CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 07/15/2020

Experimenters: Jason Marshall

ClientType: Cleaner Manufacturer

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Dirt, Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: To develop cleaning protocol that can quantitatively show soil remove rates.

Experimental Procedure: The TURI Lab established a cleaning method that follows the basic structure of ASTM G122 Standard Test Method For Evaluating the Effectiveness of Cleaning Agents. TURI prepared a soil that would be representative of typical soil (potting soil) and oil (mineral oil) that would simulate a dirty piece of fruit that has been touched with hands. The soil was added to a precleaned piece of fruit/vegetable (determined by washing fruit several times, weighing after each preclean to establish baseline weight). The fruit/vegetable was weighed with the dirt to determine the amount of soil added. The dirty fruit/vegetable was cleaned following product recommended process (concentration of cleaner, time for cleaning, cleaning method, rinsing and drying.) Final weight were recorded and the percent soil removal was calculated. Test evaluation will be run in triplicate. Water will be used as a control and one industry recognized product will be included in the assessment.

During the initial soil mixture, the lab assessed two soil mixtures. The first used potting soil and mineral oil (baby oil) but the soil did not become evenly distributed in the oil and quickly settled out. The second mixture used a synthetic carpet soil and mineral oil. A teaspoon of AATCC Carpet soil was added to 50 ml of mineral oil and shaken to mix it up. This mixture created a nicely distributed soil that provided consistent soil application to the surface to be cleaned. The cleaning used stainless steel coupons to reduce the use of food as the substrate.

Results: The evaluation used immersion using water and two light duty cleaning products. Initial weights were recorded, then soil added and coupons were weighed again to determine soil added. The soiled coupons were added to a beaker with 200 ml of cleaner and soaked for 30 seconds that was followed by a 5 second rinse in tap water from a sink faucet. Coupons were blotted dry with a paper towel. Final weights were recorded and soil removal rates were calculated. The cleaning time was slightly too long as the water was able to remove on average 88.5% of the soil-oil mixture.

Method Development	Test 1		Test 2	
	water	test cleaner	water	cleaner 2
Initial	31.1420	31.1283	31.1446	31.1358
Dirty	31.3324	31.2986	31.3916	31.4996
Final	31.1628	31.1524	31.174	31.1524
soil added	0.1904	0.1703	0.2470	0.3638
Soil remaining	0.0208	0.0241	0.0294	0.0166
% Removal	89.08	85.85	88.10	95.44

Summary:

Substrates:	Stainless Steel				
Contaminants:	Dirt, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Water	Water	100	89.08	☑	
Better Life	Better Life Naturally Mess Conquering Nursery Cleaner	100	95.44	☑	
Ambrosia Industrial-Organic	Ambrosia Veles All Purpose	100	85.85	☑	

Conclusion: The two cleaners removed 85% and 95%. The final procedure will use a shorter cleaning time (20 seconds) to try and show more difference between water and cleaners.