
CHIPSEAL SURFACING
Demonstrate knowledge of hot polymer-
modified binders and their use in
chipseal construction

level:	4
credit:	5
final date for comment:	October 2009
expiry date:	December 2010
sub-field:	Pavement Surfacing
purpose:	<p>This unit standard is for people in the bitumen industry, such as chipseal designers, chipseal supervisors, and bitumen sprayer operators who require knowledge of polymer-modifiers.</p> <p>People credited with this unit standard are able to: describe polymer-modified binders used in chipseal; describe storage and handling procedures for hot polymer-modified binders; explain the effects of polymer-modified binders on the chipseal construction process; and describe special operational requirements for sealing with polymer-modified binders.</p>
entry information:	Open.
accreditation option:	Evaluation of documentation and visit by NZQA and industry.
moderation option:	A centrally established and directed national moderation system has been set up by InfraTrain New Zealand.

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special notes:

- 1 References for the knowledge requirements of this unit standard include current versions of:
Austroad Guidelines for the Selection and Use of Modified Binders, Austroad Guidelines available at <http://www.onlinepublications.austroads.com.au>;
Chipsealing in New Zealand, Transit New Zealand (in press), available at http://www.transit.govt.nz/technical_information/index.jsp;
The Bitumen Safety Book: A Guide to the Safe Handling of Bituminous Materials Used in Roothing, Roothing New Zealand, available at <http://www.roadingnz.org.nz>;
material safety data sheets (MSDS).
- 2 This unit standard excludes the selection, storage, and use of multigrade bitumens.
- 3 Assessment against this unit standard may be based on evidence from workplace and/or provider contexts.
- 4 Definition
company procedures refers to all documented policies, procedures and methodologies of the candidate's employer at the time of training including but not limited to those relating to health, safety, environment, quality, and operations.

Elements and Performance Criteria

element 1

Describe polymer-modified binders used in chipseal.

performance criteria

- 1.1 The properties of polymer modifiers and their effect on bituminous binders are described in accordance with *Austroads Guidelines*.

Range: elastomers, plastomers, crumb rubber, latex.

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- 1.2 Description identifies forms in which polymer modifiers are supplied.
- 1.3 Binders modified with elastomers, plastomers, crumb rubber, and latex are described in terms of suitability for specified purposes.
- Range: purposes – fill cracks, retain seal in high stress areas, reduce rate of return of flushing, reduce crack reflection, reduce crack propagation.
- 1.4 Polymer-modified binders are described in terms of their effects on chipseals.
- Range: temperature susceptibility, adhesion, cohesion, durability, elasticity.
- 1.5 Description explains the effect of adhesion agents and cutters on polymer performance.

element 2

Describe storage and handling procedures for polymer-modified binders.

performance criteria

- 2.1 Health and safety hazards and adverse environmental effects associated with handling polymer-modified binders are described in accordance with *The Bitumen Safety Book* and MSDS.
- 2.2 Handling and storage procedures for binders are described in accordance with MSDS.
- Range: before, during, and after mixing; includes but is not limited to – temperature control, blending, mixing, emptying tank, emptying pipework, flushing tank, flushing pipework.
- 2.3 The effects on binders of incorrect handling and storage are outlined in accordance with *Austroads Guidelines*, *The Bitumen Safety Book*, and MSDS.
- Range: includes but is not limited to – temperature control, reheating, remixing, storage time, water contamination.

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- 2.4 Risk management procedures for handling and storing polymers are described in accordance with MSDS and company procedures.

Range: risks include but are not limited to – excessive temperature, water contamination.

element 3

Explain the effects of polymer-modified binders on the chipseal construction process.

performance criteria

- 3.1 Explanation identifies the effects, during and immediately after sealing operations, of weather conditions, pavement surface temperature, and binder spraying temperature.
- 3.2 Conditions of surface and chips are explained in accordance with *Austroads Guidelines*.
- 3.3 Means of enhancing chip adhesion are explained in accordance with *Austroads Guidelines*.
- 3.4 Pretreatment of chip is explained in terms of compatibility of sealing chip and selected binder.
- 3.5 Binder and chip application rates are described in accordance with *Austroads Guidelines*, *Chipsealing in New Zealand*, and company procedures.

element 4

Describe special operational requirements for sealing with polymer-modified binders.

performance criteria

- 4.1 Description explains critical importance of having chips available for immediate coverage of sprayed binder.

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- 4.2 Binder application is described in terms of minimising the need for hand spraying.
- 4.3 Description explains importance of coordinating spray application, chip application, and rolling.
- 4.4 Disposal of surplus binder is described in accordance with company procedures and legislative requirements.
- 4.5 Cleanup of plant is described in accordance with manufacturer's instructions and company requirements.

Comments on this unit standard

Please contact the InfraTrain New Zealand askus@infratrains.co.nz if you wish to suggest changes to the content of this unit standard.

Please Note

Providers must be accredited by the Qualifications Authority or a delegated inter-institutional body before they can register credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by the Qualifications Authority before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.

Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for providers wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

This unit standard is covered by AMAP 0101 which can be accessed at <http://www.nzqa.govt.nz/site/framework/search.html>.