CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2023

DateRun: 07/20/2023

Experimenters: Amelia Wagner

ClientType: Tool Manufacturer

ProjectNumber: Project #2

Substrates: Steel

PartType: Coupon

Contaminants: Adhesive, Resins/Rosins

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric

Purpose: To find an effective solvent or aqueous cleaner to remove varnish from steel coupons

Experimental Procedure: Three steel coupons were used for each cleaner tested, for a total of nine coupons. Initial weights of coupons were taken. The varnish was heated to 350 F on a hot plate. Each coupon was placed on the hot plate for a total of 30 seconds. The varnish was then applied to the heated coupons with a metal scraper in order to achieve a thin layer of varnish on the bottom third of the coupons. Once the varnish had solidified, dirty weights of each coupon were taken. Coupons were then subjected to 15 minutes of heated ultrasonics at 120F . The chosen solvents/cleaners tested were A. Dimethyl Glutarate 98.5% (solvent), B. SC Actisolv Safety Solvent 100% (solvent), C. Mirachem 500 100% (aqueous). Coupons were removed and left to air dry. Clean weights were then taken.

Results:

Cleaner	Initial wt of cont.	Final wt of cont.	%Cont Removed	% AVG
Dimethyl Glutarate 98.5%	0.0345	0.0304	11.88	8.04
	0.0261	0.0245	6.13	
	0.0817	0.0767	6.12	
SC Acitsolv Biobased Safety Solvent 100%	0.0125	0.0119	4.80	3.25
	0.0325	0.0324	0.31	
	0.0043	0.0041	4.65	
Mirachem 500 100%	0.1266	0.1110	12.32	15.67
	0.1063	0.0923	13.17	
	0.0581	0.0456	21.51	

Summary:

Conclusion: None of the solvents/cleaners tested were effective in removing the varnish from the coupons in 15 mins of heated ultrasonics at 120F. All solvents/cleaners tested show promise with increased temp and/or increased time.