Asphaltic Concrete Compaction

Compaction is the single most important factor affecting the ultimate performance of a hot mix asphalt pavement. There are four factors which interact and impact the proper compaction of an asphaltic concrete pavement: mix design, environmental variables, site conditions and equipment.

Mix Design

The asphaltic concrete mix must be designed to withstand the stresses on the asphaltic concrete pavement that are anticipated during service. Factors which can impact the performance of the asphaltic concrete pavement include volume and weight of traffic, exposure to salt water or deicing chemicals, thermal cycles and road grade.

A continuously graded aggregate from coarse to fine is typically easier to compact than a mixture with any other aggregate gradation. The asphalt content of the mix influences compactability. Asphalt content will typically range between 5% and 10% of the mix weight. In general, a mix with too little asphalt tends to be stiff and will require increased compaction whereas a mix with too much asphalt will tend to shove. A mix that is placed at a higher temperature will be easier to compact than a mix that is lower in temperature.

Sand mixes tend to be softer and easier to compact but more easily affected by in service stresses than aggregate mixes.

Environmental Factors

Mat thickness, air temperature, substrate temperature, mix temperature, wind and solar flux have an affect on the rate of cooling. The minimum recommended temperature at compaction of asphaltic concrete over Bituthene 5000 Waterproofing Membrane is 135°C (275°F). Temperatures lower than this may make compaction difficult and jeopardize proper formation of the mat.

Mat thickness is the single most important factor influencing the rate at which the mix cools. It is very difficult to properly compact thin lifts in cool weather because of the rapid loss of heat from the mat. When this occurs, the mats are susceptible to premature failure due to the inability to properly densify the mix before it cools below the minimum compaction temperature. Asphaltic concrete should be placed at thicknesses greater than 50 mm (2 in.) during cool temperatures.

Air and substrate temperature have a significant impact on the rate of cooling of the asphaltic concrete mix. Typically, more heat flows from the asphaltic concrete mat into the concrete base than up into the air. Therefore, substrate (concrete deck) temperature has more impact on the time available to compact the mat than air temperature.

Wind has a greater impact on the surface of the mat than on the internal temperature of the mix and can cause the surface to cool so rapidly that a crust will form. Surface crust must be broken by the rollers before the actual compaction process can begin.

The best installation practice to minimize potential compaction problems is to increase the thickness of the mat. Thin mats cool so quickly even under optimum environmental and site conditions, that proper compaction is very difficult. To be certain of proper compaction, and for installation during the spring and fall the minimum mat thickness after compaction should be 50 mm (2 in.).

Waterproofing car park decks

Why use **Bituthene 5000** and asphalt?

Features		Benefits
1	Waterproofing and wear surface are independent.	Two layered approach (Bituthene 5000 & asphalt) gives best combination of waterproofing and wear resistance.
2	Hard-wearing asphalt	Cars, vans and trucks will not damage the asphalt.
3	Protected membrane	The Bituthene 5000 membrane waterproofs the building and is protected from wear. This means long term service.
4	Dark coloured asphalt	Spills of oil, foods etc will not overly affect the appearance. Skid marks are not obvious.
5	Elastomeric	The Bituthene 5000 is very flexible (100%) and will bridge cracks that develop in the concrete. Many systems are not tolerant of post-cracking..
6	All weather installation	The Bituthene 5000 is more tolerant of wet weather than many systems. Using special primers, it may even be laid on damp concrete. Once applied, the asphalt may be laid at any time. (NB: asphalt itself must be compacted at 50mm @ above 135c.)
7	Quick installation	The Bituthene 5000 does not require the concrete surface to be shotblasted. It is just required to be free of sharp points and laying may get underway. May lay and complete around 400m^2 per day.
8	Quick re-occupation	The asphalt laying can follow immediately after Bituthene 5000 installation. Once cooled, these areas can be re-occupied without delay. Allows excellent area staging.
9	Maintenance free	Damage unlikely to membrane except in extreme situations.
10	Low cost	All-up budget rates are \$65-\$70 / m^2 plus GST. Mastic asphalt can be up to twice that with no real advantage
11	Warranty	A 15 year warranty is provided by two large corporate companies: Nuplex Industries & Grace Construction products
12	Proven	The Bituthene 5000 system has been used around NZ on many large commercial contracts.
13	Strong	Tensile Strength: 50000 KN/m^2 ASTM D1876 Puncture Resistance: 900N ASTM E154-88
14	Consistent Thickness	The Bituthene 5000 is 1.6mm thick in roll form. It cannot be under-applied by the contactor as some liquid system may be.

See www.nuplexconstruction.co.nz for more details. Ph 0508-882288