Guidelines and Specifications for Microsurfacing
14 June 2018
Today’s moderator

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About Austroads

The peak organisation of Australasian road transport and traffic agencies

- Roads and Maritime Services New South Wales
- Roads Corporation Victoria
- Department of Transport and Main Roads Queensland
- Main Roads Western Australia
- Department of Planning, Transport and Infrastructure South Australia
- Department of State Growth Tasmania
- Department of Transport Northern Territory
- Transport Canberra and City Services Directorate, Australian Capital Territory
- Department of Infrastructure, Regional Development and Cities
- Australian Local Government Association
- New Zealand Transport Agency
Our structure

Austroads Board

Austroads National Office

Assets Program
- Assets Task Force
- Bridge Task Force
- Pavements Task Force
- Road Tunnels Task Force
- Project Delivery Task Force

Network Program
- Network Task Force
- Freight Task Force

Safety Program
- Road Safety Task Force
- Road Design Task Force
- Registration and Licensing Task Force
- Austroads Safety Barrier Assessment Panel

Connected and Automated Vehicles
- CAV Steering Committee
- Industry Reference Group

NEVDIS
- Vehicle governance
- Licensing governance
Housekeeping

Presentation = 35 mins
Question time = 15 mins

Please type your questions here

Let us know the slide number your question relates to
Austroads report

Download from Austroads Website:

Today’s presenter

**Steve Patrick**
Senior Professional Leader
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<table>
<thead>
<tr>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Background and Introduction</td>
<td></td>
</tr>
<tr>
<td>Microsurfacing Overview</td>
<td></td>
</tr>
<tr>
<td>Microsurfacing Guidelines</td>
<td>Steve Patrick</td>
</tr>
<tr>
<td>Model Specification</td>
<td></td>
</tr>
<tr>
<td>Test Methods</td>
<td></td>
</tr>
<tr>
<td>Q&amp;A</td>
<td></td>
</tr>
</tbody>
</table>
Project Background and Introduction
Introduction to team

Project Team

- Austroads Project Manager
  John Esnouf

- Project Leader, ARRB
  Steve Patrick

- Team Member, MRWA
  Steve Halligan

Review Team

- Austroads Project Working Group
- Stakeholders-Road and Traffic Authorities
- Austroads Pavements Task Force
- Austroads Board
The review teams

Austroads Pavements Task Force
Industry

Dr Michael Moffatt
ARRB

Dr Robert Urquhart
ARRB

Dr Erik Denneman
AAPA

Graham Hennessy
AusStab

John Nichols
CCAA

Dr Bryan Pidwerbesky
Civil Contractors

Dr Kym Neaylon
Opus
Project purpose

- Update Austroads microsurfacing documentation
  - Guidelines and Specification
  - Test Methods
- Reflect current industry practice and terminology
- Ensure use of up-to-date and cost effective treatments
Guidelines and specification

• Updated version now published at
    – AP-R569-18 Guidelines and Specifications for Microsurfacing

• Replaces previous version published in 2003
    – AP-T26-03 Guidelines and Specification for Bituminous Slurry Surfacing
Test methods

• Updated test methods now published on [Austroads Publications website](https://austroads.com)
  - AGPT-T221 Sampling of Bituminous Slurry
  - AGPT-T270 Determination of Optimum Amount of Added Water for Bituminous Slurry (Consistency Test)
  - AGPT-T271 Cohesion Determination of Set and Cure for Bituminous Slurry (Cohesion Test)
  - AGPT-T272 Determination of Abrasion Loss of Bituminous Slurry (Wet Track Abrasion Test)
  - AGPT-273 Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test)

• Previous versions published between 2005 and 2007
GoToWebinar

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Microsurfacing Overview
Definition of microsurfacing

A bituminous slurry surfacing that contains polymer modified emulsion binder, which is capable of being spread in layers with variable thickness for rut-filling and correction courses, and for wearing course applications requiring good surface texture.
Microsurfacing
Applications

- Microsurfacing
  - Minimal increase in surface level
  - Asphalvic type surface at minimal cost
  - Improve ride quality, skid resistance, noise, agg. loss
  - Correct cross-sectional shape and fill ruts
  - Improving surface shape prior to reseal
  - Non-structural wearing course

See Section 3.1
Limitations of microsurfacing

• No structural strength
  - Not suitable for pavements with high curvature values – will crack early in life

• Not suitable to prevent crack reflection
  - Likely to reflect existing cracks within months of placement
  - Recommended to use with SAM / GRS to mitigate crack reflection

See Section 3.1
Moving on from Slurry

Slurry seals
- Applied as thin wearing course
- Typically for low volume roads
- Preventative or corrective maintenance

Microsurfacing
- Improved binder characteristics through the incorporation of polymer
- Allows use of larger sized aggregate
- Thicker layers
- Suitable for higher traffic areas

See Section 3.2
# Nominal sizes

<table>
<thead>
<tr>
<th>Size (mm)</th>
<th>Common application</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 &amp; 5</td>
<td>Local government residential resurfacing type works, airfield and shared pathways</td>
</tr>
<tr>
<td>7</td>
<td>State road agencies for shape and correction courses, or as a final wearing course</td>
</tr>
<tr>
<td>10</td>
<td>Deep rut or shape correction, or on sites where higher final texture is required</td>
</tr>
</tbody>
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Materials

Microsurfacing

- Binder
- Mineral filler
- High Performance Additives
- Additives
- Water
- Mineral aggregate

See Section 4
High performance additives

- Enhanced properties
  - Flexibility
  - Strength
- Specified in mix design
  - Type
  - Dosage rates
- Must be approved for use prior to commencing works

See Section 4.6
Microsurfacing Guidelines
Mix design - Components

- Aggregate and binder properties
- Abrasion (wear) loss (AGPT/T272)
- Traffic time/material cohesion (AGPT/T271)
- Excess binder content (AGPT/T273)
- Mix consistency (AGPT/T270)
- Mix performance
- Mix design currency

See Section 5
Plant

- Truck mounted or continuous paver
  - Material feeders
  - Guidance system
  - Maintained and calibrated
- Spreader box
- Ancillary equipment
Field application

- Preparation of existing surface
  - Set out
  - Cleaning
  - Protection of services and road fixtures
  - Surface defects
  - Tack coat
  - Water fog coat

See Section 7.1
Field application

- Weather limitations
- Rut-filling and correction
- Multiple-layer applications
- Spreading
  - Process
  - Surface finish
  - Shape
  - Joints
  - Traffic time
  - Rolling

See Section 7
Sampling and testing

• Compliance testing
• Compliance criteria
  – Method of Sampling (AGPT/T221)
  – Frequency of Testing
  – Surface Finish

See Section 8
Outcomes

- Defective work or materials
- Measurement and payment
- Quality assurance

See Sections 9, 10, 11
Model Specification
Scope

• Requirements for manufacture and placement
  – Component materials
  – Properties of microsurfacing
  – Mix design responsibility
  – Manufacturing and application
  – Sampling and testing
• Intended as a reference to prepare national or local specifications
Additives

• Allowed for various purposes
  – Material break accelerant / retardant
  – Provision of higher performance service attributes
• Likely range of additive levels expected stated in mix design
• Testing at both extremes of nominated design range for additive
  – Wear loss
  – Traffic time
  – Excess binder content
• Allows for emerging technologies

See Sections A.6.5
Mix design

- Contractor is responsible for mix design
- Mix property criteria
- Mix design submission. Remains valid for two-years if:
  - Sources and quality of component materials remain unchanged
  - Proportions of component materials remain unchanged
  - Performance in service is satisfactory

See Sections A.7
Hold points

Mix design
- Proposed design and certification
- 14 days prior to works commencing

Paving unit
- Calibration documentation
- 1 day prior to works commencing

Testing
- Proposed plan
- Prior to works commencing
Sampling

AGPT/T221 Sampling of Bituminous Slurry

- Specifies method for sampling from paving unit
  - Equipment
    - Ladle
    - Containers
  - Procedure
    - Frequency – start, middle and end of paving run for three 1 kg samples
    - Procedure
    - Sample identification
AGPT/T270 Determination of Optimum Amount of Added Water for Bituminous Slurry (Consistency Test)

- Optimising water proportion for mixture workability
- A series of identical mixes are produced
  - Aggregate, filler, bituminous emulsion and additives constant
  - Varying amounts of water added
- Mixes placed in inverted truncated cones in fluid state
- Extent of flow is a measure of mix consistency
Cohesion

**AGPT/T271 Determination of Set and Cure for Bituminous Slurry (Cohesion Test)**

- Determines time for sufficient cohesive strength development
  - ‘set’ is when material will not soften or separate in rain
  - ‘cure’ is when the material is trafficable under controlled conditions
- Torque applied to prepared samples at chosen time intervals
ABRASION

**AGPT/T272 Determination of Abrasion Loss of Bituminous Slurry (Wet Track Abrasion Test)**

- Determines material loss when subject to abrasive action
  - Evaluates wearing resistance under wet abrasion conditions
- Prepared samples are soaked for set period
- Abrasion applied
- Mass loss evaluated
Excess binder

AGPT/T272 Determination of Excess Binder in Bituminous Slurry (Loaded Wheel Test)

- Indicates tendency of mix to flush under traffic
- Prepared samples subject to loaded wheel tracking cycles
- Surface covered with warm sand before further wheel tracking
- Quantity of sand retained through embedment
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Questions?

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## Upcoming Austroads webinar

<table>
<thead>
<tr>
<th>Topic</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits of Safety and Traffic Management Technologies</td>
<td>19 June</td>
</tr>
<tr>
<td>Guideline for Continual Improvement Processes for Asset Management</td>
<td>28 June</td>
</tr>
<tr>
<td>Connected and Automated Vehicles Trials</td>
<td>3 July</td>
</tr>
</tbody>
</table>

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