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.