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: Daraclean 294xx results

Experimental Procedure: This trial is to determine the effectiveness of both Grace Daraclean 294xx and Grace Daraclean 283 in removing wax from various coupons. The Daraclean 294xx is a semi- aqueous terpene whereas the Daraclean 283 is an aqueous cleaner.
The coupons were weighed prior to contamination and then dipped in a beaker of 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 for 15 minutes. The coupons were then rinsed for 5 minutes in a tap water rinse at 150 F. Drying was performed by running the coupons under air knives for 2 minutes and then placing the coupons in a convection oven set at 125 F for 90 minutes. The coupons were then left to cool overnight and then weighed the next morning. A total of four runs were performed for the Daraclean 294xx (one run for each different 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
#5 Aluminum	21.0724	21.8289	21.0752	0.7537	99.63%
#6 Aluminum	21.0246	21.8274	21.0283	0.7991	99.54%
#7 Aluminum	21.0166	21.4187	21.0205	0.3982	99.03%
#6097 Copper	35.6108	36.5260	35.6148	0.9112	99.56%
#3658 Copper	35.3669	36.1804	35.3678	0.8126	99.89%
#4076 Copper	35.4092	36.2176	35.4113	0.8063	99.74%
#4317 Brass	34.4331	35.2092	34.4330	0.7762	100.01%
#5370 Brass	34.5389	35.7766	34.5381	1.2385	100.06%
#6077 Brass	34.6109	35.5091	34.6073	0.9018	100.40%
#27 Steel	188.2295	189.4184	188.2278	1.1906	100.14%
#10 Steel	148.3131	149.4491	148.3130	1.1361	100.01%
#8 Steel	152.5285	153.8135	152.5270	1.2865	100.12%

The 294xx tends to foam up a little bit but did a very good job of removing the wax from the coupons. The worst removal was encountered on the Aluminum coupons whereas the best removal was on the steel coupons. Small little droplets of wax were noticed on the coupons, but this is believed to be caused by dragout from the cleaner solution due to the fact that some of these droplets were on areas of the coupons that were not contaminated with wax. Once the cleaner temperature reaches below 150 F the wax started to solidify thus reducing the cleaning efficiency.

Summary:

Substrates:	Aluminum, Brass, Copper, Steel				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Magnaflux	Daraclean 294 xx	10	99.78	☐	

Conclusion: Temperatures should be kept at least 160 F. The biggest problem that needs to be looked into is removing the wax from the cleaner bath to avoid drag out.