

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2002

DateRun: 08/26/2002

Experimenters: Jason Marshall

ClientType: Lab

ProjectNumber: Project #1

Substrates: Electronics

PartType: Coupon

Contaminants: Fluxes, Solder, Films

Cleaning Methods:

Analytical Methods:

Purpose: To find a new process that will not leave white film behind

Experimental Procedure: Using SSL's database of test results, several products were found that have been used successfully to remove flux and solder. The are listed below.

Results: Table 1. Flux Trials

| CompanyName           | ProductName           | Classification       | Total | Number of Trials:<br>Contaminant<br>Cleaned                                  | Number of Trials:<br>Contaminant<br>Cleaned   | Number of Trials:<br>Contaminant<br>Cleaned |
|-----------------------|-----------------------|----------------------|-------|--|---|---|
| Alconox, Inc.         | Detergent 8           | Alkaline Aqueous     | 5     | 5: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7) |   |   |
| Bio Chem Systems      | Bio T Max             | Terpene-Semi-Aqueous | 4     | 2: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7) | 2: Flux - Wave Flux, RMA Flux (7440-31-5, 7439-92-1, 7740-69-9, 6597-06-0, 6852-86-3, 98-55-5, 8009-03-8) |   |
| Bio Chem Systems      | Bio T Parts Washer NR | Terpene              | 6     | 6: Flux  |   |   |
| Bio Chem Systems      | Green Stuff (6325)    | Alkaline Aqueous     | 6     | 6: Flux  |   |   |
| Buckeye International | Shopmaster RC         | Ester                | 8     | 4: Flux  | 4: Flux (67-63-0, 67-56-1, 8050-09-7)   |   |
| Calgon Corporation    | Geo Guard 2215        | Alkaline Aqueous     | 1     | 1: Flux - Rosin Solder Flux  |   |   |
| Church & Dwight       | Armaklean E 2001      | Alkaline Aqueous     | 2     | 2: Flux  |   |   |
| Church & Dwight       | Armaklean E 2002      | Alkaline Aqueous     | 6     | 4: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7) | 2: Flux - RMA flux  |   |

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|                             |                         |                      |    |   |                                       |  |
|-----------------------------|-------------------------|----------------------|----|---|---------------------------------------|--|
| Dynamold Solvents, Inc.     | DS-104                  | Petroleum Distillate | 10 | 5: Flux   | 5: Flux (67-63-0, 67-56-1, 8050-09-7) |  |
| Dynamold Solvents, Inc.     | DS-108                  | Petroleum Distillate | 10 | 5: Flux   | 5: Flux (67-63-0, 67-56-1, 8050-09-7) |  |
| EMKAY Chemical Co           | Safety Wash CRC         | Alkaline Aqueous     | 3  | 3: Flux   |                                       |  |
| International Products Corp | LF 2100                 | Alkaline Aqueous     | 5  | 5: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7)                              |                                       |  |
| Kyzen Corporation           | Ionox HC 2              | Alcohol              | 3  | 3: Flux - Wave Flux, RMA Flux (7440-31-5, 7439-92-1, 7740-69-9, 6597-06-0, 6852-86-3, 98-55-5, 8009-03-8) |                                       |  |
| Magnum Research             | Aluminum Aerowash       | Alkaline Aqueous     | 3  | 3: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7)                              |                                       |  |
| Oakite Products             | Inproclean 4000 T       | Terpene-Organic      | 3  | 3: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7)                              |                                       |  |
| Safe Science                | Engine Degreaser        | Terpene              | 11 | 3: Flux   | 8: Flux - RMA Alpha                   |  |
| Savogran                    | Dirtex Prepaint Cleaner | Alkaline Aqueous     | 1  | 1: Flux   |                                       |  |
| Solvent Kleene, Inc.        | D-Greeze 1000           | Petroleum Distillate | 8  | 4: Flux   | 4: Flux (67-63-0, 67-56-1, 8050-09-7) |  |
| SWR Corp                    | SWR One                 | Alkaline Aqueous     | 3  | 3: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7)                              |                                       |  |
| Today & Beyond              | Beyond-2001             | Alkaline Aqueous     | 20 | 14: Flux  | 6: Flux - Ersin 5381 RMA Flux         |  |
| Today & Beyond              | Beyond-2002             | Alkaline Aqueous     | 18 | 12: Flux  | 6: Flux - Ersin 5381 RMA Flux         |  |
| Today & Beyond              | Beyond-2003             | Alkaline Aqueous     | 12 | 12: Flux  |                                       |  |

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|                     |                    |                  |    |          |                               |                                       |
|---------------------|--------------------|------------------|----|----------|-------------------------------|---------------------------------------|
| Today & Beyond      | Beyond-2004        | Alkaline Aqueous | 18 | 12: Flux | 6: Flux - Ersin 5381 RMA Flux |                                       |
| Today & Beyond      | Beyond-2005        | Alkaline Aqueous | 18 | 6: Flux  | 6: Flux - Ersin 5381 RMA Flux | 6: Flux (67-63-0, 67-56-1, 8050-09-7) |
| Today & Beyond      | Beyond-2009        | Organic          | 3  | 1: Flux  | 1: Flux - Ersin 5381 RMA Flux | 1: Flux (67-63-0, 67-56-1, 8050-09-7) |
| U.S. Polychem Corp. | Hydropurge HPL 790 | Caustic          | 1  | 1: Flux  |                               |                                       |

Table 2. Solder Trials

| CompanyName             | ProductName      | Classification       | Total | Number of Trials:<br>Contaminant<br>Cleaned  | Number of Trials:<br>Contaminant<br>Cleaned |
|-------------------------|------------------|----------------------|-------|--|---|
| Bio Chem Systems        | Bio T Max        | Terpene-Semi-Aqueous | 4     | 2: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7)           | 2: Solder                                   |
| Bio Chem Systems        | SOLSAFE 245      | Petroleum Distillate | 1     | 1: Solder - Emerson & Cuming Eccobons Solder 59C (7440-22-4, 108-88-3, Silicone Resin) |   |
| Calgon Corporation      | Geo Guard 2215   | Alkaline Aqueous     | 1     | 1: Flux - Rosin Solder Flux  |   |
| Church & Dwight         | Armaklean E 2002 | Alkaline Aqueous     | 4     | 4: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7)           |   |
| Dynamold Solvents, Inc. | DS-104           | Petroleum Distillate | 1     | 1: Solder - Emerson & Cuming Eccobons Solder 59C (7440-22-4, 108-88-3, Silicone Resin) |   |
| Dynamold Solvents, Inc. | DS-108           | Petroleum Distillate | 1     | 1: Solder - Emerson & Cuming Eccobons Solder 59C (7440-22-4, 108-88-3, Silicone Resin) |   |

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|                 |                   |                  |   |  |           |
|-----------------|-------------------|------------------|---|--|-----------|
| Oakite Products | Inproclean 4000 T | Terpene-Organic  | 3 | 3: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7) |           |
| SWR Corp        | SWR One           | Alkaline Aqueous | 6 | 3: Flux - Kester Solder 1544 Rosin Solder flux (64-17-5, 78-92-2, 8050-09-7) | 3: Solder |

Summary:

|                      |                            |               |                    |                          |                      |
|----------------------|----------------------------|---------------|--------------------|--------------------------|----------------------|
| <b>Substrates:</b>   | Electronics                |               |                    |                          |                      |
| <b>Contaminants:</b> | Fluxes, Solder, Films      |               |                    |                          |                      |
| <b>Company Name:</b> | <b>Product Name:</b>       | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>        | <b>Observations:</b> |
| No Specific Vendor   | Supplied alternatives list |               |                    | <input type="checkbox"/> |                      |

Conclusion:

Cleaning projects vary from case-to-case. To obtain more detailed information about any of the products listed, contact the lab at (978)934-3133.