Under Revision. See DR 91129 Dup

Amendment 1 - September 1988
" 2 - June 1989
" 3 - Oct 1990

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AS 19

Superseded by AS 1940 - 1993

AS 1940—1988

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THE STORAGE AND HANDLING OF FLAMMABLE AND COMBUSTIBLE LIQUIDS

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This Australian Standard was prepared by Committee ME/17, Flammable and Combustible Liquids. It was approved on behalf of the Council of the Standards Association of Australia on 5 February 1988 and published on 13 May 1988.

The following interests are represented on Committee ME/17:

Association of Australian Port and Marine Authorities

Australian Institute of Petroleum Ltd

Australian Paint Manufacturers Federation

Board of Fire Commissioners, New South Wales

Confederation of Australian Industry

Department of Defence

Department of Administrative Services

Department of Employment and Industrial Affairs, Queensland

Department of Industrial Relations and Employment, New South Wales

Department of Labour, South Australia

Department of Labour, Victoria

Department of Local Government, Queensland

Department of Mines, Tasmania

Department of Mines, Western Australia

Department of the Arts, Sport, the Environment, Tourism, and Territories

Electricity Supply Association of Australia

Insurance Council of Australia Ltd

Metal Trades Industry Association of Australia

Railways of Australia Committee

Work Health Authorities, Northern Territory

Additional interests participating in preparation of Standard:

Country Fire Authority, Victoria

Fire Protection Industry Association of Australia

Western Australian Fire Brigades Board

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Suggestions for improvements to Australian Standards, addressed to the head office of the Association, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 86193.

Dup

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STANDARDS AUSTRALIA

Amendment No 3
to
AS 1940—1988
The storage and handling of flammable and combustible liquids

STANDARDS AUSTRALIA
30 OCT 1990
SYDNEY INFO CENTRE

CORRECTIONS AND REVISED TEXT

The 1988 edition of AS 1940, which was amended in September 1988, and in June 1989, is further amended as follows; the amendment(s) should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Clauses 1.1, 1.4.25.2, 1.4.25.3, 3.2.3, 3.4.1, 4.7.9, 4.11.4, 9.12.7, 9.14.2.

Published on 15 October 1990.

AMDT No 3 OCT 1990

Page 5. Clause 1.1(h).

Change the first word 'or' in the second line to 'of'.

AMDT No 3 OCT 1990

Page 6. Clause 1.4.25.2.

Delete existing Clause and *substitute*:

1.4.25.2 *Combustible liquid*—any liquid other than a flammable liquid, that has a flashpoint, and that has a firepoint less than its boiling point.

NOTE: The boiling point is taken to mean that point at which it is no longer possible to achieve the rate of temperature rise required by ASTM D 92 for the firepoint test.

AMDT No 3 OCT 1990

Page 6. Clause 1.4.25.3.

Delete the item defining Class 3.3, and *substitute*:

Class 3.3— a combustible liquid that has a flashpoint of 150 °C or less.

AMDT No 3 OCT 1990

Page 10. Clause 3.2.3(d).

Change 'container' to 'package'.

AMDT No 3 OCT 1990

Page 12. Clause 3.4.1.

Delete the final sentence of the Note, and *substitute*:

Therefore Clause 3.3.3(b) cannot validly be applied, and the remainder of Clause 3.3.3 applies from any vent outlet or doorway.

AMDT No 3 OCT 1990

Page 20. Clause 4.7.9(c).

Change 'that' to 'than' in the second line.

AMDT No 3 OCT 1990

Page 23. Clause 4.11.4.

Change the Clause No. '4.11.4' to '4.11.3'.

AMDT No 3 OCT 1990

Page 39. Clause 9.12.7(b).

Change 'B5' to 'B15'.

AMDT No 3 OCT 1990

Page 40. Clause 9.14.2(b).

Change Clause '9.11.4' to Clause '9.11.5'.

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TABLE 8.1
TANK INSPECTION SCHEDULE—CATEGORY 6 TANKS

Part of tank	Frequency of inspection	Minimum standard type of inspection	Purpose
1. Tank shell	Maximum 10 years	Ultrasonic*	To prove the integrity of the tank and its continued compliance with allowable design stresses
2. Other structural members	Maximum 10 years	Ultrasonic*	
3. Bottom plates	Maximum 10 years	Ultrasonic* or by removing 'coupons'	To determine whether plate thickness has deteriorated below acceptable standards (see Clause 8.7.9.8)
4. Roof plates	Maximum 10 years	Ultrasonic*	
5. Visual external inspections of whole tank including seals of floating roofs	Monthly	Visual	To ensure no visual evidence of abnormal stress, leaking, or other malfunctions
6. Valves and vents	Monthly	Visual	To ensure that fittings are operating normally
	Maximum 10 years	Remove and full test	
7. Other fittings & appurtenances	Quarterly	Visual	To ensure that fittings are sound, and operating normally
8. External foundations	Monthly	Visual	To ensure no signs of leaking or stress indicating imminent failure
9. Foundations	Maximum 10 years	Physical	To ensure foundation has not subsided or put tank at risk
10. Roof seals on floating tanks	Maximum 10 years	Physical	To ensure seal performances are within acceptable limits

* The frequency of testing may need to be varied according to the type of service, and ultrasonic testing may be waived if visual inspection indicates that such testing is not necessary.

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STANDARDS AUSTRALIA

STANDARDS AUSTRALIA 3 AUG 1989 SYDNEY INFO. CENTRE

Amendment No 2 to AS 1940—1988 SAA Flammable and Combustible Liquids Code

REVISED TEXT

The 1988 edition of AS 1940, which was amended in September 1988, is further amended as follows; the amendment(s) should be inserted in the appropriate place.

SUMMARY: This Amendment applies to Clause 8.7.

Published on 19 June 1989.

AMDT No 2 JULY 1989

Page 34. Clause 8.7.

Add new Clause 8.7.9.

8.7.9 Maintenance of storage tanks.

8.7.9.1 *General.* The owner of a Category 6 storage tank shall take all practical means to ensure that it remains in serviceable condition when in use.

8.7.9.2 *Regular inspection.* The owner of a storage tank referred to in Clause 8.7.9.1 shall cause that tank and its foundations, fittings, and appurtenances to be inspected and tested in accordance with Table 8.1.

8.7.9.3 *Records and reports.* The owner of a storage tank referred to in Clause 8.7.9.1 shall maintain a permanent record of all such inspections and tests. Such records shall be available to the Authority on request.

8.7.9.4 *Repair of defects.* Where defects create local stresses that exceed allowable limits, the tank shall not continue to be operated unless either repairs are effected or the filling level is limited to ensure that stress levels are not exceeded.

8.7.9.5 *Limited filling height.* Where a limited filling height has been imposed in accordance with Clause 8.7.9.4, the Authority shall be notified. The Authority may permit continued operation at a limited filling height for a period not exceeding one year provided that—

(a) a thorough evaluation of the structural strength of the tank has been made by a qualified Engineer;

(b) the limited filling height does not stress the weakest part of the tank beyond allowable design limits;

(c) any such testing includes non-destructive examination of shell plates and welds, account being taken of any pitting or grooving or other imperfections that may be apparent; and

(d) sufficient metal thickness measurements of shell plates have been taken to ensure that the minimum effective thickness of each strake has been determined.

8.7.9.6 *Approval of repairs.* Any repair program shall be such as to ensure that the tank is restored to the design standard for the proposed service.

8.7.9.7 *Hydrostatic test.* Prior to return to operating service after structural repairs, a hydrostatic test shall be satisfactorily completed in accordance with AS 1692. A hydrostatic test shall not be required for minor repairs or repairs to fittings or appurtenances.

8.7.9.8 *Floor plates.* Sufficient measurements of floor plate thickness as required by Table 8.1 shall be taken to ensure that the minimum thickness has been determined. Where the effective thickness at any point is less than 4 mm, the floor plate shall be repaired by any method that will effectively prevent further corrosion or leakage.

NOTE: The Australian Institute of Petroleum is currently developing a detailed code of practice on storage tank integrity testing and inspection methods. It is also recommended that reference be made to the AIP Guide for Inspection of Refinery Equipment, Chapter XIII (Storage Tanks).

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