

TRANSPORT FOR NSW (TfNSW)

QA SPECIFICATION 3252

POLYMER MODIFIED BINDER FOR PAVEMENTS

NOTICE

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REVISION REGISTER

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 1		First issued.	GM, CMS	28.06.91
Ed 2	5 6.3	Certification for 5 years. Delivery temperature between mid and max recommended range.	GM, CMS	06.08.91
Ed 3		Table 1 - Physical Properties of Polymer Modified Bitumen, amended as per Manager, Scientific Services minute dated 27.09.91.	GM, CMS	02.10.91
Ed 4	2 5 6.3 6.4 Table 1 Appendix	Name changed to reflect inclusion of or allowance for scrap rubber modified bitumen and multigrade bitumen. "Polymer" deleted from various clauses. Test Method T742 added to references. 3 Austroads documents added to the references. Product certification requirement changed from 5 to 3 years. Maximum temperature of modified bitumen changed to 185°C. Secondary sub-clause designation added to first point in clause. Point 8 added to clause. Revised to recognise APRG 7/4 Nov 1992. Appendix A reworded and the word "modified" added to A3, A5, A6.	GM, CEC	Aug 93

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 5	Title Table 1 4.1 4.3 6.4 and A7 7.1 1, 2, 4.2, 5, 6.2 & A5	"Polymer" reinstated in text. Names of Grades simplified. New sealing grade introduced. MBT 11 viscometer speed corrected. Maximum limit introduced for test T742. Maximum viscosity limit for test MBT 11 changed for some materials. Loss on heating test included to control fuming. Manufacturer to nominate safe working temperature range. Include tests on one raw material which may otherwise cause field problems with handling. Minimum acceptable QA sampling and testing regimes specified. Changed qualifications for persons taking samples Editorial improvements.	GM, CEC	15.12.94
Ed 6		Converted to MS Word 6.0c. Document reformatted. References updated.	GM, RNIC J Woodward	14.04.97
Ed 7	Scope Scope 2 3 4.1 4.1 4.2 4.3 4.4 5, 6.2 6.4 7.1	Includes reference to Austroads "Framework" specification (Feb 1997) Deletes "certain refinery processes" which is relevant only to the former A1P (multigrade) which has now been removed Update nomenclature Update reference to AS/NZS ISO 9002 Delete Flashpoint as now in Tables 3252.1& 3252.2 Refer to all known safety requirements Clarify reporting of Supplier nominated tests Update nomenclature Widen explicitly to include field blended scrap rubber and make testing of such material mandatory Update nomenclature Recognise that it is not always possible for testing documentation to travel with a consignment Update sampling reference	GM, RNIC	07.05.98

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 7 (cont'd)	Table 3252.1	All changes are according to Austroads Framework Feb 97. Not all classes or tests of that framework have been used.		
Ed 8	Various 2 2, 3 4.3 4.4 Table 3252.1 Table 3252.2 Table 3252.3 Table 3252.3	Minor editorial changes Additional referenced documents and test methods ISO 9002 replaced by ISO 9001 Replaced S50R with S45R Additional sampling (TR&SP) Modified requirements and notes New table for field produced grades Replaces previous Table 3252.2, modified requirements and notes Removed - merged with tables	GM, RNIC	2003
Ed 9		Fonts changed	GM, RNIC	05.08.03
Ed 10/ Rev 0	“Notice” Spec Ref No Foreword Global 2.4 Tables 1, 2 and 3 Annex C Annex M Appendix B	RTA PO Box and Fax numbers updated. Revision No added. Foreword, incorporating copyright clause, added. Text revised to direct imperative style. “shall” replaced by “must”. Reformatting and minor editing to clarify intent. Clauses rearranged and renumbered. Definitions of “you” and “your” added. Tables updated to incorporate Austroads Bituminous Surfacing Research Reference Group (BSRRG) findings. New Annexure for “Schedule of Identified Records” added. References updated. Transferred to new Spec Guide N3252.	GM, IC	30.07.09
Ed 11/ Rev 0	Global Guide Notes 1.1	Spec title changed. “comminuted scrap rubber” changed to “crumb rubber”. References to Austroads publications for safe handling of bitumen moved here from clause 5.1. Requirement regarding storage of PMB deleted.	GM, CPS	27.06.14

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 11/ Rev 0 (cont'd)	3	New clause for definitions. Definition of “Contractor” clarified. Definitions of “Supplier” and “terminal” added.		
	5.1	References to Austroads publications for safe handling of bitumen moved to front Guide Notes.		
	5.2.1	Previous clause 5.3 on requirements of crumb rubber used in manufacture of ‘S’ class PMB moved here; that on ‘A’ class deleted.		
	5.2.2	New clause on submission of nominated formulation of PMB.		
	5.4	Previous item (d) moved to Paragraph incorporated into Annex L.		
	Tables 1, 2, and 3	Tables amended to accord with “Austroads Framework for Polymer Modified Binders”. Minimum frequency of testing moved to Annex L. Production control properties moved to Clause 6.1.		
	Table 2	Test for “colour of blond binder” added.		
	6.1	New clause titled “Production Control Properties”.		
	6.2	Previously clause 6.		
	6.3	Previously clause 5.4. Title amended to include “factory blended”. Previous item (d) of requirements incorporated into Table L.1 on minimum frequency of testing.		
	7	Consignment details to be provided deleted.		
	8	New clause, incorporating previous Annex L, clarifying sampling and testing requirements. Sample taking and preparation to be in accordance with AGPT/PT101 and AGPT/PT102 respectively.		
	Annex C	Schedule updated.		
	Annex L	New Table L.1 on frequency of testing.		
	Annex M	Reference Documents updated.		
	Appen A	Previous Appendix A on requirements applicable when PMB is ordered directly by Principal deleted.		

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 12/ Rev 0	Global	Term “bitumen” changed to “binder”.	DCS	17.08.18
	3	Definition of parties clarified.		
	5.1	Previous clause 5.1 on “Safety” deleted.		
	5.2	Previously sub-clause 5.2.1.		
	5.2	New clause on segregation and ease of mixing.		
	5.3.1	Previously part of sub-clause 5.2.2, modified.		
	5.3.2	Previously part of sub-clause 5.2.2.		
		Formulation verification frequency reduced from every 12 months to 24 months.		
		Verification report to be provided to “Principal”, instead of “Purchaser” previously.		
	5.3.3	New sub-clause on submission of binder information directly to Pavement Unit.		
		Table 1		
		- limiting values changed to “Report” for “Consistency at 60°C”;		
		- “Report” changed to limiting values for “Consistency 6% at 60°C”;		
		“Ease of remixing” added..		
		Table 2		
		“Consistency at 60°C” deleted,		
		“Ease of remixing” added.		
		Associated table footnotes amended.		
	6.1	Headings added to form new sub-clauses 6.1.1 to 6.1.3.		
	6.2	New clause on sampling and testing for batch release and product certification, incorporating previous clause 6.2 and sub-clause 8.2.2.		
		Headings added to form new sub-clauses 6.2.1 to 6.2.3.		
	6.2.1	Supplier to nominate tests for batch release of factory blended binders.		
	6.2.1, 6.2.2	Clarified that testing for batch release limited to nominated tests only.		
	6.2.3	Frequency of certification of conformity of product produced reduced from 6 months to 3 months.		
	6.3	Requirements for factory/field blending deleted and replaced by cross reference to clause 6.2.		

Ed/Rev Number	Clause Number	Description of Revision	Authorised By	Date
Ed 12/ Rev 0 (cont'd)	7.1.2	New sub-clause on requirement to maintain records of deliveries, including history of delivery container used.		
	7.2	Heading title changed.		
	8	Heading title changed to sampling and testing at point of delivery. Previous clause 8.1 (superfluous) deleted. Subsequent clauses renumbered accordingly.		
	8.1	Incorporating previous sub-clause 8.2.3, but divided into two separate sub-clauses, one for sampling and another for testing.		
	8.1.1	Retention period for samples taken at point of delivery specified.		
	8.1.2	New requirements for reduced minimum frequency of testing added.		
	8.2	Previously sub-clause 8.2.1 on method of sampling and testing. Headings added to form new sub-clauses 8.2.1 and 8.2.2.		
	8.3.1	Incorporating 2 nd paragraph of previous sub-clause 8.2.4 on submission of test results. (1 st paragraph now moved to clause 6.2.2.)		
	8.3.2	New sub-clause on reporting nonconformities directly to RMS Pavement Unit.		
	8.4	Previously clause 8.2.5 on Principal requested sampling.		
	Annex C	Schedules updated.		
	Annex L	Table L.1 on frequency of sampling and testing modified to show separately that for spray sealing applications and asphalt applications.		
Annex M	Referenced documents updated.			
Ed 12/ Rev 1	Global	References to “Roads and Maritime Services” or “RMS” changed to “Transport for NSW” or “TfNSW” respectively.	DCS	22.06.20

GUIDE NOTES

(Not Part of Contract Document)

Specification 3252 Ed 12 Rev 0

Specification 3252 Ed 12 Rev 0 has been updated to accord with “Austroads Specification Framework for Polymer Modified Binders (February 2014)”.

Safety

The Project Manager must ensure that both the Supplier and Contractor are familiar with the safety provisions in the Austroads publication “Guidelines to the Selection and Use of Polymer Modified Binders and Multigrade Bitumens”.



Transport
for NSW

QA SPECIFICATION 3252

POLYMER MODIFIED BINDER FOR PAVEMENTS

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VERSION FOR: DATE:

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FOREWORD

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REVISIONS TO PREVIOUS VERSION

This document has been revised from Specification TfNSW 3252 Edition 12 Revision 0.

All revisions to the previous version (other than minor editorial and project specific changes) are indicated by a vertical line in the margin as shown here, except when it is a new edition and the text has been extensively rewritten.

PROJECT SPECIFIC CHANGES

Any project specific changes are indicated in the following manner:

- (a) Text which is additional to the base document and which is included in the Specification is shown in bold italics e.g. ***Additional Text***.
- (b) Text which has been deleted from the base document and which is not included in the Specification is shown struck out e.g. ~~Deleted Text~~.

TfNSW QA SPECIFICATION 3252

POLYMER MODIFIED BINDER FOR PAVEMENTS

1 SCOPE

This Specification sets out the requirements for polymer modified binders (including blended crumb rubber binders) for use in asphalt and sprayed bituminous surfacings.

2 STRUCTURE OF THE SPECIFICATION

This Specification includes a series of annexures that detail additional requirements.

2.1 (NOT USED)

2.2 SCHEDULE OF IDENTIFIED RECORDS

The records listed in Annexure 3252/C are **Identified Records** for the purpose of Specification TfNSW Q Annexure Q/E.

2.3 FREQUENCY OF SAMPLING AND TESTING

Frequency of sampling and testing must be in accordance with Clause 8.3 and Annexure 3252/L.

2.4 REFERENCED DOCUMENTS

Unless otherwise specified, the applicable issue of a referenced document, other than a TfNSW Specification, is the issue current at the date one week before the closing date for tenders, or where no issue is current at that date, the most recent issue.

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 1234). For convenience, the full titles are given in Annexure 3252/M.

3 DEFINITIONS

The term “you” means either “the Contractor” or “the Supplier”.

“The Contractor” refers to the Contractor carrying out the asphaltting or sprayed sealing. “The Supplier” means the manufacturer of binder.

4 QUALITY MANAGEMENT SYSTEM

Obtain materials only from suppliers who have implemented a Quality Management System conforming to AS/NZS ISO 9001 as a means of ensuring that the materials supplied conform to the requirements of this Specification.

5 MATERIAL REQUIREMENTS

5.1 POLYMER MODIFIED BINDER PROPERTIES

Polymer modified binder must comply with the requirements for its class as specified in Tables 3252.1, 3252.2 or 3252.3, as appropriate.

Crumb rubber used for the manufacture of modified binders, such as S45R, must comply with Specification TfNSW 3256.

5.2 SEGREGATION AND EASE OF REMIXING REQUIREMENTS

Where the binder fails to meet the “Segregation” requirement, carry out a “Ease of remixing” test. If the binder meets the “Ease of remixing” requirement, the following applies:

(a) For sprayed sealing applications

The binder may be used without any further conditions.

(b) For asphalt applications

The binder may be used provided that it can be demonstrated that the technique employed to agitate the binder at the asphalt plant effectively remixes the segregated binder.

Prior to the use of the binder for asphalt applications, verify that the binder meets requirements for the following tests:

- (i) Torsional recovery;
- (ii) Viscosity at 165°C;
- (iii) Softening point.

5.3 NOMINATED BINDER INFORMATION AND FORMULATION VERIFICATION

5.3.1 Nominated Binder Information

Prior to supply of any nominated polymer modified binder, for each class of binder, submit the following information to the Principal:

- (a) unique identification for each formulation;
- (b) identification of the blending plant.

Include verification that the binder complies with the requirements of this Specification, and report the results (including test results) on NATA endorsed documents.

5.3.2 Formulation Verification

Undertake the formulation verification every 24 months and/or immediately upon any change of the constituent materials, the manufacturing process or the formulation, and report to the Principal within 14 days of the verification.

5.3.3 Copy to Pavement Unit

Submit also a copy of the reports specified under Clauses 5.3.1 and 5.3.2 directly to TfNSW Pavements Unit by email to: pavements@rms.nsw.gov.au.

Table 3252.1 - Properties of Polymer Modified Binders for Sprayed Sealing Applications

Binder Property	Test Method	Class				
		S15E	S20E	S35E	S45R ⁽⁴⁾	
Viscosity at 165°C ⁽¹⁾	Pa.s	AG:PT/T111	0.55 max	0.55 max	0.55 max	4.5 max
Torsional recovery at 25°C, 30 s	%	AG:PT/T122	32 – 62	45 – 74	16 – 32	25 – 55
Softening point	°C	AG:PT/T131	55 – 75	62 – 88	48 – 56	55 – 65
Rubber content	% by mass	TfNSW T737	–	–	–	10 min
Consistency at 60°C ⁽²⁾	Pa.s	AG:PT/T121	Report	Report	Report	Report
Consistency 6% at 60°C ^(2,3)	Pa.s	AG:PT/T121	400 min	500 min	250 min	800 min
Elastic recovery at 60°C, 100 s ⁽²⁾	%	AG:PT/T121	–	–	–	25 min
Stiffness at 15°C	kPa	AG:PT/T121	140 max	140 max	180 max	180 max
Compression limit at 70°C	mm	AG:PT/T132	–	–	–	0.2 min
Segregation ⁽⁵⁾	%	AG:PT/T108	8 max	8 max	8 max	8 max
Flash Point	°C	AG:PT/T112	250 min	250 min	250 min	250 min
Loss of mass on heating	%	AG:PT/T103	0.6 max	0.6 max	0.6 max	0.6 max
Ease of remixing ⁽⁵⁾	%	AG:PT/T109	2 max	2 max	2 max	2 max

Legend: min = minimum; max = maximum; Report = no conformity criteria exist, but test results must be reported

Notes:

- (1) Use a Brookfield series L, or mechanical equivalent. For all classes except for R class, the spindle must be SC4-31. For R class, use the spindle SC4-29. In every case, report the viscosity at the maximum rotation speed achievable and also this speed.
- (2) For “Consistency at 60°C”, “Consistency 6% at 60°C” and “Elastic recovery at 60°C”,
- use mould B (breakpoint of 5 mm and test speed of 1.5 mm/s) for class S35E;
- use mould A (breakpoint of 10 mm and a test speed of 1 mm/s) for other classes.
- (3) “Consistency 6% at 60°C” is derived from elastometer data (i.e. tested under the same conditions as consistency testing, refer to Note⁽²⁾ above).
- (4) Manufacturer to provide user with cutting procedure for their product when used over a range of different pavement temperatures.
- (5) Apply the “Ease of remixing” requirement when a binder fails the “Segregation” requirement. Refer to Clause 5.2 (a) for further details.

Table 3252.2 - Properties of Polymer Modified Binders for Asphalt Applications

Binder Property	Test Method	Class					
		A5E ⁽³⁾	A15E	A20E	A35P	A50C ⁽³⁾	
Viscosity at 165°C ⁽¹⁾	Pa.s	AG:PT/T111	0.75 max	0.9 max	0.6 max	0.6 max	0.3 max
Torsional recovery at 25°C, 30 s	%	AG:PT/T122	25 – 38	55 – 80	38 – 70	6 – 21	17 – 35
Softening point	°C	AG:PT/T131	88 – 110	82 – 105	65 – 95	62 – 74	52 – 57
Consistency 6% at 60°C ⁽²⁾	Pa.s	AG:PT/T121	2500 min	900 min	500 min	1200 min	250 min
Stiffness at 25°C	kPa	AG:PT/T121	120 min	30 max	35 max	120 max	100 max
Segregation ⁽⁴⁾	%	AG:PT/T108	8 max	8 max	8 max	8 max	8 max
Flash Point	°C	AG:PT/T112	250 min	250 min	250 min	250 min	250 min
Loss on heating	%	AG:PT/T103	0.6 max	0.6 max	0.6 max	0.6 max	0.6 max
Colour of blond binder	%	TfNSW T743	–	–	–	–	3 max
Ease of remixing ⁽⁴⁾	%	AG:PT/T109	2 max	2 max	2 max	2 max	2 max

Legend: min = minimum; max = maximum; Report = no conformity criteria exist, but test results must be reported

Notes:

- (1) Use a Brookfield or mechanical equivalent series L. For all classes, the spindle must be SC4-31.
- (2) "Consistency 6% at 60°C" is derived from elastometer data and must be tested using Mould A (breakpoint of 10 mm and a test speed of 1 mm/s).
- (3) Properties are experimental and to be considered as trial values for such period until manufacturing capabilities are proven.
- (4) Apply the "Ease of remixing" requirement when a binder fails the "Segregation" requirement. Refer to Clause 5.2 (b) for further details.

Table 3252.3 - Properties of Field Blended Crumb Rubber Binders

Binder Property	Test Method	Class	
		S15RF ⁽¹⁾	S20RF ⁽¹⁾
Nominal rubber concentration %		15	20
Rubber content % by mass	TfNSW T737	13 min	16 min
Torsional recovery %	AG:PT/T122	25 min	30 min
Softening Point °C	AG:PT/T131	55 min	62 min
Consistency at 60°C Pa.s	AG:PT/T121	Report	Report

Legend: min = minimum; max = maximum; Report = no conformity criteria exist, but test results must be reported

Notes:

⁽¹⁾ See also Clause 6.3.

6 PRODUCTION

6.1 PROCESS CONTROL

6.1.1 Process Control System

The Supplier must implement a documented process control system to produce polymer modified binder of a consistent quality conforming to the requirements of this Specification.

As a minimum, the process controls must include a method for determining and controlling the formulation during the production process, keeping records of the composition of the constituent materials for each batch and recording sampling frequencies and test results.

6.1.2 Other Tests

The Supplier may nominate other tests or different values from those specified in Tables 3252.1, 3252.2 or 3252.3 in its Quality Management System, which, if agreed to by the Principal, will form the basis for the production quality testing.

The Supplier must state in its Quality Management System the production control limits or target value of these tests.

6.1.3 Nonconforming Test Results

Where a production control test result does not comply with the nominated production control limits, the batch represented by the test may still be accepted if you can verify that it meets all the specified material property requirements under this Specification.

6.2 SAMPLING AND TESTING FOR BATCH RELEASE AND PRODUCT CERTIFICATION

6.2.1 General

The Supplier must nominate in its Quality Management System the tests to be carried out for batch release of factory blended binders only.

Carry out sampling and testing for the nominated tests prior to each batch release from the Supplier. Results for nominated tests must conform to the requirements of Tables 3252.1 or 3252.2.

6.2.2 Batch Release

Prior to delivery, the Supplier must submit test results for the nominated tests demonstrating conformity of the polymer modified binder with the requirements for its class as specified in Tables 3252.1, 3252.2 or 3252.3.

Report test results on NATA endorsed test documents.

6.2.3 Product Certification

Every 3 months or whenever a change in constituent materials, source of production or formulation is made, the Supplier must provide a NATA endorsed certificate of conformity verifying that the polymer modified binder produced complies with all of the properties for its class as specified in Tables 3252.1, 3252.2 or 3252.3.

The certificate will relate only to the constituent materials, the source of production and the formulation of the product type on which the tests were made.

6.3 FIELD BLENDED CRUMB RUBBER BINDERS

Unmodified bitumen may be used to produce modified (blended crumb rubber) binders, subject to compliance (including frequency of sampling and testing) with Clauses 5.1, 6.2.2 and 6.2.3.

7 DELIVERY

7.1 CONTAINERS

7.1.1 General

Use only delivery containers which are in good condition and do not contain contaminants which would cause the binder at the point of delivery to be non-complying with any of the requirements for its class as specified in Tables 3252.1, 3252.2 or 3252.3.

7.1.2 Records of Deliveries

The Supplier must, as part of its Quality Management System, maintain records of the deliveries made. These records include but are not limited to delivery dockets showing the history of the individual container's use over the last 5 deliveries, including the type of product that was transported in the container.

7.2 HANDLING TEMPERATURE

Transport the polymer modified binder by road tanker or sprayer at a temperature within the manufacturer's recommended temperature range.

8 SAMPLING AND TESTING AT POINT OF DELIVERY

8.1 FREQUENCY OF SAMPLING AND TESTING

8.1.1 Frequency of Sampling

Carry out sampling of the binder at the point of delivery, at the frequencies stated in Annexure 3252/L.

Samples not used for testing must be retained for a minimum of 12 months after.

8.1.2 Frequency of Testing

Carry out testing of the binder samples taken under Clause 8.1.1, at the frequencies stated in Annexure 3252/L.

You may propose in writing to the Principal that a reduced minimum frequency of testing be accepted in accordance with TfNSW Q. Support your proposal with a statistical analysis verifying consistent process capability and product characteristics.

In the event of a nonconformity, a reduced frequency of testing must revert immediately to the specified minimum frequency of testing. You can request a reduction in the minimum frequency of testing when you can demonstrate again by statistical analysis that you have gained a consistent process capability and product characteristics.

8.2 METHOD OF SAMPLING AND TESTING

8.2.1 Sampling Personnel

Sampling must be conducted by a nominee considered to be competent for that sampling procedure, supported by documented training records of your nominee.

8.2.2 Test Methods

Take samples of the polymer modified binder for testing in accordance with Test Method AG:PT/T101.

Handle and prepare the sample for testing in accordance with Test Method AG:PT/T102.

Test the samples in accordance with the Test Methods stated in Tables 3252.1, 3252.2 or 3252.3.

8.3 SUBMISSION OF TEST RESULTS

8.3.1 General

Within 14 days after delivery, submit test results of samples taken at the point of delivery demonstrating conformity of the polymer modified binder with the requirements for its class as specified in Tables 3252.1, 3252.2 or 3252.3.

Report test results on NATA endorsed test documents.

8.3.2 Report of Nonconformities

In the event of nonconformities occurring, submit a report of the nonconformities directly to TfNSW Pavements Unit within 14 days of the testing date. The report may be forwarded by email to pavements@rms.nsw.gov.au.

8.4 PRINCIPAL REQUESTED SAMPLING

When the Principal makes a request for additional samples to be taken at the point of delivery, take three samples. Retain two of the samples and deliver the third sample to a location nominated by the Principal.

Test one of the two samples retained by you to verify conformity of the batch delivered with Clause 6.2. Keep the other sample as a reference sample. The Principal may test the third sample to verify conformity with this Specification.

If the results of the samples tested by you or the Principal do not meet the acceptance criteria, the polymer modified binder represented by the sample is deemed to be nonconforming.

If the results of the samples tested by you or the Principal do not meet the acceptance criteria, you may request the Principal to test the third sample in your presence to verify conformity.

ANNEXURES 3252/A TO 3252/B – (NOT USED)**ANNEXURE 3252/C – SCHEDULE OF IDENTIFIED RECORDS**

The records listed below are Identified Records for the purposes of TfNSW Q Annexure Q/E.

Clause	Description of Identified Record
5.3	Preliminary submission of polymer modified binder details, including verification of conformity, prior to supply of any binder.
6.2.2	Test results of Supplier nominated tests demonstrating conformity of binder, for batch release.
6.2.3	Certificate of conformity, together with test results of all specified tests, demonstrating conformity of binder.
8.3	Test results of samples taken at point of delivery.

ANNEXURES 3252/D TO 3252/K – (NOT USED)**ANNEXURE 3252/L – MINIMUM FREQUENCY OF TESTING**

Minimum frequency of testing must be in accordance with Table 3252/L.1.

Table 3252/L.1 Minimum Frequency of Sampling and Testing

Property	Sampling Frequency	Testing Frequency
For polymer modified binders used in sprayed sealing applications		
Viscosity at 165°C ⁽¹⁾ Pa.s	One sample per shift whenever there is at least one delivery during the period ⁽²⁾	1 per 200,000 litres (or part thereof)
Torsional recovery at 25°C, 30 s %		
Softening point °C		
For polymer modified binders used in asphalt applications		
Viscosity at 165°C Pa.s	One sample per 24 hours whenever there is at least one delivery during the period	The greater of: 1 per 500,000 litres (or part thereof); or 1 per 3 months
Torsional recovery at 25°C, 30 s %		
Softening point °C		

Notes

(1) This property does not apply to field blended crumb rubber.

(2) A "shift" is a period of continuous work not exceeding 12 hours.

ANNEXURE 3252/M – REFERENCED DOCUMENTS

Refer to Clause 2.4.

TfNSW Specifications

TfNSW Q	Quality Management System
TfNSW 3256	Crumb Rubber

TfNSW Test Methods

TfNSW T737	Recovery and Determination of Rubber Content of Scrap Rubber Mixes
TfNSW T743	Colour of Blond Binders for Asphalt

Australian Standards

AS/NZS ISO 9001	Quality management systems – Requirements
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Austrroads Test Methods

AG:PT/T101	Method of sampling polymer modified binders, polymers and crumb rubber
AG:PT/T102	Protocol for handling polymer modified binders in the laboratory
AG:PT/T103	Pre-treatment and loss on heating of bitumen, multigrade binders and polymer modified binders by roller modified rolling thin film oven (MRTFO) test
AG:PT/T108	Segregation of polymer modified binders
AG:PT/T109	Ease of remixing of polymer modified binders
AG:PT/T111	Handling viscosity of polymer modified binders (Brookfield Thermosel)
AG:PT/T112	Flash point of polymer modified binders
AG:PT/T121	Consistency, stiffness, elastic recovery and tensile modulus of polymer modified binders (ARRB Elastometer)
AG:PT/T122	Torsional recovery of polymer modified binders
AG:PT/T131	Softening point of polymer modified binders
AG:PT/T132	Compressive limit of polymer modified binders