CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998

DateRun: 08/02/1998

Experimenters: Jason Marshall

ClientType: Name Plate Mfg-Etching

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Carbon Deposits, Paints, Dirt

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To find an alternative cleaner to the Naphtha solvent currently using.

Experimental Procedure: Eight cleaners were selected based on the laboratory's databases and vendor information. Five aqueous cleaners were made into 5% solutions in 500 mL
beakers using DI water. These chemistries were heated to 130 oF on a hot plate. The three other chemistries were used at full strength at room temperatures.
Preweighed coupons were immersed into the contaminant solution and stacked on top of each other. Coupons were allowed to sit for one hour at room temperature. Before the second weighing was performed, each coupon was allowed to dry completely. The drying was necessary so that an accurate contaminated weight could be recorded. It was also a good way to test the worst case scenario for the contaminant cleaning.
Three coupons were placed into each cleaning chemistry for 5 minutes using stir bar agitation. Coupons were rinsed with tap water at 120 oF for 30 seconds. Coupons were allowed to air dry. After drying, a final clean weight was recorded. Cleaning efficiencies were calculated.

SUBSTRATE MATERIAL: Aluminum 3003
CONTAMINANTS: Dirty cleaning solution-Naphtha w/ residual paint chips and pumice sludge

Results: Of the eight cleaners selected, only one showed excellent removal of the contaminant. This product was D-Greeze 500 which the client has already tested. There were three other cleaners that removed over 60% of the contaminant. These products were Super CMF 240, Simple Green and Soy Gold 1000. Table 1 lists each cleaners cleaning efficiencies for each coupon.
Table 1. Cleaning Efficiencies for Coupons

	Buckeye	Chrisal	WR Grace	Star Clean	Sunshine Makers	T-Square	AG Environ.	Solvent Kleene
Coupon 1	5.05	62.57	2.96	48.58	65.53	58.63	76.79	93.44
Coupon 2	45.44	72.80	21.59	36.61	63.18	27.02	73.15	91.92
Coupon 3	40.37	53.46	37.73	53.96	68.73	74.07	61.98	95.96
Ave	30.28	62.94	20.76	46.38	65.81	53.24	70.64	93.77
Std Dev	22.00	9.67	17.40	8.88	2.78	23.99	7.72	2.04

The Chrisal and Sunshine Makers products are both aqueous cleaners used at a low dilution. Increasing the concentration may help to promote a higher cleaning efficiency. Further testing will try various concentrations of each. An increase in time may also benefit the cleaning process for Chrisal, Sunshine and AG Environmental.

Summary:

Substrates:	Aluminum				
Contaminants:	Carbon Deposits, Paints, Dirt				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Buckeye International	Shopmaster	5	30.28	☐	
Chrisal USA Inc	Super CMF 240	5	62.94	☐	
Magnaflux	Daraclean 232	5	20.76	☐	
By Pas and Star Products	Star Cleaning Miracle # 50	5	46.38	☐	
Simple Green	Concentrated Industrial Strength Cleaner and Degreaser	5	65.81	☐	

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Tarksol Inc	Tarksol HTF-50	100	53.24	☐	
AG Environmental Products	Soy Gold 1000	100	70.64	☐	
Transene Company, Inc.	D Greeze 500 LO	100	93.77	☑	

Conclusion: Only one product tested showed excellent removal of the coupons. Three others showed potential for cleaning the coupons. Further testing of these chemistries will be conducted varying concentrations and times.