CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2005
DateRun:	04/07/2005
Experimenters:	Jason Marshall
ClientType:	Wire & Cable Mfr
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Mold Releases
Cleaning Methods:	Ultrasonics
Analytical Methods:	Gravimetric
Purpose:	To evaluate semi-aqueous products for mold release cleaning using heated ultrasonics.

Experimental Procedure:

Seven products were selected from the lab's database. The products were used at full strength. Products were heated to 120 F using a hot plate. Each product was suspended into a Crest 40 kHz ultrasonic tank filled with water at 120 F. The cleaning solutions were degassed for 5 minutes.

Twenty-one preweighed coupons were first coated with Valspar MR 225 mold release (100-41-4, 1330-20-7, 8052-41-3, 67-63-0, 108-88-3, 110-82-7, 64742-89-8), followed by a second coating with Valspar MR 225 Aerosol (75-28-5, 74-98-6, 100-41-4, 75-09-2). The coupons were placed into a convection oven at 150 F and allowed to cure overnight. After the coupons were cooled to room temperature, a second set of weights were recorded to determine the amount of contaminants were added.

Three coupons were cleaned in each product for five minutes using ultrasonic energy. After cleaning the coupons were removed and dried using compressed air at room temperature. Final weights were to be recorded after coupons were dry and efficiencies were calculated for each product.

Results:

Six of the eight products were effective in removing over 80% of the contaminant mix after five minutes of ultrasonic cleaning. One product, Solsafe 245 removed 111%. Further testing would need to be conducted to ensure damage was not being done to the aluminum substrate and therefore this product was not considered to be effective. Finally, the last product, Canola Gold 110 was found to have removed over 97% of the contaminant even though the initial cleaning efficiency was only 56%. When the coupons were wiped with a paper towel, the remaining cleaner residue was removed resulting in the higher efficiency. A similar improvement was found for two of the three DBE 5 cleaned coupons. Efficiency increased from 83% to 93%. The table below lists the initial weights, final weights and efficiencies for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
Bio T Max	0.0554	0.0054	90.25
	0.0401	0.0028	93.02
	0.0511	0.0006	98.83
Solsafe 245	0.0365	-0.0062	116.99
	0.0422	-0.0030	107.11
	0.0527	-0.0053	110.06
DS 104	0.0413	0.0008	98.06
	0.0422	0.0006	98.58
	0.0426	0.0001	99.77
D Greeze 500 Lo	0.0356	0.0014	96.07
	0.0548	0.0057	89.60
	0.0360	0.0077	78.61
Canola Gold 110	0.0236	0.0166	29.66
	0.0327	0.0090	72.48
	0.0226	0.0077	65.93
SC Maxisolv	0.0463	0.0014	96.98
	0.0444	-0.0008	101.80
	0.0302	-0.0005	101.66
DBE 5	0.0392	-0.0005	101.28
	0.0335	0.0033	90.15
	0.0317	0.0128	59.62

Wiped Surfaces

Cleaner	Initial wt	Dirty wt	% Removed

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Canola Gold wipe	0.0236	-0.0002	100.85
	0.0327	-0.0003	100.92
	0.0226	0.0018	92.04
DBE 5 wipe	0.0335	0.0000	100.00
	0.0317	0.0068	78.55
	0.0392	-0.0005	101.28

Summary:

Substrates:	Aluminum
Contaminants:	Mold Releases

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Bio Chem Systems	Bio T Max	100	94.03	☑	
Bio Chem Systems	Solsafe 245	100	111.38	☐	
Dysol	DS 104 Wipe Solvent	100	98.80	☑	
Transene Company, Inc.	D Greeze 500 LO	100	88.09	☑	
AG Environmental Products	Canola Gold CE110	100	56.02	☐	97.93 with wipe
Gemtek Products	Safe Care (SC) Maxi Solv	100	100.14	☑	
Invista S.a.r.l	Flexisolv DBE 5 ester	100	83.68	☑	93.27 with wipe

Conclusion: The semi-aqueous products were very effective when used with ultrasonic cleaning.