

SYNTHETIC COLOURED BUS & CYCLE LANE SURFACING

MATERIAL SPECIFICATION

1. Surface Treatment

- 1.1 Coloured Surface Treatments for Bus & Cycle Lane surfacing shall consists of a film of binder applied to a sound substrate and covered with Synthetic aggregate to provide a coloured, textured, durable matrix of skid resistance.
- 1.2 Proposed treatments shall have a demonstrated history of on road performance in Australia for a period of no less than 3 years.
- 1.3 Installation contractors shall have a documented portfolio of such coloured surface treatments detailing references and having no less than 2 years experience in the placement of the proposed system.

2. Resin Binder

- 2.1 The applied resin binder shall be OMNIGRIP EP 176 as supplied by Omnicrete Pty Ltd (Phone:- 1300 851 523 / info@omnicrete.com.au) being comprised of an thermosetting modified epoxy compound suitable for both concrete & asphalt substrates or approved equivalent in accordance with Clause 2.2.
- 2.2 Any proposed equivalent binders shall:
 - 2.2.1 be of an amine epoxy base
 - 2.2.2 be comprised of a 2 component epoxy resin certified by the manufacturer to be suitable for colour pigmenting to meet the specified AS Colour as required to obtain a depth of colour in coloured applications
 - 2.2.3 upon mixing and application to the pavement surface have a maximum in service time of 4 hours @ an ambient surface temperature of 20° Celsius.
 - 2.2.4 demonstrate the technical property requirements in Table 1

Table 1: Test Parameters

Test	Parameter	Test Method	Requirement
Binder Elongation At Break	7 days @ 23° Celsius	BS 2782	>= 30%
Binder Tensile Strength	7 days @ 23° Celsius	BS 2782	>= 10.5 N/mm ²
Binder Tensile Adhesion	Stress at -10+/- 2 ⁰ C	TRL 176 Appendix J	>= 1.0 (Nmm ⁻²)
Binder Tensile Adhesion	Stress at 20+/- 2 ⁰ C	TRL 176 Appendix J	>= 0.5 (Nmm ⁻²)

- 2.3 The contractor shall supply to the superintendent written evidentiary documentation for any proposed alternative in accordance with Clause 2.2
- 2.4 Production of an OMNIGRIP EP 176 compliance document as issued by the supplier shall be considered as full documentary compliance with Clause 2.2.

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3. Aggregate

- 3.1 The preferred coloured aggregate dressing shall be Synthite coloured aggregate, as supplied by OMNICRETE Pty Ltd, (Ph:- 1300 851 523 www.omnicrete.com.au Email:- info@omnicrete.com.au) or approved equivalent in accordance with Clause 3.2.
- 3.2 Proposed aggregate alternatives submitted for approval shall:-
- 3.2.1 be clean and free from foreign matter
 - 3.2.2 be of synthetic construction manufactured with a translucent crystalline internal matrix.
 - 3.2.3 have been colour treated with a UV stable pigmentation process to provide a depth of colour consistent as agreed with the Superintendent
 - 3.2.4 be of a nominal sieve grading of 1- 3 mm
 - 3.2.5 have a certified PSV (Polished Stone Value) or PAFV (Polished Aggregate Friction Value) ≥ 60
 - 3.2.6 have a certified AAV (Aggregate Abrasion Value) ≤ 10
 - 3.2.7 have been subjected to CSIRO independent accelerated Xenon Arc weathering testing in accordance with SAE J1960-04 and obtained a certified Gray Scale Colour Change Assessment of no less than 4.
 - 3.2.8 shall have undertaken simulative wear and scuffing testing in accordance with test method TRL 176 Appendix G meeting the minimum technical requirements as specified in Table 2

Table 2: Aggregate Test Parameters

Test	TRL 176 (G)	Test Method	Requirement
Initial texture	Scuffing After 500 Wheel Passes at 45° Celsius	Austrroads Test Method SDT 02:2003 / BS 598:105:1990	≥ 2.0 mm
Final texture	Scuffing After 500 Wheel Passes at 45° Celsius	Austrroads Test Method SDT 02:2003 / BS 598:105:1990	≥ 1.2 mm
Erosion Index	Scuffing After 500 Wheel Passes at 45° Celsius	TRL 176 Appendix G	≤ 1.5
Loss of texture depth	Scuffing After 500 Wheel Passes at 45° Celsius	TRL 176 Appendix G	$\leq 30\%$

- 3.2 The contractor shall supply to the superintendent evidentiary documentation for any proposed alternative in accordance with Clause 3.2.
- 3.3 Production of an original Synthite batch number compliance certificate as issued by Omnicrete Pty Ltd shall be considered as full documentary compliance with Clause 3.2.
- 3.4 Traditional quarried stone aggregates which have been artificially coloured or otherwise shall not be permitted.

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4. Surface Preparation

4.1 CONCRETE

- 4.1.1 New concrete should be water cured for at least 28 days, well compacted and finished, preferably by power floating or trowelling to give a dense smooth finish.
- 4.1.2 Old concrete must be structurally sound, all loose and deteriorated areas shall be replaced, spalled areas repaired and any existing coatings must be removed.
- 4.1.3 The concrete substrate must have a moisture content no greater than 5% by volume and the surface must be clean, free from dust, oil, grease or other contaminants that may impair the adhesion of the system.
- 4.1.4 All surface laitance must be removed by captive shot blasting, diamond grinding, hydro blasting or other approved methods.
- 4.1.5 Concrete surfaces shall be suitably primed in accordance with manufacturer's instructions.

4.2 ASPHALT

- 4.2.1 Asphalt surfaces shall be vigorously treated to remove dust laitance and other loose material. The treatment shall consist of the application of Hot Compressed Air or dry surface abrasive blasting as determined by a site inspection.
- 4.2.2 Unless otherwise directed by the engineer any newly laid asphalt surface shall be trafficked for a period of 6 weeks prior to surface binder application.

- 4.3 Any visible oil not removed during the process described in clause 4.1 / 4.2 shall be removed by washing and scrubbing the surface with a mild detergent solution and flushing with clean water. The surface shall then be allowed to dry prior to surface application of the binder.
- 4.4 Unless otherwise directed by the engineer all existing road markings, ironwork and studs shall be suitably masked.

5. Hand Applied Batch Mixing of Binder

- 5.1 Binder components shall be batched and mixed in accordance with the manufacturer's instructions. Components shall be accurately proportioned by weight or volume and thoroughly mixed using a mechanical mixer.

6. Application

- 6.1 The binder shall be applied by squeegee onto a dry surface at a rate, which will vary according to the surface texture and porosity. On a smooth closed textured surface the amount of binder shall not be less than the manufacturers requirements as required to hold the aggregate permanently in position.
- 6.2 The temperature of binder components heated to facilitate mixing or spray application shall be measured using a temperature gauge accurate to $\pm 2^\circ$ and shall not exceed the maximum temperature recommended by the resin manufacturer. Heated binders shall be allowed to cool prior to the application of aggregate.
- 6.3 Following binder application, aggregate shall be broadcast to cover the binder uniformly and to excess, in accordance to the manufacture's instructions. Rolling of aggregate shall not be permitted under any circumstances.

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- 6.4 No encapsulation of the aggregate shall be permitted and no colour coating or sealer shall be applied to the aggregate after application.
- 6.5 Immediately following application any masking material shall be removed together with any binder or aggregate adhering to same. During the cure period no disturbance or trafficking shall be permitted.
- 6.6 Upon initial curing all excess aggregate shall be removed by a vacuum sweeper or equivalent means.
- 7. Finished Surface Properties**
- 7.1 Upon completion and for the duration of the defects liability period the applied coloured surface shall:
- 7.1.1 be an approximate visual match to the Australian Standard Colour
 - 7.1.2 be of a consistent and uniform finish with no loss of any surface area in excess of 5%
 - 7.1.3 provide for a minimum texture depth of 0.6 mm
 - 7.1.4 provide for a minimum SFC of 60
- 8. Defects Liability**
- 8.1 The defects liability period for the applied surfacing shall be 24 months during which time the contractor shall be responsible for monitoring the site and undertaking any defects rectification.
- 9. Environmental Testing & Compliance**
- 9.1 The manufacturer and / or supplier shall provide independent documented testing on the surface treatment indicating that once installed and open to the public the applied resin system and chemical components there of do not present an exposure hazard to the public.
- 9.2 The manufacturer and / or supplier shall provide Material Safety Data Sheets in respect of all material components used in the applied system. Any materials classified within the MSDS as Dangerous Goods "Toxic" Class 6.1 (encompassing all sub classes) shall not be permitted for use."