CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 08/09/2020

Experimenters: Justin Kiander

ClientType: Cleaner Manufacturer

ProjectNumber: Project #10

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Oil

Cleaning Methods:

Analytical Methods: Gravimetric, Visual

Purpose: To test the effectiveness of EnvirOx Storm against Green Works AP.

Experimental Procedure: Two different types of soils were prepared. The first soil, maintenance soil, consisted of 10 g carbon black, 10 g iron oxide, 100 ml WD-40, 100 ml hydraulic oil, and 100 ml gear oil. Each component was placed in a 750 ml beaker and mixed for 20 minutes at room temperature with a magnetic stirrer. The second soil, production soil, was made by mixing 200 ml Quench oil and 200 ml cutting oil for 20 minutes at room temperature using a magnetic stirrer.

Approximately 100 mg of each soil was applied to a pre-weighed and pre-cleaned stainless-steel coupon onto one side only with use of a hand swab. The maintenance soil for the first set of coupons was baked in an oven for 30 minutes at a temperature of 40° C (105° F). For the production soil, the second set of coupons was baked in an oven for 30 minutes at 105° C (220 ° F). The coupons were then allowed to cool to room temperature and weighed a second time and recorded as dry weights.

All products were used a room temperature. Beakers were filled with enough fresh cleaner solution to completely submerge the contaminated portion of the coupons. Each coupon was placed in a beaker and were washed for 30 minutes using un-heated immersion cleaning only. The washing was followed by a rinse using tap water for 30 seconds. After the rinse, all coupons were air dried for 60 minutes and then placed in an oven to dry at 105° C for 30 minutes. The coupons were allowed to cool to room temperature and final weights were recorded.

Results:

Soil	Cleaner	Coupon	Initial wt. of cont.	Final wt. cont.	% Cont. Removed	Average
Maintenance Soil	Envirox Storm	76	0.5479	0.0049	99.11	95.53
		81	0.7216	0.0525	92.72	
		93	0.5950	0.0312	94.76	
	Green Works AP	78	0.4632	0.0964	79.19	81.47
		80	0.5036	0.0913	81.87	
		86	0.6117	0.1018	83.36	
Production Soil	EnvirOx Storm	30	0.1141	0.0161	85.89	92.36
		69	0.5151	0.0207	95.98	
		97	0.7324	0.0351	95.21	
	Green Works AP	84	0.6438	0.0284	95.59	94.44
		85	0.4231	0.0215	94.92	
		94	0.4480	0.0322	92.81	

Summary:

Substrates:	Stainless Steel
Contaminants:	Oil

Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
EnvirOx LLC	EnvirOx Storm	100	93.74	☑	
Clorox Company	Green Works General Purpose Cleaner Concentrate	100	87.96	☑	

Conclusion: EnvirOx Storm was effective in the removal of both containments and preformed significantly better in comparison with Green Works AP in the maintenance soil removal.