
**Aseptic processing of health care
products —**

**Part 4:
Clean-in-place technologies**

Traitement aseptique des produits de santé —

Partie 4: Technologies de nettoyage sur place



Reference number
ISO 13408-4:2005(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions.....	1
4 Quality system elements.....	2
4.1 General.....	2
4.2 Management responsibility	2
4.3 Design control.....	2
4.4 Measuring instruments and measuring systems	2
5 Process and equipment characterization	3
5.1 General concepts.....	3
5.2 Effectiveness of CIP	3
5.3 Equipment	4
6 Cleaning agent characterization	5
6.1 Selection of cleaning agent(s).....	5
6.2 Quality of cleaning agent(s).....	5
6.3 Safety and the environment.....	6
7 CIP process	6
7.1 Process parameters.....	6
7.2 Process control.....	6
7.3 Residues of cleaning agent(s).....	8
8 Validation	8
8.1 Validation protocol	8
8.2 Evaluation of the CIP process	8
8.3 Design qualification.....	8
8.4 Installation qualification.....	8
8.5 Operational qualification.....	9
8.6 Performance qualification.....	9
8.7 Review and approval of validation.....	10
8.8 Requalification	10
9 Routine monitoring and control	10
9.1 CIP process control	10
9.2 Procedures	10
9.3 CIP process records	11
9.4 Change control.....	11
9.5 Maintenance and calibration	11
10 Personnel training	11
Annex A (informative) Description of sampling methods	12
Annex B (informative) Calculation examples for acceptance criteria.....	13
Bibliography	14

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 13408-4 was prepared by Technical Committee ISO/TC 198, *Sterilization of health care products*.

ISO 13408 consists of the following parts, under the general title *Aseptic processing of health care products*:

- *Part 1: General requirements*
- *Part 2: Filtration*
- *Part 3: Lyophilization*
- *Part 4: Clean-in-place technologies*
- *Part 5: Sterilization in place*
- *Part 6: Isolator systems*