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:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To find an effective solvent 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 unheated immersion with a stir bar set at 100 rpm. The chosen solvents tested were A. Xylene 98.5% (for comparison), B. SC Actisolv Safety Solvent 100%, C. Dimethyl Glutarate 98%. 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
Xylene 98.5%	0.0724	0.0025	96.55	95.96
	0.0531	0.0037	93.03	
	0.0415	0.0007	98.31	
SC Actisolv Safety Solvent 100%	0.0307	0.0304	0.98	2.26
	0.0213	0.0204	4.23	
	0.0698	0.0687	1.58	
Dimethyl Glutarate 98%	0.0213	0.0212	0.47	0.48
	0.0306	0.0306	0.00	
	0.0103	0.0102	0.97	

SC Actisolv Biobased Solvent: Varnish just beginning to flake off at 15 minutes of unheated immersionDimethyl Glutarate: No Change

Summary:

Conclusion: Neither SC Actisolv Biobased Solvent 100% or Dimethyl Glutarate 98% were effective in removing varnish using unheated immersion. They may show some promise with the addition of heat and/or ultrasonics.