

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2014
 DateRun: 09/23/2014
 Experimenters: Junhee Cho, Loc Nguyen, George Liang
 ClientType: Cleaner Manufacturer
 ProjectNumber: Project #2
 Substrates: Stainless Steel
 PartType: Coupon
 Contaminants: Greases
 Cleaning Methods: Manual Wipe
 Analytical Methods: Gravimetric

Purpose: To evaluate supplied products for grease removal from various surface found on a boat.

Experimental Procedure: The two cleaning products were used at the requested dilutions at room temperature for all boat cleaning. Prewighed stainless steel coupons were coated with lithium grease using a handheld swab and allowed to dry for 2 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 1-2 sprays of cleaning solutions. Each coupon was sprayed 1-2 times with the same cleaning solution. The cleaning unit was run for 30 cycles (~45 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. Additional rounds of cleaning were conducted until the stainless-steel coupons were completely free of lithium grease.

Chemistries Evaluated: Wechem Boat Soap (3.125%); West Marine Heavy Duty Boat Soap 3.125%

Results: After the initial 45 seconds of cleaning, all products had limited success in removing the soiled coupons. An additional 45 seconds of cleaning using a new wipe improved removal. The table lists the amount of soil added and the calculated efficiency for each coupon cleaned. The second table summarizes the removal for each product after each 30 cycles.

Cleaner	% Removed for after each run					
	Soil added	45 sec	90 sec	135 sec	180 sec	225 sec
WeChem	0.5055	48.98	82.65	96.93	98.93	99.09
	0.5035	29.51	76.01	96.68	99.09	99.15
	0.5685	44.93	82.71	97.84	98.91	98.28
West Marine Heavy Duty Boat Soap 3.125% - Stainless Steel						
	0.5232	37.88	68.75	89.53	98.18	99.31
	0.5025	8.20	63.88	86.37	98.47	99.30
	0.5368	27.29	70.94	89.47	98.92	99.70

Table of Average removal after each 30 cycles

Round	Cleaning	% Removed
Round 1	Cleaning	
	WeChem 3.125% - Stainless Steel	41.14
	West Marine 3.125% - Stainless Steel	24.46
Round 2	Cleaning	
	WeChem 3.125% - Stainless Steel	80.46
	West Marine 3.125% - Stainless Steel	67.86
Round 3	Cleaning	
	WeChem 3.125% - Stainless Steel	97.15
	West Marine 3.125% - Stainless Steel	88.46
Round 4	Cleaning	

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WeChem 3.125% - Stainless Steel	98.98
West Marine 3.125% - Stainless Steel	98.52
Round 5 Cleaning	
WeChem 3.125% - Stainless Steel	98.84
West Marine 3.125% - Stainless Steel	99.44

Summary:

Substrates:	Stainless Steel				
Contaminants:	Greases				
Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
West Marine	West Marine Heavy Duty Boat Soap	3.125	88.52	<input checked="" type="checkbox"/>	
Wechem Inc.	Booyah Cleaner Degreaser 2X	3.125	97.15	<input checked="" type="checkbox"/>	

Conclusion:

The WeChem product required fewer cycles to completely remove the lithium grease from the surface as compared with the West Marine product.