CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2020
DateRun:	12/31/1969
Experimenters:	Sabrina Apel, Othon Pagounes, Harry Rankin
ClientType:	Brass Instrument Manufacturer
ProjectNumber:	Project #1
Substrates:	Brass, Copper, Nickel
PartType:	Coupon
Contaminants:	Lubricating/Lapping Oils
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric, Visual
Purpose:	To evaluate the effectiveness of aqueous-based and solvent-based cleaners at the removal of American Lapping Compound by S.E Shires using unheated immersion on copper, brass, and copper/nickel (90/10) substrates by gravimetric and visual analysis.
Experimental Procedure:	Three pre-weighed coupons per substrate were soiled with American Lapping Compound, using a cotton swab. Each set of coupons were immersed into a beaker with one of the six cleaners for 30 minutes. During this process, any noticeable soil removal was observed at five minute intervals. After immersing, final weights were recorded and efficiency was calculated for each coupon cleaned.
Results:	Table 1: Gravimetric Results The soil visually was not removed from each substrate for each cleaner. After drying for 24 hours, some coupons were still wet from the cleaner, indicating the soil may have absorbed moisture causing a negative percent contaminant removal.

Cleaner	Substrate	Initial wt of cont.	Final wt of cont.	%Cont Removed	% Average	Overall % Removal
Aquavantage 1400 10%	Copper	0.2162	0.2162	0.00	-0.09	-0.28
		0.2909	0.2909	0.00		
		0.2996	0.3004	-0.27		
	Brass	0.2326	0.2338	-0.52	-0.40	
		0.3657	0.3664	-0.19		
		0.3008	0.3023	-0.50		
	Copper/ Nickel	0.2873	0.2889	-0.56	-0.34	
		0.2811	0.2804	0.25		
		0.2349	0.2366	-0.72		
Surface Cleanse 930 5%	Copper	0.3623	0.3623	0.00	-0.07	-0.32
		0.3680	0.3682	-0.05		
		0.4199	0.4206	-0.17		
	Brass	0.4543	0.4539	0.09	-0.47	
		0.3187	0.3224	-1.16		
		0.6173	0.6194	-0.34		
	Copper/ Nickel	0.1773	0.1806	-1.86	-0.42	
		0.1614	0.1565	3.04		
		0.0780	0.0799	-2.44		
SC Aircraft & Metal Cleaner 1:100	Copper	0.6476	0.6465	0.17	0.29	0.21
		0.3278	0.3274	0.12		
		0.6730	0.6691	0.58		
	Brass	0.4641	0.4633	0.17	0.22	
		0.6299	0.6289	0.16		
		0.6202	0.6181	0.34		
	Copper/ Nickel	0.2399	0.2404	-0.21	0.12	
		0.2163	0.2168	-0.23		
		0.3046	0.3022	0.79		
Micro 90 2%	Copper	0.4411	0.4428	-0.39	0.31	2.91
		0.3678	0.3670	0.22		

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		0.3929	0.3886	1.09		
	Brass	0.4181	0.3982	4.76	3.42	
		0.4263	0.4265	-0.05		
		0.4338	0.4098	5.53		
	Copper/ Nickel	0.2142	0.2008	6.26	5.01	
		0.2233	0.2195	1.70		
		0.1642	0.1526	7.06		
LF2100 5%	Copper	0.4177	0.4065	2.68	1.90	4.05
		0.4310	0.4232	1.81		
		0.5168	0.5105	1.22		
	Brass	0.2958	0.2433	17.75	8.28	
		0.2123	0.1985	6.50		
		0.2547	0.2532	0.59		
	Copper/ Nickel	0.1031	0.0979	5.04	1.98	
		0.1681	0.1672	0.54		
		0.1154	0.1150	0.35		
Liquinox 1%	Copper	0.2711	0.2664	1.73	1.14	0.57
		0.3816	0.3783	0.86		
		0.2878	0.2854	0.83		
	Brass	0.3131	0.3133	-0.06	0.20	
		0.2446	0.2437	0.37		
		0.3435	0.3425	0.29		
	Copper/ Nickel	0.2845	0.2843	0.07	0.36	
		0.3207	0.3204	0.09		
		0.2964	0.2937	0.91		

Summary:

Substrates:	Brass, Copper, Nickel
Contaminants:	Lubricating/Lapping Oils

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Brulin Corporation	Aquavantage 1400	10%	-0.28	☐	
International Products Corporation	Surface Cleanse Concentrated Neutral 930	5%	-0.32	☐	
Gemtek Products	SC Aircraft & Metal Cleaner Super Concentrate	5%	0.21	☐	
International Products Corporation	Micro 90 Conc.	2%	2.91	☐	
International Products Corporation	LF 2100 (Liquid Foam Cleaner)	5%	4.05	☐	
Alconox Inc	Liquinox	1%	0.57	☐	

Conclusion: Each cleaner was not effective in removing American Lapping Compound contaminant from copper, brass, and copper/brass (90/10) coupons. Next step will be heated immersion.