

TRANSPORT FOR NSW (TfNSW)

SPECIFICATION D&C 3351

ROAD MARKING PAINT

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**Transport
for NSW**

SPECIFICATION D&C 3351

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FOREWORD

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BASE SPECIFICATION

This document is based on Specification TfNSW 3351 Edition 4 Revision 1.

TfNSW SPECIFICATION D&C 3351

ROAD MARKING PAINT

1 SCOPE

This Specification sets out the requirements for paints suitable for application by spraying on road pavement surfaces of bituminous concrete, bituminous surface dressings and Portland cement concrete.

The paint must be capable of retaining a surface layer of reflectorising glass beads to improve the visibility of the markings at night.

2 STRUCTURE OF THE SPECIFICATION

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

2.1 (NOT USED)

2.2 (NOT USED)

2.3 (NOT USED)

2.4 REFERENCED DOCUMENTS AND DEFINITIONS

Standards, specifications and test methods are referred to in abbreviated form (e.g. AS 2350). For convenience, the full titles are given in Annexure 3351/M.

The term “the Supplier” means the supplier of the product covered by the scope of this Specification.

3 (NOT USED)

4 SUPPLIER’S QUALITY MANAGEMENT SYSTEM

The Supplier must establish and maintain a Quality Management System complying with AS/NZS ISO 9001 as a means of ensuring that the product conforms to this Specification.

Provide evidence verifying compliance with this Clause.

5 MATERIAL REQUIREMENTS

5.1 COLOUR

When a test panel which has been coated and dried in accordance with Annexure 3351/A is assessed according to AS 1580.601.1, the colour match (according to AS 2700S) must be as follows:

- White:** equivalent to or whiter than Y35 Off-White
- Yellow:** equivalent to Y12 Wattle or Y14 Golden Yellow or all colours deemed to be between these colours.
- Black:** to be no lighter than B64 Charcoal of AS 2700S.

5.2 LEAD CONTENT

When determined in accordance with ASTM D3335, the pigment must contain less than 0.25% (m/m) lead in the non-volatile content of the paint.

5.3 CONDITION IN CONTAINER

From an initially uniform dispersion, the paint must not settle to produce a rating of less than eight within four days when tested in accordance with AS 1580.211.1 (Method 211.1).

5.4 STORAGE PROPERTIES

The keeping qualities of the paint must be such that:

- (i) when sealed in its original container for a period of six months; and
- (ii) when decanted into a 500 millilitre capacity tin and left sealed for six months at room temperature; and
- (iii) when decanted into a 500 millilitre capacity tin and left sealed for one month at 35°C,

it must not form a skin, undergo gelation, or settle to such an extent that the settlement rating will drop to four when tested in accordance with AS 1580.211.1 (Method 211.1).

The settled material must be readily reincorporated to produce a smooth uniform product consistent with the freshly manufactured product.

5.5 COMPATIBILITY WITH THINNERS

When tested in accordance with AS 1580.208.1 (Method 208.1), the reducing thinners supplied for use with the paint must be completely miscible with the paint in any proportion without signs of coagulation.

5.6 CONSISTENCY

The consistency of the paint on delivery and for a period of six months from that date must be within the range 65.0 to 85.0 Krebs units when measured according to AS 1580.214.1 (Method 214.1).

5.7 FINENESS

The paint must be free of coarse particles and when tested in accordance with Test Method TfNSW T807, the whole of the paint must pass through a 300 µm sieve and not less than 99.5% must pass a 75 µm sieve when washed through with the thinner supplied with the paint.

5.8 APPLICATION PROPERTIES

The paint must be suitable for application by spray as delivered without the addition of thinners.

When applied to one half of a metal test panel by spraying, according to AS 1580.205.2 or AS 1580.205.4, the paint must produce a uniform smooth film with an even edge without objectionable side splatter and must not clog the spray gun under normal operating conditions.

Air atomised spray systems are to perform satisfactorily with paint and atomising air pressures up to 700 kPa and using a gun tip orifice 1.58 mm in diameter.

Airless systems are to perform satisfactorily with paint pressures up to 11,000 kPa and using a gun tip orifice 1.32 mm in diameter.

5.9 LUMINANCE FACTOR

When measured in accordance with Test Method TfNSW T1213, the luminance factor must not be less than 78 percent for white paint and must be not less than 58 percent for yellow paint.

A luminance factor is not applicable to black paint.

5.10 DRYING TIME (NO-PICK-UP TIME)

When determined by AS 1580.401.8 (Method 401.8), the drying time (no-pick-up time):

- (i) must not exceed 5 minutes;
- (ii) when tested at a temperature of $15 \pm 3^{\circ}\text{C}$, must not exceed 8 minutes.

6 ROAD PERFORMANCE REQUIREMENTS

6.1 DISCOLOURATION AND BLEEDING

After application to a smooth bituminous concrete road surface which has been trafficked for at least four weeks, at a wet film thickness of 0.375 ± 0.025 mm and allowed to dry, the change in colour when compared with a panel prepared in accordance with Annexure 3351/A must be not less than 4 on the grey scale (ISO 105 Part A02).

6.2 WEAR AND EROSION

When painted markings applied in September or October to a lane with an average daily traffic count of 8,000 - 12,000 vehicles are assessed after 6 month traffic according to Test Method TfNSW T867, the wear index must not be greater than 35. The lane surface must be dense graded asphalt which has been in place for at least 6 months.

7 PRODUCT CERTIFICATION

Provide a certificate of compliance verifying that the road marking paint complies with Clauses 5 and 6 of this Specification together with test results for all tests reported on NATA endorsed test documents, except that NATA endorsed documents will not be required for the Discolouration and Bleeding test specified in clause 6.1.

The certificate must relate only to the formulation on which the tests were made and must not be more than 3 years old.

8 DELIVERY

8.1 CONTAINERS

Deliveries must be made in either 20 litre or 205 litre steel drums complying with AS 2905 bung type. All containers must be in good condition.

8.2 DELIVERY PROCEDURES

Implement delivery procedures which ensure that all containers are clean and free from any deleterious material prior to filling with paint as part of the Quality Management System.

The delivery procedures must include product auditing at the point of delivery to verify compliance with Clause 5.

If product auditing (internal or external) identifies a nonconforming product, take samples from each drummed batch for testing to verify compliance with Clause 5.

The number of drums sampled must not be less than the cube root of the number of drums making up the batch. Report the test results on NATA endorsed test documents.

205 litre drums must be filled to hold 180 litres.

8.3 IDENTIFICATION OF CONTAINERS

Mark each container clearly and durably with the following information:

- (i) Manufacturer's name.
- (ii) Product name or trade name.
- (iii) Product Reference Number or Identification Number.
- (iv) Batch number or date of manufacture.

8.4 DOCUMENTATION WITH DELIVERY

Provide the following details with each delivery:

- (i) documentary evidence that the delivery procedures in Clause 8.2 have been complied with for that delivery.

- (ii) documentary evidence that the production batch complies with the requirements of this Specification.

ANNEXURES 3351/A TO 3351/D – (NOT USED)

ANNEXURE 3351/E – PREPARATION OF TEST PANELS

E1 SCOPE

This Annexure sets out the procedure for the preparation of test panels for the assessment of properties of road marking paints.

E2 TEST PANEL MATERIAL

Except where specified otherwise in the Standard, test panels must be made of metal or glass to AS 1580.104.1. Test panels must be flat and free from distortion and must be free from any ridges or cracks. Metal panels must be pre-treated according to AS 1580.105.2.

Except where specified otherwise in the Standard, glass test panels must be of minimum size 150 mm x 100 mm x 5 mm and must be prepared by solvent cleaning.

E3 PAINT APPLICATION

Except where specified otherwise in the Standard, apply paint to the test panel to give a wet film thickness of $375 \pm 25 \mu\text{m}$. Allow the panel to dry for seven days in a horizontal position under the routine conditions of AS 1580.101.1.

ANNEXURES 3351/F TO 3351/L – (NOT USED)

ANNEXURE 3351/M – REFERENCED DOCUMENTS

Refer to Clause 2.4.

TfNSW Test Methods

TfNSW T807	Fineness of Paint
TfNSW T867	Field Evaluation of Road Marking Paint by Durability Index
TfNSW T1213	Determination of the Luminance of a Surface

Australian Standards

AS 1580	Paints and related materials – Methods of test
AS 2700S	Colour standards for general purposes
ISO 9001	AS/NZS ISO 9001 Quality management systems – Requirements

ISO Standards

ISO 105	Part A02
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