

CIRCULAR 51/00-9-1

TEST PROCEDURES

ADR 51/00-FILAMENT GLOBES

“A Guide for Inspectors”

**This Circular is relevant to the Third Edition of the
Australian Design Rules gazetted as
National Standards under the Motor Vehicle Standards Act 1989**

CONTENTS

	Page
1 SCOPE	5
2 SELECTION OF TEST GLOBES	5
3 IDENTIFICATION OF TEST GLOBES	5
4 NUMBER OF TEST GLOBES	5
5 EQUIPMENT AND PROCEDURE	5
5.1 Globe Filament Position and Size	5
5.2 Determination of Luminous Flux	5
5.3 Colour of Emitted Light	6
5.4 Recording of Results	6
6 ANALYSIS OF RESULTS	6
7 REPORTING OF RESULTS	6
8 SUMMARY OF EVIDENCE REPORT	6
9 PROCEDURE FOR DESIGNS WITH CERTIFICATION TO ALTERNATIVE STANDARDS	6
10 REFERENCES	6

1 SCOPE

This procedure, when read in conjunction with other Circulars issued by the Administrator, provides sufficient information, without reference to other standards, to conduct and audit tests related to filament globes as defined in Australian Design Rule No. 51/00.

This procedure provides details of minimum standards for method and equipment utilized to demonstrate compliance with the requirements of ADR 51/00. Other methods and equipment are permissible providing the Test Facility can demonstrate that such alternatives provide results of no less accuracy than those derived from this procedure.

This ADR requires validation by test in three specific areas, these being:

- (i) Filament location and dimensions
- (ii) Colour of emitted light
- (iii) Luminous flux

This procedure is intended primarily as a guide for Officers of the Australian Department of Transport and Communications or Agents acting on behalf of the Administrator when they carry out audit inspections of Test Facilities or witness tests for compliance with the ADR. This and other Circulars dealing with Test Procedures for ADRs may also be useful to vehicle manufacturers and testing organisations.

Nothing in these Circulars, however, absolves the manufacturer from complying with the requirements as specified in the ADR which always remains the primary reference.

2 SELECTION OF TEST GLOBES

Production or prototype globes are satisfactory for testing to these requirements provided that the prototypes are fully representative of the production components.

3 IDENTIFICATION OF TEST GLOBES

All test Globes shall be representative of the design condition as reflected in the production drawings.

In most cases the test Globes will be assembled using production parts which have passed through normal quality assurance procedures. If prototype Globes are used they should be individually inspected for both dimensional and material specification compliance with their respective drawings.

For each test program all relative Globes are to be uniquely identified by part number, drawing number and revision or issue status. Such information is to be included in all test records and reports.

This Design Rule has provisions for the selection of Standard Filament Globes used to test the performance of lighting and light signalling devices (Appendix A Clause 3.9). These globes may be identified by selective inspection techniques on the basis of the restricted dimensional and photometric tolerances.

4 NUMBER OF TEST GLOBES

ADR 51/00 requires that all production globes meet the specified dimensional and photometric tolerances. It is

therefore necessary to test a sample which would demonstrate that this requirement has been met.

5 EQUIPMENT AND PROCEDURE

The test equipment and procedures required for validation of this ADR are detailed in Circular 0-12-5. The following test procedures are required:

Determination of globe filament position and size

Determination of luminous flux

Determination of colour of emitted light

Each globe subject to testing shall be aged for not less than one hour at the test voltage prior to start of the test procedures. For dual filament globes each filament shall be aged separately.

5.1 Globe filament position and size

All dimensions are to be measured whilst the globe is being supplied with a voltage between 90 and 100% of the test voltage.

Refer to the sheet of Annex 1 and Annex 4 of the ADR appropriate to the category of lamp being tested to ensure correct positioning and dimensions of the filament. The length of the filament shall be determined by its ends at the apices of the first and last filament turn as seen in projection perpendicular to the reference axis of the lamp. The angle of the legs shall not exceed 90 degrees taking into account the apices of the secondary turns in coiled coil filaments.

5.2 Determination of Luminous Flux

The following details the minimum standard for equipment and procedures required to conduct luminous flux tests. Alternative equipment or system approaches are acceptable if the accuracy and system response obtained meet the minimum standard required by the ADR.

5.2.1 Basic equipment. The following basic equipment is required:

- (i) Integrating sphere
- (ii) Reference test globes
- (iii) Photometer
- (iv) Regulated power supply
- (v) Instrumentation Package

5.2.2 Calibration and test. The test apparatus in total should be calibrated prior to testing, and the test conducted, to a procedure similar to the following:

- install reference test globes of compatible output and the photoreceptor in the integrating enclosure.
 - calibrate the photoreceptor
 - fit the test globe to the integrating enclosure
 - apply the specified power to the test globe and stabilize the system
 - record photoreceptor output
- In the case of testing the Photometric characteristics of standard test globes the last two steps should be replaced by:
- adjust the voltage applied to the test lamp until the required photometric output is achieved
 - stabilize the system
 - record voltage and power input

5.3 Colour of Emitted Light

ADR 51/00 requires that the colour of light emitted by lamps complying with this Rule shall be white. Although no colour limits are specified by the ADR, it is the responsibility of the Test Facility to ensure that compliance is demonstrated. If the Test Facility is of the opinion that compliance is not clearly demonstrated, a colour of emitted light test may be conducted in accordance with Circular 0-12-5 Section 4. A test result which demonstrates that the colour of emitted light is within the trichromatic coordinates for white light given in ADR 1/00 will be considered acceptable.

5.4 Recording of Results

The measured values of dimensions, luminous flux and electrical voltage and power, as required by the appropriate filament globe category given in Annex 1 of the ADR, shall be recorded on suitable data sheets.

6 ANALYSIS OF RESULTS

The globe as tested is deemed to satisfy the requirements of ADR 51/00 if the minimum conditions as described in the ADR are met by the test results achieved.

7 REPORTING OF RESULTS

A complete internal report giving a full description of the material tested, equipment used, results and order of

accuracy is to be prepared.

8 SUMMARY OF EVIDENCE REPORT

No Summary of Evidence Report is required for Submission to the Administrator.

9 PROCEDURE FOR DESIGNS WITH CERTIFICATION TO ALTERNATIVE STANDARDS

Where a copy of an official communication from the Administrative Department (of the approving government) giving no less information than that specified in Annex 1 to United Nations ECE Regulation No. 37/03 including corrigendum, together with appropriate attachments are held by a manufacturer, the requirements of ADR 51/00 are deemed to be satisfied.

10 REFERENCES

ADR References

ADR Definitions

ADR 51/00 - Filament Globes

Circulars

Circular 0-12-5 - General Photometric Test Procedures

Other Standards

ECE R 37/00 - Incandescent Filament Lamps