

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2006
 DateRun: 06/05/2006
 Experimenters: Jason Marshall
 ClientType: General
 ProjectNumber: Project #1
 Substrates: Steel
 PartType: Part
 Contaminants: Paints
 Cleaning Methods:
 Analytical Methods:

Purpose: Summary of testing performed on alternatives for paint removal from steel spindles.

Experimental Procedure: Ten trials were conducted on the various paints used in painting golf balls. During the evaluations, one of the current cleaning chemicals was used as a bench mark. Successful products were identified that could be used to clean the manufacturing equipment, i.e. spindles.

Results: Oakite Products Inproclean 4000 T and International Products Surface Cleanse 930 were effective on the RPM Wood Finishes Group paint combinations. The Inproclean 4000 T was also effective for the Westfield Coatings Company paints and the water based coating as well. However Surface Cleanse 930 did not remove enough of the paint to be considered successful. A third product, Gemtek Products SC Actisolv, was tested on the Westfield Coatings Company and the water based coating. This product was effective on the supplied spindles.

Follow up testing on the RPM Wood Finishes Group paints using coupons showed that SC Actisolv was very effective in removing the two RPM Wood Finishes Group paints and the Westfield Coatings Company paint.

The table summarizes the testing for the various paint mixtures on the steel based substrates. Products with empty cells were not tested for that paint mixes. The eight paint combinations are described as well.

Table 1. Steel Cleaning Summary

| Product | Mix # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|------------------------------|-------|------------|------------|------------|------------|------------|------------|------------|------------|
| D Solve 1012-current solvent | | Yes | Yes | Yes | | Yes | | Yes | |
| Solsafe 245 | | Yes | Yes | Yes | No | | No | | |
| Aquavantage 3800 GD | | Yes | Yes | Yes | | | | | |
| Shopmaster | | No | | | | | | | |
| Optisolv OP7171 | | No | | | | | | | |
| Inproclean 4000 T | | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Beyond 2006 | | Yes | No | | | | | | |
| A 2000 XS | | Yes | Yes | No | No | | | | |
| Surface Cleanse 930 | | Yes | Yes | Yes | Yes | No | | No | |
| SC Aircraft & Metal Cleaner | | | | | | No | | | |
| Citrus Burst 7 | | | | | | Yes | No | | |
| Canola gold CE 110 | | | | | | No | | | |
| Shopmaster RC | | | | | | No | | | |
| SC Actisolv | | Yes | Yes | | | Yes | Yes | Yes | Yes |
| DBE 5/6 | | | | | | | | No | |

Table 2. Paint Mix Components

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| Paint Mix 1 | Paint Mix 2 | Paint Mix 3 | Paint Mix 4 | Paint Mix 5 | Paint Mix 6 | Paint Mix 7 | Paint Mix 8 |
|--|--|----------------------------|---|--|------------------------------------|--|------------------------------------|
| RPM Wood Finishes Group. MS2664 Catalyst White (108-10-1, 28182-81-2, 822-06-0) MS2669 Primer (108-10-1, 28182-81-2, 822-06-0) | RPM Wood Finishes Group MS2664 Catalyst White (108-10-1, 28182-81-2, 822-06-0) 9-6LP9258 White Primer Topcoat (13463-67-7, 110-43-0, 123-86-4, 108-10-1, 108-38-3) | Paint Mix 1 Paint Mix 2 | RPM Wood Finishes Group paint mixtures Oil, dirt and grime | Westfield Coatings Company ARC Fast Dry (108-10-1) ARC Fast Dry Catalyst (123-86-4, 110-43-0, 108-65-6) | Paint Mix 5 Oil, dirt and grime | Witcobond W-235 (71173-87-0) Crosslinker (64265-57-2) DI water | Paint Mix 7 Oil, dirt and grime |
| Ratio 3:1 | Ratio 3:1 | Ratio 1:1 | | Ratio: 2:1 | | Ratio: 40:2:1 | |

Summary:

Conclusion:

Oakite Inproclean 4000 T and Gemtek SC Actisolv were successful on each of the paints. Both products cleaned the supplied spindles very well when using ultrasonic energy.