Australian Standard®

Road tank vehicles for dangerous goods

Part 5: Tankers for bitumen-based products

This Australian Standard was prepared by Committee ME/57. It was approved on behalf of the Council of Standards Australia on 14 November 1989 and published on 7 May 1990.

The following interests are represented on Committee ME/57:

Aluminium Development Council
Australian Chemical Industry Council
Australian Gas Association
Australian Institute of Petroleum
Australian Liquefied Petroleum Gas Association
Australian Road Research Board
Australian Road Transport Federation
Australian Valve Manufacturers Association
Commercial Vehicle Industry Association of Australia
Confederation of Australian Industry
Department of Defence
Department of Industrial Affairs, Queensland
Department of Industrial Relations and Employment, New South Wales
Department of Labour, South Australia
Department of Labour, Victoria
Department of Mines, Western Australia
Department of Transport and Communications
Department of Transport, Queensland
Institute of Road Transport Engineers
Metal Trades Industry Association of Australia
Society of Automotive Engineers—Australasia
Traffic Authority of New South Wales

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Australian Asphalt Paving Association

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PREFACE

This Standard was prepared by the Standards Australia Committee on Road Tankers for Hazardous Liquids and Gases. It was derived from a draft submission prepared under the auspices of the Australian Asphalt Paving Association to fill a need not covered in the existing AS 2809 series.

While certain grades of cutback bitumen are flammable liquids, and AS 2809.2, *Tankers For Flammable Liquids*, was intended to cover all types of flammable liquids, there are certain peculiarities of bitumen that necessitated special treatment, not the least of these being the complex and variable method of operation of the industry.

The majority of transport is of 'straight' bitumen, which is loaded hot at a refinery, and transported in insulated tankers to the application site where it is transferred to a sprayer and blended to become 'cutback' immediately before use. The extent of the dilution with solvent is a variable: it depends on weather and whether it is a first coat or a finish coat. Heating tubes are provided for both tankers and sprayers in case some delay could lead to cooling and thickening.

Cutback bitumen is not of a single composition. The dilution fluid may vary from kerosene (Class 3.2) to distillate (Class 3.3) and the dilution proportions vary, so that a degree of flexibility of requirements is essential.

Heaters are fuel-fired, and cannot be used when spraying, or when transporting, or when the vehicle contains cut-back, but this is a matter which must be controlled entirely by procedures, not by the provision of hardware. Sprayers are usually reserved for the application operations only, but at times they may be used to transport bitumen to a site, depending on distance and quantity.

Amongst other aspects requiring special consideration are the tank design requirements, which differ substantially from other flammable liquids tankers. Bulkheads are not used, and the options for construction material are fewer, so the table of shell thickness has been simplified. It seems possible to simplify it further as more thought is given to the special case of bitumen. A complex relationship between longitudinal and circumferential stiffeners has been dropped.

The viscosity of the cargo necessitated vents and valves that were less sensitive to clogging.

Given the number of such differences, the size of the nationwide fleet of bitumen tankers and applicators justified a specialist Standard.

CONTENTS

STANDARDS AUSTRALIA

Australian Standard
Road tank vehicles for dangerous goods

Part 5: Tankers for bitumen-based products

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Standard specifies requirements for the design and construction of tankers for the transport of cutback bitumen, including bitumen sprayers. It is complementary to AS 2809.1.

1.2 APPLICATION. Tankers for the transport of cutback bitumen shall comply with Parts 1 and 5 of this Standard. Where any requirement of Part 5 differs from a similar requirement in Part 1, Part 5 shall take precedence.

1.3 NEW DESIGNS AND INNOVATIONS. Any novel materials, designs, method of assembly, procedures, etc, which do not comply with specific requirements of this Standard, or are not mentioned in it, but which give equivalent results to those specified, are not necessarily prohibited. The SAA Committee on Road Tankers for Hazardous Liquids and Gases can act in an advisory capacity concerning equivalent suitability, but the specific approval remains the prerogative of the Authority.

1.4 INTERPRETATIONS. Questions concerning the meaning, application, or effect of any part of this Standard may be referred to the SAA Committee on Road Tankers for Hazardous Liquids and Gases for explanation. The authority of the committee is limited to matters of interpretation and it will not adjudicate in disputes.

1.5 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

AS
1204 Structural steels—Ordinary weldable grades
1205 Structural steels—Weather-resistant weldable grades
1210 SAA Unfired Pressure Vessels Code
1250 SAA Steel Structures Code
1375 SAA Industrial Fuel-fired Appliances Code
1449 Wrought alloy steels—Stainless and heat-resisting steel plate, sheet and strip
1554 SAA Structural Steel Welding Code
Part 1: Welding of steel structures
1657 SAA Code for Fixed Platforms, Walkways, Stairways, and Ladders
2475 Threaded hose connection fittings for bituminous materials
2809 Road tank vehicles for dangerous goods
Part 1: General requirements

1.6 DEFINITIONS. For the purpose of this Standard, the definitions given in AS 2809.1 apply.

1.7 VEHICLE REQUIREMENTS.

1.7.1 Spillage hazards. The appropriate requirements of AS 2809.1 and the following requirements shall apply:

(a) Any portion of an engine or exhaust system which by reason of its location can be reached by spillage from above, whether the tanker is parked or moving, or which is within 1 m of a liquid-carrying component of the pumping system, shall be protected from such spillage by a metal shield.

(b) The distance between the shield and any hot part of the engine or exhaust shall be not less than 50 mm.

(c) The distance between the shield and any cargo-carrying component shall be not less than 75 mm.

(d) The shield for a vertical exhaust pipe shall extend as nearly as practicable to the full height of the pipe, but not lower than the top of the tank, and shall be sealed to it liquid-tight at the top. The shield shall be at least 100 mm larger in diameter than the exhaust pipe. Any openings or perforations for ventilation shall be located on the side remote from the tank.

1.7.2 Propulsion engine exhaust. The engine exhaust system shall comply with the appropriate requirement of AS 2809.1 and the following requirements:

(a) The exhaust system shall not run beneath a tank.

(b) The exhaust shall discharge at one of the following locations:

(i) Behind the cabin at a level not lower than the top of the cabin and at least 1 m from any tank opening, or

(ii) On the right-hand side of the vehicle, sideways and forward of the front wheels, or not more than 150 mm behind the front wheels.

1.7.3 Auxiliary engines, intake and exhaust terminations. The intake and exhaust of an auxiliary engine shall not terminate at a level lower than the top of the cabin, nor in a hazardous zone as described in AS 2809.1.

For portable or trailer units, the terminations shall be above the tank top and at least 2 m from any opening into the tank.

1.7.4 Rear bumper. For sprayers only, the rear work platform, spray piping system and other fittings may be taken into account in assessing the need for a rear bumper.