CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	1997
DateRun:	06/10/1997
Experimenters:	Andrew Bray
ClientType:	Aluminum Anodizing Job Shop
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Coupon
Contaminants:	Waxes
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Visual
Purpose:	Determine effectiveness of selected cleaners

Experimental Procedure:

This experiment was designed to determine the effectiveness of selected cleaners at removing the masking wax. To reduce the number of variables, the steam cleaning was eliminated. The six solutions used in this test are listed below:
50% Super Blue Non-Ammoniated Stripper @ room temperature
100% Super Blue Non-Ammoniated Stripper @ room temperature
50% Zap Stripper @ room temperature
100% Zap Stripper @ room temperature
10% Inproclean #3800 @ 150oF
2% Alconox Alcojet @ 150oF
The two strippers were used at the same concentrations as earlier. This was done to explore the effectiveness of each at two strengths. 10% Inproclean #3800 and 2% Alconox Alcojet were used because they have been successful at removing wax in previous lab trials.
Test Coupons were immersed in the cleaning solutions for fifteen minutes. When removed, they were immersed in a 150 F tap water rinse bath followed by a room temperature deionized water rinse. The immersion time for the rinse baths was one minute each. The coupons were dried in an oven at 120 F for thirty minutes and allowed to return to ambient temperature overnight.

SUBSTRATE MATERIAL: Aluminum 5052 Coupons
CONTAMINANTS: Mobilewax 2305
CONTAMINATING PROCESS USED: Bars contaminated at Aluminum Anodizing Job Shop by dipping into vat of masking wax and allowing wax to cure

Results:

The cleaning solutions performed slight to no removal of the wax. In the Super Blue Non-Ammoniated Stripper and the Zap Stripper the wax appeared to be partially liquefy, but no removal occurred. There was no visible difference in wax removal between the 50% and the 100% concentrations of each. The 10% Inproclean #3800 did not effectively dissolve the wax. The 2% Alconox Alcojet appeared to begin to dissolve the wax and a small amount was removed. In both of the heated solutions small amounts of wax were left on the bottom of the beakers.
Following the hot water rinse, wax was left on the bottom of all beakers. Besides this, minute to no wax removal took place in this bath. The 80 F DI water rinse bath appeared to solidify the wax. There was no significant wax removal on any of the test
coupons in this bath. No further analytical analysis was performed due to the large amount of wax remaining on the coupon.

Summary:

Substrates:	Aluminum				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Don Garland Inc	Super Blue Non Ammoniated Stripper	100	0.00	☐	
Don Garland Inc	Super Blue Non Ammoniated Stripper	50	0.00	☐	
Don Garland Inc	Zap Ammoniated Stripper	100	0.00	☐	
Don Garland Inc	Zap Ammoniated Stripper	50	0.00	☐	
Oakite Products	Inproclean 3800	10	0.00	☐	
Alconox Inc	Alcojet	2	0.00	☐	

Conclusion:

At room temperature neither Super Blue Non-Ammoniated Stripper nor Zap Stripper appeared to remove wax from the coupons. The concentrated solutions performed no differently than the 50% dilute solutions. 10% Inproclean #3800 at 150 F was also ineffective at removing the wax. 2% Alconox Alcojet at 150 F provided minor wax removal. The heat seemed to be effective at melting some of the wax, evidenced by wax adhering to the bottom of the beakers when the coupons were removed.
Gravimetric Analysis, Contact Angle Goniometry, and Optical Sensor Electron Emission were not necessary

to quantify differences in cleanliness, as all coupons remained grossly contaminated at the end of the cleaning trial. Further testing with Alconox Alcojet will be performed to explore the possibility of using the cleaner in the event that the proposed steam and three stage rinse is not effective at providing adequate cleaning. Using this or another cleaner in the first soak tank may be very effective at decreasing energy and water costs and consumption rates. The increased cleaning performed by the chemistry may enable the soak temperatures to be lowered significantly.