EFFECTIVENESS STUDY

SURFACE CLEANING PROPERTIES

Da-Clean™ vs Alkalinity Cleaner

10/23/08

Test conducted At:
Specialty Steak
Erie PA

Bacteria Analysis Conducted By:
MAK-BEA Laboratory, Inc

Damon Industries, Inc.
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An Effectiveness Study on Da-Clean and CS#1

By: Adam Burthus

Purpose:

The goal of this study is to compare the effectiveness of two cleaning products Da-Clean and CS#1. The comparison will be made using standard plate counts before and after treatment with dilute samples of both cleaning products. This will provide empirical evidence that will differentiate the two cleaners by their effectiveness at destroying general aerobic microbes, Coliforms, and E. coli.

Materials:

The following materials are required for this study: an incubator capable of maintaining a constant 35 degrees Celsius, 20 microliter pipette, 1000 microliter pipette, sterile pipette tips for each pipette, two clean one liter bottles, 1000ml graduated cylinder, four sterile swabs, four 3M aerobic count Petrifilm plates, four 3M E. coli/Coliform Petrifilm plates, four test tubes with 10ml of sterile phosphate buffer in each, water, two surfaces that are to be used for sampling purposes, and cooler with gel packs.

Methods:

The first step is to prepare the two cleaning products for use as directed on their labels. Next, take the 1000ml graduated cylinder and measure out 999ml of water and pour it into a 1 liter bottle. Next, set the 20 microliter pipette to 10 microliters. Using a sterile pipette dispense 10 microliter of Da-Clean into one bottle and label it. Next repeat this for CS#1 using the other 1 liter bottle. Shake each bottle thoroughly.

After the solutions are prepared take one of the sterile swabs and label it Da-Clean before treatment. Use this swab to sample one of the surfaces. When sampling with the swab make sure to just make one complete rotation of the swab on the surface. Do not swab back and forth repeatedly. Once this is complete, treat the surface with the dilute sample of Da-Clean cleaning solution. Then take another swab and label it Da-Clean post treatment. Use this swab to sample the same area that was sampled pre-treatment. Repeat this process with the other surface using the last two swabs and the dilute CS#1 cleaner. Once all this is complete place the swabs into the cooler with the gel packs for transport back to location where you will be plating and incubating the samples.

The next step is to label the Petrifilm plates and test tubes containing the sterile phosphate buffer. Make sure that you label each one carefully and make sure to match the swabs up with the correct tubes and plates. To prepare the swab for plating you must take it from the jacket and then break off the swab end into the appropriately labeled test tube containing sterile phosphate buffer. Next shake the swab in the tube vigorously for 15 seconds. Then, set your 1000 microliter pipette to pipette 1000 microliter. Use this to dispense from the tube onto the appropriately labeled plates. Repeat this process for each of the swabs. Each swab should be plated onto one aerobic count Petrifilm plate and one E. coli/Coliform Petrifilm plate. Make sure to label these plates with the date and the dilution

10^-1 as well. Once swab has been plated, place the plates into the incubator set at 35 degrees Celsius. Finally, record the time that the plates were placed into the incubator.

The results will be read at 24 and 48 hours from the time that the plates were placed into the incubator. At 24 hour the E. coli/Coliform plates will be read for Coliforms, and at 48 hours the plates will be read for E. coli and the count will be taken for total aerobic microbes. The count on the plates will be multiplied by 10 because the samples were diluted by 10 when the swabs were placed into the test tubes containing the sterile phosphate buffer solution.

Data:

	SPC (cfu/swab)	Coliforms (cfu/swab)	E. coli (cfu/swab)
Da-Clean pre-treatment	6330	Less than 10	Less than 10
Da-Clean post-treatment	60	Less than 10	Less than 10
CS#1 pre-treatment	7060	Less than 10	Less than 10
CS#1 post-treatment	2010	Less than 10	Less than 10

Results/Conclusions:

To interpret the data for this study one needs to consider the purpose of the experiment. The aim was to differentiate the two cleaning products based on their effectiveness at destroying general aerobic microbes, Coliforms, and E. coli. The results for the swabs taken on the surface treated with Da-Clean demonstrates that the cleaner was able to reduced the number of aerobic microbes present on the sample surface by over 99%. This was achieved even when the sample was diluted 100,000 times beyond what the label instructs for general usage. No data is available on the effectiveness of Da-Clean's ability to destroy Coliforms and E. coli because there was none present in the pre-treatment sample.

The data for this study indicates that the cleaner CS#1 was able to reduce the number of aerobic microbes present in the sample by over 71%. This level of effectiveness was achieved when the cleaner was diluted 100,000 times past what the label directs for general usage. No data is available on the effectiveness of CS#1 ability to destroy Coliforms and E. coli because there was none present in the pre-treatment sample.

The data collected by this experiment is supporting evidence that Da-Clean is a more effective at eliminating general aerobic microbes than CS#1.

Date: 10/23/2008

Subject: Total Aerobic Bacteria Surface Test

Location: Specialty Steak (Erie P.A.)

Chemicals used: (Da-Clean APC) (Chemsafe Alkalinity Product).

Equipment: Test was performed on identical Gicarda machines

- **Four total swabs were used for this test.**
- **First swab taken after Gicarda Machine had been pressured washed only with water.**
- **Swabs were marked to indicate rolling swab in one direction 360 degrees and back the same 360 degrees.**
- **Both machines indicated that there were bacteria present, one machine was at 6330 SPU cfu/cm2 the other 7060 SPC cfu/cm2.**
- **Using pipettes I mixed the solution into a 24 oz. Bottle containing the Damon Da-Clean Product and 1 Bottle using Chemsafe product.**
- **Using same temp water and exact amount of water I flooded the areas to be swabbed again.**
- **I let product sit on machines for 10 minutes.**
- **I then rinsed with plain water**
- **I then swabbed same areas using the 360 degree method.**
- **I labeled and immediately packed in cooler with ice pack.**
- **I then went and next day the test swabs to MAK-BEA Labs in Blue Earth MN,**
- **Received the test results back on Monday 10/27/2008**
- **Results see attached sheet.**

Test performed by Joe Menc (Specialty Steak) (Craig Ripley)

Damon Industries, Inc.
12435 N Rockhill Ave NE
Alliance OH 44601

MAK-BEA Laboratory, Inc.

TEMP : 40 F

Date Received: 10/24/2008
Date Sampled:
Time Sampled :

LOT ID : 29322

D701 D701

WHAT DO THE STARS MEAN? These are only guidelines to assist you with interpreting your test results.
*****SUPERIOR ****EXCELLENT ***GOOD **AVERAGE *POOR

ATTENTION - may indicate the presence of E.coli in ready to eat food or surfaces that exceed recomended guidelines

ABBREVIATIONS - SB = Sell By, UB = Use By, POD = Packaged On Date, ST = Sell Thru, SO = Sold On, PO = Packed On, PD = Pack Date, UFB = Use / Freeze By, BUB = Best If Used By, FB = Freeze By, BIEB = Best If Enjoyed By

All Shelf Life Studies taste tests, performed after day 1. All Surfaces Tested (RODAC) are clean - washed and sanitized, unless otherwise indicated.

01 **Before Cleaning - Da-Clean SWAB**

SPC cfu/cm2	6,330	ATTENTION
Coliforms cfu/cm2	<10	*****
Ecoli cfu/cm2	<10	*****

02 **Clean - Da-Clean SWAB**

SPC cfu/cm2	60	**
Coliforms cfu/cm2	<10	*****
Ecoli cfu/cm2	<10	*****

03 **Before Cleaning - Chemsafe SWAB**

SPC cfu/cm2	7,060	ATTENTION
Coliforms cfu/cm2	<10	*****
Ecoli cfu/cm2	<10	*****

04 **Clean - Chemsafe SWAB**

SPC cfu/cm2	2,010	ATTENTION
Coliforms cfu/cm2	<10	*****
Ecoli cfu/cm2	<10	*****