CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2004
DateRun:	05/04/2004
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 TCE drop-in replacements for vapor degreasing operation.
Experimental Procedure:	Twelve cleaners were selected based on client request for vapor degreasing solvents. All twelve 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. Thirty-six preweighed steel coupons were coated with Castrol Quench G oil (64742-55-8, 64742-65-0, 8052-42-4) using a hand held swab. The quench 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 twelve products removed over 90% of the quench oil within five minutes of cleaning. Nine products removed over 95% and five removed over 98%. 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	0.0682	0.0021	96.92
	0.1237	0.0027	97.82
	0.0615	0.0017	97.24
Vertrel CCA	0.0915	0.0040	95.63
	0.0590	0.0039	93.39
	0.1875	0.0035	98.13
Vertrel MCA	0.1605	0.0061	96.20
	0.1049	0.0096	90.85
	0.0859	0.0077	91.04
Flux Remover C	0.1122	0.0033	97.06
	0.1626	0.0078	95.20
	0.1661	0.0030	98.19
Heavy DutyDegreaser C	0.1516	0.0066	95.65
	0.1941	0.0233	88.00
	0.1179	0.0116	90.16
HFE 7100	0.1791	0.0101	94.36
	0.0567	0.0087	84.66
	0.1640	0.0122	92.56
HFE 7200	0.2124	0.0026	98.78
	0.1330	0.0032	97.59
	0.2182	0.0011	99.50
Ensolv	0.1025	0.0028	97.27
	0.1352	0.0025	98.15
	0.1295	0.0024	98.15
Ensolv A	0.1230	0.0020	98.37
	0.2217	0.0020	99.10
	0.1034	0.0022	97.87
Metalnox M6960	0.1632	0.0012	99.26
	0.1043	0.0025	97.60

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	0.1769	0.0033	98.13
Solvon PB	0.1397	0.0005	99.64
	0.1963	0.0009	99.54
	0.1190	0.0010	99.16
Solvon IP	0.2184	0.0019	99.13
	0.1136	0.0034	97.01
	0.1758	0.0017	99.03

Summary:

Substrates:	Steel
Contaminants:	Oil

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
AGA Chemical	AK 225	100	97.32	☑	
DuPont	Vertrel CCA	100	95.72	☑	
DuPont	Vertrel MCA	100	92.69	☑	
Micro Care	Flux Remover C	100	96.82	☑	
Micro Care	Heavy Duty Degreaser C	100	91.27	☑	
3M	HFE 7100	100	90.53	☑	
3M	HFE 7200	100	98.62	☑	
Enviro Tech International Inc	Ensolv	100	97.86	☑	
Enviro Tech International Inc	Ensolv A	100	98.45	☑	
Kyzen Corporation	Metalnox M6960	100	98.33	☑	
Poly Systems USA Inc	Solvon Kreussler PB	100	99.45	☑	
Poly Systems USA Inc	Solvon Kreussler IP	100	98.39	☑	

Conclusion:

The nine products that removed over 95% of the soil will be tested on Rochester Midland RI 780 rust preventative under the same conditions.