CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2007

DateRun: 05/15/2007

Experimenters: Jason Marshall, Shweta Bansal

ClientType: Metal

ProjectNumber: Project #1

Substrates: Alloys

PartType: Coupon

Contaminants: Coatings

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate successful alternatives on fourth supplied contaminant.

Experimental Procedure: Five products from the previous trial were selected and used at full strength based on past performance. The cleaning solutions were all heated to 130 F on a hot plate.

Fifteen preweighed alloy coupons were coated with the fourth contaminant and weighed a second time to determine the amount of contaminant added to each coupon. Three coupons were immersed into each solution and cleaned for 5 minutes using stir-bar agitation. Coupons were rinsed in room temperature tap water for 15 seconds and air dried using compressed dry air for 30 seconds. A final weight was recorded, and efficiencies were calculated for each coupon cleaned.

Results: Two of the five products appeared to be visually effective in removing the coating compound. However, gravimetric analysis revealed that no product had an efficiency greater than 35%. Upon closer inspection, one product removed most of the coating but left a residue from the cleaner on the coupons, thus lowering efficiency. When the coupons were wiped with a paper towel, efficiency increased to over 80% removal. When wiped, the coating on the second visually clean product was easily removed, increasing efficiency to nearly 80%.

The other products all head negative efficiencies. This was due to both cleaner residue and the coating absorbing the cleaning solution, increasing the weights of the coupons above the initial contaminated weights.

The cleaning effectiveness for all products could be improved by increasing temperature, time or agitation (ultrasonics or spray washing). The table below lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Soy Gold 1100	0.0208	0.0340	-63.46
	0.0613	0.0805	-31.32
	0.0435	0.0759	-74.48
Solsafe 245	0.0640	0.0829	-29.53
	0.0522	0.0757	-45.02
	0.0432	0.0582	-34.72
Shopmaster RC	0.0504	0.0466	7.54
	0.0542	0.0260	52.03
	0.0504	0.0268	46.83
DS 108	0.0430	0.0694	-61.40
	0.0704	0.1120	-59.09
	0.0489	0.0527	-7.77
D Greeze 500 LO	0.6509	0.7401	-13.70
	0.0495	0.1255	-153.54
	0.0536	0.1284	-139.55

Summary:

Substrates:	Alloys				
Contaminants:	Coatings				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
AG Environmental Products	Soy Gold 1100	100	-56.42	☐	
Bio Chem Systems	Solsafe 245	100	-36.42	☐	
Buckeye International	Shopmaster RC	100	81.64	☑	with wipe
Dysol	DS 108 Wipe Solvent	100	78.67	☑	with wipe

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Transene Company, Inc.	D Greeze 500 LO	100	-102.26	☐	

Conclusion:

All five product should be retested using increased mechanical agitation (ultrasonics) or higher temperature (150F) in an attempt to improve efficiency. The same five products will be used on the sixth supplied contaminant.

The fifth contaminant was skipped as it was very similar to the fourth contaminant. This contaminant can be tested in the next set of trials.