

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2017

DateRun: 05/10/2017

Experimenters: George Liang

ClientType: Cleaner Manufacturer

ProjectNumber: Project #8

Substrates: Aluminum, Stainless Steel

PartType: Coupon

Contaminants: Food

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric

Purpose: To evaluate supplied product for DCC-12 oven soil removal from stainless steel and aluminum surfaces following TURI's all-purpose cleaning method.

Experimental Procedure: The following experimental procedure is in accordance with TURI's cleaning standard operating procedure for all-purpose cleaning substituting a partially aged DCC-12 soil.

Soiling Process:

A set of pre-weighed stainless steel and aluminum coupons were contaminated with 0.5 grams of DCC-12 soil using a handheld swab onto the center of the coupon's surfaces. DCC-12 was made with the following ingredients: Butter 85.4%, Sugar 6.5%, Deionized Water 4.3%, and Flour 3.4%. The coupons were then aged in the oven at 450 oF for 25 minutes (normal aging time for DCC 12 is 2 hours). After the aging of the soil, the coupons were allowed to sit at room temperature to cool down for 20-30 minutes before reweighing again to determine the amount of contaminant added.

Cleaning Process:

Three soiled substrates were placed into a Gardner Straight Line Washability unit. Two Wypall X60 reinforced wipe was attached to the cleaning sled and soaked with 1 spray of cleaning solutions. The cleaning solutions were diluted to the desired concentrations specified by the vendor and heated to a temperature of 110 oF. Each substrate was sprayed 1 time with the same cleaning solution. The solution was allowed to penetrate for 30 seconds. This was followed by cleaning in the SLW unit for 20 cycles (~33 seconds).

Efficacy Rating Process:

The substrates were left to dry at room temperature for an hour before weighing to determine the amount of contaminant removed.

Results: The objective of the experiment is to compare the efficacy of the sampled cleaners: Vi-Jon Economy Pot & Pan with the comparative cleaners Brady Pot & Pan through gravimetric and visual efficacy evaluations.

Comparative Analysis:

The Vi-Jon Economy Pot & Pan was slightly more effective on stainless steel surfaces than the Brady Pot & Pan. Respective ratings of 96.18% and 91.00%. On aluminum coupons, Vi-Jon Economy Pot & Pan had a similar efficacy as Brady Pot & Pan; with respective ratings of 94.64% and 95.80%. Table pertaining to the amount of contaminant added and removed using a gravimetric scale by its respective cleaning agent to measure the efficacy of the cleaners.

| Cleaner | Initial wt (g) | Final wt (g) | % Removed |
|-------------------------------------|----------------|--------------|-----------|
| Brady Pot and Pan Aluminum | | | |
| | 0.3893 | 0.0082 | 97.89 |
| | 0.3826 | 0.0131 | 96.58 |
| | 0.3922 | 0.0277 | 92.94 |
| Brady Pot and Pan Stainless Steel | | | |
| | 0.3683 | 0.0234 | 93.65 |
| | 0.3333 | 0.0214 | 93.58 |
| | 0.4123 | 0.0586 | 85.79 |
| Vi-Jon Economy Pot and Pan Aluminum | | | |
| | 0.3972 | 0.0236 | 94.06 |
| | 0.3647 | 0.0138 | 96.22 |
| | 0.3966 | 0.0252 | 93.65 |

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| Vi-Jon Economy Pot and Pan Stainless Steel | | | |
| | 0.3777 | 0.0310 | 91.79 |
| | 0.4728 | 0.0149 | 96.85 |
| | 0.3957 | 0.0004 | 99.90 |

Summary:

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|----------------------|----------------------------|---------------|--------------------|-------------------------------------|----------------------|
| Substrates: | Aluminum, Stainless Steel | | | | |
| Contaminants: | Food | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Brady Industries | Brady Pot and Pan | 0.78 | 93.40 | <input checked="" type="checkbox"/> | |
| Vi-Jon | Vi-Jon Economy Pot and Pan | 0.78 | 95.41 | <input checked="" type="checkbox"/> | |

Conclusion:

The supplied products from Vi-Jon compared equally with the Brady brand products.