AS 1940:2017 (Incorporating Amendment No. 1)



The storage and handling of flammable and combustible liquids



This Australian Standard® was prepared by Committee ME-017, Flammable and Combustible Liquids. It was approved on behalf of the Council of Standards Australia on 13 July 2017.

This Standard was published on 1 August 2017.

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- Australasian Fire and Emergency Service Authorities Council
- Australasian Institute of Dangerous Good Consultants
- Australian Industry Group
- Australian Institute of Petroleum
- Australian Paint Manufacturers Federation
- Department of Defence
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- SafeWork SA
- WorkCover NSW
- Workplace Health and Safety, Qld
- WorkSafe, Vic.

Additional Interests:

- Accord Australasia
- AusSpill Association
- WorkCover Queensland

This Standard was issued in draft form for comment as DR AS 1940:2017.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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AS 1940:2017 (Incorporating Amendment No. 1)

Australian Standard®

The storage and handling of flammable and combustible liquids

Originated as part of AS CB5—1942. Previous edition AS 1940—2004. Sixth edition AS 1940:2017. Reissued incorporating Amendment No. 1 (August 2019).

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ISBN 978 1 76035 857 0

PREFACE

This Standard was prepared by Standards Australia Committee ME-017, Flammable and Combustible Liquids, to supersede AS 1940—2004. The objective of this Standard is to promote the safety of persons and prevent damage to property and the environment where flammable or combustible liquids are stored or handled.

This Standard incorporates Amendment No. 1 (August). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The changes in this revision of the Standard include alignment for the classification criteria of C1 combustible liquids to the Globally Harmonized System of Classification and Labelling of Chemicals (GHS). The use of plastic polyethylene or other composite polymeric tanks for the minor storage of combustible liquids is now permitted. Some changes to fire hydrants requirements were also made in Section 11, dealing with fire protection for package stores.

Committee ME-017 reviewed the report with recommendations into the Buncefield oil depot fire in Hertfordshire UK in 2005, and implemented engineering controls accordingly, wherever possible.

The terms 'normative' and 'informative' have been used in this Standard to define the application of the appendices to which they apply. A 'normative' appendix is an integral part of a Standard, whereas an 'informative' appendix is only for information and guidance.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard. Notes that appear in the main text of this Standard provide information only.

The series of Standards covering the storage and handling of Class 3 and related dangerous goods presently comprises the following Standards:

AS

- 1894 The storage and handling of non-flammable cryogenic and refrigerated liquids
- 2106 Methods for the determination of the flash point of flammable liquids (closed cup) (series)
- 2507 The storage and handling of agricultural and veterinary chemicals
- 2585 Determination of flash and fire points—Cleveland open cup method
- 2714 The storage and handling of organic peroxides
- 3780 The storage and handling of corrosive substances
- 3846 The handling and transport of dangerous cargoes in port areas
- 3961 The storage and handling of liquefied natural gas
- 4326 The storage and handling of oxidizing agents
- 4332 The storage and handling of gases in cylinders
- 4897 The design, installation and operation of underground petroleum storage systems
- 4976 The removal and disposal of underground petroleum storage tanks

AS/NZS	
1596	The storage and handling of LP Gas
2022	Anhydrous ammonia—Storage and handling
2927	The storage and handling of liquefied chlorine gas
3833	The storage and handling of mixed classes of dangerous goods, in packages and intermediate bulk containers
4081	The storage, handling and transport of liquid and liquefied polyfunctional isocyanates
4452	The storage and handling of toxic substances
4681	The storage and handling of Class 9 (miscellaneous) dangerous goods and articles
5026	The storage and handling of Class 4 dangerous goods
60079 60079.10.1 60079.14	Explosive atmospheres Part 10.1: Classification of areas—Explosive gas atmospheres Part 14: Electrical installations design, selection and erection

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STANDARDS AUSTRALIA

Australian Standard

The storage and handling of flammable and combustible liquids

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out requirements and recommendations for the safe storage and handling of flammable liquids of dangerous goods Class 3, as classified in the UN *Recommendations for the Transport of Dangerous Goods—Model Regulations* and listed in the ADG Code. This Standard also provides requirements and recommendations for the storage and handling of combustible liquids, as defined in Clause 1.4.9.

This Standard provides minimum acceptable safety requirements for storage facilities, operating procedures, emergency planning and fire protection. It provides technical guidance that may assist in the storage and handling of flammable and combustible liquids in accordance with the risk management requirements of Safe Work Australia, Model Code of Practice, *Managing Risks of Hazardous Chemicals in the Workplace* and legislation which underpins that document.

This Standard provides requirements for commonly used flammable and combustible liquids such as hydrocarbons and industrial solvents. Some flammable and combustible liquids have other physical and chemical properties that require additional precautions and design considerations. Examples of these are—

- (a) liquids that can polymerize;
- (b) liquids that require blanketing with inert gas;
- (c) liquids that are heated; and
- (d) liquids that are assigned a subsidiary risk.

Any special precautions and considerations necessary for the safe storage and handling of such liquids are additional to the requirements and recommendations provided in this Standard.

For the storage and handling of dangerous goods of another class but having a Class 3 subsidiary risk, this Standard is relevant to their flammability aspects.

NOTE: Fuel blends that contain biofuel (e.g. ethanol) have physical and chemical properties that require additional precautions and design considerations.

1.2 APPLICATION

1.2.1 Where this Standard applies

This Standard applies to the storage and handling of Class 3 dangerous goods as defined in Clause 1.4.8 or relevant legislation, with the exception of desensitized explosives of Class 3. It also applies to the storage and handling of combustible liquids. The requirements of this Standard apply in conjunction with, but do not take precedence over, any government legislation that applies in any area.

Where the flammable liquid being kept has one or more subsidiary risks, reference shall be made to the Australian Standards relevant to the Classes of those risks and the more stringent requirements shall apply. Where any combustible liquid being kept has risks of other Classes, the relevant Australian Standard for that Class shall be consulted, but for requirements relating to its combustible properties and fire safety, this Standard shall apply. NOTE: It is often difficult to ascertain whether liquid in a drum or other package is a C1 or C2 combustible liquid. Only rarely do material safety data sheets (MSDS/SDS) indicate that a liquid is combustible. The actual classification can be determined by reference to the flash point (see Clause 1.4.29). If the flash point is not provided on the MSDS/SDS, it should be ascertained from the manufacturer or Australian supplier of the liquid.

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This Standard applies in locations that are generally industrial, commercial or rural in nature, including laboratories where the provisions of this Standard are additional to those of AS 2243.10.

1.2.2 Where this Standard does not apply

This Standard does not apply to the following:

- (a) The transport of flammable liquids, which is covered by other regulations, rules and codes, e.g. the ADG Code, the International Maritime Dangerous Goods (IMDG) Code.
- (b) The handling of flammable liquids in port areas, where covered by AS 3846.
- (c) Shipboard installations.
- (d) The storage and handling of potable spirits having less than 24% v/v ethanol, and potable spirits with greater than 24% v/v ethanol in containers of less than 5 L capacity.
- (e) Residential-type heating oil installations comprising Category 1 tanks. NOTE: Tank categories are described in Clause 1.4.7.
- (f) Liquefied gases that are maintained in the liquid phase for storage by means of pressure or refrigeration.
- (g) Fuel tanks of any mobile vehicle or equipment, including those on large mining vehicles.
- (h) Temporary field storages and associated facilities in remote locations for Australian Defence Force exercises or operations, or declared states of emergency.

1.3 NORMATIVE REFERENCES

The normative documents referred to in this Standard are listed in Appendix A.

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

1.4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.4.1 Access

A means by which a person or vehicle can approach or leave a specific location. The term includes walkways, platforms, stairways, ladders, roads and all provisions for safe entry and exit.

1.4.2 ADG Code

The Australian Code for the Transport of Dangerous Goods by Road and Rail.

1.4.3 Boundary

The perimeter of the whole of the site under the same occupancy as the storage area.

1.4.4 Bulk

In relation to dangerous goods, dangerous goods which are not in packages.