

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2006

DateRun: 05/09/2006

Experimenters: Jason Marshall

ClientType: General

ProjectNumber: Project #2

Substrates: Plastic

PartType: Part

Contaminants: Inks, Paints

Cleaning Methods: Ultrasonics

Analytical Methods: Tactile, Visual

Purpose: To evaluate products for paint/ink removal from supplied products

Experimental Procedure: Nine products were selected from the lab's database of test results based on client supplied information. One product was used at 5% and the remaining eight were used at full strength. Each product was heated to 130 F in a 40 kHz ultrasonic tank. One golf ball was cleaned in each solution for 30 minutes. At the end of the cleaning, the ball was rinsed in a tap water spray for 15 seconds at 120 F and wiped dry with a paper towel. Observations were made and compared to the client's current cleaner.

Results: No alternative product worked as well as the client's current cleaner. A couple of products did remove a lot of the white paint but had trouble with the ink printed on the ball. Observations and rankings are listed in the table below.

| Cleaner | Observations | Rank |
|-------------------|----------------------------------------------------------------------------------------------------------|------|
| D-Zolv 1012 | Current solvent - complete removal in under 15 min | 1 |
| Inproclean 4000 T | looked different; slight change | 8 |
| Solsafe 245 | no visual change; felt different | 9 |
| Ink Zapper | no visual change; felt different | 9 |
| Citrus Burst 7 | lost shine - not smooth feeling | 5 |
| D Limonene | pock marks on surface; still had shine | 4 |
| Shopmaster RC | Black ink could be rubbed off; still smooth w/ shine | 6 |
| Soy Clear 1500 | Only one small spot removed | 7 |
| SC Supersolv | Some spots tacky; no ink removal; coating started to pull up; looked like "crystals" forming; lost shine | 3 |
| SC Activsolv | lost shine; not smooth; little ink removed; closest to current solvent | 2 |

Summary:

| Substrates: | Plastic | | | | |
|--------------------------|-------------------|--------|-------------|-------------------------------------|---------------|
| Contaminants: | Inks, Paints | | | | |
| Company Name: | Product Name: | Conc.: | Efficiency: | Effective: | Observations: |
| Oakite Products | Inproclean 4000 T | 5 | | <input type="checkbox"/> | |
| Bio Chem Systems | Solsafe 245 | 100 | | <input type="checkbox"/> | |
| Vertec BioSolvents | Ink Zapper | 100 | | <input type="checkbox"/> | |
| Transene Company, Inc. | D Zolve 1012 | 100 | | <input checked="" type="checkbox"/> | |
| Florida Chemical Company | Citrus Burst 7 | 100 | | <input type="checkbox"/> | |
| Florida Chemical Company | D-Limonene | 100 | | <input type="checkbox"/> | |
| Buckeye International | Shopmaster RC | 100 | | <input type="checkbox"/> | |

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|---------------------------|------------------------------|-----|--|-------------------------------------|--|
| AG Environmental Products | Soy Clear 1500 | 100 | | <input type="checkbox"/> | |
| Gemtek Products | SC Supersolve Safety Solvent | 100 | | <input checked="" type="checkbox"/> | |
| Gemtek Products | SC Actisolv Safety Solvent | 100 | | <input checked="" type="checkbox"/> | |

Conclusion:

Only one product, SC Actisolv, was close to removing the paint coating from the supplied golf balls. Follow up testing will be conducted to determine other alternatives products and operating conditions.