

CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 33
 DateRun: 07/11/2024
 Experimenters: Tatyanna Moreland Junior, Alexander Symko, Cindy McClaughlin
 ClientType: Manufacturing
 ProjectNumber: Project #1
 Substrates: Wood, Laminate
 PartType: Part
 Contaminants: Adhesive
 Cleaning Methods: Manual Wipe
 Analytical Methods: Visual
 Purpose: Evaluating the effectiveness of HSP Solvent blends compared to Toluene for the removal of hot-melt adhesive from test panels

Experimental Procedure: In order to better capture the actual in-house cleaning application, a replication of the edge-banding manufacturing procedure was attempted. This was accomplished by gluing strips of laminate to pieces of wood such that the edges of the wood and laminate were parallel and even (see attached images). 5 of these coupons, labeled A through E, were assembled such that globs of adhesive were spilling out from between the laminate and wood. These adhesive globs were then wiped with a microfiber cloth that had been dipped in the 5 solvent/ solvent blends. These were A: 100% Toluene, B: 58 wt% anisole, 42 wt% diethyl carbonate, C: 52 wt% Acetone 48 wt% ethyl acetate, D: 47 wt% acetone, 58 wt% thiophene, E: 23 wt% acetone, 77 wt% anisole. The coupons were visually rated for cleanliness on a scale of 1 to 5, with 5 being completely soiled and 1 being completely clean. 3 panelists gave their ratings such that an average rating for each coupon could be determined.

Results:

Trial #4 Solvent Blend	Initial			Dirty			Clean			Average Clean Values
	A	T	C	A	T	C	A	T	C	
A	1.0	1.0	1.0	5.0	5.0	5.0	1.0	2.0	2.0	1.67
B	1.0	1.0	1.0	5.0	5.0	5.0	4.0	3.0	5.0	4.00
C	1.0	1.0	1.0	5.0	5.0	5.0	1.0	1.0	2.5	1.50
D	1.0	1.0	1.0	5.0	5.0	5.0	1.0	2.0	2.5	1.83
E	1.0	1.0	1.0	5.0	5.0	5.0	4.0	4.0	5.0	4.33

Summary:

Conclusion: Based on the results, the control panel of toluene (which is known to be effective in this application) achieved cleanliness values at an average of 1.67, slightly higher (less clean) than mixture C which achieved a cleanliness value of 1.50, and slightly lower (more clean) than mixture D which had an average cleanliness value of 1.83. It is recommended that next steps involve a site visit to the company to test these solvent blends on the actual cleaning application.