



The TURI Laboratory / Umass Lowell



Performance Testing & MORE

How We Fit Into the Industry

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A Little About Me....

- Life long New Englander
- I will Pahk your Cah
- **Red Sox are Bad**
- Patriots.....☺
- I love Seattle & Pete Carroll
- I will gladly talk to you about all the ways and reasons you hate the Pats, Brady and the rest one on one..
- Now lets talk Testing

TURI Laboratory Mission & Goal

- Assist facilities in finding safer cleaning chemicals & processes that:
 - *Perform as well or better*
 - *Improve EH&S*
 - *Economically feasible*
- Evaluate /compare performance of cleaners & equipment, R&D, consulting, formulation & more
- Aid companies in selecting processes & systems to facilitate better, safer cleaning
 - Share information on effective cleaning methods and processes to help move industries forward

TURI LAB FACTS....

- Working in less toxic alternatives for 22 yrs
 - Located at UMASS Lowell
- Janitorial work about 15 years
 - Performance testing for third party certifications
 - Working with manufacturers on products
 - Help promote good process & systems
 - Learn from the end users, work in REALITY
- **Data does the talking, field work supports it**
- Helping to supply data to industry



Standard sub category	Performance code	Standard
All Purpose	APH	GS 37
All purpose – light duty	APL	N/A
Glass Cleaning	GLC	GS 37
Bathroom general	BRG	GS 37
Bathroom toilet bowl (must be selected with BRG)	BTB	GS 37
Grease removal from hard surfaces	GRH	DCC17
Automatic Dishwashing	DWA	DCC05A
Foam Stability of Hand Dishwashing Detergents	DWM	DCC10
Screening the Efficacy of Oven Cleaners	OVC	DCC12
Hand Washing	HWC	GS41
Cleaning Performance-Resilient Flooring and Washable Walls	FWW	ASTM D4488 A5 *
Evaluating Cleaning Performance of Ceramic Tile Cleaners	FWW	ASTM D5343
Odor Elimination	ODE	
Floor stripping	FLS	GS 40
Oil cleaning - heavy	OCH	GS 34
Oil cleaning – heavy (motor)	OCH	ASTM G122
Oil cleaning – light (cooking)	OCL	ASTM G122
Whiteboard cleaning	WBC	
Stainless Steel cleaning/polishing	SSC	
Wood Polish	WPC	
Miscellaneous	MSC	
Carpet cleaning-standard	CCS	GS 37
Carpet stain removal	CSR	CM T110
Miscellaneous G122	MSC G122	ASTM G122

Why a University Laboratory

- Non Biased – work to generate data not money\$
 - Research and standard testing is the driver
- Interested in data & what works
 - If there is not non biased, 3rd party data how do you trust a product????
 - All data on testing claims of a product should be readily available to the public
- Want to inform janitorial sector end users & help generate the data they need & want
 - Standardized
- Resources – students, other scientists

Product Testing in the Lab

- Glass Cleaner
- All Purpose Cleaners
- Bathroom Cleaners
- Dish Detergents
- Graffiti removers
- Floor Strippers, cleaners, maintainers, finishes



EVERYTHING & ANYTHING

Equipment Testing in the Lab

- Floor Scrubber
 - Small & Large
- Engineered water
 - Mineral based
 - ozone
- Battery back pack vac.
 - Efficacy, time, cord mgmt
- Steam
 - Large & small units



Innovative Cleaners & Technology Tested

- We do a lot of R&D, field & lab testing
- Organic cleaners with probiotics,
- Onsite generators of cleaners, sanitizers & disinfectants
 - Mineral based
- More water based solutions
 - Steam
 - Hands free restroom
 - Floor machines & pads that do not require cleaner
- Microfiber, bucketless mops, waterless urinal retrofits & door handle protectors



What is Reality Based Testing

- Customers products are tested against industry std products – *green & not*
- Specific substrates used
- Specific **real world soils** based on ASTM, GS & other standard soils used
 - Work with certifiers on our soils



Reality Based Substrates & Soils

Substrates

- Ceramic
- Porcelain
- Stainless steel
- Painted Steel
- Chrome
- Fiberglass
- Glass

Soils

- Bathroom
- All purpose
- Hard floor
- Glass
- Vacuuming soils
 - Carpet & Hard Floor

BYK-Gardner Abrasion Tester



<http://glossmeters.com/abrasion-tester.html>

Straight-line Washability

- BYK-Gardner Abrasion Tester
 - Device enables a real-world repeatable rubbing or scrubbing action to compare cleaning performance cleaners
 - Such as All purpose, bathroom glass and more
 - Test the durability and efficacy of scrub brushes or scouring pads
 - Precisely matches pressure & rate of cleaning from surface to surface & from product to product
 - Enables apples-to-apples comparisons between cleaning methodologies

Who Does the Testing

- University of Massachusetts Lowell's TURI Lab
 - A globally-recognized test lab
 - specializing in performance testing of green products
 - TURI understands “green cleaning” product **performance**

TURI Lab People



How Do You Know Something Works

- Testing using industry standards to produce data, paid for, third party testing
- Testing is reproducible & not a fluke
- Analytical methods are used
 - ATP meters – trend tool to show cleaning efficacy in field and lab. **LIMITATIONS**
 - Gloss meters, contact angle
 - Black light, white glove, plate growth
- Field work & antidotal info & data in field in addition to 3rd party, no biased testing



Analytical Methods & Equip Used

- Gravimetric (abrasion tester)
- Color-gloss readings
- ATP testing where applicable
 - Trend tool, not absolute
- Visual evaluation by panel
- Time & effort – time cleaning activities for comparisons



Cleaner Solutions Database

- Check it out on-line to start your search for a new cleaning method

www.cleanersolutions.org



- Remember....
 - The products you find should be tested on your specific soils in your current cleaning process
 - **Every situation is different so PILOT.**

TURI SURFACE SOLUTIONS LABORATORY EVALUATION SUMMARY

SCL #: 2010-17-275-20-4-
DateRun: 3/16/2010
Experimenters: Marshall, Cho;
ClientType: Chemical Mfr;
ProjectNumber: 1
Substrates: Ceramics; Fiberglass; Chrome;
PartType: Coupons;
Contaminants: Films; Soaps;
CleaningMethods: Manual Wipe;
AnalyticalMethods: Gravimetric;
Purpose: To evaluate the supplied products for bathroom cleaning using manual cleaning
ExperimentalProcedure: The supplied cleaning product were used at the recommended concentration (2%, 2% and 1.5%). Preweighed chrome, ceramic and fiberglass, 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 5-7 sprays of cleaning solutions. Each coupon was sprayed 7-10 times with the same cleaning solution. The solution was allowed to penetrate for 30 seconds followed by cleaning in the SLV unit for 20 cycles (~33 seconds). At the end of the cleaning, coupons were wiped once with a dry paper towel. Final weights were recorded and efficiencies were calculated and recorded.

ChemistriesEvaluated: Product 1; Product 2; Product 3 – comparative product

Results: The two supplied products both removed over 85% of the bathroom soap scum soil from the surfaces using manual cleaning. The conventional product removed 75%. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Product 1 (1:48)_Ceramic	0.3057	0.0358	88.43
	0.1234	0.0079	93.60
	0.0260	0.0025	90.38
Product 1 (1:48)_Chrome	0.0115	0.0019	83.48
	0.0273	0.0024	91.31
	0.0117	0.0038	67.52
Product 1 (1:48)_Fiberglass	0.0216	0.0020	90.74
	0.0221	0.0029	86.88
	0.0194	0.0015	90.26
Product 2 (1:128)_Ceramic	0.2548	0.0458	82.03
	0.5427	0.1034	80.95
	0.2379	0.0441	81.46
Product 2 (1:128)_Chrome	0.2916	0.0441	84.88
	0.2952	0.0265	91.02
	0.4028	0.0352	91.26
Product 2 (1:128)_Fiberglass	0.3183	0.0511	83.95
	0.2855	0.0230	91.94
	0.3232	0.0514	84.10
Product 3 -Ceramic	0.3325	0.0840	74.74
	0.6008	0.2322	61.35
	0.3427	0.0912	73.39
Product 3 -Chrome	0.3184	0.0768	75.88
	0.3891	0.0733	80.97
	0.1951	0.0429	78.01
Product 3 -Fiberglass	0.6121	0.1472	75.95
	0.3844	0.0833	78.33
	0.4439	0.0881	80.15

Summary: **Substrates:** Ceramics; Fiberglass; Chrome;

Contaminants: Films; Soaps;

Product Name	Conc.	Efficiency	Effective
Product 1	2.1	87.67	Yes
Product 2	0.78	85.73	Yes
Product 3	0.78	75.42	No

Conclusion: The two products had an overall average efficiency over 85% and performed better than the conventional cleaning product.

Why Test??? Green Washing

- False Claims, what is true
- Need to do your homework
- Third party certified? Check MSDS
- Many terms are used but aren't policed by the Federal Trade Commission
 - Environmentally friendly / safe
 - Natural, Eco Safe
 - Earth Friendly
- **Testing Help prove claims**
- Clients should ask for Testing **before** they buy & have someone technical explain



Testing & Field Work

- TURI lab known as a lab who tests for performance of cleaners & equipment
- **Unique ability to do lab & field work**
- Can take our reality testing further into the field
 - Help end users solve problems - implementation
 - Help manufacturers back up claims – 3rd party testing
 - Help public & clients see proof of claims – help inform and make purchasing decisions
- Work with facility management & workers to verify performance in the field

Thank You!!

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