



# Toxics Use Reduction Institute

## Surface Solutions Laboratory

University of Massachusetts Lowell  
One University Avenue, Lowell, MA 01854-2866  
(978)934-3133 or 3249 fax: (978)934-3050 or 4962  
www.cleansolutions.org

### SSL CLEANING PRODUCT PERFORMANCE REVIEW

Performed for Triple S, 2 Executive Park Drive, Billerica, MA 01862

Vendor Name:	Tersano	Date of Testing:	7/10-7/11/08
Product Name:	Lotus Sanitizing System		
Major Fields of Cleaning:	<input type="checkbox"/> Parts	<input type="checkbox"/> Precision	<input checked="" type="checkbox"/> Janitorial/Facility

#### Primary Cleaner Classification

<input type="checkbox"/> Acidic Aqueous	<input type="checkbox"/> Semi-Aqueous	<input type="checkbox"/> Powder detergent	<input type="checkbox"/> Extracting
<input checked="" type="checkbox"/> Neutral Aqueous	<input type="checkbox"/> Terpene	<input type="checkbox"/> Enzymatic/ Microbial	<input type="checkbox"/> HCFC
<input type="checkbox"/> Alkaline Aqueous	<input type="checkbox"/> Petroleum distillate	<input type="checkbox"/> Blasting	<input type="checkbox"/> Alcohol
<input type="checkbox"/> Caustic	<input type="checkbox"/> Organic	<input type="checkbox"/> Biobased	<input type="checkbox"/> Other: <input type="text" value="Oxygenated Water"/>

#### Methods Used for Cleaning

<input type="checkbox"/> Cold Solvent	<input type="checkbox"/> Media Blasting	<input type="checkbox"/> Vapor Degreasing
<input type="checkbox"/> Immersion/Soak	<input type="checkbox"/> Spray Washer	<input type="checkbox"/> Other1: <input type="text"/>
<input checked="" type="checkbox"/> Manual Wipe	psi-range <input type="text"/>	<input type="checkbox"/> Other2: <input type="text"/>
<input type="checkbox"/> Mechanical Agitation	<input type="checkbox"/> Ultrasonic	<input type="checkbox"/> Other3: <input type="text"/>

Concentration used	100	%
Temperature used	68	F
Analysis used	Gravimetric	

#### Contaminant Removal Performed at SSL<sup>1</sup>

<input type="checkbox"/> Adhesives	<input type="text"/>	%	<input type="checkbox"/> Paints	<input type="text"/>	%
<input type="checkbox"/> Buffing/polishing	<input type="text"/>	%	<input type="checkbox"/> Resins Silicones	<input type="text"/>	%
<input type="checkbox"/> Carbon deposits	<input type="text"/>	%	<input type="checkbox"/> Rosins	<input type="text"/>	%
<input type="checkbox"/> Coatings	<input type="text"/>	%	<input type="checkbox"/> Rust/Scale	<input type="text"/>	%
<input type="checkbox"/> Fluxes	<input type="text"/>	%	<input type="checkbox"/> Oil -cutting/tapping or lubricants	<input type="text"/>	%
<input type="checkbox"/> Greases	<input type="text"/>	%	<input checked="" type="checkbox"/> Other1: <input type="text" value="All purpose soil mix"/>	<input type="text" value="88.01"/>	%
<input type="checkbox"/> Inks	<input type="text"/>	%	<input checked="" type="checkbox"/> Other2: <input type="text" value="Bathroom Soap Scum"/>	<input type="text" value="92.31"/>	%
<input type="checkbox"/> Mold releases	<input type="text"/>	%	<input checked="" type="checkbox"/> Other3: <input type="text" value="Glass Soap Scum"/>	<input type="text" value="90.46"/>	%

#### Laboratory Safety Screening Score for Important Physical/Chemical Properties<sup>2</sup>

VOC (g/l):	<input type="text" value="0"/>	NFPA rating: H	<input type="text" value="0"/>	F	<input type="text" value="0"/>	R	<input type="text" value="0"/>
Global Warming Potential:	<input type="text" value="0"/>	HMIS rating: H	<input type="text"/>	F	<input type="text"/>	R	<input type="text"/>
Ozone Depletion Potential:	<input type="text" value="0"/>	pH:	<input type="text" value="7.0"/>				

Safety Screening Score:  The higher the score, up to 50, implies a potentially safer product

<sup>1</sup> SSL uses a modified version of the ASTM standard G122 to determine product performance. Effectiveness is determined using the gravimetric analysis of portion of the standard. The lab considers the removal of 85% or more on average of the soil from three coupons to be effective. However, in some cases lower or higher values may be acceptable depending upon the end goal of the cleaning process.

<sup>2</sup> SSL has developed a screening methodology to help in the selection of safer cleaning products. It is important to conduct a full EH&S assessment of any product prior to adoption. Contact SSL to find out how to have an EH&S evaluation completed.

# TURI SURFACE SOLUTIONS LABORATORY EVALUATION SUMMARY

SCL #: 2008-16-305-1-4-  
 DateRun: 7/11/2008  
 Experimenters: Marshall; Bansal;  
 ClientType: Chemical Mfr; Performed for Triple S, 2 Executive Park Drive, Billerica, MA 01862  
 ProjectNumber: 1  
 Substrates: Glass/Quartz; Tile; Chrome;  
 PartType: Parts;  
 Contaminants: Films; Soaps;  
 CleaningMethods: Manual Wipe;  
 AnalyticalMethods: Gravimetric;  
 Purpose: To evaluate three supplied products for glass cleaning following GS 37 requirements  
 ExperimentalProcedure: Two of the three supplied cleaning product were diluted to vendor recommended concentration using DI water (32:1 and 128:1). In addition, the third product was prepared following the specified procedure - oxygenating cold tap water for about 10 minutes.

Preweighed chrome, glass and composite tile coupons were coated with SSL Soil 2 (Glass soap scum: Colgate Regular shaving cream 5.3%, Arid Extra Extra Spray Deodorant 3.5%, Suave Naturals Flexible Hold hair spray 3.7%, Aleeda Texturizing hair gel 25.6% Colgate Total toothpaste 10.4%, Water 51.5%) by pump spraying the mix. The soil was 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 Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The cleaning unit was run for 5 cycles (~9 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, efficiencies were calculated and recorded.

ChemistriesEvaluated: Lotus Sanitizing System; Pleascent Neutra Shine; Compass;

Results: All three products were effective at removing the glass soap scum from the three surfaces using manual wiping. The Lotus Sanitizing System resulted in the highest efficiency, removing more than 90% of the soap film. The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for each coupon cleaned.

Substrate	Cleaner	Initial wt	Final wt	% Removed
Glass	Lotus	0.0390	0.0031	92.05
		0.0491	0.0048	90.22
		0.0415	0.0046	88.92
Glass	Pleasant	0.0521	0.0031	94.05
		0.0499	-0.0003	100.60
		0.0375	0.0057	84.80
Glass	Compass	0.0522	0.0044	91.57
		0.0639	0.0038	94.05
		0.0552	0.0035	93.66
Chrome	Lotus	0.0682	0.0090	86.80
		0.0605	0.0059	90.25
		0.0624	0.0088	85.90
Chrome	Pleasant	0.0969	0.0205	78.84
		0.0533	0.0137	74.30
		0.1056	0.0260	75.38
Chrome	Compass	0.0821	0.0136	83.43
		0.0731	0.0172	76.47
		0.1132	0.0227	79.95
Tile	Lotus	0.0777	0.0028	96.40
		0.0627	0.0085	86.44
		0.0710	0.0020	97.18
Tile	Pleasant	0.0418	0.0044	89.47
		0.0641	0.0039	93.92
		0.0416	0.0029	93.03
Tile	Compass	0.0549	0.0065	88.16
		0.0442	0.0021	95.25
		0.0658	0.0021	96.81

Summary **Substrates:** Glass/Quartz; Plastic; Chrome;

**Contaminants:** Films; Soaps;

Company Name:	Product Name	Conc.	Efficiency	Effective
Tersano	Lotus Sanitizing System	100	90.46	Yes
Triple S	Pleasant Neutra Shine	3.1	87.15	Yes
Triple S	Compass	0.78	88.82	Yes

Conclusion: The Lotus Sanitizing System was found to be effective for removing the glass soil from various surfaces using manual wiping. It compared well to the two other cleaning products supplied for testing.

# TURI SURFACE SOLUTIONS LABORATORY EVALUATION SUMMARY

SCL #: 2008-16-305-0-4-  
 DateRun: 7/11/2008  
 Experimenters: Marshall; Bansal;  
 ClientType: Chemical Mfr; Performed for Triple S, 2 Executive Park Drive, Billerica, MA 01862  
 ProjectNumber: 1  
 Substrates: Ceramics; Tile; Fiberglass; Chrome;  
 PartType: Coupons;  
 Contaminants: Films; Soaps;  
 CleaningMethods: Manual Wipe;  
 AnalyticalMethods: Gravimetric;  
 Purpose: To evaluate three supplied products for bathroom cleaning following GS 37 requirements  
 ExperimentalProcedure: Two of the three supplied cleaning product were diluted to vendor recommended concentrations for bathroom cleaning using DI water (32:1 and 128:1%). The third product was prepared following the specified procedure - oxygenating cold tap water for about 10 minutes.

Preweighed fiberglass, ceramic, chrome and composite floor tiles coupons were coated with SSL Soil 1 (Bathroom soap scum: Vaseline Dry Skin Lotion 21.4%, Dial Clean Rinsing Body Wash 14.3%, Market Basket Shampoo & Conditioner (Pert)28.6%, Soft Soap Natural Liquid hand soap 21.4%, Coast 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 Kimberly-Clark Wypal reinforced paper towel was attached to the cleaning sled and soaked with 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The cleaning unit was run for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded, efficiencies were calculated and recorded.

ChemistriesEvaluated: Lotus Sanitizing System; Pleascent Neutra Shine; Compass;

Results: All three products were successful in removing the bathroom soil from the four substrates. Overall efficiencies were above 90%. The table lists the amount of soil added, the amount remaining after cleaning and the calculated efficiency for each coupon cleaned.

Substrate	Cleaner	Initial wt	Final wt	% Removed
Ceramic	Lotus	0.3671	0.1062	71.07
		0.2130	0.0394	81.50
		0.2677	0.0200	92.53
Ceramic	Pleasant	0.2195	0.0100	95.44
		0.1925	0.0017	99.12
		0.2007	0.0006	99.70
Ceramic	Compass	0.0947	0.0062	93.45
		0.2045	0.0187	90.86
		0.1395	0.0064	95.41
Chrome	Lotus	0.1733	0.0066	96.19
		0.1910	0.0050	97.38
		0.1328	0.0055	95.86
Chrome	Pleasant	0.2044	0.0295	85.57
		0.2579	0.0465	81.97
		0.3367	0.1314	60.97
Chrome	Compass	0.2222	0.0096	95.68
		0.1072	0.0127	88.15
		0.2188	0.0071	96.76
Fiberglass	Lotus	0.2320	0.0187	91.94
		0.1619	0.0009	99.44
		0.2008	0.0071	96.46
Fiberglass	Pleasant	0.1435	0.0139	90.31
		0.3196	0.0075	97.65
		0.2581	0.0280	89.15
Fiberglass	Compass	0.2619	0.0012	99.54
		0.2055	0.0028	98.64
		0.2147	0.0186	91.34
Tile	Lotus	0.1480	0.0014	99.05
		0.1094	0.0094	91.41
		0.0829	0.0042	94.93
Tile	Pleasant	0.0856	0.0005	99.42
		0.1355	0.0123	90.92
		0.2460	0.0248	89.92
Tile	Compass	0.1578	0.0116	92.65
		0.1556	0.0157	89.91
		0.1232	0.0110	91.07

Summary

**Substrates:** Ceramics; Plastic; Steel;

**Contaminants:** Hucker's Soil;

<i>Company Name:</i>	<i>Product Name</i>	<i>Conc.</i>	<i>Efficiency</i>	<i>Effective</i>
Tersano	Lotus Sanitizing System	100	88.01	Yes
Triple S	Pleasant Neutra Shine	3.1	91.34	Yes
Triple S	Compass	0.78	94.14	Yes

Conclusion:

The Lotus Sanitizing System was found to be effective for removing the Hucker's soil from various surfaces using manual wiping. It compared well to the two other cleaning products supplied for testing.

Summary

**Substrates:** Ceramics; Plastic; Fiberglass; Chrome;

**Contaminants:** Films; Soaps;

<i>Company Name:</i>	<i>Product Name</i>	<i>Conc.</i>	<i>Efficiency</i>	<i>Effective</i>
Tersano	Lotus Sanitizing System	100	92.31	Yes
Triple S	Pleasant Neutra Shine	3.12	90.01	Yes
Triple S	Compass	0.78	93.62	Yes

Conclusion:

The Lotus Sanitizing System was found to be effective for removing the bathroom soil from various surfaces using manual wiping. It compared well to the two other cleaning products supplied for testing.

## Tersano Lotus Sanitizing System vs. Tap H2O

Soil Mix	Bathroom Soil Mix	Bathroom Soil Mix	Bathroom Soil Mix	All-Purpose Soil Mix	All-Purpose Soil Mix	All-Purpose Soil Mix	Glass Soil Mix
Surface	Ceramic	Chrome	Fiberglass	Ceramic	Plastic	Steel	Glass
Lotus	81.70	96.48	95.66	86.21	91.50	96.31	90.40
Tap H2O	53.78	77.27	66.23	50.70	87.89	79.85	82.59
Compass	93.24	93.53	96.50	93.39	96.73	97.88	87.15
Pleasant NS	98.00	76.17	92.37	93.32	93.65	90.17	88.82