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Basic Cleaning & Basic Sanitizers

Presented by:

Donald Jones, Technical Manager, Wesmar Company

Table of Contents

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01

What is Sanitation?

What is Sanitation?

Cleaning

Removing Soils from a Surface.

Soil

Any Unwanted, Undesirable Material on a Given Surface.

Sanitizing

Treating a Cleaned Surface to Reduce Total Bacteria to a Safe Level.

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02

Types of Soil

Organic Soils

Fats	Oils	Grease	Protein	Starch

Inorganic Soils

Rust

Scale

Combination Soils

Stones

Organic & Inorganic	Indicator of Poor Cleaning Practices	Special Procedures to Remove

03

Chemistry of Cleaning

Primary Types Chemicals used in Cleaning

Alkaline

Acid

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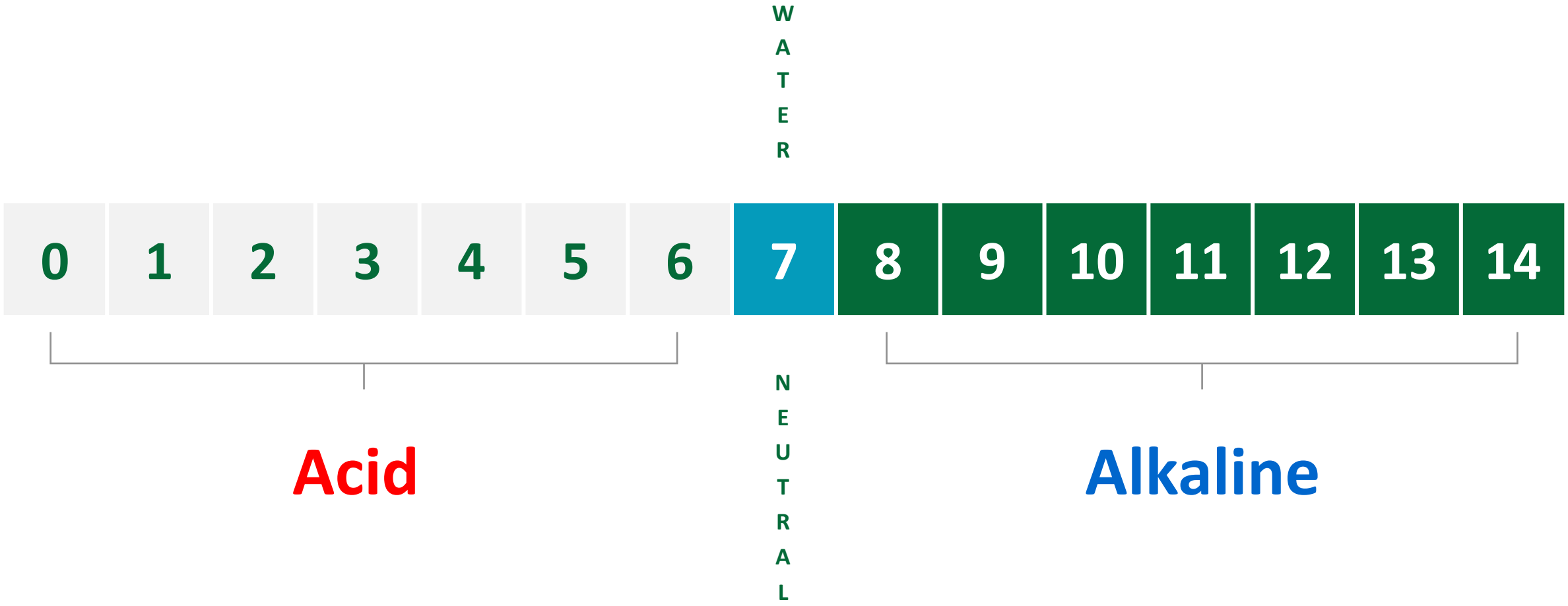
The pH Scale



Alkaline Cleaners

Remove Organic Soils

(Fats, Oils, Greases, Proteins, Starches)

Alkaline Cleaners

Sodium Hydroxide

Potassium Hydroxide

Sodium Carbonate

Heat Activated

Additives

- Gluconate
- Glucoheptonates
- EDTA
- Hydrogen Peroxide
- Sodium Percarbonate

Additives

- Sodium Metasilicate
- Sodium Tripolyphosphate
- “Soil Penetrating” Additives
- “De-foam” Additives
- “Foaming” Additives

Alkaline Additives

“Built Caustic Cleaner”

No Additives →

← Additives

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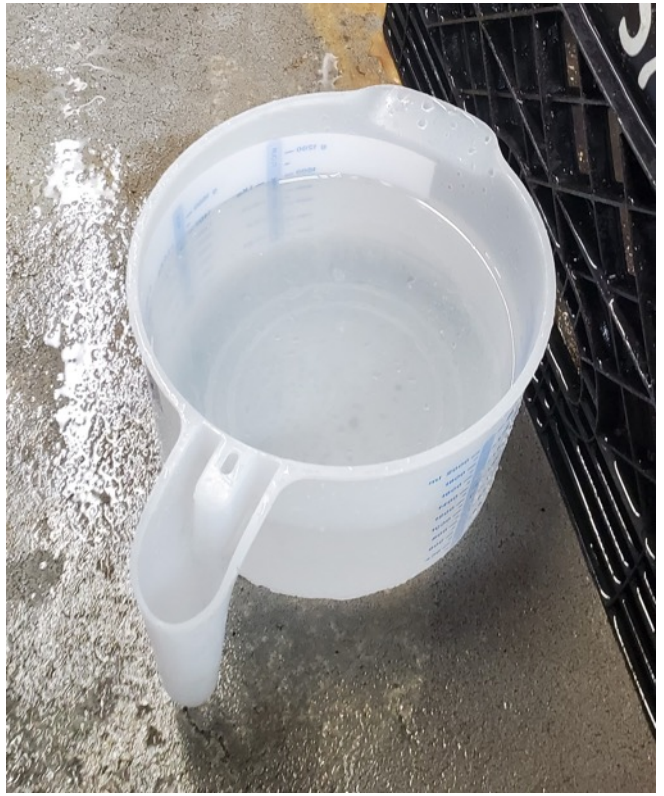
Alkaline Additives

“Built Caustic Cleaner”



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Acid Cleaners

Remove Inorganic Soils

(Rust, Scale)

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Acid Cleaners

Phosphoric Acid

Nitric Acid

Sulfuric - Sulfamic - Citric

Role of Chlorine as a Cleaner

Used with an Alkaline Product:

- Removes Protein
- It is Just a Good Cleaning Additive

04

Principles of Cleaning

Principles of Cleaning

Factors – W.I.N.S.

W ater

I ndividual

N ature of Soil

S urface

Factors are the Specific Components of Cleaning that Change Infrequently.

Water

W ater

I ndividual

N ature of Soil

S urface

- Hard Water
- Soft Water
- Sea Water
- Hot Water
- Cold Water

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Individual

W ater

I ndividual

N ature of Soil

S urface

Who?

How Many?

How Long?

Training?

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Nature of Soil

W ater

I ndividual

N ature of Soil

S urface

Organic

Inorganic

Combination

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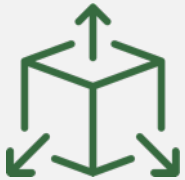
Surface



W ater

I ndividual

N ature of Soil

S urface

- Stainless
- Plastic
- Concrete

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Parameters – T.A.C.T.

T	**ime**
A	**ction**
C	**concentration**
T	**emperature**

The Principles We have Control Over.

Interdependent – Changing one affects the others.

Time

T ime

A ction

C oncentration

T emperature

- Time Availability
- Soil Type
- Soil Amount
- Process Temperature
- Equipment Being Cleaned

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Action

- **T**ime
- **A**ction
- **C**oncentration
- **T**emperature

- CIP
- COP
- Foam Cleaning
- High Pressure Cleaning
- Manual/Brush Cleaning

Concentration

- **T**ime
- **A**ction
- **C**oncentration
- **T**emperature

Depends On:

- Nature of the Soil
- Chemical Type

Testing Is Critical:

- Test Kits
- Test Strips

Temperature

T ime

A ction

C oncentration

T emperature

Cleaning Enhanced with Correct Temp:

- Clean at 10ºF Higher Than Process Temp.
- For Every 18ºF - 20ºF Increase in Temp - Double the Activity of the Cleaner.

Chlorinated – Alkaline – Acid

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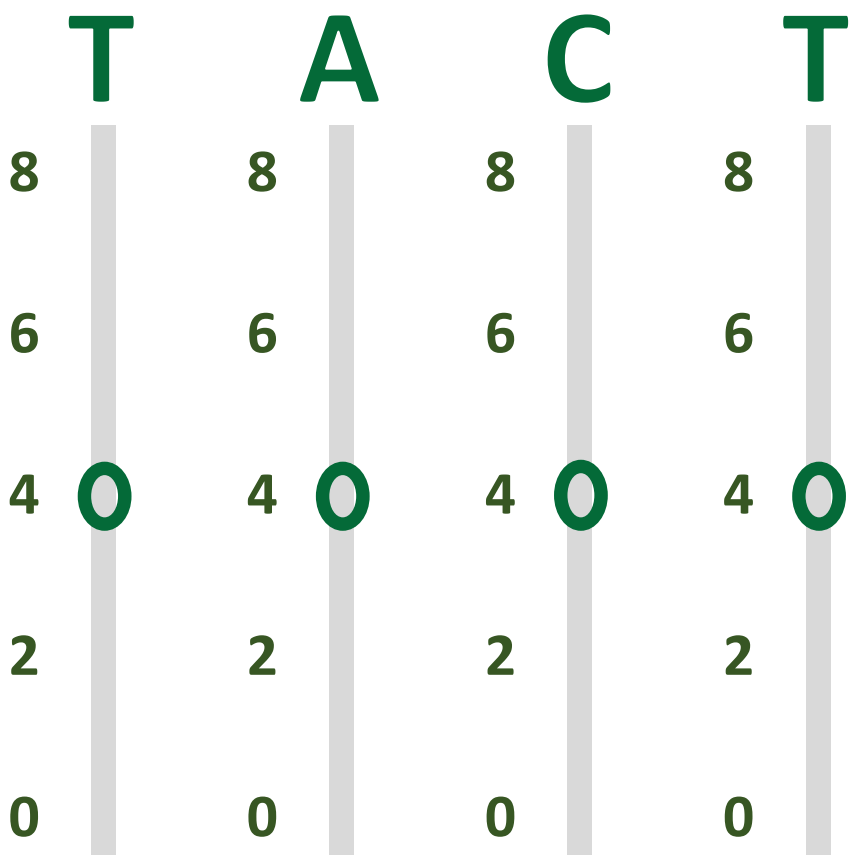
Rule of Four



Time	4
	X
Action	4
	X
Concentration	4
	X
Temperature	4
	=256

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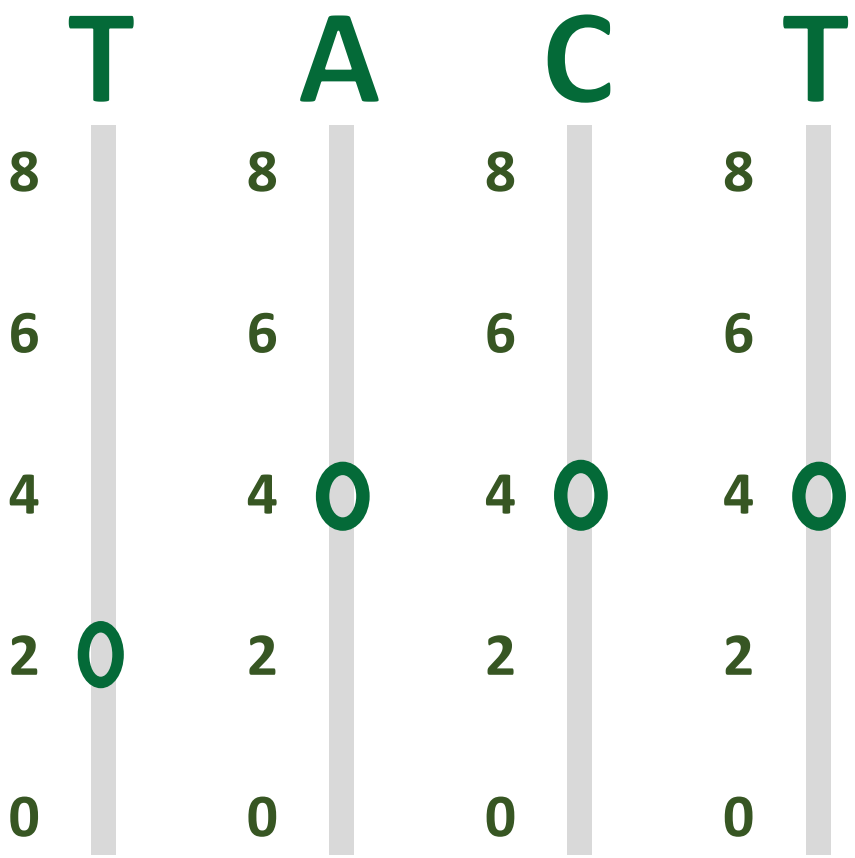
Rule of Four



Time	2
	X
Action	4
	X
Concentration	4
	X
Temperature	4
	=128

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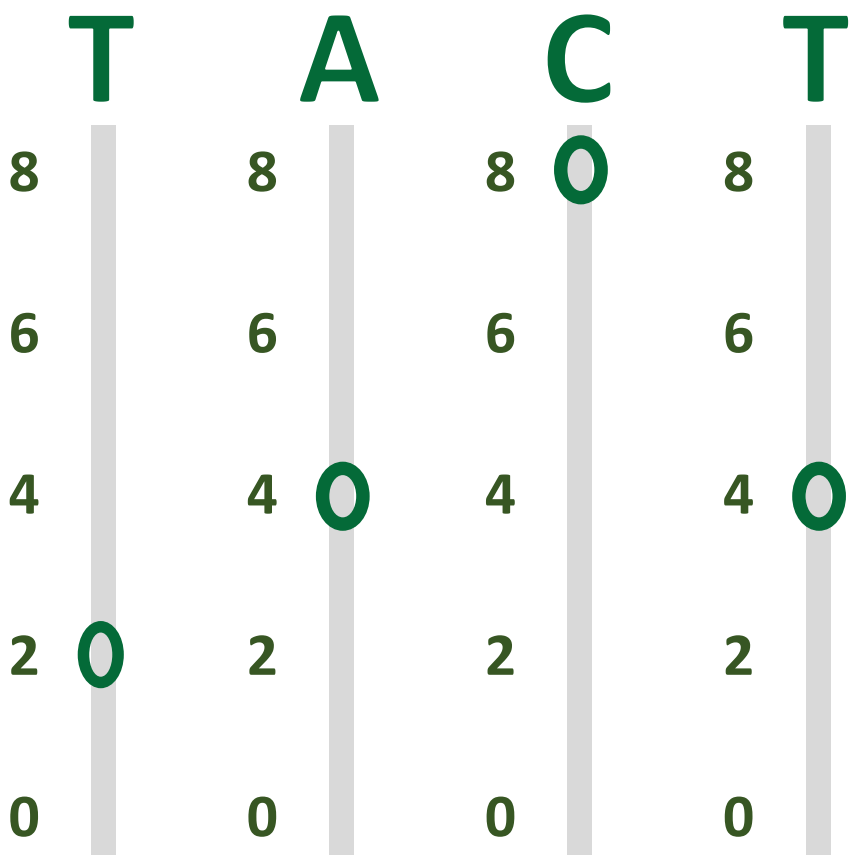
Rule of Four



Time

Action

Concentration

Temperature

Changes in One Variable Affects the Others – **There Must Be a Balance**

2 X 4 X 8 X 4 = **256**

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Process - Steps

1

Prior to Rinse

Remove Trash, Packaging, Chunks and Pieces of Product. Protect Anything That Cannot Get Wet.

2

Rinse

Use Water, Shovels, Fingers, or Bushes to Remove as Much of the Debris as Possible.

3

Wash

Apply Detergent: Foam - CIP - COP - Manual

4

Rinse

Use Water to Remove Detergent and Soils from Surfaces.

5

Inspect

Visually Inspect Equipment/Area Cleaned to Make Sure There is Nothing On It.

6

Sanitize

Flood the Equipment and Surrounding Area with an Adequate Solution of Sanitizer.

Principles Summary

Factors: **W.I.N.S.**

Water, Individual, Nature of Soil, Surface

Parameters: **T.A.C.T.**

Time, Action, Concentration, Temperature

Process: **STEPS**

6 Steps in Cleaning Process

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Foam Cleaning Procedures

- First, Cover All Electrical and/or Water Sensitive Equipment-Panels-Controls
- Thoroughly Pre-rinse to Remove “Gross” Soils
- Foaming is Not a Cleaning Step without Some Form of Manual Action
- Look: Over 7’ & Under 2’
- Contact Times Will Vary:
  - Vertical Surfaces Versus Horizontal Surfaces

Foam Cleaning Do's

- Wear Proper Safety Equipment
- Cover All Electrical Equipment
- Rinse Thoroughly All Gross Soils
- Follow Foam Mixing Procedures
- Follow All Safety Procedures
- Foam From the Bottom Up
- Rinse From the Top Down
- Foam Small Sections at a Time

Foam Cleaning Don’ts

- Do Not Foam Hot Surfaces
- Do Not Allow Foam to Dry
- Do not Apply to Electrical Panels, Outlets, Boxes or Meters
- Do Not Mix at High Temperatures (Ambient or < 120° F)
- Do Not Apply Thicker Than 1”

Foam Cleaning: Chlor Alkaline

Seafood Plant Alaska **Working Instruction: 205**

23-Apr-21 **Page:** 1 of 1

Working Instruction

Foam Cleaning - Central System

Cleaned by: Sanitation **Cleaning Frequency: Daily**

Products	Concentration	Usage Total	Test Kit:	TK Color Code:
FRM 63 CBS	3 - 5 ozs / gal	x gals	TK5000-Z	Yellow
Sanite 75	150 - 400 ppm	x gals	TK9000-Z	Gray
xxx	x	x gals	x	x
xxxx	x	x gals	x	x
xxxxx	x	x gals	x	x
xxxxxx	x	x gals	x	x
xxxxxxx	x	x gals	x	x

Required Safety Equipment

Rubber Boots	: Yes
Eye Protection	: Yes
Rubber Gloves	: Yes
Bump Cap	: Yes
Rain Suit	: Yes
Rubber Apron	: No

Always Wear Proper Safety Equipment When Working with Chemicals or Hot Water

1. Remove excess product debris and dispose of in appropriate waste receptacle.
2. Using water hose (ambient to 130°F) and rinsing from inside to outside or top to bottom, force any visible product residue downward toward floor.
3. Working in direction of nearest drain, rinse any product residue from floor.
4. Using central foaming unit and **FRM 63 CBS (3 – 5 ozs / gal)**, cover all surfaces with a thin layer of foam from inside to outside, bottom to top. Foam should be allowed adequate contact time for penetrating soils but never allowed to dry (5 - 15 Minutes).
5. Using single use scrub pad or appropriate color brush, remove any remaining product residue.
6. Using water hose (ambient to 130°F) and rinsing from inside to outside or top to bottom, rinse all detergent and soils from surfaces.
7. Perform visual inspection of entire area/equipment. Inspect area/equipment from above and below, paying close attention to food contact surfaces and ensuring all areas are clean.
8. Using central sanitizing unit and **Sanite 75 (150-400 ppm)**, cover all surfaces with sanitizing solution from inside to outside, bottom to top. Surfaces MUST remain wet for at least one minute. Follow directions for use listed on product label. DO NOT RINSE.
9. Use water hose (ambient to 130°F) and working in direction of nearest drain, remove all foam from floor.
10. After cleaning floor, inspect/clean drains.

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Foam Cleaning: Alkaline

Seafood Plant Alaska **Working Instruction: 207**

23-Apr-21 Page: 1 of 1

Working Instruction

Foam Cleaning - Formula BCR+

System Volume: 20 Gallons | Cleaned by: Sanitation | Cleaning Frequency: Daily

Products	Concentration	Usage Total	Test Kit:	TK Color Code:
Formula BCR +	3 - 5 ozs/gal	80.0 ozs	TK5050-Z	Yellow
Sanite 75	150 - 400 ppm	48.0 ozs	TK9000-Z	Gray
xxx	x	x gals	x	x
xxxx	x	x gals	x	x
xxxxx	x	x gals	x	x
xxxxxx	x	x gals	x	x
xxxxxxx	x	x gals	x	x

Required Safety Equipment	
Rubber Boots	: Yes
Eye Protection	: Yes
Rubber Gloves	: Yes
Bump Cap	: Yes
Rain Suit	: Yes
Rubber Apron	: No

Always Wear Proper Safety Equipment When Working with Chemicals or Hot Water

1. Remove excess product debris and dispose of in appropriate waste receptacle.

2. Using water hose (ambient to 130°F) and rinsing from inside to outside or top to bottom, force any visible product residue downward toward floor.

3. Working in direction of nearest drain, rinse any product residue from floor.

4. Using a 20 Gallon Portable Foamer and **Formula BCR+ (3 - 5 ozs / gal)**, cover all surfaces with a thin layer of foam from inside to outside, bottom to top. Foam should be allowed adequate contact time for penetrating soils but never allowed to dry.

5. Using single use scrub pad or appropriate colored brush, remove any remaining product residue.

6. Using water hose (ambient to 130°F) and rinsing from inside to outside or top to bottom, rinse all detergent and soils from surfaces.

7. Perform visual inspection of entire area/equipment. Inspect area/equipment from above and below, paying close attention to food contact surfaces and ensuring all areas are clean.

8. Using Hydro Sprayer unit and **Sanite 75 (150-400 ppm)**, cover all surfaces with sanitizing solution from inside to outside, bottom to top. Surfaces MUST remain wet for at least one minute. Follow directions for use listed on product label. DO NOT RINSE.

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Freeze Tunnel CIP:

Seafood Plant Alaska **Working Instruction: 203**

23-Apr-21 **Page:** 1 of 1

Working Instruction

Freeze Tunnel CIP - Formula BCR+

Cleaned by: Sanitation | Cleaning Frequency: Daily

Products	Concentration	Usage Total	Test Kit:	TK Color Code:
Formula BCR+	1 - 3 ozs / gal	5 gals	TK5025-Z	Yellow
Sanite 75	150 - 400 ppm	2 gal	TK9000-Z	Gray
xxx	x	x gal	x	x
xxxx	x	x gals	x	x
xxxxx	x	x gals	x	x
xxxxxx	x	x gals	x	x
xxxxxxx	x	x gals	x	x

Required Safety Equipment	
Rubber Boots	: Yes
Eye Protection	: Yes
Rubber Gloves	: Yes
Bump Cap	: Yes
Rain Suit	: Yes
Rubber Apron	: No

Always Wear Proper Safety Equipment When Working with Chemicals or Hot Water

1. Rinse: 15 min. 110° F to 120° F

2. Alkaline Detergent 20 min. 140° F to 145° F 5 Gals 2 ozs / gal
   Formula BCR+ Degreaser

   Formula BCR+ Degreaser Foam SS Tunnel Belt with 20 Gallon Portable Foamer

3. Rinse the System: 15 min.

4. Sanitize 3 min. Cold 2 Gals 150 - 400 ppm
   Sanite 75

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05

Basic Sanitizers

Terms

Sterilize:

An Agent that will Destroys or Eliminates all Forms of Life, Including all Forms of Vegetative, or Actively Growing Bacteria, Bacterial Spores, Fungi and Viruses.

Disinfectant:

An Agent that will Destroy 100% of Vegetative, or Actively Growing Bacteria, or Infectious Fungi. Will not Kill Spores or all Viruses.

Terms

Sanitize:

The Treatment of a Cleaned Surface with a Chemical or Physical Agent to Destroy Disease / Spoilage Causing Organisms.

Reduces Total Vegetative Cell Population to a "Safe Level".

EPA & FDA

EPA Registration:

- Non-Rinse Food Contact Surface Sanitizer
- Non-Food Contact Surface Sanitizer

FDA: 21CFR 178.1010

- Compliance & Regulations for Sanitizers
- Identifies Ingredients for Formulations
- Identifies Sanitizer Concentrations

Sanitizer

Food Contact Surfaces:

By 99.999% or 5 Logs,
in 30 Seconds, at 25° C.

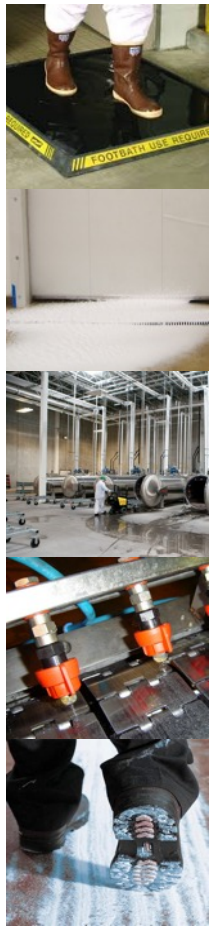
- **Concentration Critical for Non-Rinse.**
- **Surface Must be Allowed to Drain.**

Sanitizer

Non-Food Contact Surfaces:

**By 99.9% or 3 Logs,
Within 5 Minutes.**

- **Concentrations Usually Exceed Label Dilutions for “Non-Rinse” Sanitizer.**
- **These Include Sanitizing Solutions Used for:**



Foot Baths

Foot Foam

Floors, Walls, Drains, Ceilings

Conveyor Lubricants

Powder Treatments

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Label Information

Usage Restrictions:

- Use Concentrations Must be Accurate
  - To High – Violates Regulation
  - To Low – Efficacy Concerns
  - Typically Labels Allow a Range for Concentration
    - (82 ppm to 500 ppm) or (200 ppm to 400 ppm)
- Only Single Use Allowed
- Manual Preparations Should be Done Daily or More Frequently

Sanitizing Food Contact Surfaces:

This product can be used in Federally Inspected Meat and Poultry Facilities as a sanitizer. Prior to sanitizing, remove gross food particles, then wash with a detergent solution, followed by a potable water rinse. Sanitize with a concentration of 1.0-6.1 oz. of this product diluted in 6 gallons of water (0.13%-0.79% v/v concentration, or 82-500 ppm active peroxyacetic acid).
At this dilution, this product is effective against Staphylococcus aureus, Escherichia coli, Salmonella enterica, and Listeria monocytogenes. Use immersion, spray or circulation techniques as appropriate to the equipment. All surfaces must be exposed to sanitizing solution for a period of at least 60 seconds or more if specified by a governing code. Drain any excess solution. Do not rinse.

Test - Test - Test

Log Results!!!

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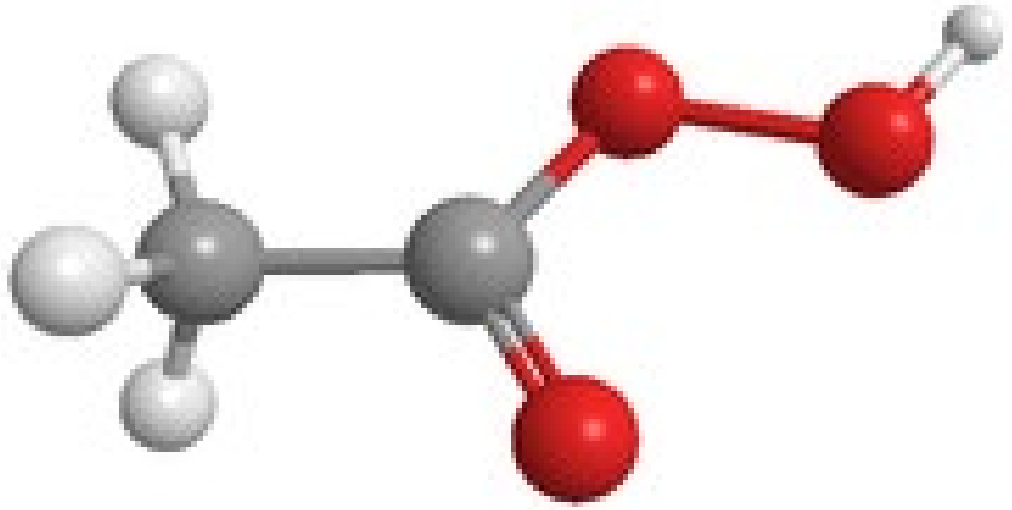
Types of Sanitizers

- Heat
- Chlorine
- Chlorine Dioxide
- Acidified Sodium Chlorite
- Peroxyacetic Acid
- Acid Sanitizers
- Quats
- Iodine
- Hydrogen Peroxide
- PerQuat™
- Silver Dihydrogen Citrate
- Alcohol Sanitizer
- Ozone

Peracetic Acid



Peracetic Acid - Acetic Acid & H_2O_2

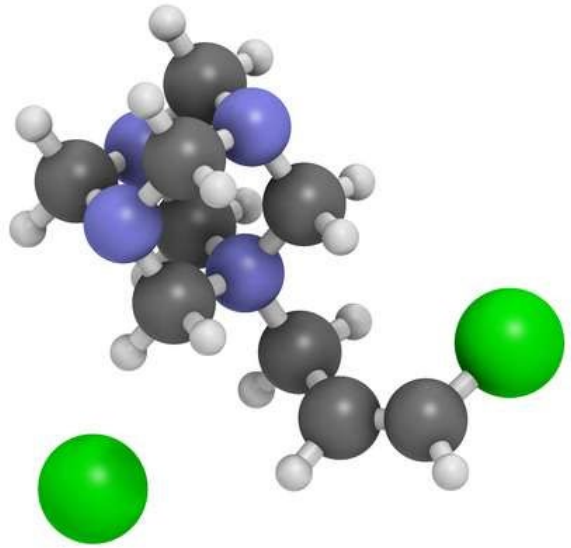
Advantages

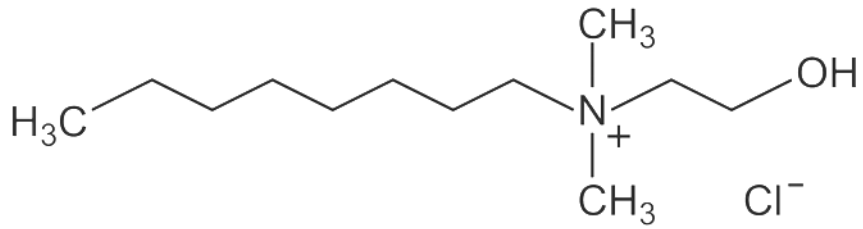
1. Broad Spectrum
2. Kills Spores
3. No Foam
4. Environmentally Safe
5. Good on Bio-films
6. Stable Solutions
7. Wide pH Range

Disadvantages

1. Strong Oxidizer
2. Pungent Odor
3. Not an Acid Rinse
4. Special Training Needed
5. Limited Manual Use

Quats





an alkyl quaternary system

Quats – Cationic Surfactant

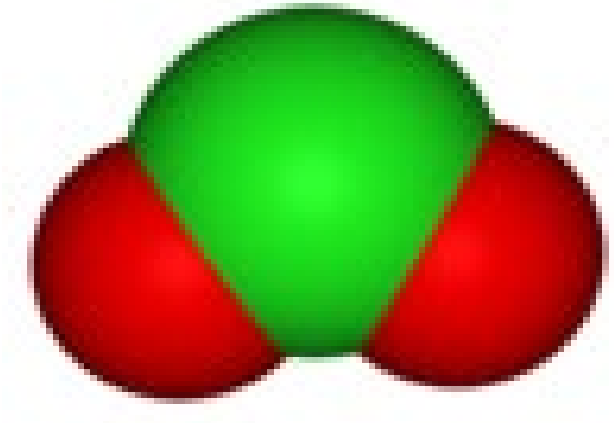
Advantages

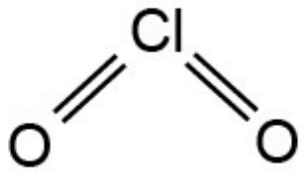
1. Low Toxicity
2. Non-Irritating
3. Non-Corrosive
4. Heat / Organic Stable
5. High Activity for G+
6. Yeast / Mold Control
7. Residual
8. Non-Volatile
9. Can be Acidified

Disadvantages

1. Low Activity for G-
2. Anionic Contamination Reduces Activity
3. Residual
4. Foam in CIP

Chlorine Dioxide





Chlorine Dioxide

Advantages

1. Broad Spectrum
2. Kills Spores / Phages
3. OK in Hard Water
4. Very Economical
5. Safe for Environment
6. Wide pH Range
7. No THM's (Trihalomethanes)
8. Bio-film Removal
9. Tolerate High Organic Load
10. Low Organoleptic Impact

Disadvantages

1. May Gas-Off
2. On-Site Generators
3. Needs Special Training
4. Must Follow Directions

Proper Sanitizer Application

When to Apply:

Immediately After Cleaning:

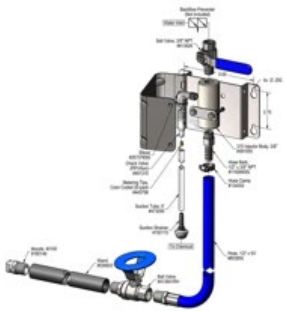
- Manual Step
  - Flood Sanitizing
- Automated Program Step
  - CIP System
    - Separate Program Step (Pre-Start-Up)

Re-Sanitize:

- After 4 Hours of Non-Use

Sanitizers: Concentration is Critical

Hose Injector Systems



In-Line Injecting

- Venturi
- Injector Action

Portable Tank Sprayers

Dosatron

Pump-Up Sprayers

Metering Pump

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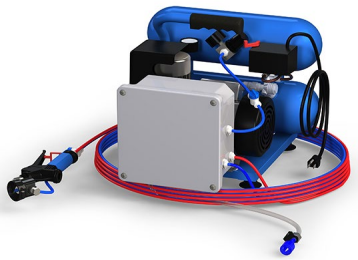
Fog & Mist Units

- Portable and Wall-Mounted Systems
- Droplet Size: 15 Microns at 50 psi
- Telescoping Fog Mast Available
- Polypropylene or Kynar Nozzles
- Delay Timer (Optional)
- Compressed Air Required



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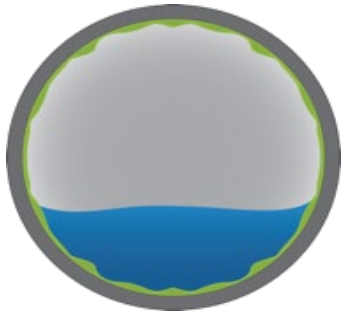
360° Contact

Foam for Drain Sanitation:



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06

Questions

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Thank You.

Presented by:

Donald Jones, Technical Manager, Wesmar Company

208-559-7872 | djones@wesmarcompany.com | wesmarcompany.com

Kevin Graham, Area Sales Manager, Wesmar Company

206-660-2649 | keving@wesmarcompany.com | wesmarcompany.com