CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2005
DateRun:	09/15/2005
Experimenters:	Jason Marshall
ClientType:	Metal
ProjectNumber:	Project #1
Substrates:	Aluminum
PartType:	Part
Contaminants:	Graphite
Cleaning Methods:	Ultrasonics
Analytical Methods:	Photography, Visual
Purpose:	To evaluate two new products for graphite removal from aluminum parts using ultrasonic cleaning
Experimental Procedure:	Two formulations were selected for testing based on vendor recommendations. One products was similar to Coil Bright in its formulation and the second product contained phosphoric acid. Both products were diluted to 20% and if successful to 10%. Each solution was suspended in water heated to 130 in a Crest Ultrasonic 40 kHz tank. The solutions were degassed for five minutes. One presoiled baked coupon coated with the Acheson Colloids Co Aquadag M mold release agent (CAS#: 7782-42-5, 84122-50-6, 70131-67-8, 1333-86-4, 107-21-1, 9002-84-0) was suspended in each solution and cleaned for 10 minutes using ultrasonic energy. Parts were then rinsed with tap water at 120 F for 15 seconds and dried using compressed air at room temperature for 30 seconds. Cleaned parts were then visually inspected and compared to each other. In addition, the parts were also compared to the client supplied cleaned parts.
Results:	Both products performed very well at the 20% concentration. Both products resulted in parts that looked as clean as the finished product samples. The 10% concentration need more time to achieve effective results. Observations are listed in the table below.

Cleaner	Dilution	Observation
#1	20%	Immediate removal of graphite
		Parts were brighter than cleaner #2 at 4 minutes
		End part was cleaner than acid washed samples
		At or near Finished products, similar to Coil Bright
#2	20%	Immediate removal of graphite
		Graphite removed faster than #1 @20% at 2 minutes
		End part was cleaner than acid washed samples
		Near Finished products
#1	10%	Slower initial graphite removal
		All graphite removed at 5 minutes, not bright
		Better than acid washed samples
		Near Finished products
#2	10%	Slightly faster than #1 @10% for graphite removal
		Almost all graphite removed at 5 minutes, some on back
		Better than acid washed samples
		Near Finished products

Summary:

Substrates:	Aluminum				
Contaminants:	Graphite				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**

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Chemspec	Phosphoric Acid Cleaner #1	20	0.00	☑	
Chemspec	Phosphoric Acid Cleaner #2	20	0.00	☑	
Chemspec	Phosphoric Acid Cleaner #1	10	0.00	☑	
Chemspec	Phosphoric Acid Cleaner #2	10	0.00	☑	

Conclusion: Initial results show that the two supplied products were comparable to the Coil Bright cleaner previously tested. Parts have been sent to client for analysis.