# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2000

DateRun: 01/02/2000

Experimenters: Jason Marshall, Nicole Vayo

ClientType: Chemical Light mfr

ProjectNumber: Project #1

Substrates: Glass/Quartz

PartType: Coupon

Contaminants: Phthalates

Cleaning Methods: Immersion/Soak

Analytical Methods: Black light

Purpose: To find an cleaning solution that will remove all of the two contaminants and reduce the amount of waste generated.

Experimental Procedure: Five cleaning chemistries were selected based on the lab's Industrial Cleaning Survey: Directory of Vendors database. A sixth cleaner was used based on the client's current cleaning system. All six products were diluted to 2% by volume in 600 ml beakers using DI water. The beakers were heated to 120 F on a hotplate.
Eighteen precleaned coupons were contaminated using a mixture of the two components using a small plastic eye dropper. Coupons were allowed to sit for a couple of hours, periodically heated with a Master Appliance Corp, Hot-air gun model HG-301A at 500oF. Three coupons were cleaned per cleaning solution for three minutes. A single tap water rinse was used for 30 seconds at 120 F. Drying was at room temperature for 10 minutes. Coupons and rinse water were both analyzed under the black light in a chamber. Each set of coupons were compared to each other. Analysis was performed by two lab staff members.

SUBSTRATE MATERIAL: Glass coupons
CONTAMINANTS: Oxalate ether compound (75-65-0, 131-11-3, 7722-84-1); Activator compound (84-74-2)
CONTAMINATING PROCESS USED: Coupons were coated with mix of both chemicals

Results: Two products were very effective in removing the combination of the two contaminants. One was the currently used cleaner, Micro 90 and the other was SWR One. The SWR One product appeared to be slightly better than the Micro 90. Table 2 ranks the cleaners and lists the observations made. Ranking was based on effectiveness of cleaning as well as rinse water analysis.

| PRODUCT | RANKING | OBSERVATION |
|---|---|---|
| SC 1000 | 5 | Not as bad as Luminox, small amounts of contamination in rinse water |
| ND 17 | 3 | Better than SC 1000, less than base line (Micro 90), small amounts in rinse water |
| SWR One | 1 | Equal to, slightly better than baseline, no contamination in rinse |
| Luminox | 6 | Very little removal, rinse water had as much contamination as cleaning solution |
| Micro 90 | 2 | Some spots on coupon, little contamination in rinse water |
| All Purpose | 4 | Cleaned as well as ND 17, more contamination in rinse water than ND 17 |

Summary:

| **Substrates:** | Glass/Quartz | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Phthalates | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| Gemtek Products | SC 1000 Aqueous Cleaner Concentrate | 2 | 5.00 | ☐ | Rank |
| | ND 17 | 2 | 3.00 | ☐ | Rank |

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|---|---|---|---|---|---|
| MacDermid Industrial Products | | | | | |
| SWR Corporation | SWR One | 2 | 1.00 | ☑ | Rank |
| Alconox Inc | Luminox | 2 | 6.00 | ☐ | Rank |
| International Products Corporation | Micro 90 Conc. | 2 | 2.00 | ☑ | Rank |
| Safe Science Inc | Safe Science All Purpose (Industrial) | 2 | 4.00 | ☐ | Rank |

Conclusion: Micro 90 and SWR One were both very effective in cleaning the contamination mix from the coupons. The other semi-effective cleaners may be further evaluated at higher concentrations. The next test will be run to determine a method to track bath life.