CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2021

DateRun: 03/10/2021

Experimenters: Zoe Lawson, Nicole Kebler

ClientType: Bolt, Screw & Nut Manufacturer

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Greases

Cleaning Methods: Ultrasonics

Analytical Methods: Gravimetric, Visual

Purpose: To evaluate the removal of grease from aluminum coupons using heated ultrasonics at 15 minutes.

Experimental Procedure: A 2:1 solution was created for Water Works, and Dimethyl Glutarate was used at 100%. Three aluminum coupons per cleaner were pre-weighed for initial weights. They were then soiled 1/3 of the way with black grease that was given to us by the company and were weighed for dirty weights. The solutions were all heated on the hot plate till they reached 105 degrees F and the ultrasonic tank was also heated to 105 degrees F. Three coupons per cleaner were placed in the solutions for 15 minutes using ultrasonics. They were then left to dry for over an hour and final weights were taken.

Cleaners:

1. 2:1 Water Works
2. 100% Dimethyl Glutarate

Results: Both cleaners were effective for the removal of grease from aluminum coupons. Water Works averaged around 88% and only minor amounts were left on the coupons surface. Dimethyl Glutarate averaged around 98% and had full removal.

Cleaner	Initial wt of cont	Final wt of cont	% Removal	Average
Water Works	0.1311	0.0263	79.94	88.59
	0.1787	0.0206	88.47	
	0.1294	0.0034	97.37	
Dimethyl Glutarate	0.1247	0.0006	99.52	97.83
	0.1914	0.0009	99.53	
	0.1565	0.0087	94.44	

Summary:

Substrates:	Aluminum
Contaminants:	Greases

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Keteca USA	Water Works Heavy Duty Degreaser	2:1	89.00	☑	Water Works was effective for the removal of grease from aluminum coupons.
Fisher Scientific	Dimethyl glutarate (CAS:1119-40-0)	100%	98.00	☑	Dimethyl Glutarate was effective for the removal of grease from aluminum coupons.

Conclusion: Both cleaners were effective for the removal of grease from aluminum coupons at 15 minutes. Only minor amounts were left on the coupon, company stated they don't need a full 100% removal. Next steps are to test parts using 15 minutes heated ultrasonics.