CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2020

DateRun: 06/18/2020

Experimenters: Alicia McCarthy, Hayley Byra

ClientType: Metal Working

ProjectNumber: Project #1

Substrates: Aluminum

PartType: Coupon

Contaminants: Buffing/Polishing Compounds

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: The purpose of this experiment was to use unheated immersion to identify the hardest buffing compound to remove of the three compounds (Red Buffing, White Buffing, and Blue Buffing) using the cleaners Dimethyl glutarate and Metalnox 6386.

Experimental Procedure: All three soils were tested with each of the two cleaners: Dimethyl glutarate (100% concentration) and Metalnox 6386 (100% concentration). Three aluminum coupons were obtained and weighed for each of the soils, for a total of nine coupons per cleaner. Coupons were soiled with the respective buffing compounds; Red Buffing, White Buffing, or Blue Buffing, and a soiled weight was obtained. Coupons were then submerged into 200mL of their respective cleaners for 5 minutes at room temperature. After 5 minutes, coupons were air-dried, and a final clean weight was obtained. Effectiveness of the cleaners and difficulty of removal was determined.

Results:

Cleaner	Contaminant	Initial wt of cont.	Final wt of cont.	% Cont. Removed	% AVG per soil	% AVG Total
Dimethyl glutarate	Red Buffing Compound	0.0092	0.0094	-2.174	32.36	44.93%
		0.012	0.0092	23.33		
		0.0108	0.0026	75.926		
	White Buffing Compound	0.0039	0.0042	-7.693	9.99	
		0.0055	0.005	9.091		
		0.0056	0.004	28.571		
	Blue Buffing Compound	0.0241	0.0035	85.477	92.43	
		0.0749	0.0057	92.39		
		0.0846	0.0005	99.409		
Metalnox 6386	Red Buffing Compound	0.0154	0.0013	91.558	96.8	91.23%
		0.0216	0.0008	96.296		
		0.0315	-0.0008	102.54		
	White Buffing Compound	0.0085	0.0036	57.647	75.83	
		0.008	0.0031	61.25		
		0.0093	-0.0008	108.602		
	Blue Buffing Compound	0.0268	0.0006	97.761	101.07	
		0.0465	0.0013	97.204		
		0.0437	-0.0036	108.238		

Summary:

Substrates:	Aluminum				
Contaminants:	Buffing/Polishing Compounds				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Fisher Scientific	Dimethyl glutarate (CAS:1119-40-0)	100%	44.93	☐	
Kyzen Corporation	Metalnox M6386	100%	91.23	☑	

Conclusion: The White Buffing compound was the most difficult to remove for both cleaners (9.99% from Dimethyl glutarate and 75.83% from Metalnox 6386). Metalnox 6386 was the more effective cleaner overall in removing all three buffing compounds from aluminum substrates (91.23% removal total average).