

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2014

DateRun: 03/07/2014

Experimenters: Kathleen Tenaglia, Alicia Melvin

ClientType: Cleaning Company

ProjectNumber: Project #1

Substrates: Ceramics, Plastic, Stainless Steel

PartType: Coupon

Contaminants:

Cleaning Methods: Steam

Analytical Methods: Visual

Purpose: The objective of this study was to determine the effectiveness of commercially available steam devices for disinfection

Experimental Procedure: All tests performed in triplicate with pos and neg controls.  
All tests were performed with a 30 second contact time.  
All tests were performed with *S. aureus* and *E. coli*.  
Tests were performed on aluminum and stainless steel.  
Towel variations included: Microfiber washed with no fabric softener  
TNTC= Too Numerous to Count (>300 Colonies)

Lab Methods

Day 1

- Subculture Bacteria and Prepare Supplies.
- o Make Tryptic Soy Agar Plates
- o Autoclave Supplies
- o Gather Equipment

Day 2

- Conduct Run
- o Set up Biological Safety Cabinet
- o Spot Coupon Surface with Inoculation, plate Standardized Inoculum.
- o Prepare Controls
- o Test Cleaning
- o Wrist Action Shaker
- o Dilutions
- o Plate

Day 3

- Count Plates
- o Determine Effectiveness

Results:	Organism	Coupon	Test	Dilution	Result	Duplicate result
	<i>S. aureus</i>	Aluminum	Negative	1:1	2	0
	<i>S. aureus</i>	Aluminum	Positive	1:1	TNTC	TNTC
	<i>S. aureus</i>	Aluminum	Positive	1:10	TNTC	TNTC
	<i>S. aureus</i>	Aluminum	Positive	1:100	50	63
	<i>S. aureus</i>	Aluminum	Positive	1:1000	2	2
	<i>S. aureus</i>	Aluminum	Standard In.	10 <sup>-9</sup>	TNTC	TNTC
	<i>S. aureus</i>	Aluminum	Standard In.	10 <sup>-10</sup>	TNTC	TNTC
	<i>S. aureus</i>	Aluminum	Standard In.	10 <sup>-11</sup>	188	180
	<i>S. aureus</i>	Aluminum	Standard In.	10 <sup>-12</sup>	108	95
	<i>S. aureus</i>	Aluminum	1	1:1	0	0

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S. aureus	Aluminum	1	1:10	1	0
S. aureus	Aluminum	1	1:100	1	0
S. aureus	Aluminum	1	1:1000	1	0
S. aureus	Aluminum	2	1:1	0	0
S. aureus	Aluminum	2	1:10	1	0
S. aureus	Aluminum	2	1:100	1	0
S. aureus	Aluminum	2	1:1000	3	0
S. aureus	Aluminum	3	1:1	1	0
S. aureus	Aluminum	3	1:10	2	2
S. aureus	Aluminum	3	1:100	0	0
S. aureus	Aluminum	3	1:1000	1	0

Organism	Coupon	Test	Dilution	Result	Duplicate result
S. aureus	Aluminum	Negative	1:1	2	0
S. aureus	Aluminum	Positive	1:1	TNTC	TNTC
S. aureus	Aluminum	Positive	1:10	TNTC	TNTC
S. aureus	Aluminum	Positive	1:100	50	63
S. aureus	Aluminum	Positive	1:1000	2	2
S. aureus	Aluminum	Standard In.	10 <sup>-9</sup>	TNTC	TNTC
S. aureus	Aluminum	Standard In.	10 <sup>-10</sup>	TNTC	TNTC
S. aureus	Aluminum	Standard In.	10 <sup>-11</sup>	188	180
S. aureus	Aluminum	Standard In.	10 <sup>-12</sup>	108	95
S. aureus	Aluminum	1	1:1	0	0
S. aureus	Aluminum	1	1:10	1	0
S. aureus	Aluminum	1	1:100	1	0
S. aureus	Aluminum	1	1:1000	1	0
S. aureus	Aluminum	2	1:1	0	0
S. aureus	Aluminum	2	1:10	1	0
S. aureus	Aluminum	2	1:100	1	0
S. aureus	Aluminum	2	1:1000	3	0
S. aureus	Aluminum	3	1:1	1	0
S. aureus	Aluminum	3	1:10	2	2
S. aureus	Aluminum	3	1:100	0	0

# CLEANING LABORATORY EVALUATION SUMMARY

S. aureus	Aluminum	3	1:1000	1	0
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Organism	Coupon	Test	Dilution	Result	Duplicate result
S. aureus	Aluminum	Negative	1:1	0	0
S. aureus	Aluminum	Positive	1:1	TNTC	TNTC
S. aureus	Aluminum	Positive	1:10	TNTC	TNTC
S. aureus	Aluminum	Positive	1:100	TNTC	TNTC
S. aureus	Aluminum	Positive	1:1000	TNTC	TNTC
S. aureus	Aluminum	Standard In.	10 <sup>-9</sup>	TNTC	TNTC
S. aureus	Aluminum	Standard In.	10 <sup>-10</sup>	TNTC	TNTC
S. aureus	Aluminum	Standard In.	10 <sup>-11</sup>	TNTC	TNTC
S. aureus	Aluminum	Standard In.	10 <sup>-12</sup>	TNTC	TNTC
S. aureus	Aluminum	1	1:1	0	0
S. aureus	Aluminum	1	1:10	0	0
S. aureus	Aluminum	1	1:100	0	0
S. aureus	Aluminum	1	1:1000	0	0
S. aureus	Aluminum	2	1:1	0	0
S. aureus	Aluminum	2	1:10	1	2
S. aureus	Aluminum	2	1:100	0	0
S. aureus	Aluminum	2	1:1000	0	0
S. aureus	Aluminum	3	1:1	0	0
S. aureus	Aluminum	3	1:10	0	4
S. aureus	Aluminum	3	1:100	0	0
S. aureus	Aluminum	3	1:1000	0	0

Organism	Coupon	Test	Dilution	Result	Duplicate result
S. aureus	Stainless Steel	Negative	1:1	0	0
S. aureus	Stainless Steel	Positive	1:1	TNTC	TNTC
S. aureus	Stainless Steel	Positive	1:10	TNTC	TNTC
S. aureus	Stainless Steel	Positive	1:100	36	33
S. aureus	Stainless Steel	Positive	1:1000	5	3
S. aureus	Stainless Steel	Standard In.	10 <sup>-9</sup>	TNTC	TNTC
S. aureus	Stainless Steel	Standard In.	10 <sup>-10</sup>	TNTC	TNTC

## CLEANING LABORATORY EVALUATION SUMMARY

S. aureus	Stainless Steel	Standard In.	10 <sup>-11</sup>	TNTC	TNTC
S. aureus	Stainless Steel	Standard In.	10 <sup>-12</sup>	TNTC	TNTC
S. aureus	Stainless Steel	1	1:1	0	0
S. aureus	Stainless Steel	1	1:10	0	0
S. aureus	Stainless Steel	1	1:100	0	0
S. aureus	Stainless Steel	1	1:1000	0	0
S. aureus	Stainless Steel	2	1:1	TNTC	TNTC
S. aureus	Stainless Steel	2	1:10	TNTC	TNTC
S. aureus	Stainless Steel	2	1:100	238	202
S. aureus	Stainless Steel	2	1:1000	19	31
S. aureus	Stainless Steel	3	1:1	TNTC	TNTC
S. aureus	Stainless Steel	3	1:10	TNTC	TNTC
S. aureus	Stainless Steel	3	1:100	83	78
S. aureus	Stainless Steel	3	1:1000	13	15

Organism	Coupon	Test	Dilution	Result	Duplicate result
E. coli	Stainless Steel	Negative	1:1	0	0
E. coli	Stainless Steel	Positive	1:1	TNTC	TNTC
E. coli	Stainless Steel	Positive	1:10	TNTC	TNTC
E. coli	Stainless Steel	Positive	1:100	172	178
E. coli	Stainless Steel	Positive	1:1000	14	28
E. coli	Stainless Steel	Standard In.	10 <sup>-8</sup>	TNTC	TNTC
E. coli	Stainless Steel	Standard In.	10 <sup>-9</sup>	TNTC	TNTC
E. coli	Stainless Steel	Standard In.	10 <sup>-10</sup>		
E. coli	Stainless Steel	Standard In.	10 <sup>-11</sup>	140	163
E. coli	Stainless Steel	1	1:1	0	0
E. coli	Stainless Steel	1	1:10	0	0
E. coli	Stainless Steel	1	1:100	0	0
E. coli	Stainless Steel	1	1:1000	0	0
E. coli	Stainless Steel	2	1:1	TNTC	TNTC
E. coli	Stainless Steel	2	1:10	TNTC	TNTC
E. coli	Stainless Steel	2	1:100	TNTC	TNTC
E. coli	Stainless Steel	2	1:1000	55	61

## CLEANING LABORATORY EVALUATION SUMMARY

E. coli	Stainless Steel	3	1:1	TNTC	TNTC
E. coli	Stainless Steel	3	1:10	TNTC	TNTC
E. coli	Stainless Steel	3	1:100	TNTC	TNTC
E. coli	Stainless Steel	3	1:1000	152	Plate Dropped

- Shark
  - o Versatile
  - o Tested on Hardwood, Tile, Granite, Baseboards, and Walls
  - o Temperature Control
  - o Easy Lift Out Hand Unit
  - o Water Reservoir Easy to Fill, Lasts
  - o Awkward Plug on Side of Unit
- Orek
  - o Floor Unit Only
  - o Feels "Cheap/Flimsy" to Use

Summary:

<b>Substrates:</b>		Ceramics, Plastic, Stainless Steel			
<b>Contaminants:</b>					
<b>Company Name:</b>	<b>Product Name:</b>	<b>Conc.:</b>	<b>Efficiency:</b>	<b>Effective:</b>	<b>Observations:</b>
Water	Water	100		<input checked="" type="checkbox"/>	Steam units effective at multilog reduction of bacteria

Conclusion: