Australian Standard®

Road tank vehicles for dangerous goods

Part 6: Tankers for cryogenic liquids

This Australian Standard was prepared by Committee ME/57, Road Tank Vehicles for Dangerous Goods. It was approved on behalf of the Council of Standards Australia on 30 April 1991 and published on 12 July 1991.

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
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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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PREFACE

This Standard was prepared by the Standards Australia Committee on Road Tankers for Hazardous Liquids and Gases. It is complementary to AS 2809.1, *Road tank vehicles for dangerous goods*, Part 1: *General requirements*, and provides requirements that are specifically applicable to road tankers for cryogenic liquids.

The requirements are an amalgamation of material from a number of sources, the most notable being AS 2809.3, *Tankers for compressed liquefiable gases*, which provided the basic framework, to which was merged appropriate material from the US DOT regulations, the Compressed Gas Association CGA 341—1987, *Insulated Cargo Tank Specification for Cryogenic Liquids* and a publication of Australian Statutory Authorities, PEN E6, *Vacuum insulated cryogenic pressure vessels*.

AS 1210, *Unfired Pressure Vessels*, is referenced for the basic design of the cargo tank, but a number of supplementary requirements are listed to facilitate its application to tankers for cryogenics.

The liquids dealt with in this Standard fall into two broad groups. One comprises those that are mainly derived from the atmosphere; such gases present no great danger other than cold contact if they escape. Another group consists of materials that are more dangerous because of flammability or toxicity characteristics. For this group, greater attention is paid to the engineering of the provisions for escape prevention and control.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE This Standard specifies requirements for the design and construction of road tankers for the transport of certain listed cryogenic liquids. It provides for vehicles which are specifically designed and constructed as road tankers, or which are conventional trucks provided with transportable tanks for use as tankers. It is complementary to Part 1 (i.e. AS 2809.1).

NOTES:

1 Although carbon dioxide and nitrous oxide are not true cryogenic liquids according to the conventional definition (see Clause 1.6.2), they are dealt with in this Standard as a matter of convenience.

2 Tanks which are carried or towed after filling to a point of use, where they are dismounted or uncoupled before draw-off commences, e.g. portable tanks, are not considered to be tankers to be dealt with by this Standard.

1.2 APPLICATION Tankers for the transport of cryogenic liquids shall comply with Parts 1 and 6 of this Standard. Where any requirement of Part 6 differs from a similar requirement in Part 1, Part 6 shall take precedence. Sections 1 and 2 of Part 6 shall apply to all tankers, and Section 3 shall apply additionally where the cargo is flammable or toxic.

NOTE: Carbon monoxide is defined in the ADG Code as being primarily a flammable gas, with toxicity as a subsidiary risk. The approach reflected in this Standard is that the two risks are of equal rank, and that the toxicity risk requires the same design safeguards as the flammability risk.

1.3 NEW DESIGNS AND INNOVATIONS Any alternative materials, designs, methods of assembly, procedures, and the like 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 SA 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 SA 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	
1135	SAA Non-ferrous Pressure Piping Code
1210	SAA Unfired Pressure Vessels Code
1349	Bourdon tube pressure and vacuum gauges
2809	Road tank vehicles for dangerous goods
2809.1	Part 1: General requirements
CB18	SAA Pressure Piping Code
CB18.1	Part I: Ferrous piping
CGA	
G-4.1	Cleaning equipment for oxygen service
V6	Standard cryogenic liquid transfer connections
ANSI/ASME	
B31.3	Chemical plant and petroleum refinery piping
B31.5	Refrigeration piping
ACTDG	
ADG Code	Australian code for the transport of dangerous goods by road and rail
ASTM	
STP 986	Flammability and sensitivity of materials in oxygen-enriched atmospheres

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

1.6.1 Capacity (of a tank)—for nominal or data-plate purposes, the total internal volume of the cargo space, in cubic metres or litres.