AS 1692—2006
(Incorporating Amendment No. 1)



Australian Standard®

# Steel tanks for 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 20 January 2006.
This Standard was published on 22 February 2006.

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The following are represented on Committee ME-017:

- A.C.T. WorkCover
- Australasian Fire Authorities Council
- Australian Chamber of Commerce and Industry
- Australian Industry Group
- Australian Institute of Petroleum
- Australian Paint Manufacturers Federation
- Department for Administrative and Information Services, S.A.
- Department of Consumer and Employment Protection, W.A.
- Department of Defence
- Department of Emergency Services, Queensland
- Department of Infrastructure, Energy and Resources, Tas.
- Plastics and Chemicals Industry Association
- Victorian WorkCover Authority

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This Standard was issued in draft form for comment as DR 05392.

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 public comment period.

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Australian Standard®

# Steel tanks for flammable and combustible liquids

Originated as part of AS CB5—1942.
Previous edition AS 1692—1989.
Fourth edition 2006.
Reissued incorporating Amendment No. 1 (August 2006).



Published by Standards Australia, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 7281 1

# PREFACE

This Standard was prepared by Standards Australia Committee ME-017, *Flammable and Combustible Liquids* to supersede AS 1692—1989. This new edition has been revised to include new standards and designs to which tanks may be constructed and tested. References to 'approvals' by authorities have been removed, in line with current regulatory practices.

*This Standard incorporates Amendment No. 1 (August 2006). 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 objective of this Standard is to provide requirements and recommendations for the design and construction of a range of types of steel tanks suitable for the storage of flammable and combustible liquids. This Standard is limited to tanks made of steel and stainless steel, and includes tanks with integral secondary containment.

Thicknesses of materials are based on empirical data, being the result of experience rather than stress calculations, the exception being tanks of Category 6 (e.g. those built to API 650).

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of the Standard.

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# Australian Standard
# Steel tanks for flammable and combustible liquids

## SECTION 1 SCOPE AND GENERAL

### 1.1 SCOPE

This Standard specifies requirements for the design and construction of steel tanks for the storage of flammable and combustible liquids. It sets out requirements for tank joints and accessories (e.g. vents, manholes, fill level indicators) and specifies tank testing requirements.

This Standard applies only to tanks that are used to store substances that are liquid at normal temperatures and pressures.

The shell thicknesses of tanks specified in this Standard are based on the following assumptions:

(a) Stresses on the tank will be comparatively low.

(b) The liquid being stored is no more corrosive than normal petroleum products.

(c) The density of the liquid being stored is not greater than 1000 kg/m$^3$.

(d) The tank needs to be reasonably sturdy for handling and any transport.

(e) An allowance for corrosion needs to be made.

(f) Liquid levels after normal filling will not be substantially above the 'tank full' level.

(g) No allowance is made for the effect of filling an extended pipe to a level that is substantially above that of the tank.

(h) The pressure in the vapour space will not exceed 35 kPa.

(i) The length-to-diameter ratio of an above-ground tank on two supports does not exceed 5.

(j) The tank shell is not stiffened.

(k) The material of construction is commercial-grade, low-carbon steel.

The possibility of using thinner materials, compensating by shaping, corrugating, bracing or stiffening, is recognized, especially for stainless steel. In such cases the design will need to demonstrate mechanical properties that are at least equivalent to a similar size of tank built to this Standard if such a tank is to be used for flammable or combustible liquids.

This Standard does not insist on compliance with any particular material Standards, or the use of specific grades of materials.

### 1.2 APPLICATION

This Standard applies to the design and construction of tanks of commercial grade low carbon steel or stainless steel for the storage of flammable or combustible liquid. It also applies to tanks with integral secondary containment such as those approved by Underwriters Laboratories (UL) and having a fire-rated secondary containment.

This Standard does not apply to—