CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 12/03/2020

Experimenters: Nicole Kebler

ClientType: Bolt, Screw & Nut Manufacturer

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Greases

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate the effectiveness of SW-3 Ozzy Juice for the removal of grease from aluminum coupons using heated immersion and agitation cleaning processes.

Experimental Procedure: Initial weights of the aluminum coupons were recorded for each cleaning process, 3 coupons per process. 1/3 of the coupons were coated in grease using a metal spatula and dirty weights were recorded for all coupons. For the first process, 200 mL of Ozzy Juice SW-3 was poured into a beaker and heated using a hot plate to 105 F. The coupons were immersed in the beaker for 15 minutes, then taken out to dry. The process was repeated using the 105 F Ozzy Juice and the next set of coupons were immersed for 30 minutes. After they were taken out and laid on the tray to dry. For the last process, a small metal basket was hung by a large rubber band on a tube shaker and placed in a beaker with 200 mL of Ozzy Juice SW-3. The shaker was set on its lowest setting and the coupons were placed in the basket. The coupons moved up and down with the basket creating agitation for 15 minutes, then were taken out to air dry. All coupons were left to dry overnight and clean weights were recorded.

Cleaners Used:

- SW-3 Ozzy Juice

Results: The results for the 15 minutes in Ozzy Juice showed that there was a substantial amount of grease left on the coupon and visually did not effectively clean and had an average of 28.24% removal. The results for the 30-minute coupons showed that it removed the grease effectively and visually there was no grease on two of the coupons and minimal amounts on the third, they had an average of 91.18% removal but 2 were over 100. The coupons could have been dirty when I took initials or there could be a small error with the scale making the two coupons that had no grease left on them showing over 100% removal. Lastly, the 15-minute agitation process showed the grease being mostly removed from the coupons at 80.93% removal, and since the company wants the parts to still have some grease left after the cleaning process, this process was effective.

Process	Temperature	Initial wt of cont.	Final weight of cont.	% Removal	Average
15-minute heated immersion	105F	0.1007	0.0803	20.26	28.24
		0.0749	0.0452	39.65	
		0.0907	0.0682	24.81	
30-minute heated immersion	105F	0.1077	0.0362	66.39	91.18
		0.0696	-0.0026	103.74	
		0.0939	-0.0032	103.41	
15-minute with basket agitation	68F (room temp)	0.0994	0.0346	65.19	80.93
		0.0676	0.0105	84.47	
		0.0831	0.0057	93.14	

Summary:

Substrates:	Aluminum
Contaminants:	Greases

Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Chem Free Corporation	SW-3 Ozzy Juice (Improved Low Odor)	100%	80.93	☑	SW-3 Ozzy Juice was effective for the removal of grease from aluminum coupons at 15 minutes using the basket agitation process. Full removal was seen for the 30 minute heated agitation at 105F.

Conclusion:

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15-minute heated immersion was not effective for the removal of grease, but at 30 minutes heated immersion the grease had completely come off 2 out of the 3 coupons and the 3rd had minimal grease left on it. A small error could have occurred making the % removal exceed 100%. The basket in a beaker agitation for 15 minutes showed ideal removal at 80% and was effective for the removal of grease from aluminum coupons. The next steps are to identify one other cleaner that will be recommended as an alternative and to test on parts given to us by the company on the basket agitation process with Ozzy Juice.