DR 95059
1995 ed
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AS 1187—1988

takes ISO 5708-1983 into acct.

1996 ED.

Standards Association of Australia

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# Australian Standard®
# 1187—1988

# REFRIGERATED BULK MILK TANKS

**AS 1187—1996**
**Farm milk cooling and storage systems**
14pp *EE*
Sets out minimum requirements for the design, construction and performance of bulk milk cooling and storage systems on farms. The new edition of the Standard covers new developments such as larger storage vessels that may be installed externally and the use of pre-cooling equipment to cool milk, before milk enters the storage vessel.
*(FT/14): **Supersedes AS 1187—1988**: DR 95059: **Publication date 1996-01-05.***



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The following interests are represented on Committee FT/14:

Australian Dairy Corporation

Australian Dairy Farmers Federation

Commercial Refrigeration Manufacturers Association of Australia

Confederation of Australian Industry

Co-operative Dairy Factories' Association of Victoria

Dairy Industry Association of Australia

Department of Agriculture, N.S.W.

Department of Agriculture, S.A.

Department of Agriculture, Tas.

Department of Agriculture, W.A.

Department of Agriculture and Rural Affairs, Vic.

Department of Primary Industries, Qld

Department of Primary Industries and Energy

Electricity Supply Association of Australia

Metal Trades Industry Association of Australia

Ministry of Consumer Affairs, Vic.

National Standards Commission

New South Wales Dairy Corporation

United Dairyfarmers of Victoria.

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AUSTRALIAN STANDARD

# REFRIGERATED BULK MILK TANKS

## AS 1187—1988

First published as AS N46—1963.
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# PREFACE

This Standard was prepared by the Association's Committee on Bulk Milk Handling, taking into account International Standard ISO 5708, *Refrigerated bulk milk tanks.* Wherever possible the requirements specified in ISO 5708 have been adopted.

The metrological specifications set out in this Standard are used by the National Standards Commission as a basis for approval of refrigerated bulk milk tanks which, for trade purposes, are used for measurement of the volume of the contents.

There have been some modifications to and departures from both ISO 5708 and the previous edition of AS 1187 in order to accommodate Australian conditions and practices and technological developments since AS 1187 was first published. A guide to these is given in the following notes:

(a) Tanks designed for every-other-day collection of milk—ISO has separate performance and test requirements for tanks intended to hold two milkings (every-day pick-up) and tanks to hold four milkings (every-other-day pick-up). The committee considers that the maximum performance requirements of tanks designed for every-day pick-up (two milkings) are more than adequate if the tank is used to cool and hold four milkings which are collected every two days. Furthermore, manufacturers of bulk milk tanks consider that there would be no significant cost benefit in producing a separate type of tank designed specifically for every-other-day pick-up.

This Standard therefore sets out one design and performance standard for tanks which is suitable for both everyday and every-other-day pick-up of milk.

(b) Performance tests—the tests set out in this document are based on tanks which may be filled to capacity in two milkings. These tests are modified from the tests in the 1977 edition of AS 1187 as follows:

— The cooled milk temperatures have been reduced from 8 °C to 7 °C (surface) and from 5 °C to 4 °C (mean).

— Tests for tanks of different capacities have been deleted.

— The holding test has been deleted as it is considered that the first 10 hours of the new test gives an adequate indication of holding performance.

— The final four hour period of the new test is used as a test of the insulation.

(c) Specifications and tests for ice banks have been deleted as they are no longer used in Australia.

(d) Specifications and performance tests for milk pre-cooling equipment have not been included (nor in ISO 5708). Such equipment is not an integral part of a refrigerated bulk milk tank and is considered to be outside the scope of this Standard.

(e) Levelling requirements and the dip-stick specification remain the same as in the 1977 edition as these are laid down by the National Standards Commission for tanks used for measurement of milk volume.

(f) In addition, provision has been made for the use of other linear measuring devices such as sight gauges, provided they are approved by relevant authorities. It should be noted that specifications for sight gauges are currently being developed but are not at the stage at which they can be included in this Standard. Until such time as there is an Australian Standard for sight gauges, approval of the pattern, specification and verification marking of a sight gauge fitted to a refrigerated bulk milk tank will need to be obtained from the National Standards Commission and other relevant Authorities.

(g) Appendix B has been changed to accord with current methods used by the National Standards Commission and Weights and Measures Authorities for verifying the accuracy of volume indicating devices.

(h) Requirements for electrical equipment remain the same with update where necessary of the Australian Standards to which reference is made.

# CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

# Australian Standard
# REFRIGERATED BULK MILK TANKS

## SECTION 1. GENERAL

**1.1 SCOPE.** This Standard sets out minimum requirements for the design, construction and performance of refrigerated bulk milk tanks for the refrigeration of milk and its storage in bulk on farms.

NOTES:

1. The Standard does not include all the minimum electrical safety requirements with which the electrical equipment incorporated in the bulk milk tank should comply. For these, reference should be made to relevant SAA Approval and Test Specifications.
2. The tanks may or may not be intended to be used as measures for the volume of contents for trading.
3. Tests for compliance with the requirements of this Standard are set out in the Appendices.

**1.2 APPLICATION.** The Standard applies to both atmospheric and vacuum-type refrigerated bulk milk tanks which are filled to no more than 60 percent of capacity at any one milking.

The Standard does not apply to insulated bulk milk tanks without integral refrigeration, which are used to store pre-cooled milk.

**1.3 REFERENCED DOCUMENTS.** The documents below are referred to in this Standard.

AS

1359 General requirements for rotating electrical machines

1360 Rotating electrical machines of particular types or for particular applications
- Part 10: Dimensions and outputs of standard single-speed three-phase general purpose motors (AS 1360.10)
- Part 11: Dimensions and performance of small power electrical machines (AS 1360.11)

1444 Wrought alloy steels—Standard and hardenability (H) series

1449 Wrought alloy steels—Stainless and heat-resisting steel plate, sheet and strip

1528 Tubes (stainless steel) and tube fittings for the food industry

1536 Code of practice for cleaning and sanitizing milking equipment

1677 Refrigerating systems

2052 Metallic conduits and fittings

2053 Non-metallic conduits and fittings

2300 Methods of chemical and physical testing for the dairying industry

2536 Surface texture

3000 SAA Wiring Rules

3116 Elastomer insulated electric cables and flexible cables for working voltages of 0.6/1 kV

3147 PVC insulated cables and flexible cables for working voltages of 0.6/1 kV

3187 Approval and test specification—Mineral-insulated metal-sheathed cables

3191 Electric flexible cords

**1.4 DEFINITIONS.** For the purpose of this Standard the definitions below apply.

**1.4.1 Tank**—a covered, insulated container consisting of an inner stainless steel vessel and an outer stainless steel casing.

**1.4.2 Refrigerated bulk milk tank**—the tank with all its associated cooling equipment.

**1.4.3 Vessel**—that component of the tank which contains the milk.

**1.4.4 Capacity at any graduation mark**—the volume in litres of milk contained in the tank (which is complete with all fittings except for any readily removable refrigeration unit), the tank having first been set up in the level position (see Clause 2.2.7) and then filled to any graduation mark read by the approved method (see Clause 2.4.2.1.(d)).

**1.4.5 Maximum rated volume.**

**1.4.5.1** *Tanks used for measurement of contents*—the maximum capacity as defined in Clause 1.4.4 when the tank, having been set up in the level position, is filled to the highest graduation mark. The maximum rated volume shall be declared by the manufacturer and marked on the tank in accordance with Clause 2.7.2.

**1.4.5.2** *Tanks not used for measurement of contents*—the rated nominal capacity of the tank declared by the manufacturer and marked on the tank in accordance with Clause 2.7.2.

**1.4.6 Cooling equipment**—all equipment supplied with the tank, including any pre-cooling equipment, for the cooling of milk as it is delivered from the milking machine.

**1.4.7 Refrigerating capacity of cooling equipment**—the refrigerating effect in watts of which the refrigeration equipment is capable when operating to the manufacturer's instructions supplied in accordance with Clause 2.7.1.

**1.4.8 Atmospheric tank**—a tank of which the vessel is designed to operate at atmospheric pressure.

**1.4.9 Vacuum tank**—a tank of which the vessel is designed to operate at any pressure below atmospheric pressure.

**1.4.10 Agitator**—device to mix the milk so as to promote heat transfer and ensure uniform distribution of butterfat.

**1.4.11 Milk pre-cooler**—any equipment which will pre-cool the milk as it is delivered from the milking machine, before the milk enters the vessel.