

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 Actisol 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 Actisol 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 Actisol Biobased Solvent: Varnish just beginning to flake off at 15 minutes of unheated immersion
 Dimethyl Glutarate: No Change

Summary:

Conclusion: Neither SC Actisol 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.