CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 02/23/2021

Experimenters: Zoe Lawson, Justin Kiander

ClientType: Precision Instrument Manufacturer

ProjectNumber: Project #1

Substrates: Steel

PartType: Part

Contaminants: Oil

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: The purpose of this experiment was to determine the effectiveness of top cleaners in removing penetrant spray oil from steel parts.

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 steel sheet parts were obtained and weighed for each of the cleaners being tested. Steel parts were then soiled with the penetrant spray oil provided by the company and a dirty weight was recorded. Once solutions reached the proper temperature, parts were submerged into their respective cleaners and ultrasonic cleaning was conducted for 15 minutes. After 15 minutes had passed, coupons were dried with a heat gun at ambient temperature to remove all excess solution. Following the drying step, parts were weighed again and a clean weight was recorded. Effectiveness of the cleaners was then determined.

Results:

Cleaner	Initial wt of cont	Final wt of cont	%Cont Removed	%AVG
Metalnox 6386	0.1479	0.0288	80.53	103.14%
	0.1157	-0.0232	120.05	
	0.0792	-0.0070	108.84	
Water Works	0.0452	0.0014	96.90	96.56%
	0.1598	0.0121	92.43	
	0.1451	-0.0005	100.34	

Both cleaners were effective at removing the penetrant oil spray from steel sheet parts. There are some percent removals over 100, however, the parts are also initially soiled with packaging oils. Under typical production line cleaning, the packaging oils are removed before the penetrant spray is applied. Therefore, percent removals exceeding 100 are not as detrimental in this trial. Solutions also experienced a color change to more muted colors indicating the removal of the viscous yellow oil. Next steps are to progress testing on the aviation grease and penetrant spray to copper parts supplied by the company.

Summary:

Substrates:	Steel				
Contaminants:	Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Kyzen Corporation	Metalnox M6386	100%	103.14	☑	
Keteca USA	Water Works Heavy Duty Degreaser	7:1	96.56	☑	

Conclusion: Upon completion of testing, it was determined that both cleaners are effective at removing the penetrant spray from steel parts. Some percent removals did exceed 100 due to the presence of initial packaging soils. Next steps are to progress testing to remove the aviation grease and penetrant spray from copper parts supplied by the company.