CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2021
DateRun:	10/26/2021
Experimenters:	Nicole Kebler
ClientType:	Metal Working
ProjectNumber:	Project #1
Substrates:	Carbon Steel
PartType:	Coupon
Contaminants:	Oil
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric, Visual
Purpose:	To get a baseline evaluation of six possible alternatives for the removal of oil from company provided stainless steel coupons.
Experimental Procedure:	Six possible alternatives were identified through examination on CleanerSolutions. The alternatives concentrations were determined and the chemistries were created following those concentrations. Once the cleaners were made, they were put into beakers. One coupon per cleaner that was previously soiled by the company was weighted for dirty weights. The coupons were then put into the cleaner and immersed for 15 minutes. After the 15 minutes, they were taken out and left to dry overnight. The clean weights were taken the next day. The coupons were then wiped clean till all oil was removed from the surface and were weighed for initial weights.

Cleaner	Concentration
SuperSolv	1:1
Simple Green	1:20
SC Aircraft	1:3
Water Works	2:1
Mirachem 500	2:1

Results: For unheated immersion, no cleaner was effective for removing the oil from stainless steel. S.C. Aircraft performed the best with 63% removal and visually was the cleanest overall. Next, Simple Green removed 57% of the soil and ranked number two for visual ratings. Mirachem 500 had an average of 48% and SuperSolv had an average of 45% and visually ranked as third and fourth for visual ratings. Lastly, Water Works came in last visually and had about 37% total removal effectiveness. Since two cleaners ranked over 50% removal with no TACT, they will continue to be investigated as possible alternatives.

Cleaner	Initial wt. of cont.	Final wt. of cont.	Average
SuperSolv	0.2789	0.1532	45.07
Simple Green	0.1725	0.0739	57.16
SC Aircraft	0.1297	0.0477	63.22
Water Works	0.2255	0.1429	36.63
Mirachem 500	0.1890	0.0976	48.36

Summary

Cleaner	**Visual Rank**	**Gravimetric Rank**
SuperSolv	4	4
Simple Green	2	2
SC Aircraft	1	1
Water Works	5	5

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Mirachem 500	3	3

Summary:

Substrates:	Carbon Steel
Contaminants:	Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Gemtek Products	SC Supersolve Safety Solvent	1:1	45.00	☐	SuperSolve was not effective.
Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	1:20	57.00	☐	Simple Green was not effective.
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	1:3	63.00	☐	SC Aircraft was not effective.
Keteca USA	Water Works Heavy Duty Degreaser	2:1	37.00	☐	Water Works was not effective.
Mirachem Corporation	Mirachem 250	2:1	48.00	☐	Mirachem 500 was not effective.

Conclusion:

Two cleaners (SC Aircraft and Simple Green) had an effectiveness over 50%. Next steps are to add agitation to the immersion and add heat to test if it will improve effectiveness.