# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 07/09/2020

Experimenters: Alicia McCarthy, Hayley Byra

ClientType: Metal

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Coupon

Contaminants: Resins/Rosins

Cleaning Methods: Manual Wipe

Analytical Methods: Gravimetric, Visual

Purpose: The purpose of this experiment was to determine the effectiveness of five cleaners; Isopropyl alcohol, SC Aircraft & Metal Cleaner, Dimethyl glutarate, Propylene carbonate, and RB Degreaser, in removing a water based rosin from stainless steel substrates with unheated manual wiping.

Experimental Procedure: Three coupons were obtained and weighed for each of the five tested cleaners; Isopropyl alcohol (100% concentration), SC Aircraft & Metal Cleaner (50% concentration), Dimethyl glutarate (100% concentration), Propylene carbonate (100% concentration), and RB Degreaser (1:30 concentration). Coupons were then soiled with the water based rosin using a swab and dried overnight before taking the dirty weight. Cotton cloths for each cleaner were saturated and used to wipe down the soiled coupons for 30 seconds at room temperature before taking the final clean weights.

Results:

| Cleaner | Initial wt of cont. | Final wt of cont. | %Cont Removed | % AVG |
|---|---|---|---|---|
| Isopropyl alcohol | 0.0756 | 0.0347 | 54.10 | 35.64 |
| | 0.0938 | 0.0527 | 43.82 | |
| | 0.201 | 0.1829 | 9.01 | |
| SC Aircraft & Metal Cleaner | 0.2142 | 0.1702 | 20.54 | 16.09 |
| | 0.2601 | 0.2247 | 13.61 | |
| | 0.2259 | 0.194 | 14.12 | |
| Dimethyl glutarate | 0.1822 | 0.0259 | 85.78 | 90.7 |
| | 0.2438 | 0.0165 | 93.23 | |
| | 0.2284 | 0.0158 | 93.08 | |
| Propylene Carbonate | 0.2534 | 0.2532 | 0.08 | 1.70 |
| | 0.2617 | 0.2968 | -13.41 | |
| | 0.1861 | 0.1518 | 18.43 | |
| RB Degreaser | 0.1881 | 0.1276 | 32.16 | 35.72 |
| | 0.1861 | 0.0999 | 46.32 | |
| | 0.2257 | 0.161 | 28.67 | |

Summary:

| **Substrates:** | Stainless Steel | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Resins/Rosins | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Fisher Scientific | Isopropanol (CAS: 67-63-0) | 100% | 35.64 | ☐ | Worked well to remove thin areas. Thicker areas were harder to remove. |
| Gemtek Products | SC Aircraft & Metal Cleaner Super Concentrate | 50% | 16.09 | ☐ | Did not perform on thick areas and barely on thin areas. Really bubbly. |
| Fisher Scientific | Dimethyl glutarate (CAS:1119-40-0) | 100% | 90.70 | ☑ | Worked really well, removed almost all soil from all coupons. |
| Fisher Scientific | Propylene carbonate 99.5% (CAS:108-32-7) | 100% | 1.70 | ☐ | Had difficulty removing thicker areas. Did not work well. |
| Environmental Technology | RB Degreaser Cleaner | 1:30 | 35.72 | ☐ | Worked well on thin areas. |

Conclusion: Dimethyl glutarate was the most effective cleaner.