CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1995

DateRun: 05/31/1995

Experimenters: Donald Garlotta, Jay Jankauskas

ClientType: Plating Job Shop

ProjectNumber: Project #1

Substrates: Aluminum, Brass, Copper, Steel

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Mechanical Agitation

Analytical Methods: Gravimetric

Purpose: Grace Daraclean 294xx vs 283 in removing wax

Experimental Procedure: The coupons were weighed prior to contamination and then dipped in melted wax. Once the wax hardened the coupons were then weighed again. Cleaning was done in a beaker at 160 F with air sparging used as agitation. The copper coupons were washed for 15 minutes but it was noted that a longer cleaning time was necessary, so the time was bumped up to 20 minutes. The coupons were then rinsed for 5 minutes in a tap water rinse at 160 F. Drying was performed by running the coupons under air knives for two minutes and then placing the coupons in a convection oven set at 125 F for 90 minutes. The coupons were then left out overnight to cool down and then weighed in the morning. Four runs were performed for the Daraclean 283 (one run for each substrate).

Results: EXPERIMENTAL DATA LOG

GRAVIMENTRIC ANALYSIS

sample # and substrate	clean mass (g)	mass with contamination (g)	mass after cleaning (g)	contaminant removed (g)	Percent Removal
#8 Aluminum	21.0186	21.8746	21.0205	0.8541	99.78%
#9 Aluminum	21.0070	21.8466	21.0193	0.8273	98.54%
#10 Aluminum	20.9878	21.7173	20.9955	0.7218	98.94%
#2954 Copper	35.2962	36.0450	35.3054	0.7396	98.77%
#3093 Copper	35.3100	36.0492	35.3125	0.7367	99.66%
#3932 Copper	35.3942	36.0962	35.4075	0.6887	98.11%
#5330 Brass	34.5341	35.2604	34.5357	0.7247	99.78%
#7399 Brass	34.7371	35.4442	34.7422	0.702	99.28%
#5881 Brass	34.5893	35.2998	34.5928	0.707	99.51%
#15 Steel	163.8808	165.0326	163.8844	1.1482	99.69%
#11 Steel	139.7609	141.0213	139.7640	1.2573	99.75%
#36 Steel	147.5389	148.6627	147.5427	1.12	99.66%

For the first run the Daraclean 283 removed a majority of the wax, however there was a thin film of wax on the copper coupons. Thus the cleaning time was bumped up to 20 minutes. Removal was pretty good (except for the Aluminum which had a lot of wax on it), but not as good as the Daraclean 294xx.

Summary:

Substrates:	Aluminum, Brass, Copper, Steel				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Magnaflux	Daraclean 283	10	98.11	☐	

Conclusion: A higher temperature would probably be the best bet to improve cleaning but this might not be a good idea due to safety reasons. A method needs to be devised to remove the wax from the top of the cleaning tank.