CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 02/25/2021

Experimenters: Zoe Lawson, Justin Kiander

ClientType: Precision Instrument Manufacturer

ProjectNumber: Project #1

Substrates: Copper

PartType: Part

Contaminants: Greases

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: The purpose of this experiment was to determine the effectiveness of cleaners in removing aviation grease from BeCu substrates provided by the company.

Experimental Procedure: Cleaners were prepared to the following concentrations: Metalnox 6386 100%, Water Works Heavy Duty Degreaser 7:1. Solutions and an ultrasonic bath were heated to 100°F. Three BeCu sheet parts were obtained and weighed for each of the cleaners being tested. Parts were then soiled with the aviation grease and a dirty weight was recorded. Once solutions reached the proper temperature, parts were submerged into their respective cleaners and heated ultrasonic cleaning was conducted for 15 minutes. After the 15 minutes, parts were dried with a heat gun at ambient temperature to remove all solution. Once dry, parts were weighed again and a clean weight was recorded. Effectiveness of the cleaners was determined.

Results:

Cleaner	Initial wt of cont	Final wt of cont	%Cont Removed	%AVG
Metalnox 6386	0.1517	0.0002	99.87	99.74%
	0.1163	0.0003	99.74	
	0.1583	0.0006	99.62	
Water Works	0.1113	0.0084	92.45	77.78%
	0.2591	0.1281	50.56	
	0.1997	0.0193	90.34	

Metalnox 6386 was the most effective cleaner in removing aviation grease from BeCu sheet parts. Water Works has typically performed well under the heated ultrasonic cleaning method, as demonstrated with the majority of the parts in the 90% range. The lower percent removal part is most likely due to poor positioning that did not allow for ample ultrasonic coverage. Therefore, both Metalnox 6386 and Water Works Heavy Duty Degreaser could be potential alternative cleaning solutions for the company to pursue. Next steps would be to contact the company with parts testing results.

Summary:

Substrates:	Copper				
Contaminants:	Greases				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Kyzen Corporation	Metalnox M6386	100%	99.74	☑	
Keteca USA	Water Works Heavy Duty Degreaser	7:1	77.78	☑	Although Water Works performed lower than expected, the cleaner on average has performed very well with these soils under heated ultrasonic cleaning and will be recommended as effective. The lower performance in this trial is due to one part not having ample ultrasonic coverage.

Conclusion: Upon completion of testing, it was determined that Metalnox 6386 was the most effective at removing aviation grease from BeCu sheets. Water Works did not perform as well as expected, but this is due to a part that did not have ample ultrasonic coverage in the cleaning process. Therefore, both Metalnox 6386 and Water Works Heavy Duty Degreaser could be potential alternatives for the company to pursue. Next steps would be to contact the company with parts testing results.