CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2016

DateRun: 09/21/2016

Experimenters: Carla De La Cruz

ClientType: Jewelry Mfr

ProjectNumber: Project #3

Substrates: Aluminum

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: To find the best fit product for cleaning Leach Garner's #4 Master draw 419TT from copper and stainless steel surfaces meant to resemble the cleaning of precious metals.

Experimental Procedure: Coupons of stainless steel and copper were selected and arranged on trays, so that each cleaner had an assigned set of each surface. Before taking initial weights coupons were wiped down with Kimwipes. After taking weights the coupons were promptly soiled and reweighed. All cleaners were gathered in respective bottles and beakers. A stir bar was used in conjunction with a heating plate equipped to stir the solutions. The plates were preheated to about 40°C and thermometers were kept in them to monitor the temperature, except Honeywell's Solstice PF which boils at room temperature and was kept at about 20°C. The coupons were added to the beakers three of a kind at one time, and then allowed to sit in the heated stirred solution for 15 minutes, in 5 minute increments while observations were taken. Finally, clean weights were taken at the end of all the testing.

Results:

Cleaner	Initial wt of cont.	Final wt of cont.	%Cont Removed	%Overall
FluoSolv CX	0.0511	0.0106	79.26	
	0.0508	0.0064	87.4	81.72
	0.0451	0.0097	78.49	
FluoSolv NC	0.0278	0.0016	94.24	
	0.0291	0.0005	98.28	95.38
	0.0345	0.0022	93.62	
Vertrel Sion	0.037	0.0052	85.95	
	0.0314	0.0086	72.61	75.86
	0.0242	0.0075	69.01	
Solstice PF	0.04	0.0122	69.5	
	0.0473	0.0174	63.21	64.31
	0.0347	0.0138	60.23	

Summary:

Substrates:	Aluminum				
Contaminants:	Waxes				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
NuGeneration Technologies, LLC	FluoSolv CX	100	81.72	☑	
NuGeneration Technologies, LLC	FluoSolv NC 786	100	95.38	☑	
DuPont	Vertrel Sion	100	75.86	☑	
Honeywell	Solstice PF with N2	100	64.31	☐	

Conclusion: Previous testing had been conducted on Leach Garner's #4 Masterdraw 419TT using stainless steel and copper coupons. It was interesting to see that results were significantly different. While in earlier tests most of the cleaners performed in the high 80's to 90's this time around, the percentages varied from mid 60''s to 90's. The difference came as a surprise and especially the relatively poor performance of DuPont's Vertrel Sion. The poor results for Honeywell's Solstice PF were expected as it has consistently shown to be the least effective of the cleaners. Unexpectedly, it was the two EcoLink FluoSolv products which were the best for cleaning Leach Garner's #4 Masterdraw 419TT from aluminum at about 40°C.