CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2004

DateRun: 05/05/2004

Experimenters: Jason Marshall

ClientType: Tool Manufacturer

ProjectNumber: Project #1

Substrates: Steel

PartType: Coupon

Contaminants: Oil

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate successful products on second supplied contaminant

Experimental Procedure: Nine cleaners were selected based on client request for vapor degreasing solvents. All products were used heated to 96 F on a hot plate in 250 ml beakers. The process utilized no water rinse and only used ambient air to dry the parts.
Twenty-seven preweighed steel coupons were coated with Rochester Midland RI780 rust preventative (80252-41-3, 95-63-6) using a hand held swab. The oil was then heated with a Master Appliance Heat gun at 300 F for 10 minutes. After cooling to room temperature, a second weighing was performed to determine the amount of soil that was added. Three coupons were cleaned in each solution for 5 minutes with minimal stir-bar agitation. After drying, coupons were weighed a final time to determine the cleaning efficiency of each product.

Results: All nine products removed over 90% of the soil during the five minutes. Four of the products removed over 97%. The table lists the amount of soil added, the amount remaining and the efficiency for each coupon.

Cleaner	Initial wt	Final wt	% Removed
Ak 225	0.0378	0.0014	96.30
	0.0284	0.0021	92.61
	0.0531	0.0017	96.80
Vertrel CCA	0.0303	0.0005	98.35
	0.0273	0.0015	94.51
	0.0647	0.0016	97.53
Flux Remover C	0.0241	0.0023	90.46
	0.0728	0.0007	99.04
	0.0824	0.0019	97.69
HFE 7200	0.0411	0.0012	97.08
	0.0753	0.0003	99.60
	0.0731	0.0005	99.32
Ensolv	0.0300	0.0032	89.33
	0.0566	0.0000	100.00
	0.0459	0.0022	95.21
Ensolv A	0.0387	0.0016	95.87
	0.0652	0.0014	97.85
	0.0465	0.0011	97.63
Metalnox M6960	0.0261	0.0025	90.42
	0.0413	0.0044	89.35
	0.0352	0.0016	95.45
Solvon PB	0.0341	0.0018	94.72
	0.0497	0.0001	99.80
	0.0282	0.0003	98.94
Solvon IP	0.0425	0.0012	97.18
	0.0210	0.0006	97.14
	0.0272	0.0009	96.69

Summary:

Substrates:	Steel				
Contaminants:	Oil				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**

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AGA Chemical	AK 225	100	95.23	☑	
DuPont	Vertrel CCA	100	96.79	☑	
Micro Care	Flux Remover C	100	95.73	☑	
3M	HFE 7200	100	98.67	☑	
Enviro Tech International Inc	Ensolv	100	94.85	☑	
Enviro Tech International Inc	Ensolv A	100	97.12	☑	
Kyzen Corporation	Metalnox M6960	100	91.74	☑	
Poly Systems USA Inc	Solvon Kreussler PB	100	97.82	☑	
Poly Systems USA Inc	Solvon Kreussler IP	100	97.00	☑	

Conclusion: All nine products will be tested on the third soil under the same conditions.