

Australian Standard™

Guide to cleaning and sanitizing of plant and equipment in the food industry



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This Australian Standard was prepared by Committee FT-005, Cleaning and Sanitizing Meat Poultry Seafood Industry. It was approved on behalf of the Council of Standards Australia on 16 February 2001 and published on 8 March 2001.

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ARMCANZ Meat Standards Committee
Australian Chemical Specialties Manufacturers Association
Australian Egg Industry Association
Australian Food and Grocery Council
Australian Poultry Industries Association
Australian Seafood Industry Council
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Australian Standard™

Guide to cleaning and sanitizing of plant and equipment in the food industry

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PREFACE

The Standard was prepared by the Standards Australia Committee FT-005, Cleaning and Sanitizing Meat Poultry Seafood Industry to supersede AS 2995—1987, *Cleaning and sanitizing of plant and equipment in the seafood industry*, AS 2996—1987, *Cleaning and sanitizing of plant and equipment in the egg handling and processing industry*, AS 2997—1987, *Cleaning and sanitizing of plant and equipment in the meat processing industry*, and AS 2998—1987, *Cleaning and sanitizing of plant and equipment in the poultry meat processing industry*.

The objectives of this revision are as follows:

- (a) To revise the four Standards on cleaning and sanitizing and to amalgamate them into one Standard.
- (b) To cover food industries including primary processors, producers and allied industries. For dairy industries further additional information is available in AS 1162, *Cleaning and sanitizing dairy factory equipment* and AS 1536, *Cleaning and sanitizing milking equipment*.
- (c) To maintain the recommended principles of cleaning and sanitizing.
- (d) To provide procedures that unfailingly restore equipment and surfaces to the required level of cleanliness for processing and transporting food products.
- (e) To provide guidelines for quality assurance managers, supervisors and consultants, regulatory authorities, and suppliers of processing equipment and chemicals.

This Guide could be used as—

- (i) a basis for developing a cleaning and sanitation program for each and every item of equipment or surface;
- (ii) a reference for Standards Operating Procedure (SOP) documentation;
- (iii) a source of standards or benchmarks against which to assess cleaning performance;
- (iv) a source of suggested corrective actions; and
- (v) a document regarding cleaning and sanitation principles.

It is recognized that cleaning systems, which differ from those described in this Guide, can be satisfactory in specific circumstances.

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STANDARDS AUSTRALIA

Australian Standard**Guide to cleaning and sanitizing of plant and equipment in the food industry**

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Guide sets out cleaning practices to be observed in order to achieve and maintain a satisfactory level of hygiene. It integrates the provision of Food Safety Programs incorporating HACCP into the cleaning practices.

In addition to food industries, the primary processors, producers and allied industries also could use this Guide for their industries. For dairy industries, further additional guidance on cleaning and sanitation is available in AS 1162 and AS 1536.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

1162 Cleaning and sanitizing dairy factory equipment

1536 Cleaning and sanitizing milking equipment

Australian Drinking Water Guidelines, 1996, co-authored by Agriculture and Resource Management Council of Australia and New Zealand and the National Health and Medical Research Council.

1.3 DEFINITIONS

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

1.3.1 Air-drying

To dry surfaces by allowing residual moisture remaining on surfaces to evaporate by natural air movement.

1.3.2 Clean surface

A surface which is free from soil and complying with the following characteristics:

- (a) Contamination or oxidation is not visible under good lighting when the surface is dry.
- (b) No objectionable odour is discernible.
- (c) The surface does not feel greasy when rubbed with clean fingers.

NOTE: See Clause 1.3.12, Sanitized clean surface.

1.3.3 Cleaning and sanitizing methods**1.3.3.1 Manual cleaning**

An operation in which the detergent solution is brought into contact with the soil and surfaces to be cleaned by physical effort on the part of the operator, e.g. brushing or use of non-metallic scouring pad.

1.3.3.2 Foam application

An operation in which the detergent and sanitizer are kept in contact with the soil and surface by foam for an extended period.

1.3.3.3 Gel application

An operation in which gelled detergent is kept in contact with the soil and surface to be cleaned by gel for an extended time.

1.3.3.4 Mechanized cleaning

An operation in which the surfaces are cleaned by a detergent solution assisted mechanically (see Appendix A).

1.3.3.5 Circulation cleaning-in-place (CIP)

A method of cleaning equipment without dismantling, using no direct mechanical aid to remove the soil but depending on solution flow characteristics, temperature and the properties of the detergent to achieve a satisfactory result.

1.3.4 Cleaning and sanitizing systems

1.3.4.1 Routine cleaning and sanitizing systems

Routine sequences which usually include dry cleaning, rinses, detergents and sanitizers applied regularly to surfaces after processing to control the accumulation of soil on those surfaces to minimize the microbial contamination of the product from the surfaces.

1.3.4.2 Periodic cleaning and sanitizing systems

Supplementary sequences which usually include dry cleaning, rinses, detergents and sanitizers applied infrequently to control the accumulated soils which remain after the application of the routine cleaning system, e.g. scale or rust removal.

1.3.5 Degree of foaming

The nature and extent of foaming characteristics of agitated solutions of detergents and sanitizers.

NOTE: For practical purposes, these products are classified according to whether they form stable or unstable foam. The unstable foams may be divided into low-foaming and high-foaming categories.

1.3.6 Detergents

Chemicals or blends of chemicals capable of assisting cleaning when added to water (see Appendix B).

NOTE: An effective detergent is one which, when applied by methods described in this Standard, achieves surfaces which comply with requirements of Clause 1.3.2.

1.3.7 Dry clean

Removal of bulk soils without the use of water, e.g. by scraping, sweeping or vacuuming.

1.3.8 Food Safety Program

A system that identifies, evaluates and controls hazards that are significant for food safety. For example, a HACCP-based program.

1.3.9 Hazard Analysis Critical Control Point (HACCP)

A system, which identifies, evaluates, and controls hazards that are significant for food safety.

1.3.10 Monitor

The act of conducting a planned sequence of observations or measurements of control parameters to assess whether a Critical Control Point (CCP) is under control.

1.3.11 Rinses

1.3.11.1 Pre-rinse

A water rinse to dislodge and wash away easily removable soils.

1.3.11.2 Intermediate rinse

A water rinse applied between detergent treatments or between a detergent and a sanitizer treatment in a cleaning operation.

1.3.11.3 Post-rinse

A final rise of water to remove detergent and sanitizer residues.

1.3.11.4 Pre-production rinse

A water rinse to remove dust and particles, which may have settled on the surface since the last cleaning effort, and to wet the surfaces.

1.3.12 Sanitized clean surface

A clean surface (as defined in Clause 1.3.2) that is substantially free from pathogenic microorganisms and undesirable numbers of spoilage organisms following the application of a sanitizer (see Clause 1.3.13).

1.3.13 Sanitizer

A substance that is capable of reducing the numbers of viable microorganisms on clean surfaces to a level satisfactory for product quality and public health, without adversely affecting the food (see Appendix B).

NOTE: An effective sanitizer is one that achieves sanitized clean surfaces (see Clause 1.3.12) when applied by the practices described in this Standard.

1.3.14 Soil

Any material which has to be removed from product contact surfaces during the cleaning process to prevent contamination of product and make it unacceptable to the consumer. Allergenic materials also be considered.

Food residue deposited on surfaces during processing is an obvious example of soil. Other examples of soil include dust and other particulate matter from packaging materials used during production, corrosion products of the surfaces and water scale build-up from the process water.

1.3.15 Solution temperature

The temperature of the detergent or sanitizer is defined as follows:

- (a) Cold below 30°C.
- (b) Warm between 30°C and 50°C.
- (c) Hot between 50°C and 80°C.
- (d) Very hot above 80°C.

1.3.16 Stated contact time

The time, as recommended by the manufacturer, for which the detergent or sanitizer remains in contact with the surface.

1.3.17 Surfaces

1.3.17.1 *Product-contact surface*

Surface of equipment, premises or gear, which has a high probability of contacting the food product during processing.

1.3.17.2 *Incidental surface*

Surface of equipment, premises or gear, which has a low probability of contacting the food product during processing.

1.3.18 Use dilution

The concentration of the detergent or sanitizer in water, as recommended by the manufacturer.

1.3.19 Use temperature

The application temperature of the detergent or sanitizer as recommended by the manufacturer.

1.3.20 Verification

The application of methods, procedures, tests and other evaluations, in addition to monitoring, to determine compliance with the HACCP plan.

1.3.21 Water for cleaning and sanitizing

1.3.21.1 *Potable water*

Water that is acceptable for human consumption. The Australian Drinking Water Guidelines, 1996 should be taken as the basis for defining good drinking water quality.

1.3.21.2 *Water reuse*

The use, for cleaning, of water that has previously been used in the establishment for such purposes as chilling and washing product or for final rinses of cleaned equipment, and which has been maintained or rendered pathogen free.

SECTION 2 CLEANING SYSTEMS

NOTE: In the following procedures, instructions are given to rinse equipment and surfaces after chemical detergents and sanitizers have been used. In certain cases rinsing may not be necessary depending on the chemical agent used and the subsequent use of the equipment (see Clause 4.4(b)).

2.1 ROUTINE CLEANING PROCEDURE FOR PROCESSING AREAS AND EQUIPMENT

Routine cleaning procedures are those sequences of rinses, detergents and sanitizers that are applied in accordance with HACCP principles every time processing is completed.

Routine systems vary greatly with the nature of soil present and the surfaces to which the soil is attached. Sometimes, some of those components may be deleted or combined, or suitably qualified personnel may use variations of the system. Each individual cleaning system should be validated and verified for effectiveness.

An example of a routine procedure, and the way its components function, is as follows:

- (a) *Preparatory operations*—Remove as much soil from the areas to be cleaned as is possible with shovels, scrapers, brooms, vacuums etc. Suitable receptacles for the collection of this soil should be provided. Where appropriate, equipment should be dismantled.

Removes the bulk soils, minimizes environmental impact and helps prevent blocking of drains.

- (b) *Pre-rinse*—Rinse the surfaces to remove further soil and to wet all surfaces thoroughly, with adequate quantities of water at ambient temperature. For fatty soils without blood or protein soils, hot water may be used.

Removes the bulk of unattached soil. This reduces and softens the amount of soil, which the detergent has to remove. It also removes a large number of microorganisms that are embedded in that unattached soil.

- (c) *Detergent cleaning operation*—Select a suitable detergent and apply at use dilution, use temperature and for the stated contact time, as specified by the detergent supplier. Apply the detergent by one of the following methods:

- (i) *Manual cleaning* Apply by brush or pad and thoroughly scrub all surfaces until all soil has been removed.
- (ii) *Foam application* Apply a suitable, stable, foam-forming detergent using foam-generating equipment. After the stated contact time, manually scrub the surfaces or use mechanical cleaning aids.
- (iii) *Gel application* Apply a gel-forming detergent using suitable equipment. After the stated contact time, manually scrub the surfaces or use a mechanical cleaning aid.
- (iv) *Mechanized cleaning* Apply the detergent using equipment such as:
 - (A) a steam cleaning machine; or
 - (B) venturi feed into a steam gun; or
 - (C) steam/water/detergent mixing gun; or
 - (D) high pressure spray gun.

NOTE: Such equipment is only effective if used correctly. Guidelines on the choice of mechanized cleaning systems are given in Appendix A.