The Wonderful World of Warewashing!

Learning Objectives

At the end of this session, you will be able to:

- Describe key warewashing concepts
- Describe how to assess warewashing in Food Establishment
- Describe Food Safety Rationale behind Warewashing regulations
- Describe how to assess the Active Managerial Control of Warewashing

Why we do Food Inspections

To Prevent Foodborne Illness at the Establishment

5 Risk Factors

- Improper holding temperatures/cooling
- Improper cooking temperatures
- Contaminated utensils and equipment
- Poor employee health and hygiene
- Food from unsafe sources

We don't want a food-contact surface to be ***the Source*** of Contamination

Warewashing - Definition

The cleaning and SANITIZING of UTENSILS and FOOD-CONTACT SURFACES of EQUIPMENT

Cleaning and Sanitizing of Food-Contact Surfaces

- How
- When
- What (Which surfaces)
- Where
- Why

How (5 Steps)

1. Pre-Rinse/Scrape
2. Wash
3. Rinse
4. Sanitize
5. Air Dry

Where

- 3 compartment sink
- Warewashing (Dish) machine
- Clean-In-Place (CIP)
- Alternate
  - Large/immovable equipment
  - 2 compartment sinks

How (5 Steps)

1. Pre-Rinse/Scrape
2. Wash
3. Rinse
4. Sanitize
5. Air Dry

Cleaning-Objective

4-601.11

(A) EQUIPMENT FOOD-CONTACT SURFACES and UTENSILS shall be clean to sight and touch

(B) The FOOD-CONTACT SURFACES of cooking EQUIPMENT and pans shall be kept free of encrusted grease deposits and other soil accumulations.

Cleaning-Objective: Cooking equipment

Washing - How

- Hot water
  - 3 compartment sink >110F
  - Low-Temp Dishmachine >120F
  - High Temp Dishmachine >150-165F
- Detergent
- Agitation

Washing - Why

- Reduces surface tension between the food and the surface so detergent can penetrate quickly and lift the dirt off

How (5 Steps)

1. Pre-Rinse/Scrape
2. Wash
3. Rinse
4. Sanitize
5. Air Dry

Rinse

How:

Sprayed/immersed in clean water

Why:

Surface must be thoroughly rinsed of Food & Detergent residue in order for Sanitization to be effective

How (5 Steps)

1. Pre-Rinse/Scrape
2. Wash
3. Rinse
4. Sanitize
5. Air Dry

Sanitization – Definition

The application of cumulative heat or chemicals on cleaned FOOD-CONTACT SURFACES that, when evaluated for efficacy, is sufficient to yield a reduction of 5 logs, which is equal to a 99.999% reduction, of representative disease microorganisms of public health importance

Sanitization – Types

Heat (Hot water)

Chemical solution

- Chlorine
- Quaternary Ammonium (Quat)
- Iodine
- Lactic Acid

Exposure time/temperature is Critical

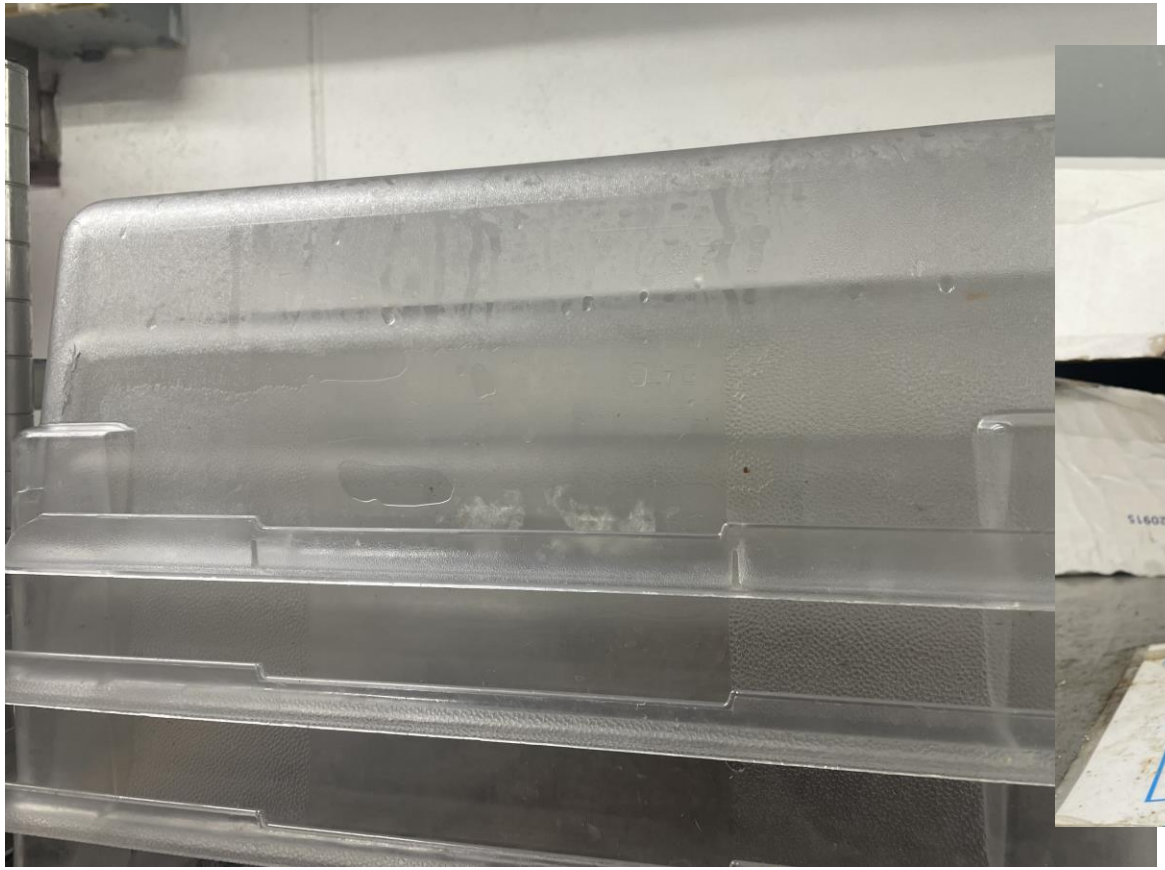
How (5 Steps)

1. Pre-Rinse/Scrape
2. Wash
3. Rinse
4. Sanitize
5. Air Dry

Air dry

- Don't re-contaminate surface
- Store in self-draining position
- Residual (no-rinse) sanitizer chemical
  - Sanitizer solution (at proper concentration) is an Approved Indirect Food additive

Air dry -'Wet Nesting'



Warewashing

How to Inspect

Inspecting
3 compartment sink

3 compartment sink – Backflow Prevention

3 compartment sink - Inspection

1. Does not need to always be set up (W/R/S)
2. Cleaned before using (at least daily)
3. Compartments do not need to labeled (Wash/Rinse/Sanitize) but PIC must be knowledgeable as to the process

PIC Knowledge

2-102.11 Demonstration of Knowledge

The PERSON IN CHARGE shall demonstrate this knowledge by:

(11) Explaining correct procedures for cleaning and SANITIZING UTENSILS and FOOD-CONTACT SURFACES of EQUIPMENT

PIC Knowledge

2-102.11 Demonstration of Knowledge

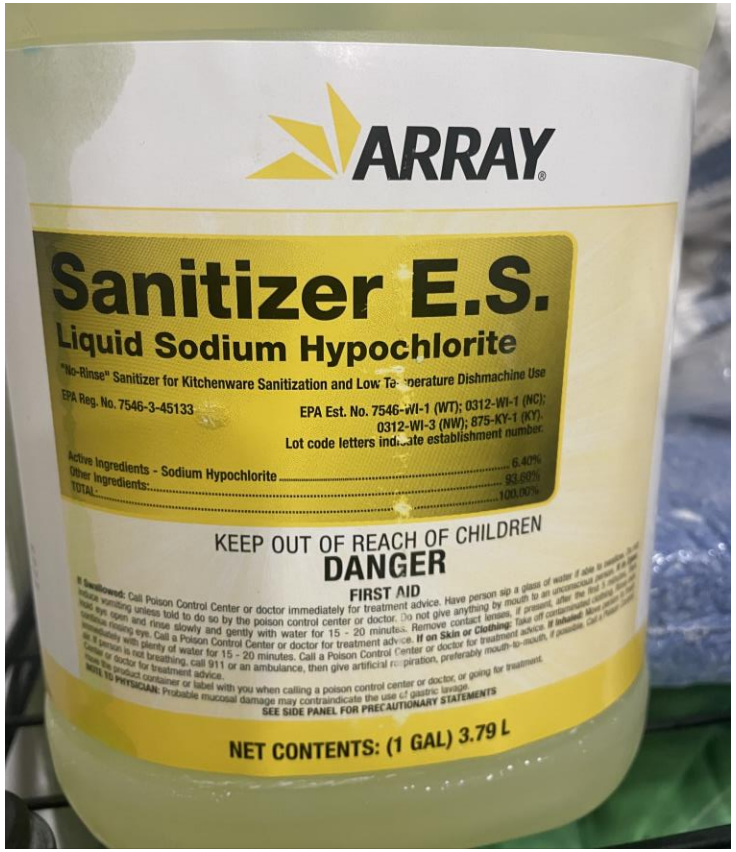
PIC Duties

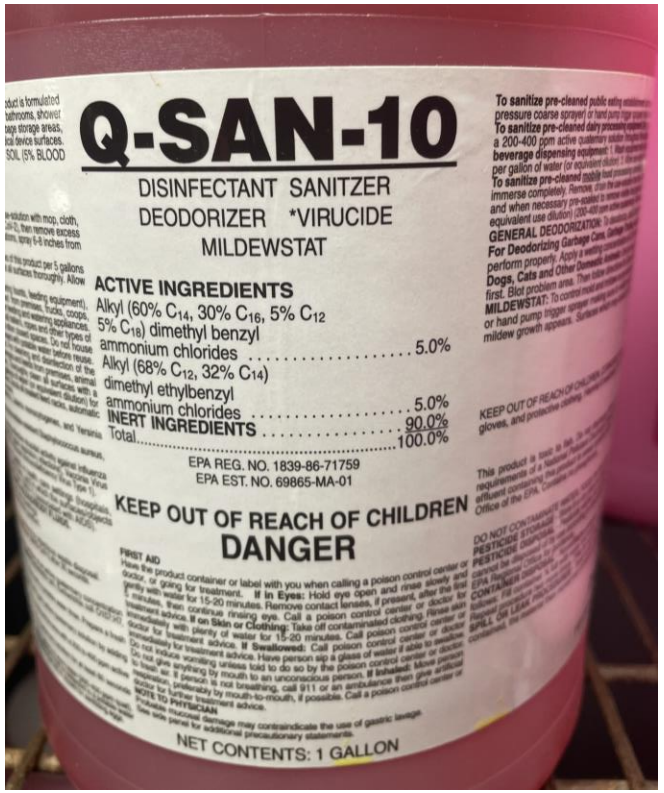
2-103.11

The PERSON IN CHARGE shall ensure that:

(K) EMPLOYEES are properly SANITIZING cleaned multiuse EQUIPMENT and UTENSILS before they are reused, through routine monitoring of solution temperature and exposure time for hot water SANITIZING, and chemical concentration, temperature, and exposure time for chemical SANITIZING; P

Assessing Sanitizing chemicals





Assessing Sanitizing chemicals

- Must have EPA Registration No. On label
- Must reference "food-contact" and provide instructions
- No scented bleaches
- Is it Quat?
  - Sometimes implied in Product name e.g. "Quat 10"
  - Active ingredient: Alkyl dimethyl benzyl ammonium chlorides
- Or Chlorine?
  - Active ingredient: Sodium hypochlorite/Chlorine dioxide

Inspecting Sanitizing Compartment
3 compartment sink

Assessing Sanitizing Compartment 3 compartment sink

- Clean solution
- Warm water >75 F (Quat)
- Solution Deep enough to completely immerse largest piece of equipment
- Equipment immersed (contact time) for
  - Chlorine > 7 seconds
  - Quat > 30 seconds
  - ***Always follow manufacturer's instructions***
- Proper concentration

Sanitizing – Chlorine solutions and pH

Minimum Concentration	Minimum Temperature	
Mg/L	pH 10 or less °C (°F)	pH 8 or less °C (°F)
25 – 49	49 (120)	49 (120)
50 – 99	38 (100)	24 (75)
100	13 (55)	13 (55)

Sanitizing solution strength - 3 compartment sink

Too weak: May not kill pathogens

Too strong: Could contaminate food

Proper strength (just right)

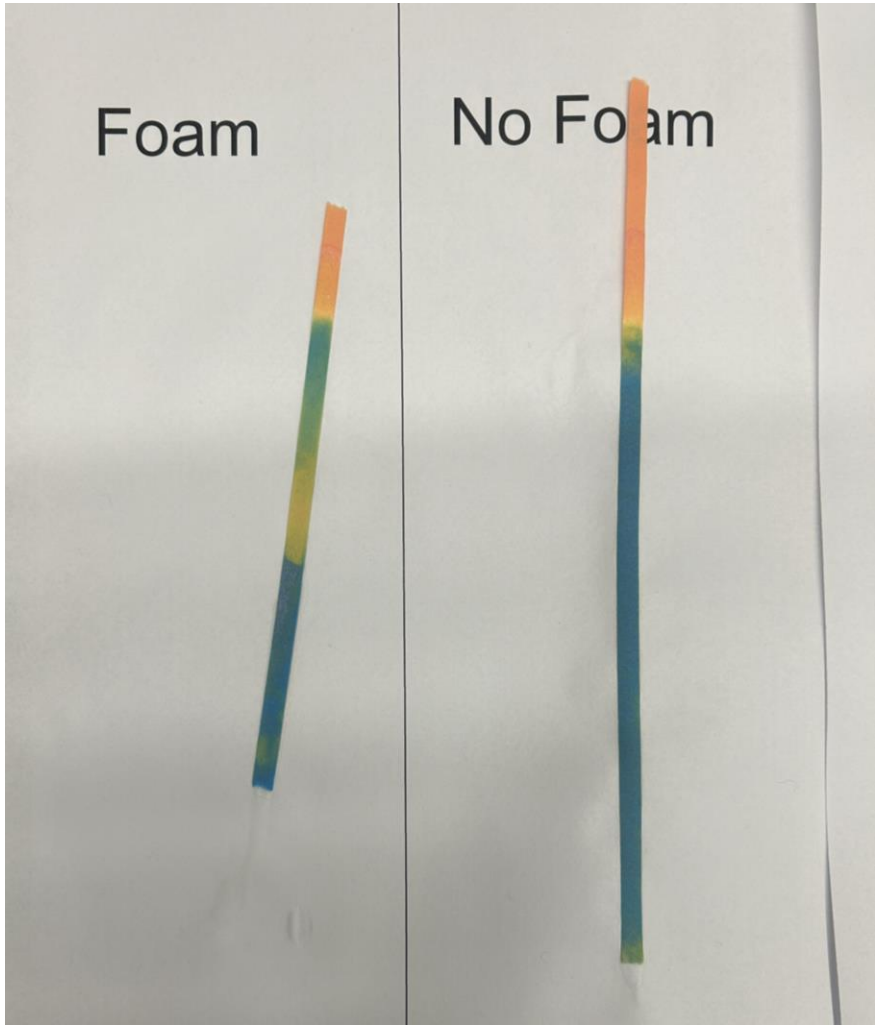
- Reduces bacteria 5 logs
- No-rinse sanitizer poses no contamination risk

More is not better (but it is more expensive)

Proper Test Kit Usage

- Always follow Instructions on Kit
- Immersion Time
- Do Not Swirl
- Blot Chlorine test strip with paper towel immediately
- Do not dip into foam
- On Quat test strips, go by dominant color

Do not dip into foam



What you learn when the Sanitizer solution is measured by *You*

- Sanitizer solution strength

What you learn when the Sanitizer solution is measured by *PIC*

- Do they have test kit(s)?
- Do they know where it is?
- Is it the correct type?
- Is it expired?
- Does it still have original foil on the paper?

Routinely monitoring?

- Do they know how to properly use test strip?
- Do they know proper temp range of solution for testing (quat)?
- Do they know the target ppm range?
- Sanitizer solution strength

What you learn when the Sanitizer solution is measured by *PIC*

- Do they have test kit(s)?
- Do they know where it is?
- Is it the correct type?
- Is it expired?
- Does it still have original foil on the paper?

Dishmachines

Dishmachine Types

High Temp vs Low temp

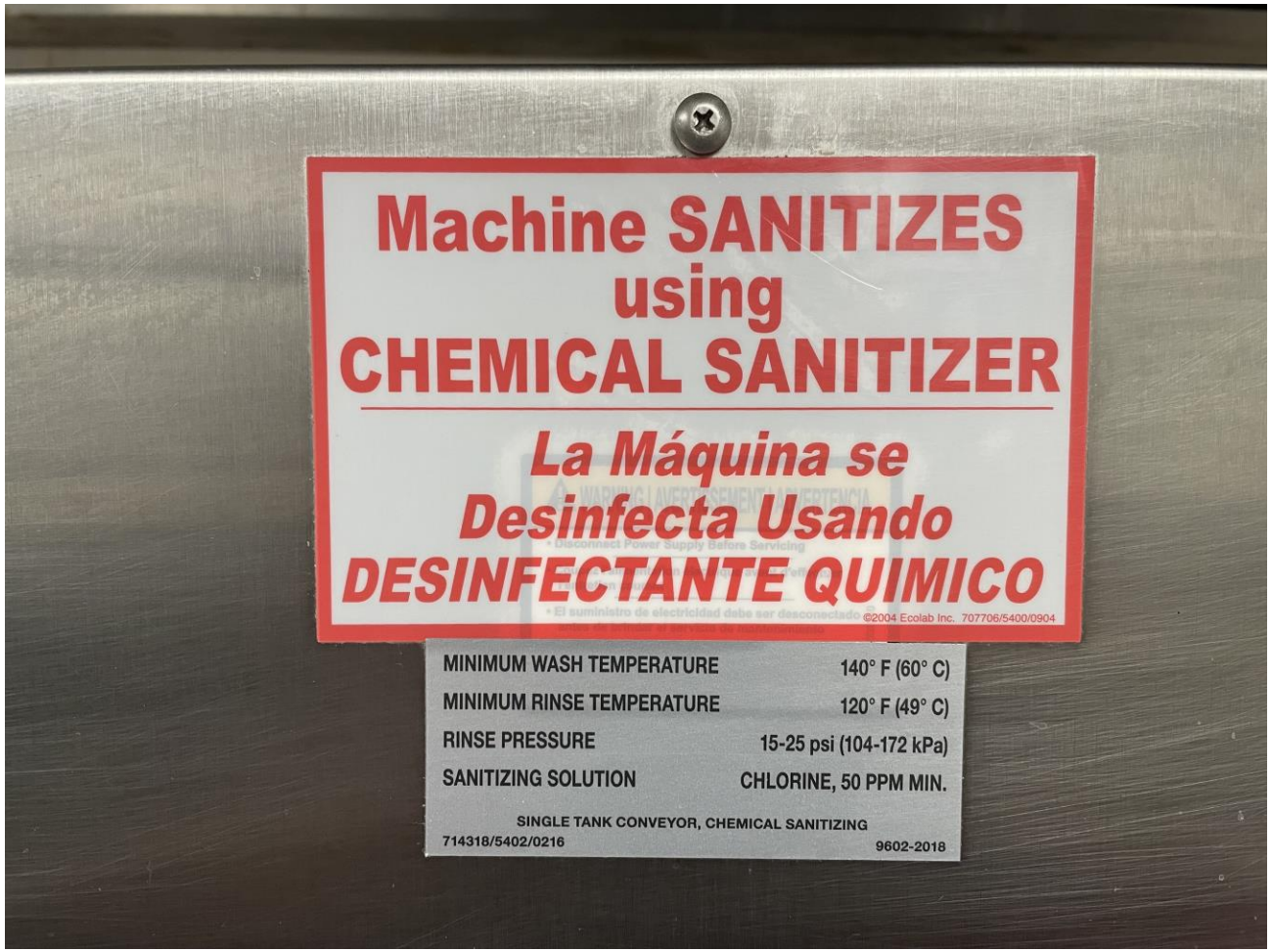
Style

- Conveyer belt
- Stationary rack
  - Under-counter
  - Upright

How to tell High temp from Low temp Dishmachine

1. PIC
2. Sign/poster
3. Does it reach 180F?
4. Follow chemical Feed tubes to containers
   - Detergent. Sanitizer? Rinse-Aid?
5. Data plate (…..?)

How to tell High temp from Low temp Dishmachine



How to tell High temp from Low temp Dishmachine

3 Chemicals = Low Temp

How to tell High temp from Low temp Dishmachine

3 Chemicals = Low Temp

Data plate

4-204.113 Warewashing Machine, Data Plate Operating Specifications.

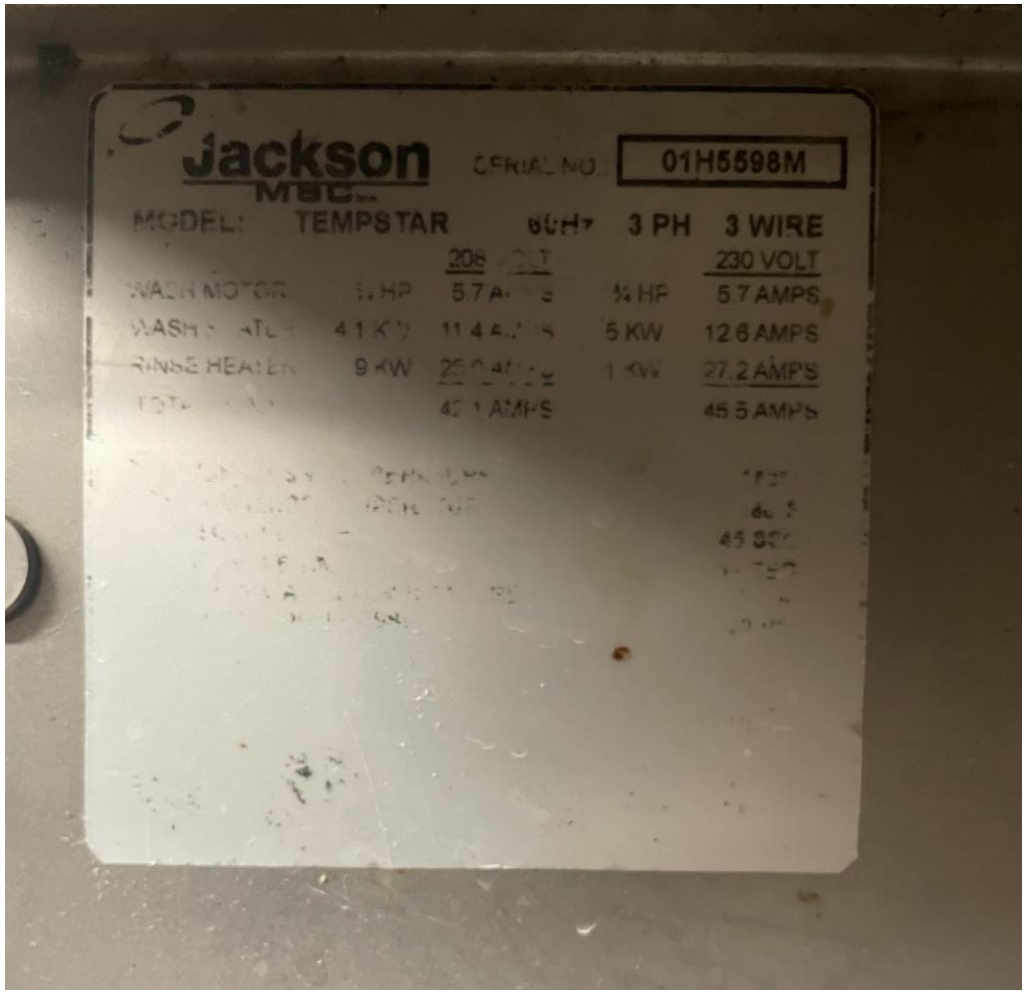
A WAREWASHING machine shall be provided with an easily accessible and readable data plate affixed to the machine by the manufacturer that indicates the machine's design and operation specifications including the:

(A) Temperatures required for washing, rinsing, and SANITIZING;

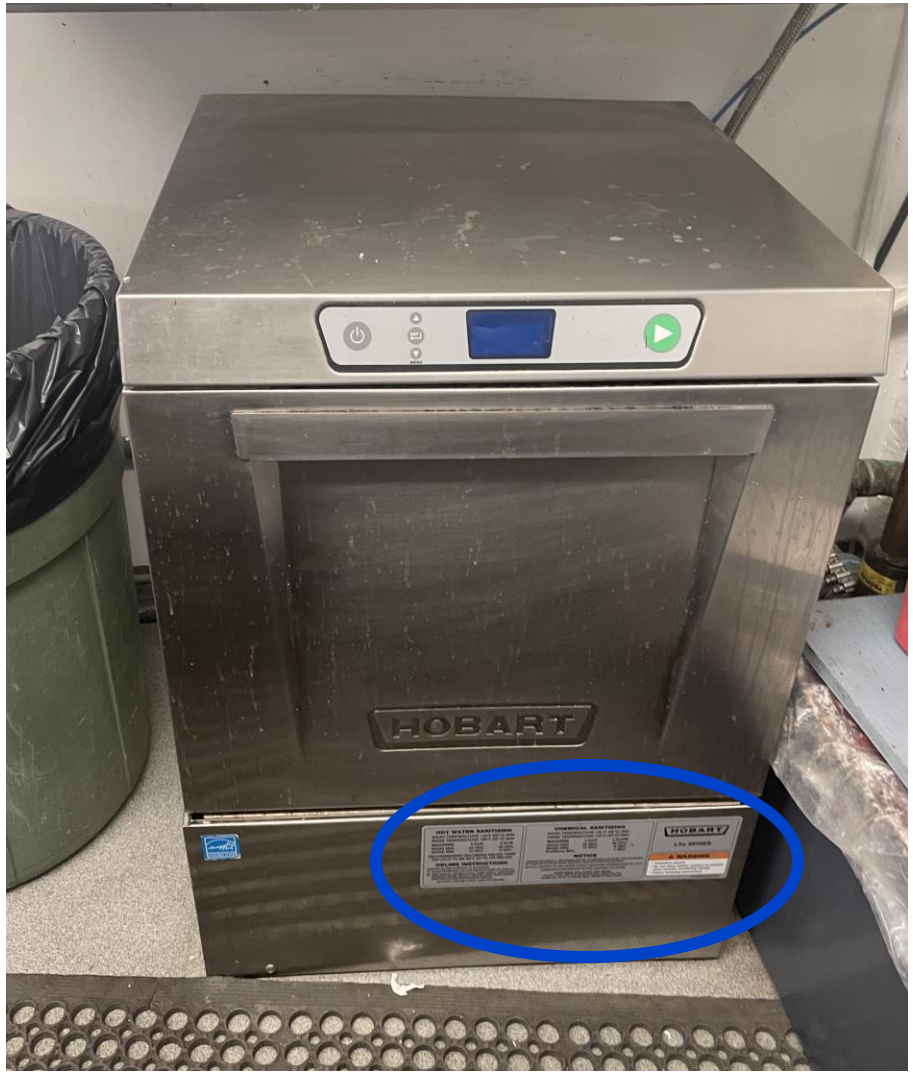
(B) Pressure required for the fresh water SANITIZING rinse unless the machine is de-signed to use only a pumped SANITIZING rinse; and

(C) Conveyor speed for conveyor machines or cycle time for stationary rack machines.

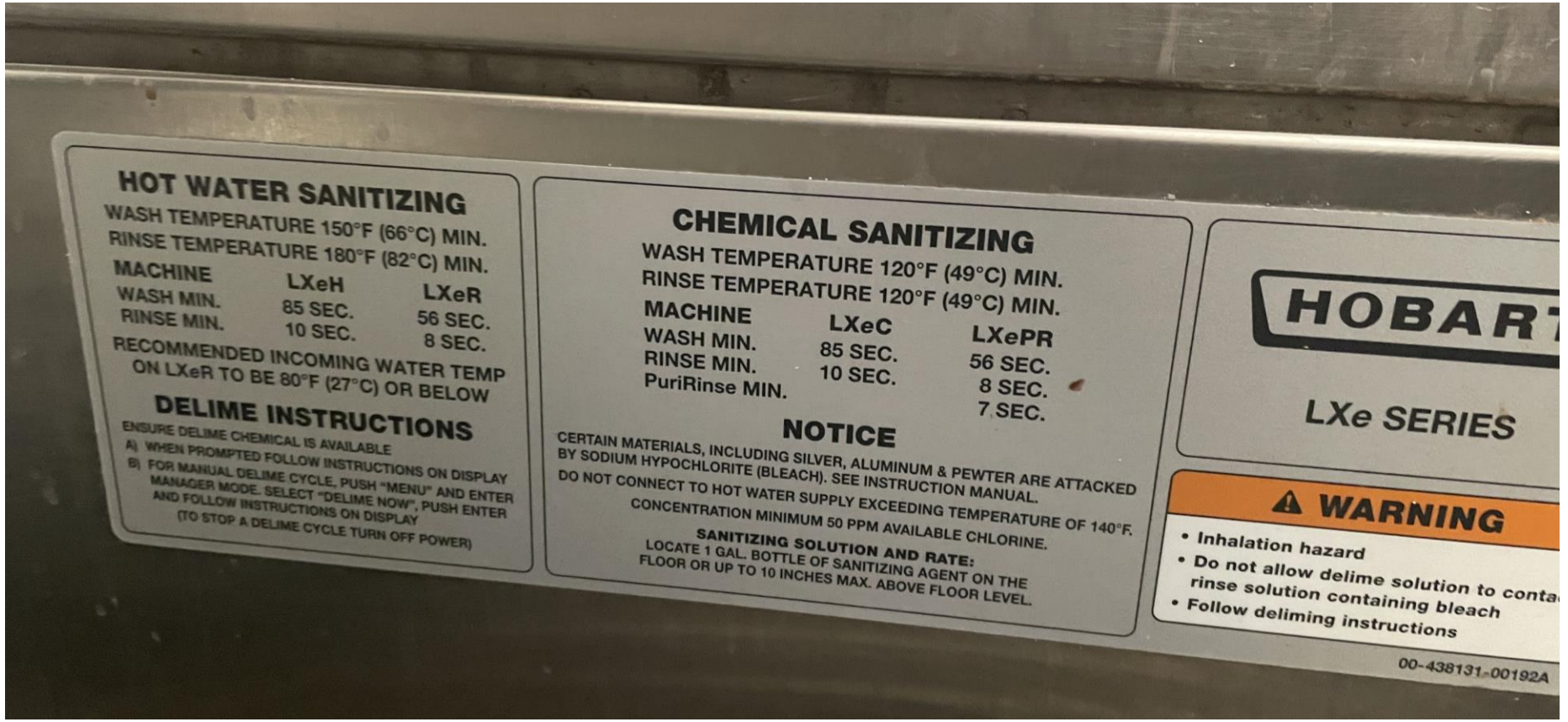
Data plate


Jackson
MSC
01H5598M
TEMPSTAR
3 PH
3 WIRE
230 VOLT
¾ HP
5.7 AMPS
5 KW
12.6 AMPS
27.2 AMPS
45.5 AMPS

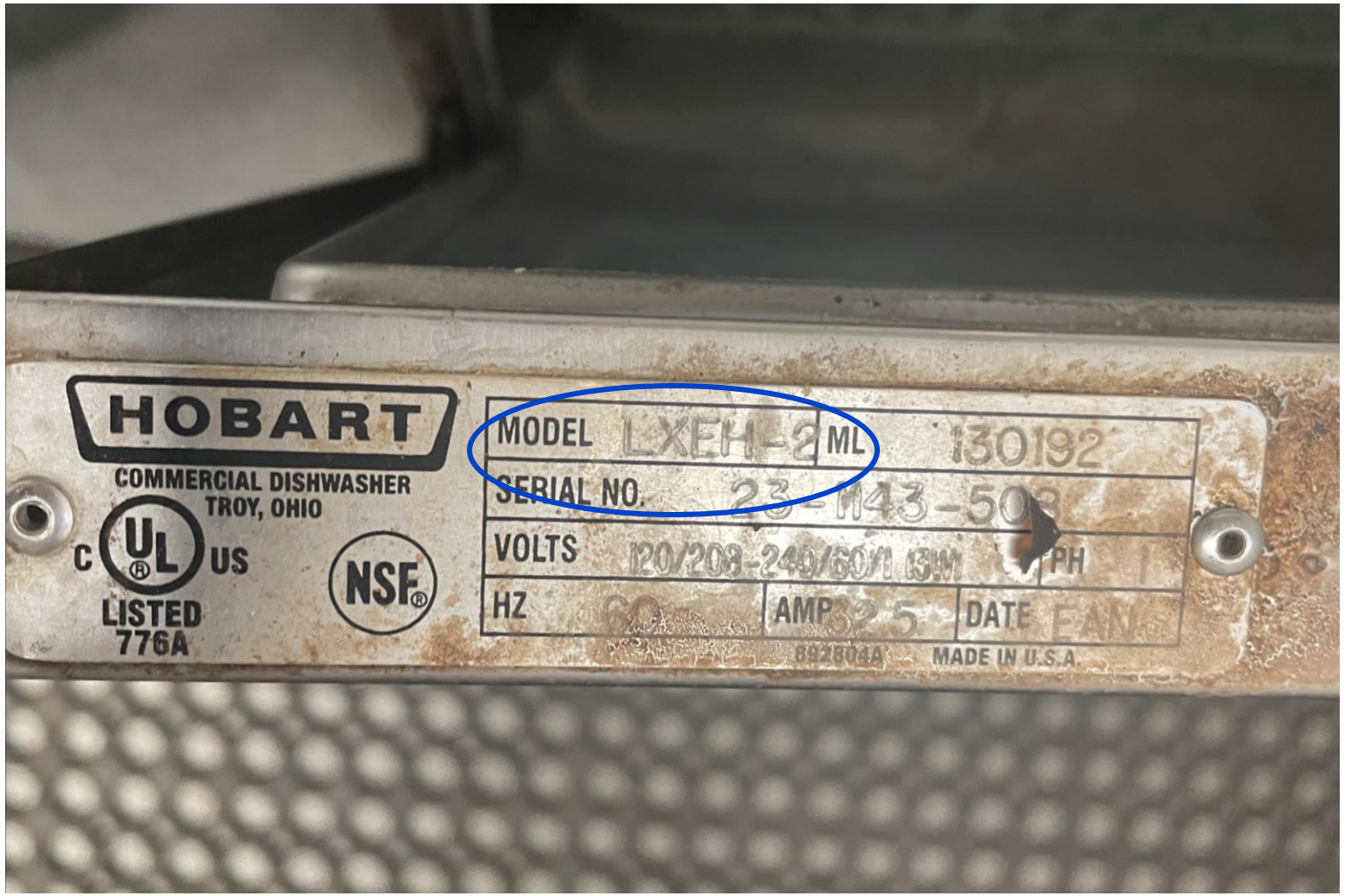
Data plate



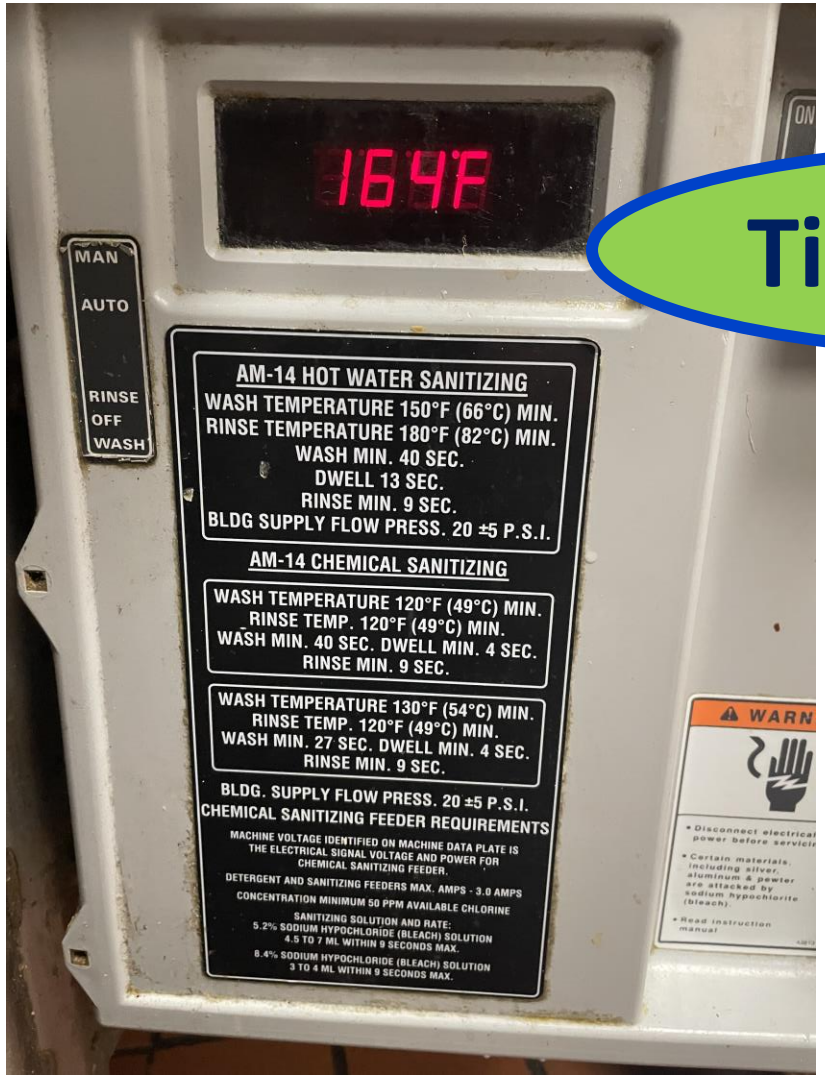
Data plate


HOT WATER SANITIZING
WASH TEMPERATURE 150°F (66°C) MIN.
RINSE TEMPERATURE 180°F (82°C) MIN.
MACHINE LXeH LXeR
WASH MIN. 85 SEC. 56 SEC.
RINSE MIN. 10 SEC. 8 SEC.
RECOMMENDED INCOMING WATER TEMP ON LXeR TO BE 80°F (27°C) OR BELOW
DELIME INSTRUCTIONS
ENSURE DELIME CHEMICAL IS AVAILABLE
A) WHEN PROMPTED FOLLOW INSTRUCTIONS ON DISPLAY
B) FOR MANUAL DELIME CYCLE, PUSH "MENU" AND ENTER MANAGER MODE. SELECT "DELIME NOW", PUSH ENTER AND FOLLOW INSTRUCTIONS ON DISPLAY
(TO STOP A DELIME CYCLE TURN OFF POWER)
CHEMICAL SANITIZING
WASH TEMPERATURE 120°F (49°C) MIN.
RINSE TEMPERATURE 120°F (49°C) MIN.
MACHINE LXeC LXePR
WASH MIN. 85 SEC. 56 SEC.
RINSE MIN. 10 SEC. 8 SEC.
PuriRinse MIN. 7 SEC.
NOTICE
CERTAIN MATERIALS, INCLUDING SILVER, ALUMINUM & PEWTER ARE ATTACKED BY SODIUM HYPOCHLORITE (BLEACH). SEE INSTRUCTION MANUAL.
DO NOT CONNECT TO HOT WATER SUPPLY EXCEEDING TEMPERATURE OF 140°F.
CONCENTRATION MINIMUM 50 PPM AVAILABLE CHLORINE.
SANITIZING SOLUTION AND RATE:
LOCATE 1 GAL. BOTTLE OF SANITIZING AGENT ON THE FLOOR OR UP TO 10 INCHES MAX. ABOVE FLOOR LEVEL.
HOBART
LXe SERIES
WARNING
• Inhalation hazard
• Do not allow delime solution to conta
rinse solution containing bleach
• Follow deliming instructions
00-438131-00192A

Serial number tag



Data plate



Time & Temp

Low Chemical indicator

4-204.117 Warewashing Machines, Auto-matic Dispensing of Detergents and Sanitizers.

A WAREWASHING machine that is installed after adoption of this Code by the REGULATORY AUTHORITY, shall be equipped to:

(A) Automatically dispense detergents and SANITIZERS; Pf and

(B) Incorporate a visual means to verify that detergents and SANITIZERS are delivered or a visual or audible alarm to signal if the detergents and SANITIZERS are not delivered to the respective washing and SANITIZING cycles..

Low Chemical indicator

Dishmachine inspection

- Use flashlight
- Clean (at least daily)
- All Food contact surfaces exposed to spray (no stacking)

Dishmachine cycles

- ***Wash***
  - Minimum Temperature (most machines)
    - 120F - Low Temp
    - 150F - High temp
  - Time
- ***Rinse/Sanitize*** (combined)
  - High temp (temp range 180-194) at manifold
  - Low temp (Temp – usually 120F)
  - Cycle time/Conveyer belt speed

May take a few times (3) to reach temperature

Dishmachine - verifying sanitization

- ***High temp*** (maximum registering device)
  - Puck/thermometer (160˚F)
  - Tape/strip (160F not 180F)
- ***Low temp***
  - Chlorine
  - Where to test…

Have PIC test if possible

Low temp Dishmachine Verifying sanitization

Clean in Place (CIP) - Definition

(1) "CIP" means cleaned in place by the circulation or flowing by mechanical means through a piping system of a detergent solution, water rinse, and SANITIZING solution onto or over EQUIPMENT surfaces that require cleaning, such as the method used, in part, to clean and SANITIZE a frozen dessert machine.

(2) "CIP" does not include the cleaning of EQUIPMENT such as band saws, slicers, or mixers that are subjected to in-place manual cleaning without the use of a CIP system.

Clean in Place

Clean in Place

- Clean-in-place (CIP) requires no disassembly or partial disassembly of equipment.
- MA Testing requirements (Frozen Dessert machines)
  - Standard Plate Count
  - Coliforms

Alternate Warewashing - 2 Bay sink

- Use detergent/sanitizer
- Must be same product for both bays (no Rinse step)
- Make up the cleaning/SANITIZING solutions immediately before use and drain them immediately after use

2 Bay sink Detergent Sanitizer

Alternate Warewashing Large/heavy equipment

- Disassemble (as required)
- Rough clean/scrape
- Using spray bottles/hoses/pails/brushes/swabbing
  - Wash
  - Rinse
  - Sanitize

Alternate Warewashing Large/heavy equipment -Slicer

Alternate Warewashing Large equipment

OR

- Disassemble
- Rough clean/scrape
- ***Detergent/sanitizer (no Rinse step)***
  - Solution or Pre-treated disposable towels

Frequency of Cleaning/sanitizing

4-602.11 Equipment Food-Contact Surfaces and Utensils.

(A) EQUIPMENT FOOD-CONTACT SURFACES and UTENSILS shall be cleaned:

(1) Except as specified in ¶ (B) of this section, before each use with a different type of raw animal FOOD such as beef, FISH, lamb, pork, or POULTRY; P

(2) Each time there is a change from working with raw FOODS to working with READY-TO-EAT FOODS; P

(4) Before using or storing a FOOD TEMPERATURE MEASURING DEVICE; P and

Frequency of Cleaning/sanitizing

(B) Subparagraph (A)(1) of this section does not apply if the FOOD-CONTACT SURFACE or UTENSIL is in contact with a succession of different raw animal FOODS each requiring a higher cooking temperature as specified under § 3-401.11 than the previous FOOD, such as preparing raw FISH followed by cutting raw poultry on the same cutting board.

(C) Except as specified in ¶ (D) of this section, if used with TIME/TEMPERATURE CONTROL FOR SAFETY FOOD, EQUIPMENT FOOD-CONTACT SURFACES and UTENSILS shall be cleaned throughout the day at least every 4 hours. P

Frequency of Cleaning/sanitizing

(D) Surfaces of UTENSILS and EQUIPMENT contacting TIME/TEMPERATURE CONTROL FOR SAFETY FOOD may be cleaned less frequently than every 4 hours if:

(1) In storage, containers of TIME/TEMPERATURE CONTROL FOR SAFETY FOOD and their contents are maintained at temperatures specified under Chapter 3 and the containers are cleaned when they are empty;

Frequency of Cleaning/sanitizing

(D) (2) UTENSILS and EQUIPMENT are used to prepare FOOD in a refrigerated room or area that is maintained at one of the temperatures in the following chart and:

(a) The UTENSILS and EQUIPMENT are cleaned at the frequency in the following chart that corresponds to the temperature

Temperature	Cleaning Frequency
5.0°C (41°F) or less	24 hours
>5.0°C - 7.2°C (>41°F - 45°F)	20 hours
>7.2°C - 10.0°C (>45°F - 50°F)	16 hours
>10.0°C - 12.8°C (>50°F - 55°F)	10 hours

Frequency of Cleaning/sanitizing

D (3) Containers in serving situations such as salad bars, delis, and cafeteria lines hold READY-TO-EAT TIME/TEMPERATURE CONTROL FOR SAFETY FOOD that is maintained at the temperatures specified under Chapter 3, are intermittently combined with additional supplies of the same FOOD that is at the required temperature, and the containers are cleaned at least every 24 hours;

Frequency of Cleaning/sanitizing

(E) Except when dry cleaning methods are used as specified under § 4-603.11, surfaces of UTENSILS and EQUIPMENT contacting FOOD that is not TIME/TEMPERATURE CONTROL FOR SAFETY FOOD shall be cleaned:

(2) At least every 24 hours for iced tea dispensers and CONSUMER self-services;

UTENSILS such as tongs, scoops, or ladles;

(3) Before restocking CONSUMER self-service EQUIPMENT and UTENSILS such as condiment dispensers and display containers; and

Frequency of Cleaning/sanitizing

E (4) In EQUIPMENT such as ice bins and BEVERAGE dispensing nozzles and enclosed components of EQUIPMENT such as ice makers, cooking oil storage tanks and distribution lines, BEVERAGE and syrup dispensing lines or tubes, coffee bean grinders, and water vending EQUIPMENT:

(a) At a frequency specified by the manufacturer, or

(b) Absent manufacturer specifications, at a frequency necessary to preclude accumulation of soil or mold.

Where to Cite

Cleanliness: Effectiveness or Frequency?

- 4-601.11 (A) EQUIPMENT FOOD-CONTACT SURFACES and UTENSILS shall be clean to sight and touch.
- 4-602.11 Frequency: Equipment Food-Contact Surfaces and Utensils

Frequency > Employee statements

How to cite- Descriptive words

- Dried-On
  Encrusted
  Excessive
  Heavy build-up
  Accumulated
  Organic Residue
  Embedded (cutting boards)
  Slimy (ice machine)
- PIC stated (…*frequency of cleaning…)*

2 Types of Food equipment with unique challenges

- Cutting boards
- Deli/meat slicers

Cutting Boards

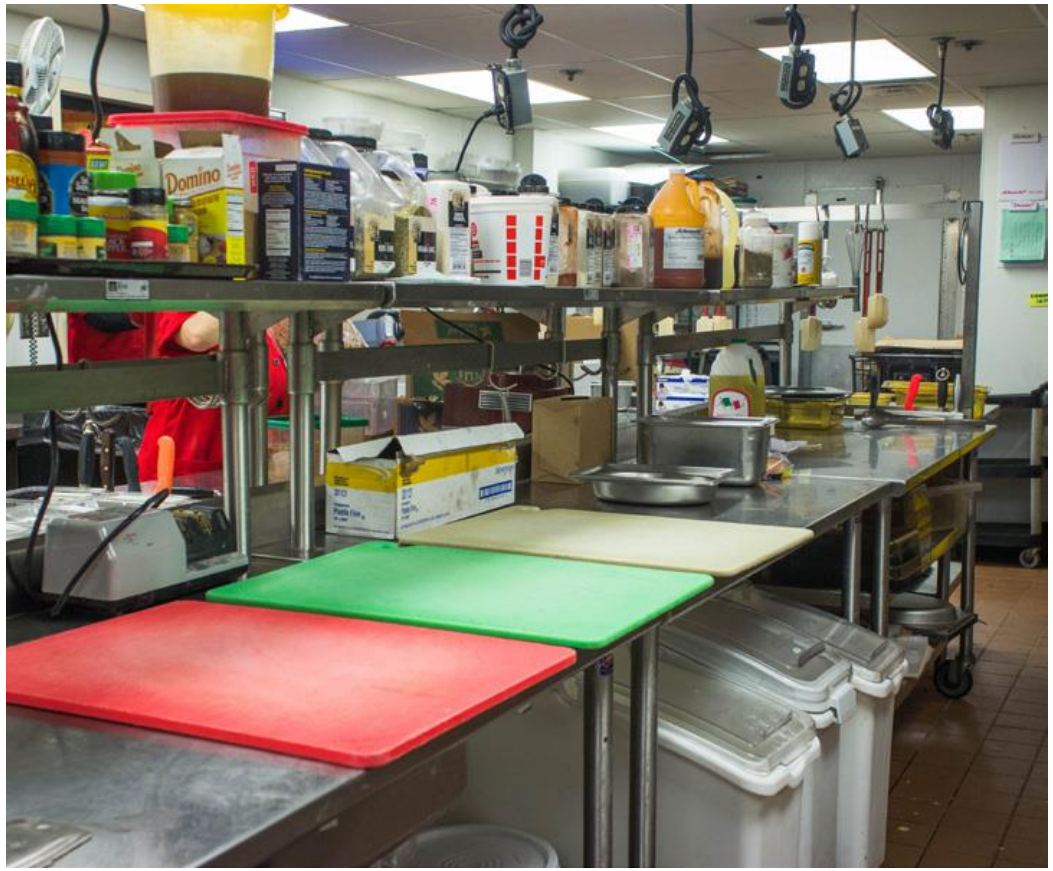
- Only food-contact surface that when used ***as intended*** is not smooth
- Many are too large for sink/dishmachine
- Often in 'continuous use' (> 4 hours)
- Often used for raw and ready-to-eat foods and multiple allergens
- Colored cutting boards

Cutting Boards

4-501.12 Cutting Surfaces.

Surfaces such as cutting blocks and boards that are subject to scratching and scoring shall be resurfaced if they can no longer be effectively cleaned and SANITIZED, or discarded if they are not capable of being resurfaced

Color-coded Cutting Boards



Cutting Boards

Cutting Boards

Cutting Boards –Scrathing/Scoring

Cutting Boards

- 'Visibly clean' (Pf) and/or 'Easily cleanable' (Core)
- Dirty should be corrected onsite (COS) Pf
- Cleaned 'in place'/ at sink/ in dishmachine?
- Just wiping pushes dirt into the grooves
- **Soak & Scrub** :Brushes (for food equipment only) recommended
- Some establishments use Block Whitener (followed by W/R/S)
- Wood vs plastic

Cutting Boards – Cleaning Frequency

- Does it contact TCS or non-TCS Food?
- Normal Room temperature vs Refrigerated prep room
- Cutting boards too large for sink and dishmachine still must be washed/rinsed/sanitized ***every 4 hours*** *or* ***after each use***

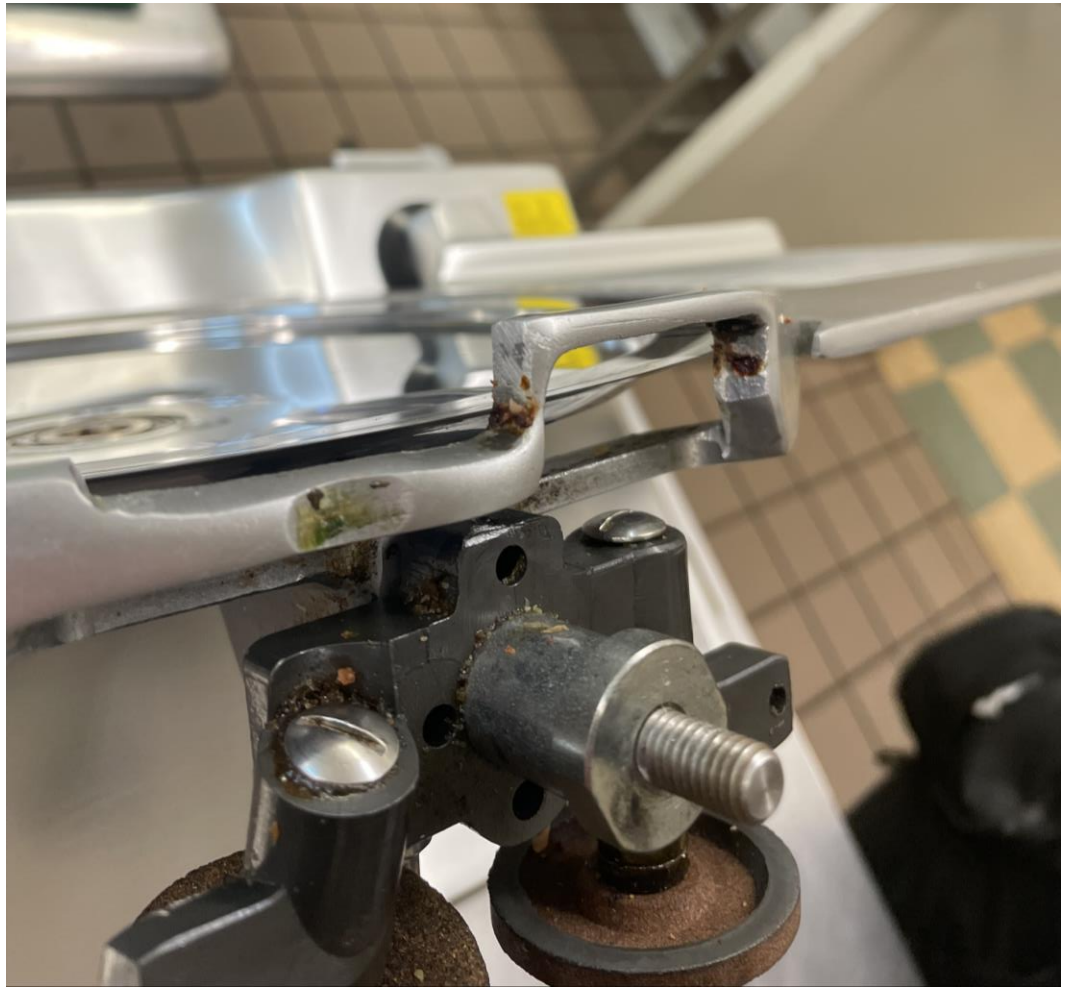
Meat/deli slicers

- Deli meats most common vehicle for Listeria
- Often in continuous use (> 4 hours)
- Use flashlight if needed (communicates the importance)
- Have them dissassemble (or describe process)
- Clean/Sanitize ***Every 4 Hours*** *or* ***after each use***

Meat/deli slicers

- Check Gap between blade edge and blade guard
- Parts that cannot be removed must be Washed/rinsed sanitized using pails/spray bottles/brushes/cleaning towels OR
- Can be cleaned/sanitized using detergent/sanitizer solution/wipes
- How do they keep track of the 4 hours (mark with food-safe pen/Date-marking sticker?)

Meat/deli slicers



Meat/deli slicers

Meat/deli slicers

Meat/deli slicers

Why we do Food Inspections

To Prevent Foodborne Illness at the Establishment

Warewashing - Priority (P) Violations

Sanitizer solution

- Strength
- Temperature
- Contact time

Cleaning/Sanitizing frequency (for surfaces that contact TCS foods)

Not all-inclusive

Warewashing - Priority Foundation (Pf) Violations

Washing

- Effectiveness (Food-contact surfaces - Clean to sight & Touch)
- Wash Solution minimum temperature

Sanitizer test kit(s)/Maximum temperature registering device provided and used

Not all-inclusive

Active Managerial Control

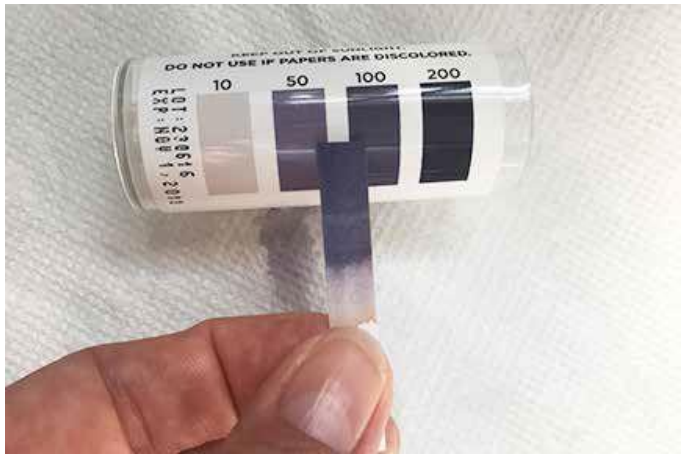
The purposeful incorporation of specific actions or procedures by industry management into the operation of their business to attain control over foodborne illness RISK factors. It embodies a preventive rather than reactive approach to FOOD safety through a continuous system of monitoring and verification.

2022 FDA Food Code Supplement

AMC - PIC Duties

- 2-103.11 Person in Charge. [590.002(D)]

1. The PERSON IN CHARGE shall ensure that:
2. (K) EMPLOYEES are properly SANITIZING cleaned multiuse EQUIPMENT and UTENSILS before they are reused, through routine monitoring of solution temperature and exposure time for hot water SANITIZING, and chemical concentration, temperature, and exposure time for chemical SANITIZING; P



AMC – Possible Elements

- Training Programs
- Sanitation Standard Operating Procedures (SSOP's)* (e.g. Slicer Cleaning Procedures)
- Sanitization logs*
- Cleaning schedule*

**** Not Required by Code***

Sample AMC Questions

- Can you demonstrate how the 3-compartment sink is set up when equipment and utensils are soiled and need to be cleaned?
- How do you know that the sanitizer concentration is correct?
- What procedures do you have in place to ensure that the dish machine is operating properly?
- Can you describe the method you use to clean the meat slicer?
- Do you have a cleaning schedule for food equipment that cannot be sent thorough the dish machine or cleaned in the three-compartment sink?

Sample AMC Questions

- What are your procedures for cleaning in-use knives/utensils/cutting boards?
- What would you do if dishmachine were not functioning properly?
- What is your process to ensure deli slicers are cleaned/sanitized at least every 4 hours?
- How are employees trained on Cleaning/sanitizing procedures?
- Do you use the Warewashing sink to wash or thaw Food?
- What are the intended uses of the colored cutting boards?

Questions