

# CLEANING LABORATORY EVALUATION SUMMARY

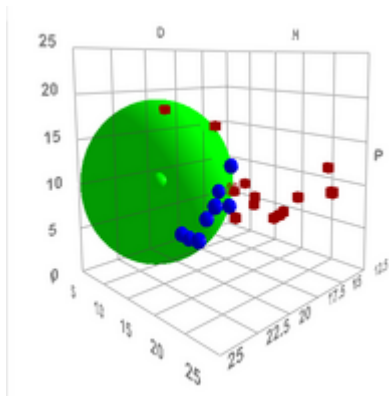
SCL #: 33  
 DateRun: 06/27/2024  
 Experimenters: Alexander Symko  
 ClientType: Manufacturing  
 ProjectNumber: Project #1  
 Substrates: Laminate  
 PartType: Coupon  
 Contaminants: Adhesive  
 Cleaning Methods: Immersion/Soak  
 Analytical Methods: HSPiP

Purpose: Determining an effective solvent for removing hot-melt adhesive from laminate substrate

Experimental Procedure: 24 strips of laminate were cut such that they were of equal size and were able to fit through the neck of a scintillation vial. Each of these laminate strips were then soiled by melting a single bead of jowatherm 288.60 hot-melt adhesive onto the surface. The coupons were then allowed to soak for 3 hours, with observations being taken every hour. A 1 rating denotes most or complete de-adhesion of the adhesive from the substrate, while a 0 rating means some of or none of the adhesive was de-adhered from the substrate. Once these values were obtained, a HSPiP Solvency sphere was generated to further examine the solubility of the target adhesive.

Results:	Solvent	1 Hr	2 Hrs	3 Hrs
	Toluene	1	1	1
	Dimethyl Carbonate	0	0	0
	Xylenes	1	1	1
	Benzyl Alcohol	0	0	0
	Ethylene Glycol	0	0	0
	Methyl Acetate	0	0	0
	Undecane	0	0	0
	Ethyl Lactate	0	0	0
	Acetone	0	1	1
	Ethyl Acetate	0	1	1
	Methanol	0	0	0
	Ethanol	0	0	0
	1,3-Dioxolane	1	1	1
	Diethyl Carbonate	0	0	1
	1-Propanol	0	0	0
	Isopropanol	0	0	0
	Propylene Carbonate	0	0	0
	Thiophene	1	1	1
	1-methoxy-2-propanol	0	0	0
	Dimethyl Sulfoxide	0	0	0
	1-Butanol	0	0	0
	Dimethyl Glutarate	0	0	0
	Anisole	1	1	1
	2-butoxyethyl acetate	0	0	0

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Conklin HSP Sphere

Summary:

Conclusion: Toluene, Xylenes, 1,3-Dioxolane, Thiophene, and Anisole were effective at or before the 1 hour mark for de-adhering the adhesive from the laminate. Acetone and Ethyl Acetate were effective at the 2 hour mark, and Diethyl Carbonate was effective at the 3 hour mark. Based on these results, a sphere was generated and the next experiment will utilize solvent blends generated through the solvent optimizer.