

Australian Standard[®]

**CLEANING AND SANITIZING OF
PLANT AND EQUIPMENT IN THE
EGG HANDLING AND
PROCESSING INDUSTRY**

This Australian Standard was prepared by Committee FT/5, Cleaning and Sanitization—Meat, Poultry, and Seafood Industry. It was approved on behalf of the Council of the Standards Association of Australia on 30 July 1987 and published on 5 October 1987.

The following interests are represented on Committee FT/5:

Australian Chemical Specialties Manufacturers Association
Australian Fishing Industry Council
Australian Poultry Industries Association
Australian Society for Microbiology Incorporated
Commonwealth Advisory Laboratory on Dairy Detergents and Sanitizer
Confederation of Australian Industry
Council of Australian Food Technology Associations Incorporated
Council of Australian Public Abattoir Authorities
CSIRO, Division of Food Research
Department of Agriculture, N.S.W.
Department of Agriculture, Vic.
Department of Health
Department of Primary Industries, Qld.
Department of Primary Industry
Food Industry Suppliers Association of Australia
Health Services Department, Tas.
N.S.W. Egg Corporation
Public Health Department, W.A.
University of Queensland

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, 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 85368.

Australian Standard®

**CLEANING AND SANITIZING OF
PLANT AND EQUIPMENT IN THE
EGG HANDLING AND
PROCESSING INDUSTRY**

First published 1987

PUBLISHED BY STANDARDS AUSTRALIA
(STANDARDS ASSOCIATION OF AUSTRALIA)
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 4739 1

PREFACE

This Standard was prepared by the Association's Committee on Cleaning and Sanitation in the Meat, Poultry, Seafood Industries. It is one of a series, the others being:

AS 2998 Cleaning and Sanitizing of Plant and Equipment in the Poultry Meat Processing Industry

AS 2997 Cleaning and Sanitizing of Plant and Equipment in the Meat Industry

AS 2995 Cleaning and Sanitizing of Plant and Equipment in the Seafood Industry

The principal purpose of the Standard is to improve the quality of egg products by prescribing effective practices for the cleaning and sanitizing of equipment, premises and personal gear in egg handling and processing plants. It is designed to be used by plant personnel, Advisory Bodies and detergent and sanitizer manufacturers.

Because of the importance of an understanding of the principles underlying the specific cleaning recommendations, Section 3 is devoted to the need for effective cleaning and the ways in which detergents and sanitizers achieve that purpose. This is complemented by a discussion in Section 4 of the practical factors which affect the application and efficacy of cleaning systems.

Section 5 describes the basic routine and periodic systems to be used in egg handling and processing plants. Sections 6 to 12 describe the specific routine and periodic systems for individual items of equipment.

Section 13 deals with the important topic of the hygiene of personnel engaged in food processing.

It is recognized that cleaning systems which differ from those described in this Standard may be satisfactory in specific circumstances.

A number of appendices are also included to give more specific information on items which are important to the effective application of the cleaning systems described. These include water quality, effluent disposal, surfaces, microbiological testing of surfaces, mechanical cleaning systems, and detergents and sanitizers.

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
SECTION 1. SCOPE AND GENERAL	
1.1 SCOPE	5
1.2 DEFINITIONS	5
SECTION 2. CLEANING AND SANITIZING MATERIALS	
2.1 DETERGENTS AND SANITIZERS	7
2.2 STORAGE	7
2.3 USAGE	7
2.4 WATER QUALITY	7
SECTION 3. GENERAL PRINCIPLES OF CLEANING AND SANITIZING	
3.1 NEED FOR HYGIENE	8
3.2 SOIL ON THE SURFACE	8
3.3 MICROORGANISMS ON THE SURFACE	8
3.4 ROUTINE CLEANING SYSTEMS	8
3.5 PERIODIC CLEANING SYSTEMS	9
SECTION 4. PRACTICAL FACTORS AFFECTING THE APPLICATION AND EFFICACY OF CLEANING PROGRAMS	
4.1 HYGIENE TRAINING	11
4.2 HYGIENE PROGRAM IN WRITING	11
4.3 RESPONSIBILITY FOR HYGIENE	11
4.4 INSPECTION OF EQUIPMENT	11
4.5 LABORATORY TESTS	11
4.6 PRACTICAL FACTORS	11
4.7 EQUIPMENT AND UTENSILS	12
4.8 UNPROCESSED EGGS	12
4.9 CLEANING PROCEDURES—BASIC REQUIREMENTS	12
SECTION 5. CLEANING SYSTEMS	
5.1 GENERAL ROUTINE CLEANING	14
5.2 PERIODIC CLEANING	14
SECTION 6. RECEPTION, GRADING, CANDLING AND DISPATCH AREAS	
6.1 CANDLING MACHINE	16
6.2 TRAY TRAYS	16
6.3 PLASTIC FILLER FLATS (OR KEY TRAYS)	16
6.4 PLASTIC CRATES	16
6.5 COLD ROOMS	16
6.6 DISTRIBUTION VEHICLES	16
SECTION 7. WASHING AND OILING OF SHELL EGGS	
7.1 EGG WASHING (FOR SHELL EGGS)	17
7.2 EGG WASHING (EGGS FOR BREAKING)	17
7.3 EGG WASHING MACHINES	17
SECTION 8. EQUIPMENT USED IN THE PULPING OF WHOLE EGG	
8.1 EGG CRUSHING SECTION	18
8.2 RAW PRODUCTS SECTION	18
8.3 PASTEURIZER	18
8.4 FILLING SECTION	19

	<i>Page</i>
8.5 PORTABLE INSULATED LIQUID PULP TANKS	19
8.6 GRUNDY CANS	19
 SECTION 9. EQUIPMENT USED IN THE SEPARATION OF EGGS	
9.1 SEPARATION EQUIPMENT	20
9.2 RAW PRODUCTS SECTION	21
9.3 EGG WHITE AND YOLK PASTEURIZERS	21
9.4 SUGAR AND SALT MIXING TANKS AND PUMP	21
9.5 FILLING MACHINES	21
 SECTION 10. EQUIPMENT USED IN THE DRYING OF EGG PRODUCTS	
10.1 HIGH PRESSURE AND FEED PUMPS	22
10.2 DRYING CHAMBER	22
10.3 CYCLONES	22
10.4 TRANSPORT SYSTEM	22
10.5 ATOMIZER	22
10.6 FEED PIPE BY CIP	22
10.7 FEED TANK	22
10.8 REASSEMBLY OF SPRAY DRYING EQUIPMENT	22
10.9 FERMENTING VATS	22
10.10 TRAYS	22
10.11 MILLING MACHINE	22
 SECTION 11. EQUIPMENT USED IN DISPOSAL OF EGGS	
11.1 SHELL DISPOSAL CHUTE	23
11.2 SHELL BINS	23
 SECTION 12. GENERAL ITEMS	
12.1 DRAINS	23
12.2 FLOORS, WALLS AND CEILINGS	23
12.3 BUCKETS	23
12.4 AIR SUPPLY FILTERS	23
 SECTION 13. PERSONNEL HYGIENE	
13.1 GENERAL	24
13.2 PERSONAL HABITS	24
13.3 PERSONNEL HEALTH	24
13.4 CLOTHING	24
13.5 GLOVES	24
13.6 TOILET FACILITIES	24
13.7 HAND WASHING FACILITIES	24
13.8 HAND WASHING PROCEDURE	24
 APPENDICES	
A WATER QUALITY	26
B DETERMINATION OF MICROBIOLOGICAL STATE OF SURFACES	27
C GUIDELINES FOR CHOOSING A MECHANICAL CLEANING SYSTEM	30
D DISPOSAL OF CLEANING SOLUTION EFFLUENTS	32
E SURFACES OF FOOD EQUIPMENT	33
F DETERGENTS AND SANITIZERS USED IN THE EGG INDUSTRY	35

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

CLEANING AND SANITIZING OF PLANT AND EQUIPMENT IN THE EGG HANDLING AND PROCESSING INDUSTRY

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This Standard sets out cleaning practices to be observed in egg processing plants in order to achieve and maintain a satisfactory level of hygiene. It describes the principles of cleaning as well as specific cleaning methods for particular items of equipment, internal surfaces of buildings and personal gear. Hygiene of personnel is also discussed.

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

1.2.1 Clean surface—surface, free from soil, that will not contaminate food products in contact with it and that complies with the following requirements:

- Contamination or oxidation is not visible under good lighting when the surface is dry.
- No objectionable odour is discernible.
- The surface does not feel greasy when rubbed with clean fingers.
- No sign of fluorescence is detectable when the surface is inspected with a longwave (340 nm to 380 nm) ultraviolet light.

NOTE: See Clause 1.2.10 Sanitized clean surface.

1.2.2 Cleaning methods.

1.2.2.1 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.

1.2.2.2 Foam application—an operation in which the detergent or sanitizer foam is kept in contact with the soil and surfaces for an extended period.

1.2.2.3 Gel application—an operation in which gelled detergent is kept in contact with the soil and surfaces to be cleaned for an extended time.

1.2.2.4 Mechanized cleaning—an operation in which the surfaces are cleaned by a detergent solution assisted mechanically, e.g. mechanical scrubbers or high pressure sprays (see Appendix C).

1.2.2.5 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 flows, temperature and the properties of the detergent to achieve a satisfactory result.

1.2.3 Cleaning and sanitizing systems.

1.2.3.1 Routine cleaning and sanitizing systems—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 and to minimize the microbial contamination of the product from the surfaces.

1.2.3.2 Periodic cleaning and sanitizing systems—sequences which usually include dry cleaning, rinses, detergents and sanitizers applied infrequently to control the accumulated soil and contaminating microorganisms which remain after the application of the routine cleaning system.

1.2.4 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 a stable or unstable foam. The unstable foams may be divided into low-foaming and high-foaming categories.

1.2.5 Detergents—chemicals or blends of chemicals capable of assisting cleaning when added to water (see Appendix F).

NOTE: An effective detergent is one which, when applied by methods described in this Standard, achieves surfaces which comply with requirements of Clause 1.2.1.

1.2.6 Dry clean—removal of bulk soils without the use of water, e.g. by scraping or sweeping.

1.2.7 Egg handling plant—premises used for handling, washing, grading and packing of eggs for human consumption.

1.2.8 Egg processing plant—premises used for processing of eggs and egg products for human consumption.

1.2.9 Rinses.

1.2.9.1 Pre-rinse—a rinse of water to dislodge easily-removable parts of the soil.

1.2.9.2 Intermediate rinse—a rinse of water applied between two detergent treatments or between a detergent and a sanitizer treatment in a cleaning operation.

1.2.9.3 Post-rinse—a final rinse of water to remove detergent and sanitizer residues.

1.2.9.4 Pre-production rinse—a rinse of water to wet all surfaces immediately before start of processing.

1.2.10 Sanitized clean surface—a clean surface as defined in Clause 1.2.1 which is substantially free from pathogenic microorganisms and undesirable numbers of spoilage organisms following the application of a sanitizer (see Clause 1.2.11).

NOTE: Appendix B details suggested procedures for microbiological assessment of surfaces.

1.2.11 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 F).

NOTE: An effective sanitizer is one which achieves sanitized clean surfaces (see Clause 1.2.10) when applied by the practices described in this Standard.