CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2017

DateRun: 12/25/2017

Experimenters: Alicia McCarthy, Hayley Byra

ClientType: General

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Part

Contaminants: Oil

Cleaning Methods: Ultrasonics

Analytical Methods:

Purpose: To compare the effectiveness of alternative solvents to Trichloroethylene (TCE) when removing lubricating oils from aluminum alloy coupons.

Experimental Procedure: Pre-soiled aluminum parts (Oak 7a - CAS: 64742-53-6; 68909-65-9) and TCE cleaned parts were provided by Lytron. The contact angle of a TCE cleaned part was taken three times and then averaged. The average contact angle was used as a benchmark for the standard of cleanliness. This process was repeated with the pre-soiled parts to get a dirty contact angle. Parts were cleaned for five minutes using Opteon Sion and Tergo Metal Cleaner in a heated ultrasonic tank (95 F). Clean contact angles were taken three times per part and averaged for a final clean contact angle.

Results: The average contact angle for a TCE cleaned part was 93.97°. The TCE contact angle served as a benchmark for the standard of cleanliness.

Cleaner	Part #	Dirty Contact Angle	Average Dirty	Clean Contact Angle	Average Clean
Opteon Sion	1	44.86°	45.16°	79.26°	80.48°
		50.14°		79.06°	
		40.49°		83.13°	
Tergo Metal Cleaner	2	35.61°	43.88°	79.29°	86.34°
		43.46°		90.44°	
		52.58°		89.28°	

Summary:

Substrates:	Aluminum				
Contaminants:	Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Micro Care	Opteon Sion SF79	100%	80.48	☑	Contact Angle
Micro Care	Tergo Metal Cleaning Fluid	100%	86.34	☑	Contact Angle
Ashland Specialty Chemical Company	Trichloroethylene	100%	93.97	☑	Contact Angle

Conclusion: The Tergo Metal Cleaner had the closest clean contact angle to the TCE cleaned contact angle. Tergo Metal Cleaner would be a more viable replacement for TCE based on the cleaning evaluation.