

# TURI SURFACE SOLUTIONS LABORATORY EVALUATION SUMMARY

**SCL #:**  
**Date Run:** 8/15/2012  
**Experimenters:** Cho; Le;  
**Client Type:** Chemical / Equipment Mfr;  
**Project Number:** 1  
**Substrates:** Ceramics; Chrome; Polycarbonate;  
**Part Type:** Coupons;  
**Contaminants:** Films; Soaps;  
**Cleaning Methods:** Manual Wipe;  
**Analytical Methods:** Gravimetric;  
**Purpose:** To evaluate the supplied products for bathroom cleaning using manual wipe cleaning  
**Chemistries Evaluated:** Trio (1g of Tartar, pH 11), Water (pH 6.5), Clorox Green Works Bathroom Cleaner, Comet Bathroom Cleaner

**Exp. Procedure:** One gram of tartar was added into 20 fl oz of water (pH 6.5) in supplied spray bottle of Trio then was electronically charged for 3min. After activation, the pH of the activated water/tarter solution increased to 11. The other cleaners were used at full concentration, or as bought (RTU), for testing.

Pre-weighed chrome, ceramic and polycarbonate coupons were coated with SSL Soil 1 (Bathroom soap scum: All-in-one shampoo and conditioner 28.6%, dry skin lotion 21.4%, liquid hand soap 21.4%, liquid body wash 14.3%, deodorant bar soap 7.2% and water 7.1%.) using a hand held swab and allowed to dry for 24 hours at room temperature. The contaminated coupons were weighed again to determine the amount of soil added.

Three coupons were placed into a Gardner Straight Line Washability unit. A Wypall X60 reinforced wipe was attached to the cleaning sled and soaked with 3-5 sprays of cleaning solutions. Each coupon was sprayed 3-5 times with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLW unit for 20 cycles (~33 seconds). Final weights were recorded and efficiencies were calculated and recorded.

**Results:** The Trio tarter solution removed over 95% of the TURI bathroom soil on polycarbonate and chrome but only removed 83% of the soil ceramic coupons. The other three cleaners also removed over 85% of the soil on all surfaces except water with ceramic. Overall the Trio removed over 91% of the bathroom soil on all substrates as shown in the summary table.

Cleaner	Initial wt	Final wt	% Removed	Average
Trio_polycarb	0.1662	0.0086	94.83	95.00
	0.1062	0.0010	99.06	
	0.0843	0.0075	91.10	
Water_ploycarb	0.1196	0.0063	94.73	87.68
	0.1336	0.0019	98.58	
	0.1008	0.0305	69.74	
Clorox Greenwork Bath_ploycarb	0.1284	0.0123	90.42	94.18
	0.1637	0.0048	97.07	
	0.1555	0.0077	95.05	
Comet Bathroom_polycarb	0.0612	0.0071	88.40	91.38
	0.1036	0.0061	94.11	
	0.1160	0.0097	91.64	
Trio_ceramic	0.1041	0.0225	78.39	82.88
	0.4892	0.0513	89.51	
	0.1339	0.0258	80.73	
Water_ceramic	0.1069	0.0058	94.57	83.17
	0.0848	0.0117	86.20	
	0.1295	0.0405	68.73	

Clorox Greenwork Bath_ceramic	0.2309	0.0528	77.13	
	0.1354	0.0146	89.22	
	0.0891	0.0013	98.54	88.30
Comet Bathroom_ceramic	0.1779	0.0393	77.91	
	0.1396	0.0010	99.28	
	0.1505	0.0111	92.62	89.94
Trio_chrome	0.0727	0.0035	95.19	
	0.1158	0.0058	94.99	
	0.1156	0.0043	96.28	95.49
Water_chrome	0.0687	0.0053	92.29	
	0.0729	0.0065	91.08	
	0.0737	0.0043	94.17	92.51
Clorox Greenwork Bath_chrome	0.0734	0.0073	90.05	
	0.0924	0.0037	96.00	
	0.1352	0.0067	95.04	93.70
Comet Bathroom_chrome	0.1252	0.0061	95.13	
	0.1111	0.0063	94.33	
	0.1053	0.0061	94.21	94.55

**Summary**      *Substrates:*      Ceramics; Polycarbonate; Chrome;

*Contaminants:*      Films; Soaps;

<i>Product Name</i>	<i>Conc.</i>	<i>Efficiency(ave of all substrates)</i>	<i>Effective</i>
Trio	100	91.12	Yes
Water	100	87.79	Yes
Clorox green work	100	92.06	Yes
Comet Bathroom	100	91.96	Yes

**Conclusion:**      The Trio cleaning solution had an overall average efficiency over 85% and performed similar to the green and conventional cleaning products.