CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1997

DateRun: 10/14/1997

Experimenters: Jason Marshall

ClientType: Manufacturer of Security Systems

ProjectNumber: Project #1

Substrates: Liquid

PartType: Coupon

Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil

Cleaning Methods:

Analytical Methods: Colorimeter

Purpose: Evaluate bath life w/ transmittance and abs.

Experimental Procedure: Samples were collected at different time intervals. The samples were then measured for transmittance and absorbance at 530 nm using LaMotte's SMART Colorimeter. The instrument was first zeroed using DI water. Each bath sample was then measured three times. Finally measuring, the values were averaged and graphed in order to show any resulting relationships. Bath lives measured were: zero month, one month-circulating, one month-stagnant, and three months.
SUBSTRATE MATERIAL: Oakite Inproclean 1300
CONTAMINANTS: Quaker C1A US oil

Results: After recording and graphing the values for the various bath ages, two graphs were constructed. Figure 1 shows the relationship between bath life and percent transmittance. As the bath life increased, the transmittance went down at a fairly linear rate. See Figure 1 for the visual representation of the trend.

The second relationship between bath life and absorbance showed an exponential increase as the bath age increased. Figure 2 shows this relationship. The data obtained for these graphs is in Table 1 and the average values are in Table 2.

Table 1 Data for %T and Absorbance

Data for %T and Absorbance		
Bath Age	%T	Abs
blank	100	0.00
	99	0.00
	100	0.00
0-M	93	0.03
	93	0.03
	93	0.03
1-M-C	72	0.14
	71	0.15
	71	0.15
1-M-S	64	0.19
	63	0.20
	63	0.20
3-M	35	0.46
	33	0.48
	32	0.50

Table 2 Average Values

	Average %T	Average Abs
blank	99.70	0.00
0-M	93.00	0.03
1-M-C	71.30	0.15
1-M-S	63.30	0.20

Summary:

Substrates:	Liquid				
Contaminants:	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Oakite Products	Inproclean 1300	3	0.00	☐	

Conclusion:

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As the cleaning solution becomes more contaminated the percent transmittance decreases at a fairly linear rate whereas the absorbance increases exponentially. These trends can be used to aid in determining when to change the bath. After the cleaning bath does not clean parts at the desired level, a reading of transmittance and/or absorbance can be determined. At the next time the bath is suspected to be failing, a reading can be taken and compared to the previous value. This testing procedure will eliminate the guess work as to when to change the bath. This can be done by expanding the graph and obtaining the slope. With the slope, an equation of the corresponding line can be determined.