CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2008
DateRun:	01/15/2008
Experimenters:	Heidi Wilcox
ClientType:	Metal Working
ProjectNumber:	Project #1
Substrates:	Brass
PartType:	Coupon
Contaminants:	Buffing/Polishing Compounds
Cleaning Methods:	Immersion/Soak
Analytical Methods:	Gravimetric
Purpose:	To find a drop in solvent alternative to TCE for vapor degreasing lighting fixtures

Experimental Procedure:

Preweighed 2 inch by 4 inch brass coupons were contaminated with one of three buffing compounds supplied by client. The red buffing compound was the most used and hardest to remove. The buffing compound was heated with a Master Appliance heat gun in order to transfer it to the coupons effectively. Once cool, coupons were reweighed to determine the amount of buffing compound added.

The coupons were then cleaned by immersion cleaning with stir bar agitation for 5 minutes in heated solutions at 85 F approximately. The coupons were removed from the solutions and wiped once with a paper towel, then let to cool and weighed a third time. The coupons were not rinsed.

All solvents used were used at 100% concentration. The solvents were picked by chemical class in order to try a wide range of solvents on the client's contaminant.

Results:

Four of the six solvents removed the contaminant at an efficiency above 95%. One was lower, AK 225, at 83.33 percent and one was higher, DOW OS 30, at 103.70% removal efficiency. The OS 30 could possibly be damaging the brass, which is a soft metal, so it will not be used in further testing for this client. One HFC, Microcare, and the two nPB solvents will be looked at further and used in vapor degreasing client supplied parts. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon cleaned.

Cleaner	Initial wt	Final wt	% Removed
AK 225	0.8915	0.3334	62.6
	0.7056	0.0157	97.77
	0.7301	0.0758	89.62
Heavy Duty Degreaser	0.8109	0.0037	99.54
	1.102	0.0064	99.42
	0.7564	0.0038	99.5
Metalnox M6960	1.2294	-0.0118	100.96
	0.7585	-0.0009	100.12
	1.5134	-0.0009	100.06
Vertrel XP 10	1.1882	0.0147	98.76
	1.0978	0.0046	99.58
	0.8068	0.0989	87.74
Lenium CP	0.7858	0.0061	99.22
	0.7668	0.0008	99.9
	0.7729	0.0006	99.92
OS 30	0.7092	-0.0786	111.08
	0.5177	-0.0008	100.15
	1.3033	0.0016	99.88

Summary:

Substrates:	Brass				
Contaminants:	Buffing/Polishing Compounds				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
AGA Chemical	AK 225	100	83.33	☐	
Micro Care	Heavy Duty Degreaser C	100	99.49	☑	
Kyzen Corporation	Metalnox M6960	100	100.38	☑	

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DuPont	Vertrel XP 10	100	95.36	☑	
Petroferm Inc	Lenium CP (no longer available)	100	99.68	☑	
Dow Chemical Company	OS 30	100	103.70	☐	

Conclusion: Heated immersion testing on the clients most frequently used buffing compound was done using solvents that are potential drop in replacements for TCE in the companies vapor degreaser. Four of the 6 solvents tested are possible candidates for the next step of vapor degreasing client supplied parts.