

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2005  
 DateRun: 03/07/2005  
 Experimenters: Jason Marshall  
 ClientType: Manufacturer of Ceramic Capacitors  
 ProjectNumber: Project #2  
 Substrates: Ceramics  
 PartType: Coupon  
 Contaminants: Cutting/Tapping Fluids, Greases, Waxes  
 Cleaning Methods: Ultrasonics  
 Analytical Methods:

Purpose: To generate a list of products that can be used to clean ceramics using ultrasonics

Experimental Procedure: Using the laboratory's database for solvent cleaning substitution, the lab generated the following lists of products. The first list contains products that have been evaluated at SSL under similar conditions to the client's criteria. The second list contains vendor suggested products based on client supplied data.

Results:

|                          |  |                      |
|--------------------------|--|----------------------|
| Contaminant              | Wax- Zopher Mills Inc No 1563<br>Wax (mixture of waxes and resins) |                      |
| Equipment                | Ultrasonics  |                      |
| Substrate                | Ceramics   |                      |
| Company                  | Product  | Classification       |
| Universal Photonics      | Uni Clear  | Terpene              |
| Bio Chem Systems         | Bio T 300 B  | Terpene-Semi-Aqueous |
| Florida Chemical Company | D-Limonene   | Terpene              |

## Second Soil

|                             |                                     |                  |
|-----------------------------|-------------------------------------|------------------|
| Contaminant                 | Grease - Hibrenia Way<br>Apiezon M1 |                  |
| Equipment                   | Ultrasonics                         |                  |
| Substrate                   | Ceramics                            |                  |
| Company                     | Product                             | Classification   |
| Alconox Inc                 | Liquinox                            | Alkaline Aqueous |
| Gemtek Products             | SC Aircraft & Metal Cleaner         | Alkaline Aqueous |
| International Products Corp | Micro 90                            | Alkaline Aqueous |
| Kyzen Corporation           | Metalnox M6314                      | Alkaline Aqueous |
| Metabolix Inc               | Metabolix E3HB                      | Ester            |
| Oakite Products             | Inproclean 3800                     | Alkaline Aqueous |

## Vendor Suggested

|                   |                        |                  |       |
|-------------------|------------------------|------------------|-------|
| Search Parameters |                        |                  |       |
| Contaminant       | Cutting/Tapping Fluids | Greases          | Waxes |
| Equipment         | Ultrasonics            |                  |       |
| Substrate         | Ceramics               |                  |       |
| Company           | Product                | Classification   |       |
| 3M                | HFE 7200               | HFE              |       |
| Alconox Inc       | Alconox                | Powder Detergent |       |

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|                                    |                                      |                           |
|------------------------------------|--------------------------------------|---------------------------|
| Alconox Inc                        | Citranox                             | Acidic Aqueous            |
| Alconox Inc                        | Liquinox                             | Alkaline Aqueous          |
| Bio Chem Systems                   | Bio T 200 A                          | Terpene                   |
| Bio Chem Systems                   | Bio T Foam Plus                      | Terpene                   |
| Bio Chem Systems                   | Green Stuff (6325)                   | Alkaline Aqueous          |
| Bio Chem Systems                   | Solsafe 245                          | Petroleum Distillate      |
| Brulin Corporation                 | Aquavantage 1400                     | Alkaline Aqueous          |
| Buckeye International              | XL 100                               | Alkaline Aqueous          |
| By-Pas and Star Products           | Star Cleaning Miracle # 50           | Alkaline Aqueous          |
| Dow Chemical Company               | OS 10                                | Volatile Methyl Siloxanes |
| Dow Chemical Company               | OS 20                                | Volatile Methyl Siloxanes |
| Dow Chemical Company               | OS 30                                | Volatile Methyl Siloxanes |
| DuPont                             | Vertrel CCA                          | HFE                       |
| DuPont                             | Vertrel MCA                          | HFE                       |
| Dynamold Solvents Inc              | DS 104                               | Petroleum Distillate      |
| Dynamold Solvents Inc              | DS 108                               | Petroleum Distillate      |
| Enviro Tech International Inc      | Ensolv                               | nPB                       |
| Enviro Tech International Inc      | Ensolv A                             | nPB                       |
| Finger Lakes Chemical              | Safer Stuff                          | Terpene                   |
| Florida Chemical Company           | Citrus Burst 7                       | Terpene                   |
| Gemtek Products                    | EZ Solv                              | Organic                   |
| Gemtek Products                    | SC 1000                              | Alkaline Aqueous          |
| Gemtek Products                    | SC Aircraft & Metal Cleaner          | Alkaline Aqueous          |
| Gemtek Products                    | SC Supersolve                        | Organic                   |
| Hotsy Cleaning Systems             | Hotsy Detergents Tub & Pressure Wash | Alkaline Aqueous          |
| Innovative Organics Inc            | Amberclean L 12                      | Alkaline Aqueous          |
| International Products Corporation | LF 2100                              | Alkaline Aqueous          |
| International Products Corporation | Micro                                | Alkaline Aqueous          |
| International Products Corporation | Micro 90                             | Alkaline Aqueous          |

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|                              |  |                  |
|------------------------------|--|------------------|
| Kyzen Corporation            | Metalnox M6960                               | nPB              |
| Magnaflux                    | Daraclean 200                                | Alkaline Aqueous |
| Magnaflux                    | Daraclean 212                                | Neutral Aqueous  |
| Magnaflux                    | Daraclean 235                                | Neutral 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              |
| Micro Care                   | Heavy Duty Degreaser C                       | HFE              |
| Safe Science Inc             | Safe Science Concrete/ Graffiti (Industrial) | Alkaline Aqueous |
| Solvent Kleene Inc           | D Greeze 500 LO                              | Organic          |
| SOQ Environmental Technology | Ecomate FN                                   | Alkaline Aqueous |
| Today & Beyond               | Beyond 2001                                  | 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          |
| US Polychem Corporation      | Polychem 2000 P                              | Alkaline Aqueous |
| US Polychem Corporation      | Polychem A 2000 XS                           | Alkaline Aqueous |
| US Polychem Corporation      | Polychem DEOX 007                            | Alkaline Aqueous |
| US Polychem Corporation      | Polyspray Jet 790 C                          | Caustic          |
| US Polychem Corporation      | Polyspray Jet 790 P                          | Alkaline Aqueous |
| US Polychem Corporation      | Polyspray Jet 790 XS                         | Alkaline Aqueous |
| Valtech Corporation          | Valtron SP 2200                              | Alkaline Aqueous |
| Vertec BioSolvents           | VertecBio Gold 2                             | Organic          |

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. In addition to the generated list of products, several reports that were conducted for local branch of company were sent to client.