

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002
 DateRun: 10/21/2002
 Experimenters: Jason Marshall
 ClientType: Manufacturing
 ProjectNumber: Project #1
 Substrates: Stainless Steel
 PartType: Part
 Contaminants: Cutting/Tapping Fluids, Lubricating/Lapping Oils, Metal fines, Oxides, Oil
 Cleaning Methods: Ultrasonics
 Analytical Methods: OSEE
 Purpose: To clean additional supplied parts and analyzing using OSEE

Experimental Procedure: Two products from the previous trial were selected for cleaning supplied parts. One was diluted to 5% and the other was diluted to 3% using DI water in 1500 ml beakers. Both products were heated to 130 F on a hot plate. Each solution was degassed for 5 minutes in a Crest 40 kHz ultrasonic tank. OSEE readings for five supplied parts were recorded using a PET SQM 100. Multiple readings were made for each of the parts. One part was then cleaned using Acetone. Two parts were cleaned in each solution for 6 minutes using ultrasonic energy. Parts were rinsed in DI water at 120 F for 15 seconds followed by drying with a Master Appliance Heat Gun at 500 F for 30 seconds. Once dry parts were dry, OSEE readings were recorded. The parts were then visibly inspected and wiped with a white towel soaked with Acetone to determine cleanliness.

Contaminant: Milacron Marketing Company CIMTECH® 310 metal working fluid concentrate (102-71-6, 78-96-6, 26896-20-8)

Results: Both cleaners were very successful in removing the machining fluids and other contaminants from the outside of the parts. It was observed that there was some black residue on one end of the insides of the "T" parts. This was probably due to the way the parts were placed into the beakers. As the parts were cleaned, one end of the "T" was partially out of the cleaning solution for a portion of the cleaning cycle. If the parts were cleaned in the ultrasonic tank alone, the black residue would have been removed. The table below lists the readings made for the two cleaners and acetone.

Table 1. OSEE Readings

Cleaner	Part	OSEE DIRTY	Average	OSEE Clean	Average
Acetone	T1	132	122	148	156
		149	112	158	185
		53	63	136	202
		136	143	166	177
		90	99	110	166
Acetone	E1Body	146		259	
		148		145	
		100		204	
		124		190	
		166		205	
		296	163	466	245
Citranox	T2	122	216	249	228
		114	109	298	338
		160	174	286	351
		199	297	285	263
		130	166	169	234
Citranox	E2 Body	190		225	
		97		254	
		121		283	
		70		175	
		123		229	
		178	130	358	254

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Citranox	E2 Ring	254			330	
		165			317	
		217			342	
		291			329	
		252			356	
		285	244	305		330
Citranox	T3	147	131		305	279
		123	136		272	250
		201	185		344	284
		166	109		235	261
		132	110	144	267	263 276
Daraclean	E3 Body	101			599	
		189			620	
		217			538	
		202			547	
		174			569	
		117	167	586		577
Daraclean	E3 Ring	64			263	
		78			321	
		121			485	
		149			459	
		116			483	
			106	563		429
Daraclean	T4	194	133		408	263
		213	201		485	437
		188	129		501	486
		164	233		378	499
		172	169	180	408	383 425
Daraclean	E4 Body	116			222	
		166			299	
		226			276	
		105			223	
		104	148	231		277
Daraclean	E4 Ring	240			252	
		150			388	
		337			292	
		300			391	
		231			666	
		304	260	474		411

The next table summarizes the cleaning results for the products evaluated.

Table 2. Summary Data

Dirty			
	T	E	E Ring
Overall	151	152	203
Clean			
	T	E	E Ring
Citranox	275	254	330
Daraclean	425	427	420
Acetone	165	245	
	288	308	298

Summary:

Substrates:	Stainless Steel
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Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Alconox Inc	Citranox	3		<input checked="" type="checkbox"/>	
Magnaflux	Daraclean 282	5		<input checked="" type="checkbox"/>	

Conclusion:

Both products were very successful in cleaning the supplied parts. The results suggest that the Daraclean 282 cleaned the parts better than the Citranox and Acetone.