

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 Actisol 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 Actisol 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.