CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2005

DateRun: 01/20/2005

Experimenters: Jason Marshall

ClientType: Plastic Manufacturer

ProjectNumber: Project #1

Substrates:

PartType: Coupon

Contaminants: Resins/Rosins

Cleaning Methods: Immersion/Soak

Analytical Methods:

Purpose: To identify a list of alternatives for removing epoxy resins. Want to replace methylene chloride.

Experimental Procedure: Using the laboratory's database for solvent cleaning substitution, the lab generated the following lists of products. The products have been evaluated at SSL under similar conditions to the client's criteria. The first list is a direct substitution for methylene chloride in resin cleaning operations. The second list contains vendor recommended products for resin removal.

Results: Laboratory Tested for Resin Cleaning

Company Name	Product Name
Bio Chem Systems	Bio T 300 B
Bio Chem Systems	Bio T Max
Bio Chem Systems	Solsafe 245
Chrisal USA Inc	Super CMF 240
DuPont	DBE
Ecolink	Safe Strip
Finger Lakes Chemical	Resineater
Gemtek Products	SC 1000
ISP Technologies	Ship Shape Resin Cleaner
Magnaflux	Daraclean 232
Oakite Products	Inproclean 3800
Solvent Kleene Inc	D Greeze 500 LO
Tarksol Inc	Tarksol HTF-50

Vendor Recommended Products

Company Name	Product Name	Classification
3M	HFE 71 De	HFE
3M	HFE 7100	HFE
3M	HFE 7200	HFE
Accurate Manufactured Products	Safety Layout Blue Remover	Terpene
AG Environmental Products	Canola Gold CE110	Ester
AG Environmental Products	Soy Clear 1500	Ester
AG Environmental Products	Soy Gold 1100	Organic
AGA Chemical	AK 225	HCFC
Albemarle Corporation	Abzol Cleaners	Organic
Alconox Inc	Alconox	Powder Detergent

CLEANING LABORATORY EVALUATION SUMMARY

Alconox Inc	Detergent 8	Alkaline Aqueous
Alconox Inc	Det-O-Jet	Alkaline Aqueous
Alconox Inc	Luminox	Neutral Aqueous
Ashland Specialty Chemical Company	Perchloroethylene	Organic
Ausimont USA Inc	Perfluorosolv PFS 1	HCFC
AW Chesterton	278 Super Solv	Petroleum Distillate
Bio Chem Systems	Bio T 200 A	Terpene
Bio Chem Systems	Bio T Foam Plus	Terpene
Bio Chem Systems	Bio T Max	Terpene-Semi-Aqueous
Bio Chem Systems	Solsafe 245	Petroleum Distillate
Blue Wave Ultrasonics Inc	25 I Detergent Concentrate	Neutral Aqueous
Blue Wave Ultrasonics Inc	Dirl-Lum 603 Powdered Detergent	Powder Detergent-Alkaline
Brulin Corporation	815 PCX	Acidic Aqueous
Brulin Corporation	Brulin 1696 PNC	Neutral Aqueous
Brulin Corporation	Compliance	Caustic
Buckeye International	Shopmaster	Alkaline Aqueous
Buckeye International	Shopmaster FF	Alkaline Aqueous
Buckeye International	Shopmaster LPH	Alkaline Aqueous
Bush Boake Allen Inc	BBA Solvent K312	Terpene
Chem Tech	CT 1 Multipurpose Cleaner	Alkaline Aqueous
Chem Tech Solutions	1050 Magic	Organic
Chem Tech Solutions	Westech CT 1550	Terpene
Chemtronics Inc	Super Bio Wash	Semi-Aqueous
Church & Dwight Co Inc	Armaklean E 2001	Alkaline Aqueous
Church & Dwight Co Inc	Armaklean E 2002	Alkaline Aqueous
Church & Dwight Co Inc	Armaklean M Aero	Alkaline Aqueous
CSA Inc	Bio Safe 1024	Hydrocarbon
Dow Chemical Company	OS 10	Volatile Methyl Siloxanes
Dow Chemical Company	OS 20	Volatile Methyl Siloxanes
Dow Chemical Company	OS 30	

CLEANING LABORATORY EVALUATION SUMMARY

		Volatile Methyl Siloxanes
Drummond America Corporation	Keynote	Neutral Aqueous
DuPont	DBE	Ester
DuPont	DBE 3	Ester
DuPont	DBE 4	Ester
DuPont	Vertrel CCA	HFE
DuPont	Vertrel MCA	HFE
Dynamold Solvents Inc	DS 104	Petroleum Distillate
Dynamold Solvents Inc	DS 108	Petroleum Distillate
Dynamold Solvents Inc	DS 801	Alkaline Aqueous
Eastern Color and Chemical Company	Ecobrite Cleaner AK	Alkaline Aqueous
Ecolink	2005	HCFC
Ecolink	Safe Strip	Organic
Ecolink	VG 151	Terpene
Ecolink	Vortex	Semi-Aqueous
EM Science	Toluene	Organic
Enviro Tech International Inc	Ensolv	nPB
Enviro Tech International Inc	Ensolv A	nPB
Exxon Mobile Chemical Company	Aromatic 100 Solvent	Organic
Fine Organic Corporation	FO 2085 M	Alkaline Aqueous
Finger Lakes Chemical	1/1/02	Terpene
Finger Lakes Chemical	Impress Wash	Semi-Aqueous
Finger Lakes Chemical	Pinene All Purpose Cleaner	Terpene-Semi-Aqueous
Finger Lakes Chemical	Resineater	Terpene
Finger Lakes Chemical	Safer Stuff	Terpene
Fisher Scientific	Isopropanol	Alcohol
Florida Chemical Company	Citrus Burst 7	Terpene
Florida Chemical Company	D-Limonene	Terpene
Frederick Gumm Chemical	Lacq off A/B	Alkaline Aqueous
Gemtek Products	EZ Solv	Organic
General Chemical Corporation	Aluminex 5761	Caustic
	Aquaclean 4784	Caustic

CLEANING LABORATORY EVALUATION SUMMARY

General Chemical Corporation		
Hotsy Cleaning Systems	Hotsy Detergents Tub & Pressure Wash	Alkaline Aqueous
Inland Technologies Inc	Citrasafe	Terpene
Inland Technologies Inc	Safety Prep	Terpene
Innovative Organics Inc	Amber Clean SC 11	Neutral Aqueous
International Products Corporation	Surface Cleanse 930	Neutral Aqueous
ISP Technologies	N Methyl Pyrrolidone	Organic
ISP Technologies	Ship Shape Resin Cleaner	Organic
Kyzen Corporation	Aquanox XIN	Alcohol-Semi Aqueous
Kyzen Corporation	Ionox FCR	Semi-Aqueous
Kyzen Corporation	Ionox HC	Alcohol
Kyzen Corporation	Ionox HC 2	Alcohol
Kyzen Corporation	Ionox I 3330	Alcohol-Semi Aqueous
Kyzen Corporation	Lonox L5003	Alkaline Aqueous
Kyzen Corporation	Lonox L5005	Alkaline Aqueous
Kyzen Corporation	Metalnox M6960	nPB
Kyzen Corporation	Misprint Stencil Remover	Hydrocarbon
LPS Laboratories	LPS Precision Clean	Alkaline Aqueous
Magnaflux	Daraclean 200	Alkaline Aqueous
Magnaflux	Daraclean 203	Caustic
Magnaflux	Daraclean 211	Alkaline Aqueous
Magnaflux	Daraclean 212	Neutral Aqueous
Magnaflux	Daraclean 232	Alkaline Aqueous
Magnaflux	Daraclean 235	Neutral Aqueous
Magnaflux	Daraclean 236	Neutral Aqueous
Magnaflux	Daraclean 238	Alkaline Aqueous
Magnaflux	Daraclean 257	Alkaline Aqueous
Magnaflux	Daraclean 282	Alkaline Aqueous
Magnaflux	Daraclean 282 GF	Alkaline Aqueous
Magnaflux	Daraclean 283	Alkaline Aqueous
Metabolix Inc	Metabolix E3HB	Ester
Micro Care	Flux Remover C	HFE

CLEANING LABORATORY EVALUATION SUMMARY

Micro Care	Heavy Duty Degreaser C	HFE
Mirachem Corporation	Mirachem 250	Acidic Aqueous
National Diagnostic	Histo Clear	Terpene
National Diagnostic	Opti Clear	Terpene
Oakite Products	Citradet	Semi-Aqueous
Oakite Products	Inproclean 4000 T	Terpene-Organic
Occidental Chemical Corporation	OXSOL 100	Organic
Pentone Corporation	Citrikleen XPC	Terpene-Semi-Aqueous
Petroferm Inc	Lenium CP	nPB
Petroferm Inc	Lenium ES	nPB
Petroferm Inc	Lenium GS	nPB
Phase III Inc	California Parts Washer Solution	Neutral Aqueous
Poly Systems USA Inc	Solvon DR	Solvent
Poly Systems USA Inc	Solvon IP	nPB
Poly Systems USA Inc	Solvon PB	nPB
Pride International Inc	Citrisolv Plus	Semi-Aqueous
Savogran Company	HD-34 Cleaner Degreaser	Semi-Aqueous
Savogran Company	Safety-Solve	Organic
Simple Green	All Purpose Cleaner/ Degreaser	Alkaline Aqueous
Simple Green	Crystal Simple Green Industrial Cleaner	Alkaline Aqueous
Simple Green	Hand Cleaner Gel	Terpene
Simple Green	Simple Green D	Alkaline Aqueous
Smart Sonic Corp	440 R SMT Detergent	Alkaline Aqueous
Solvent Kleene Inc	D Greeze 500 LO	Organic
Surface Specialties Inc	Santosol DME	Ester
System One Technologies	QSOL 200	Organic
System One Technologies	QSOL 220	Organic
Tarksol Inc	SR 225	Terpene
Tarksol Inc	Tarksol Biosoy 60	Alcohol-Organic
Tarksol Inc	Tarksol HTF 60	Terpene
Tarksol Inc	Tarksol HTF 85 B	Alcohol-Organic
Tarksol Inc	Tarksol HTF 90	Alcohol-Organic
Tarksol Inc	Tarksol HTF-50	Semi-Aqueous

CLEANING LABORATORY EVALUATION SUMMARY

Tarksol Inc	Tarksol NPB	Organic
Today & Beyond	Beyond 2001	Alkaline Aqueous
Today & Beyond	Beyond 2002	Alkaline Aqueous
Today & Beyond	Beyond 2003	Alkaline Aqueous
Today & Beyond	Beyond 2004	Alkaline Aqueous
Today & Beyond	Beyond 2005	Alkaline Aqueous
Today & Beyond	Beyond 2006	Alkaline Aqueous
Today & Beyond	Beyond 2007	Alcohol
Today & Beyond	Beyond 2009	Organic
Tower Products Inc	Tower 270 Cleaner Concentrate	Alkaline Aqueous
Twin Rivers Technologies	Methyl Ester 1618	Ester
Universal Reniglngsmitel - Mulder Hardenberg	RST 5	Organic
US Polychem Corporation	87 RB	Hydrocarbon
US Polychem Corporation	Hydropurge 36	Alkaline Aqueous
US Polychem Corporation	Hydropurge HPL 790	Caustic
US Polychem Corporation	Polychem 2000 P	Alkaline Aqueous
US Polychem Corporation	Polychem A 2000 XS	Alkaline Aqueous
US Polychem Corporation	Polychem Acra Strip 600	Semi-Aqueous
US Polychem Corporation	Polychem Aquaspat Ti	Neutral Aqueous
US Polychem Corporation	Polychem DE 144	Petroleum Distillate
US Polychem Corporation	Polychem DEOX 007	Alkaline Aqueous
US Polychem Corporation	Polychem Hydropurge 21	Alkaline Aqueous
US Polychem Corporation	Polychem Hydropurge 36 XS	Alkaline Aqueous
US Polychem Corporation	Polychem Hydropurge 790 XS	Alkaline Aqueous
US Polychem Corporation	Polychem PW 147	Alkaline Aqueous
US Polychem Corporation	Polychem QS 85 LO	Terpene-Petroleum Distillate
US Polychem Corporation	Polychem RCC 25	Terpene-Petroleum Distillate
US Polychem Corporation	Polychem Ultra CR	Alkaline Aqueous
US Polychem Corporation	Polyspray Jet 790 C	Caustic
US Polychem Corporation	Polyspray Jet 790 P	Alkaline Aqueous

CLEANING LABORATORY EVALUATION SUMMARY

US Polychem Corporation	Polyspray Jet 790 XS	Alkaline Aqueous
US Polychem Corporation	Polyspray Jet ST-21	Alkaline Aqueous
Valtech Corporation	Valtron DP 98023	Caustic
Valtech Corporation	Valtron SP 2200	Alkaline Aqueous
Valtech Corporation	Valtron SP 2201	Alkaline Aqueous
Valtech Corporation	Valtron SP 2250 2LF	Alkaline Aqueous
Valtech Corporation	Valtron SP 2500	Alkaline Aqueous
Vertec BioSolvents	Take Off Green	Organic
Vertec BioSolvents	VertecBio Gold 2	Organic
WM Barr & Company	Citristrip	Terpene-Semi-Aqueous

Summary:

Conclusion: Cleaning varies from case to case. The SSL recommends process specific testing on potential replacement cleaning chemicals. If more information is needed on a particular product, or you are interested in conducting cleaning trials, please contact the lab at (978)934-3133.