

Australian Standard™

Cleaning and sanitizing milking equipment



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Australian Food and Grocery Council
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee FT/9, Dairy Detergents and Sanitizers, to supersede AS 1536—1991.

This Standard is the result of a consensus among Australian and New Zealand representatives on the Joint Committee to produce it as an Australian Standard.

This Standard is one of a number of Standards dealing with dairy detergents and sanitizers. This Standard should be read in conjunction with AS/NZS 2541:1998, *Guide to the cleaning-in-place of dairy factory equipment* and may also require reference to the product specifications.

The objective of this revision is—

- (a) to incorporate guidance on verification and validation of cleaning programs;
- (b) to maintain recommended cleaning and sanitizing procedures for use in milking premises; and
- (c) to introduce some minor changes.

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE	4
1.2 REFERENCED DOCUMENTS	4
1.3 DEFINITIONS	4
1.4 CLEANING AND SANITIZING MATERIALS	6
1.5 VERIFICATION AND VALIDATION OF CLEANING PROGRAMS	6
SECTION 2 MAIN FACTORS INFLUENCING HYGIENE IN MILKING PREMISES	
2.1 GENERAL	7
2.2 MILKING AND ANCILLARY EQUIPMENT	7
2.3 WATER QUALITY	7
2.4 WATER HEATING FACILITIES	7
2.5 CLEANING AND SANITIZING	8
SECTION 3 GENERAL PRINCIPLES OF CLEANING AND SANITIZING	
3.1 GENERAL	9
3.2 ROUTINE CLEANING SYSTEMS	9
3.3 PERIODIC CLEANING SYSTEMS	10
SECTION 4 CLEANING-IN-PLACE AND MANUAL CLEANING OF MILKING MACHINES AND MILKING EQUIPMENT	
4.1 SCOPE OF SECTION	11
4.2 ROUTINE CLEANING SYSTEMS	11
4.3 METHODS AND EQUIPMENT FOR APPLYING CLEANING SOLUTIONS	13
4.4 PERIODIC CLEANING SYSTEMS	18
SECTION 5 CLEANING-IN-PLACE AND MANUAL CLEANING OF FARM MILK TANKS	
5.1 SCOPE OF SECTION	20
5.2 ROUTINE CLEANING SYSTEMS	20
5.3 METHODS AND EQUIPMENT FOR APPLYING CLEANING SOLUTIONS	21
5.4 PERIODIC CLEANING	21
APPENDICES	
A METHODS OF VERIFICATION AND VALIDATION OF CLEANING PROGRAMS	22
B WATER QUALITY	24
C DISPOSAL OF CLEANING SOLUTION EFFLUENTS	25
D SANITIZER RESIDUES	26

STANDARDS AUSTRALIA

Australian Standard
Cleaning and sanitizing milking equipment

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard sets out recommended cleaning and sanitizing procedures for use in milking premises in order to achieve and maintain a satisfactory level of hygiene. Procedures are given for cleaning and sanitizing items of dairy farm equipment, principally milking machines and refrigerated farm milk tanks. Both manual and cleaning-in-place techniques are included.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1030	Dial-type general purpose thermometers for use in the dairying industry
1031	Metal-cased mercury-in-glass thermometers for use in the dairying industry
1087	Sodium hypochlorite solutions for use in the dairying industry
1187	Farm milk cooling and storage systems
1398	Iodophors for use in the dairying industry
1803	General purpose detergents for use in the dairying industry
2844	Milking machine installations
2844.2	Part 2: Construction and performance

AS/NZS

1389	Acidic detergents for use in the dairying industry
1400	Heavy-duty alkaline detergents for 'in-place' cleaning in dairy factories

1.3 DEFINITIONS

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

1.3.1 Cleaning

An operation which aims at removing all foreign deposits or residues from equipment surfaces using physical, chemical or mechanical means.

1.3.2 Clean surface

A surface, free from residual film or soil, and complying with the following requirements:

- (a) Contamination or oxidation is not visible under good lighting conditions with the surface wet or dry.
- (b) No objectionable odour is apparent.
- (c) The surface does not feel greasy when rubbed with clean fingers.
- (d) The surface shows no sign of excessive water-break while water is draining from it.

- (e) The surfaces are free from undesirable residues of cleaning and sanitizing materials.
- (f) No sign of fluorescence is detectable when the surface is inspected with a long wavelength (340 nm to 380 nm) ultraviolet light.
- (g) After being sanitized, the surface microbial count is within acceptable levels (see Appendix A).

1.3.3 Cleaning-in-place (CIP)

A method for cleaning equipment, using no direct mechanical aid to remove the soil but depending on solution flows, temperature and the properties of the detergent solution.

1.3.4 Detergents

Formulated blends of chemicals capable of assisting cleaning when added to water.

1.3.5 General purpose detergents

The general purpose detergents are used where the soil is not very difficult to remove, e.g. cold milk soil, and most of the cleaning effort is supplied by the operator, e.g. manual cleaning of more tenacious soils.

1.3.6 Hard water

Water exceeding 300 mg/L total hardness as CaCO_3 .

1.3.7 Manual cleaning

An operation in which the equipment to be cleaned is dismantled, where necessary, and the detergent solution brought into contact with the equipment by physical effort on the part of the operator.

1.3.8 Mechanical cleaning

An operation in which the soiled equipment is cleaned by a cleaning solution assisted by mechanical pneumatic or ultrasonic agitation.

1.3.9 Rinse

The operation whereby a sufficient quantity of water is brought into contact with surfaces to remove most of the contaminating substances, and is then drained away.

1.3.10 Rinse additive

A chemical or blend of chemicals which is used to improve the rinsing efficiency of water.

1.3.11 Sanitizers

Substances that are capable of reducing the number of viable microorganisms to an acceptable level on product contact surfaces.

1.3.12 Sanitizing

A process which reduces the number of microorganisms in dairy plant and on utensils to an acceptable level (see Appendix A).

1.3.13 Slug

A volume of fluid forced through the lines by admission of air.

1.3.14 Soil

Any materials which have to be removed from product contact surfaces during the cleaning process.

1.3.15 Teat cup jettors

An assembly to which the teat cups are attached during cleaning.

1.3.16 Treated water

Water that has been treated to render it to be of drinking quality (see Appendix B).

1.3.17 Vacuum system

The releaser, air pipeline, short and long pulse tubes, master pulsator tube, vacuum pump, pulsators, regulator and the interceptor (vacuum tank).

1.4 CLEANING AND SANITIZING MATERIALS

1.4.1 Compliance with standards

The chemicals used in cleaning and sanitizing should comply with Australian Standards wherever they exist. For example, AS 1087, AS/NZS 1389, AS 1398, AS/NZS 1400, and AS 1803.

1.4.2 Storage

The cleaning and sanitizing materials should be stored in a secure place protected from sunlight, moisture and excessive heat, and secured from children and animals. Many sanitizers are subject to deterioration with age so large stocks should not be kept. Older stocks should be finished before starting fresh containers.

The cleaning and sanitizing materials should be stored in accordance with regulatory requirements and chemical suppliers recommendations.

1.4.3 Usage

1.4.3.1 Manufacturer's recommendations

All detergents and sanitizers should be used in accordance with the manufacturer's recommendations with particular attention to correct use dilutions, temperatures and contact times. These chemicals should also be used in accordance with equipment suppliers' recommendations.

NOTE: This Standard may indicate different usage for a product from that recommended by manufacturer. In such instances consult the manufacturer to ensure that the product is used to best effect.

1.4.3.2 Safety aspects

Care should be taken when handling, cleaning and sanitizing materials as they can cause damage to eyes and skin and may be toxic. Appropriate clothing, such as gloves and eye protection, should be worn. Special attention should be paid to instructions and warnings given by the supplier in literature about the materials, especially regarding protection of the skin and eyes.

Detergents and sanitizers should not be mixed together nor with any other chemicals, even if it is being run to waste, unless it is done in accordance with the manufacturer's recommendations.

1.4.3.3 Disposal of materials

Care should be taken to ensure that used solutions of detergents and sanitizers are directed to waste drains since rapid corrosion can occur if they are allowed to remain in contact with floors. Where these liquids are fed into ponds or lagoons for treatment that depends upon biological action, particular care has to be exercised in the selection of detergents and sanitizers to avoid severe disruption of the effluent treatment system. See Appendix C for further details.

1.5 VERIFICATION AND VALIDATION OF CLEANING PROGRAMS

All Food Safety Programs or HACCP based systems should include cleaning checks to verify compliance to the procedures and the effectiveness of the program. This can be achieved through a number of checks and control of systems which are detailed in Appendix A.

SECTION 2 MAIN FACTORS INFLUENCING HYGIENE IN MILKING PREMISES

2.1 GENERAL

The more important factors that facilitate the achievement and maintenance of hygiene in milking premises are as follows:

- (a) The design, installation and layout of the equipment in the milking premises, the general surrounds of the premises and all external surfaces of plant, fittings and fixtures.
- (b) The existence of a plentiful supply of water, suitable for the application.
- (c) The provision of adequate facilities for the heating of sufficient water for cleaning purposes.
- (d) Cleaning and sanitizing according to a proven procedure.
- (e) Use of detergents and sanitizers registered for dairy farm application with the appropriate regulatory body.
- (f) Good lighting and ventilation.
- (g) Adequate facilities for washing up, rinsing and draining equipment.
- (h) Satisfactory treatment and disposal of effluents.
- (i) Hygienic procedures during milking, together with proper filtration and cooling of milk.
- (j) Avoidance of recontamination of cleaned equipment during subsequent cleaning of surrounds.

2.2 MILKING AND ANCILLARY EQUIPMENT

2.2.1 Milking machines

The design and installation of milking machines should comply with the requirements related to hygiene and layout of equipment specified in AS 2844.2.

2.2.2 Farm milk tanks

Bulk milk tanks should comply with the requirements related to hygiene specified in AS 1187.

2.3 WATER QUALITY

Water used should comply with the standards for drinking water set by the relevant regulatory authority. Water hardness may necessitate the use of special detergents and excessive alkalinity may need to be neutralized (see Appendix B).

2.4 WATER HEATING FACILITIES

If electrical, the water heating appliance should comply with the requirements of a relevant standard. Other types of hot water service may be used, provided that they are capable of heating water to the required temperature and are approved by the relevant authorities.

2.5 CLEANING AND SANITIZING

2.5.1 Cleaning

The milking premises and external surfaces of plant, fittings and fixtures should be maintained in a clean condition.

Milk-contact surfaces should be cleaned with a 'routine' system after every milking, in the manner set out in Section 4 or 5, as appropriate. Components that are difficult to clean should be inspected daily. A more rigorous 'periodic' system may be required infrequently, under the conditions described in Section 4 or Section 5, as appropriate.

2.5.2 Sanitizing

Microorganisms grow on the milk-contact surfaces and they may be controlled by the use of heat or chemical sanitizers.

2.5.3 Prevention of recontamination

It is important to clean the area surrounding the milking equipment before cleaning the milking equipment, otherwise there is a risk of recontaminating clean milking equipment when cleaning the surrounds.

To prevent recontamination of previously sanitized equipment, care should be taken when cleaning and sanitizing the surrounds of the milking equipment.