CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2022

DateRun: 05/05/2022

Experimenters: Zoe Lawson

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Aluminum, Stainless Steel, Steel

PartType: Part

Contaminants: Oil

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate Crystal Simple Green at 15% solution for new pre-soiled samples.

Experimental Procedure: The pre-soiled parts were weighed for dirty weights. The Crystal Simple Green was prepared at a concentration of 15% and then heated to 140 F and placed in the ultrasonics tank. The parts were then placed in the ultrasonics tank for 5 minutes. The coupons were taken out and left to dry; once the coupons were dry the clean weights were taken. After clean weights, the coupons were wiped down and weighed for initial weights. Visual observations were also noted.

Results: The higher concentration of crystal simple green reacted poorly with one of the metals as there was found to be metal particles left over in the beaker following cleaning. This had not been an issue with the lower concentration of crystal simple green. While the content removed is similar to the previous test, the presence of flaked off metal indicates that the higher concentration might not be as effective at contaminant removal as lower ones.

Substrate	Duration	Initial	Dirty	Clean	Initial wt. of cont.	Final wt. of cont.	% Cont Removed
Aluminum	5 min	85.7738	85.8143	85.7763	0.0405	0.0025	93.83
Steel		243.9476	243.9884	243.9502	0.0408	0.0026	93.63
Stainless Steel		243.6447	243.6571	243.6452	0.0124	0.0005	95.97

Summary:

Substrates:	Aluminum, Stainless Steel, Steel
Contaminants:	Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	15		☐	Damaging parts. Left metal pieces in solution after cleaning.

Conclusion: Increasing the concentration of Simple Crystal Green is not effective for the parts being cleaned. Previous testing at 10% for 5, 10, and 15 minutes showed percent removal yields in the high 90's. Future testing with the remaining coupons can be performed to see how consistent the yields are at 5 minutes for simple green 10%, which had 99% yields in Trial #7 and ~95% yields in Trial 8. The other option would be to see how effective the cleaner at a lower time span.