# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2003

DateRun: 01/28/2003

Experimenters: Jason Marshall

ClientType: Manufactures parts for Semi-Conductor Industry

ProjectNumber: Project #1

Substrates: Ceramics

PartType: Coupon

Contaminants: Waxes

Cleaning Methods: Immersion/Soak

Analytical Methods: Gravimetric

Purpose: To evaluate products on the sixth supplied wax

Experimental Procedure: Two products were selected from the laboratories database of testing results based on client supplied data. Three other products were also selected based on success in previous trial. All six products were used at full strength in 600 ml beakers. The products were heated to 130 F on a hot plate. Fifteen preweighed ceramic coupons were coated with client supplied Aremco Crystalbond 509 wax. The wax was melted using a Master Appliance heat gun in a beaker and applied directly to the coupons. The coupons were allowed to cool to room temperature before weighing a second time. Three coupons were cleaned in each solution for 10 minutes using stir-bar agitation. Coupons were rinsed in tap water for 15 seconds at 120 F, followed by air blow off at room temperature. Once dry, coupons were weighed a final time and efficiencies for each cleaner were calculated. The most successful cleaner was then used for 30 minutes.

Results: None of the cleaners were able to remove over 15% of the Crystalbond during the 10 minute cleaning. One product, DS-108 was tested at an extended time. This resulted in about 60% of the Crystalbond 509 being removed. An increase in temperature, time or agitation would help to increase the cleaning efficiency. The table below lists the amount of Crystalbond applied and removed.

Table 1. Crystalbond Removal

| Cleaner | Initial wt | Final wt | % Removed |
|---|---|---|---|
| Opti Clear | 2.6864 | 2.6873 | -0.03 |
| | 1.0942 | 1.0918 | 0.22 |
| | 0.9742 | 0.9749 | -0.07 |
| Citrikleen XPC | 0.9675 | 0.9652 | 0.24 |
| | 1.1464 | 1.1428 | 0.31 |
| | 1.0141 | 1.0126 | 0.15 |
| Bio T 200 A | 1.2436 | 1.2471 | -0.28 |
| | 1.3766 | 1.3471 | 2.14 |
| | 1.2756 | 1.2781 | -0.20 |
| Crystal Bond 590 S | 0.7117 | 0.7130 | -0.18 |
| | 1.5351 | 1.5164 | 1.22 |
| | 1.7944 | 1.7952 | -0.04 |
| Dynamold DS 108 | 2.6873 | 2.4000 | 10.69 |
| 10 Min | 1.0918 | 0.9746 | 10.73 |
| | 0.9749 | 0.8468 | 13.14 |
| Dynamold DS 108 | 0.9746 | 0.5016 | 48.53 |
| 30 Min | 0.8468 | 0.3335 | 60.62 |
| | 0.9652 | 0.2848 | 70.49 |

Summary:

| **Substrates:** | Ceramics | | | | |
|---|---|---|---|---|---|
| **Contaminants:** | Waxes | | | | |
| **Company Name:** | **Product Name:** | **Conc.:** | **Efficiency:** | **Effective:** | **Observations:** |
| National Diagnostic | Opti Clear | 100 | 0.04 | ☐ | |
| Pentone Corporation | Citrikleen XPC | 100 | 0.23 | ☐ | |
| Bio Chem Systems | Bio T 200 A | 100 | 0.56 | | |

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|---|---|---|---|---|---|
| | | | | ☐ | |
| Aremco Products Inc | Crystalbond 590 S | 100 | 0.33 | ☐ | |
| Dysol | DS 108 Wipe Solvent | 100 | 11.52 | ☐ | 10 minute cleaning |
| Dysol | DS 108 Wipe Solvent | 100 | 59.88 | ☑ | 30 minute cleaning |

Conclusion: The next phase of testing will begin by cleaning supplied parts.