CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 07/22/2020

Experimenters: Alicia McCarthy, Hayley Byra

ClientType: Aircraft Parts Manufacturer

ProjectNumber: Project #1

Substrates: Glass/Quartz

PartType: Coupon

Contaminants: Resins/Rosins

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: The purpose of this experiment was to evaluate the effectiveness of cleaners to remove Rosin 2 (Pitch) and Protectocoat from glass substrates using heated ultrasonics.

Experimental Procedure: Two glass coupons were obtained for each of the cleaners tested. Cleaners were prepared at the following concentrations and temperatures: Smart Solve 605, RB Degreaser, SC Actisolv, Propylene carbonate, Dimethyl glutarate, SC Maxisolv, and Mirachem 500. An additional test was added to test unheated immersion with Mirachem 500 as a baseline comparison for the product. One coupon was soiled with the Rosin 2 (Pitch) and the other with Protectocoat by using a swab to coat the bottom third of the coupon, and soiled weights were obtained. Coupons were submerged into their respective heated cleaners using ultrasonics for 30 minutes. After 30 minutes passed, coupons were removed and allowed to air dry. Once dry a clean weight was obtained. Effectiveness of cleaners was then determined.

Results:

Cleaner	Contaminant	Initial wt. of cont.	Final wt. of cont.	% Cont. Removed	%AVG
Smart Solve 605	Rosin 2 Pitch	0.4488	0.0213	95.25	54.77
	Protect-o-coat	0.0098	0.0084	14.29	
RB Degreaser	Rosin 2 Pitch	0.3641	0.0012	99.67	50.85
	Protect-o-coat	0.0196	0.0192	2.04	
SC Actisolv	Rosin 2 Pitch	0.3311	0.0032	99.03	90.53
	Protect-o-coat	0.0284	0.0051	82.04	
Propylene carbonate	Rosin 2 Pitch	0.4045	0.0438	89.17	34.2
	Protect-o-coat	0.0207	0.025	-20.78	
Dimethyl glutarate	Rosin 2 Pitch	0.4245	0.0016	99.62	96.8
	Protect-o-coat	0.0133	0.0008	93.98	
SC Maxisolv	Rosin 2 Pitch	0.4252	0.0007	99.84	97.2
	Protect-o-coat	0.0184	0.001	94.56	
Mirachem 500	Rosin 2 Pitch	0.525	0.0142	97.3	95.89
	Protect-o-coat	0.0181	0.001	94.48	
Mirachem 500*	Rosin 2 Pitch	0.3652	0.3662	-0.27	1.56
	Protect-o-coat	0.0148	0.0143	3.38	

*Unheated Immersion

Summary:

Substrates:	Glass/Quartz				
Contaminants:	Resins/Rosins				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
United Laboratories International	Smart Solve 605	100%	54.77	☐	Still oily/wet 24 hours later
Environmental Technology	RB Degreaser Cleaner	20%	50.85	☐	Did not work on protect-o-coat.

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Gemtek Products	SC Actisolv Safety Solvent	50%	90.53	☑	
Fisher Scientific	Propylene carbonate 99.5% (CAS:108-32-7)	100%	34.20	☐	Did not work on protect-o-coat.
Fisher Scientific	Dimethyl glutarate (CAS:1119-40-0)	100%	96.80	☑	
Gemtek Products	Safe Care (SC) Maxi Solv	100%	97.20	☑	
Mirachem Corporation	Mirachem 500	25%	95.89	☑	
Mirachem Corporation	Mirachem 500	25%	1.56	☐	Did not work unheated & without ultrasonics.

Conclusion: SC Maxisolv 100% at 120°F using ultrasonics was the most effective at removing both soils from glass coupons removing an average of 97.20%. Dimethyl glutarate was the second most effective removing an average of 96.80%, Mirachem 500 the third most removing an average of 95.89%, and SC Actisolv the fourth most removing an average of 90.53%. Next step will be to test on parts.