

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 1998  
 DateRun: 09/11/1998  
 Experimenters: Jason Marshall, Shyam Sarda  
 ClientType: Electromagnetic Manufacturer  
 ProjectNumber: Project #1  
 Substrates: Copper, Nickel  
 PartType: Coupon  
 Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil  
 Cleaning Methods: Ultrasonics  
 Analytical Methods: Gravimetric

Purpose: To determine the minimum cleaning time at increased concentrations.

Experimental Procedure: Eighteen preweighed coupons were contaminated with oil using a hand held swab and then weighed. Two cleaning solutions were made into 15% solutions using DI water in a 600 mL beaker. The solutions were heated to 130 F on a hot plate. The beakers were then placed into a Crest 40 kHz ultrasonic tank model 4Ht 1014-6 also at 130 F. Three coupons were placed in each cleaner for a set cleaning time. These cleaning times were 15, 30 and 60 seconds. Coupons were rinsed in tap water at 120 F for 30 seconds and air dried. Final weights were taken after drying was complete.

SUBSTRATE MATERIAL: Copper/Nickel 70/30  
 CONTAMINANTS: Oil-Castrol 10W-40

Results: Both chemistries had good results for the all cleaning times. Table 1 list the cleaning efficiencies for both cleaners at the 3 cleaning times.

Table 1. Cleaning Efficiencies at Various Intervals

Time	AK-6215			Daraclean 282		
	15	30	60	15	30	60
Coupon 1	87.36	89.57	93.35	92.36	95.22	90.64
Coupon 2	90.27	97.45	79.11	96.52	97.43	96.15
Coupon 3	94.48	97.11	100.80	98.12	96.53	94.33
Ave	90.70	94.71	91.09	95.67	96.39	93.71
Std Dev	3.58	4.45	11	2.97	1.11	2.81

Summary:

<b>Substrates:</b>	Copper, Nickel				
<b>Contaminants:</b>	Cutting/Tapping Fluids, Lubricating/Lapping Oils, Oil				
<b>Company Name:</b>	<b>Product Name:</b>	<b>Conc.:</b>	<b>Efficiency:</b>	<b>Effective:</b>	<b>Observations:</b>
Calgon Corporation	AK 6215	15	94.71	<input checked="" type="checkbox"/>	
Magnaflux	Daraclean 282	15	96.39	<input checked="" type="checkbox"/>	

Conclusion: The increased concentration has allowed the cleaning times to be decreased to under 1 minute. The next testing will be performed using the second oil supplied by the client.