CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 02/05/2020

Experimenters: Othon Pagounes, Harry Rankin

ClientType: Adhesive Manufacturer

ProjectNumber: Project #3

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Adhesive

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate the effectiveness of a solvent and aqueous based cleaners on the removal of silicone adhesives from stainless steel coupons using heated ultrasonics to replace NMP.

Experimental Procedure: Twelve pre-weighed stainless steel coupons, three for each cleaner, were soiled for each contaminant tested. Approximately 0.5 g of the soil was applied using a hand held swab. Each set of coupons were placed into a beaker and immersed along with 40 kHz ultrasonics for 30 minutes. During this process, any noticeable soil removal was observed at ten minute intervals. Coupons were allowed to dry for 24 hours, and afterwards final weights were recorded as well as efficiency of removal was calculated for each coupon cleaned.

Results:

Cleaner	Conc.	Initial wt. of cont. (g)	Final wt. of cont. (g)	% Cont. Removed	% Average
Aquavantage 1400 GD	10%	0.4511	0.3727	17.38	19.67
		0.557	0.4828	13.32	
		0.3842	0.2754	28.32	
Surface Clean 930	2%	0.6263	0.6212	0.81	0.40
		0.6134	0.6111	0.37	
		0.6439	0.6438	0.02	
SC Aircraft and Metal Cleaner	1%	0.5851	0.5166	11.71	13.68
		0.5326	0.4617	13.31	
		0.4559	0.3828	16.03	
Sta-Sol® ESS 160	100%	0.3836	0.181	52.82	53.37
		0.4321	0.1667	61.42	
		0.4309	0.2332	45.88	

Summary:

Substrates:	Stainless Steel
Contaminants:	Adhesive

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Brulin Corporation	Aquavantage 1400	10%	19.67	☐	
International Products Corporation	Surface Cleanse Concentrated Neutral 930	2%	0.40	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	1%	13.68	☐	
JR Hess & Co., Inc.	Sta-Sol ESS 160	100%	53.37	☐	

Conclusion: All of the chemistries evaluated were not efficient in the removal of silicone adhesive in heated ultrasonics. Further testing with Sta-Sol® ESS 160 will be conducted with varying temperatures due to the promising visual and gravimetric results. The three aqueous cleaners have been deemed ineffective and will no longer be considered as an alternative.