

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2008

DateRun: 03/24/2008

Experimenters: Jason Marshall, Heidi Wilcox

ClientType: Electro-Optical Devices

ProjectNumber: Project #1

Substrates: Liquid

PartType: Coupon

Contaminants: Solvent

Cleaning Methods:

Analytical Methods: Smell

Purpose: To evaluate selected products for odor comparison to current product

Experimental Procedure: The eight originally selected products were compared with the current product, IPA for odor levels. Each container of product was opened and wafted to determine the relative level of odor associated with the product. The products were ranked from worst to best by two members of the lab staff. The average ranking of the two were determined and reported. A normalized final ranking was made.

Results: Many of the selected alternatives to IPA were found to have less objectionable odor based on the two-person panel. The table lists the general observational odor, the product rankings from both lab staff members, the average odor rank and the normalized ranking.

In the table, Worst = 9 and Best = 1

| Product          | Observation     | Rank 1 | Rank 2 | Ave Rank | Normalized Rank |
|------------------|-----------------|--------|--------|----------|-----------------|
| Bio T Max        | strong odor     | 9      | 9      | 9        | 9               |
| Solsafe 245      | medium odor     | 7      | 7      | 7        | 7               |
| Shopmaster RC    | strong odor     | 8      | 5      | 6.5      | 6               |
| SC Actisolv      | low/no odor     | 4      | 2      | 3        | 2               |
| Optisolv OP 7171 | no odor         | 1      | 1      | 1        | 1               |
| Ionox HC 2       | low/no odor     | 5      | 6      | 5.5      | 5               |
| DS 144           | medium/low odor | 3      | 3      | 3        | 2               |
| DS 800           | no odor         | 2      | 4      | 3        | 2               |
| IPA              | medium odor     | 6      | 8      | 7        | 7               |

Summary:

|                       |  |               |                    |                                     |                      |
|-----------------------|--|---------------|--------------------|-------------------------------------|----------------------|
| <b>Substrates:</b>    | Liquid                                   |               |                    |                                     |                      |
| <b>Contaminants:</b>  | Solvent                                  |               |                    |                                     |                      |
| <b>Company Name:</b>  | <b>Product Name:</b>                     | <b>Conc.:</b> | <b>Efficiency:</b> | <b>Effective:</b>                   | <b>Observations:</b> |
| Bio Chem Systems      | Bio T Max                                | 100           |                    | <input type="checkbox"/>            | Odor Rank - 9/9      |
| Bio Chem Systems      | Solsafe 245                              | 100           |                    | <input type="checkbox"/>            | Odor Rank - 7/9      |
| Buckeye International | Shopmaster RC                            | 100           |                    | <input checked="" type="checkbox"/> | Odor Rank - 6/9      |
| Gemtek Products       | SC Actisolv Safety Solvent               | 100           |                    | <input checked="" type="checkbox"/> | Odor Rank - 2/9      |
| Kyzen Corporation     | Optisolv OP7171                          | 100           |                    | <input checked="" type="checkbox"/> | Odor Rank - 1/9      |
| Kyzen Corporation     | Ionox HC 2                               | 100           |                    | <input checked="" type="checkbox"/> | Odor Rank - 5/9      |
| Dysol                 | DS 144S Wipe Solvent                     | 100           |                    | <input checked="" type="checkbox"/> | Odor Rank - 2/9      |
| Dysol                 | DS 800 Solvent                           | 100           |                    | <input checked="" type="checkbox"/> | Odor Rank - 2/9      |
| Fisher Scientific     | Isopropanol a459-4 70% VV (CAS: 67-63-0) | 100           |                    | <input type="checkbox"/>            | Odor Rank - 7/9      |

Conclusion:

## **CLEANING LABORATORY EVALUATION SUMMARY**

The least objectionable products with the highest effectiveness will be selected to clean the supplied part in the next stage of testing. These products include SC Actisolv, Ionox HC 2, DS 144 and Shopmaster RC.