CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2016

DateRun: 09/24/2016

Experimenters: Francisco Abreau, Carla De La Cruz

ClientType: Jewelry Mfr

ProjectNumber: Project #3

Substrates: Copper, Stainless Steel

PartType: Coupon

Contaminants: Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric, Visual

Purpose: To find the best fit product for cleaning Leach Garner's #9 Marvel Mystery 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 coupons were added to the beakers three of a kind at one time, and then allowed to sit in the stirred solution at room temperature for 5 minutes while observations were taken. Finally, clean weights were taken at the end of all the testing.

Results:

Cleaner	Substrate	Initial wt.	Final wt.	% Cont Removed	% Overall
FluoSolv CX	Stainless	0.0559	0.0046	91.77	
	Stainless	0.0635	0.0044	93.07	92.90
	Stainless	0.0667	0.0041	93.85	
	Copper	0.0545	0.0041	92.48	
	Copper	0.0479	0.0039	91.86	92.16
	Copper	0.0508	0.0040	92.13	
Fluosolv NC	Stainless	0.0339	0.0037	89.09	
	Stainless	0.0951	0.0083	91.27	90.41
	Stainless	0.0471	0.0043	90.87	
	Copper	0.0590	0.0049	91.69	
	Copper	0.0667	0.0045	93.25	92.28
	Copper	0.0494	0.0040	91.90	
Vertrel Sion	Stainless	0.0786	0.0010	98.73	
	Stainless	0.0567	0.0002	99.65	99.38
	Stainless	0.0433	0.0001	99.77	
	Copper	0.0323	0.0012	96.28	
	Copper	0.0382	0.0011	97.12	97.39
	Copper	0.0804	0.0010	98.76	
Solstice PF	Stainless	0.0384	0.0000	100.00	
	Stainless	0.0448	0.0005	98.88	99.32
	Stainless	0.0216	0.0002	99.07	
	Copper	0.0377	0.0000	100.00	
	Copper	0.0346	0.0002	99.42	99.59
	Copper	0.0459	0.0003	99.35	

Summary:

Substrates:	Copper, Stainless Steel
Contaminants:	Oil

Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
NuGeneration Technologies, LLC	FluoSolv CX	100	92.53	☑	
NuGeneration Technologies, LLC	FluoSolv NC 786	100	91.35	☑	
DuPont	Vertrel Sion	100	98.39	☑	
Honeywell	Solstice PF with N2	100	99.46		

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Conclusion: The cleaners selected worked well in dissolving the oil. There was some filming and streaking present, especially with FluoSolv CX and FluoSolv NC. Vertrel Sion and Solstice PF were the better of the cleaners, even though they did have some streaking and some residue in the case of Solstice PF. Of the two better cleaners, Vertrel Sion showed the least visual streaking.