CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002

DateRun: 12/09/2002

Experimenters: Jason Marshall

ClientType: Manufacturing

ProjectNumber: Project #1

Substrates: Stainless Steel

PartType: Part

Contaminants: Dirt, Films, Oxides, Oil

Cleaning Methods: Ultrasonics

Analytical Methods: OSEE

Purpose: To reevaluate proposed cleaning methodology based on results obtained at client facility

Experimental Procedure: Three products were used at two ultrasonic frequencies, 25 and 40 kHz. Parts were cleaned for 6 minutes in glass beakers at 130 F, followed by a DI water rinse also at 130 F and finally dried using a Master Appliance Heat Gun at 500 F for 1 minute. After drying, parts were analyzed by wiping with a white towel and acetone. Following the wipe test, parts were analyzed using OSEE.

Results: Crystal Simple Green was the only product to be used in both 25 and 40 kHz Crest Ultrasonic tanks. Both parts cleaned still had the black residue. OSEE readings for the two parts did not differ significantly. Citranox was used in the 25 kHz tank only. The part cleaned in this solution also had the black residue. OSEE readings were lower for this part than for the Simple Green. Ionox HC 2 was used in the 25 kHz tank. There was less black residue on the part following the cleaning. OSEE readings were slightly higher than the Citranox cleaned part. Table 1 lists the OSEE readings for each part cleaned.

Cleaner Used	Flat Surface OSEE Readings		Knife Edge OSEE Readings	
Crystal SG 25kHz	869, 541, 602, 562	Ave = 644	328, 278, 278, 352	Ave = 309
Crystal SG 40kHz	861, 570, 913, 771	Ave = 779	356, 450, 738, 682	Ave = 556
Citranox	358, 296, 274, 548	Ave = 369	379, 377, 347, 292	Ave = 349
Ionox HC 2	424, 564, 473, 340, 564, 711, 593	Ave = 524		
Double wipe w/ Acetone	350, 408, 404	Ave = 290	439, 362, 432	Ave = 411
Dirty	300, 267, 261, 290	Ave = 280	349, 285, 449, 262	Ave = 336

In addition to the cleaning trials, one elbow that was chemically cleaned off site was analyzed using OSEE Values obtained were:

545, 292, 266, 361, 303, 255	Ave = 337
328, 313. 262	Ave = 207

Summary:

Substrates:	Stainless Steel				
Contaminants:	Dirt, Films, Oxides, Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**

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Simple Green	Crystal Simple Green Industrial Cleaner & Degreaser	9	0.00	☐	
Alconox Inc	Citranox	6	0.00	☐	
Kyzen Corporation	Ionox HC 2	100	0.00	☑	

Conclusion: The change if frequency showed some signs of improved cleaning only using OSEE. The wipe test could not distinguish between the two parts cleaned in each solution. The semi aqueous cleaned part resulted in the least amount of the black residue.