

Commercial Dishwashing Specifications

Guideline for Mechanical Warewashing in Food Service Establishments

Prepared by:
Food Protection
BC Centre for Disease Control

In collaboration with the
Health Authority Food Safety Council

Revised:
January 2013



BC Centre for Disease Control
An agency of the Provincial Health Services Authority



TABLE OF CONTENTS

Introduction	1
Background	1
Guideline.....	1
Procedures.....	1
High Temperature Warewashing.....	1
Low Temperature Warewashing.....	2
Exceptions	2
Operational Considerations regarding Residential NSF Standard 184 Dishwashers	2
References	3
Appendix 1: Specifications for Hot Water Sanitizing	4
Appendix 2: USFDA Food Code	4
Appendix 3: Specifications for Chemical Sanitization.....	4

INTRODUCTION

This Guideline has been developed to provide clarification regarding compliance with the *BC Food Premises Regulation* which calls for the operator to ensure equipment and utensils are maintained in a sanitary condition, contamination is removed and that the operator to provide the facilities and equipment necessary to meet these requirements.

BACKGROUND

There are many different sizes and types of food service establishments. As such, warewashing in these facilities can be scaled to achieve the desired outcomes and meet the standards of the *Food Premises Regulation*. The following should be considered as the minimum criteria to meet the requirements of Section 17 of the *Regulation*.

Consideration should also be given to ensuring processes used are be suitable for the nature of the operation and patron volume. In all cases, warewashing details for the facility must be outlined in the Sanitation Plan.

GUIDELINE

Procedures

Due to capacity and reliability needed by typical restaurant operation, mechanical dishwashers should be designed for commercial use, which means they meet the “NSF/ANSI Standard 3 for Commercial Warewashing Equipment”, or equivalent.

High Temperature Warewashing

The temperature of the wash water in spray type dishwashers that use hot water to sanitize should be at least 66°C to 74°C (150°F to 165°F) depending on machine type (Appendix 1).

Proper sanitization in a commercial dishwasher depends on heat accumulation from washing, power rinsing (on some types of machines), and final rinsing. Therefore, each of these cycles must be operating at the proper temperature. To ensure this, the following is suggested:

- Use a maximum registering thermometer to give accurate reading of final rinse temperatures. Attach the thermometer with a rubber band or a clip in a vertical position. The final rinse temperature must be at minimum 71°C (160°F) (Appendix 2).

or

- Use heat sensitive thermal label (which changes at 71°C (160°F)) and attach it to a dry china plate, or cup. The label will turn black when this temperature is achieved. The use of thermal labels should be done as a secondary step if additional testing is required.

Note: As water falls through space after leaving the rinse spray arms, the drop in temperature is rapid. The temperature developed at the dish surface can be significantly lower than the temperature in the manifold. Therefore, a reading on the maximum-registering thermometer of at least 71°C (160°F) or a color change of the thermal label at 71°C (160°F) should be acceptable.

Unless the machine is used just prior to testing, run the machine through at least two complete wash and final rinse cycles before taking readings.

Monitoring for High Temperature Warewashing: On a daily basis, the operator should check and record the temperature of the final rinse sanitizing water. In the case of inadequate final rinse temperatures, corrective actions to be taken by the operator should be specified in the Sanitation Plan for the establishment.

Low Temperature Warewashing

The most common types of chemical sanitizers used in low temperature dishwashers and glasswashers are chlorine and iodophors (See Appendix 3).

Monitoring for Low Temperature Warewashing: On a daily basis, the operator should test and record the chemical sanitizer residual concentration with sanitizer test strips/test kits and check and record the temperature of the washing water. In the case of inadequate residual concentration, corrective actions to be taken by the operator should be specified in the Sanitation Plan (*Food Premises Regulation*, Section 24) for the establishment.

Exceptions

The installation and use of a residential dishwasher may be an acceptable alternative to a commercial dishwasher for some Child and Residential Care Facilities. The following points should be considered before the installation and use of a residential machine is approved:

1. Residential machines should be NSF/ANSI Standard 184 Certified

Residential machines certified under Standard 184 are guaranteed to achieve a 99.9% reduction in bacteria when operated using the sanitizing cycle. Their performance evaluation is based on the machine's ability to successfully deliver 3600 Heat Equivalency Units – which is based on the combination of time and temperature exposure required to achieve sanitization.

2. Residential machines should only be used where the daily volume of dishware is minimal

The final rinse temperature of NSF/ANSI Standard 184 Residential Machines is usually lower than that of commercial machines; thus they are designed to run a longer rinse cycle to achieve sanitization. Consideration for their use should therefore be limited to Child and Residential Care Facilities that do minimum food handling and/or produce a very small volume of dishware (i.e., 1-2 loads per day) whereby longer cycles will not significantly impact normal facility operation and there would be no need to interrupt the cycle. Residential dishwashers should also be limited to facilities with a capacity of up to 10 residents. For facilities with a higher capacity, the EHO should consult with their Manager prior to approving.

Operational Considerations regarding Residential NSF Standard 184 Dishwashers

- Operator should select the sanitizing cycle option before starting each cycle.
- Cycle should not be interrupted as heat loss may result in insufficient sanitization.
- Machine cycles should be completed while staff are on site so that proper completion of the sanitization cycle can be verified – i.e. visual inspection for illumination of “sanitized” indicator light on machine control panel following each cycle.

- If the required time/temperature combination is not achieved during a complete un-interrupted cycle, the “sanitized” light will fail to illuminate. This may indicate that the machine requires servicing and operator should contact a qualified person to conduct repairs where needed.
- Where the “sanitized” light can not be observed, the operator should use a maximum registering thermometer or single-use temperature indicator to confirm temperatures. Details of the monitoring requirements should be included in the facility Sanitation Plan.
- Signage instructing staff on proper process should be placed at or near the dishwasher.

REFERENCES

[BC Public Health Act, Food Premises Regulation. BC Reg. 210/99](#)

[Canadian Food Inspection System, Food Retail and Food Services Code. September 2004](#)

[US Department of Health and Human Services, FDA Food Code. 2009](#)

[Michigan Department of Agriculture, Training Program for the Professional Food Service Sanitarian
Module 4: Facility Operations](#)

APPENDIX 1: SPECIFICATIONS FOR HOT WATER SANITIZING

NSF International Standard Number 3: Part of the standard requires:

Type of Dishwashing Machine	Minimum wash temperature	Minimum sanitizing rinse temperature*
Stationary rack, single temp	74°C (165°F)	74°C (165°F)
Stationary rack/dual temp	66°C (150°F)	82°C (180°F)
Single tank conveyor	71°C (160°F)	82°C (180°F)
Multiple tank conveyor	66°C (150°F)	82°C (180°F)

Note: maximum sanitizing temperature is 90°C (195°F);
maximum rinse pressure is 20 psi ±5 psi (138 kPa ± 34kPa)

* These rinse temperatures refer to the water temperatures in the manifold, prior to spray

APPENDIX 2: USFDA FOOD CODE

The *FDA Food Code* (part 4-703.11) calls for:

Hot water mechanical operations by being cycled through equipment that is set up as specified under 4 – 501.15, 4-501.112, and 4-501.113 and achieving a utensil surface temperature of 71°C (160°F) as measured by an irreversible registering temperature indicator.

APPENDIX 3: SPECIFICATIONS FOR CHEMICAL SANITIZATION

from Canadian Food Inspection System, *Food Retail and Food Services Code*. September 2004.

Sanitizer type	Minimum Concentration	Minimum temperature (pH 8 – 10)	Minimum temperature (pH 8 or less)
Chlorine	25 ppm	49°C (120°F)	49°C (120°F)
	50 ppm	38°C (100°F)	24°C (75°F)
	100 ppm	13°C (55°F)	13°C (55°F)
Sanitizer type	Minimum Concentration	Minimum temperature	Other constraints
Iodine	12.5 ppm - 25 ppm	24°C (75°F)	pH 5.0 or less (unless manufacturer's specifications state otherwise)
Quaternary Ammonium	200 ppm or as per manufacturer's specs	24°C (75°F)	water hardness <500 mg/L