AquaLac Reclaim Viscosity Adjustment

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Background: AquaLac is a water based clear self-sealing topcoat with application for the millwork prefinishing industry. One practice frequently employed in this industry is the capture and re-use of oversprayed coating generated in an automated spray booth (i.e., reclaiming). Occasionally problems are observed with reclaimed material including increased viscosity and haziness.

In clear coatings a frequent source of haziness is high viscosity. Air bubbles trapped during the spray application are not able to rise to the surface and release before the surface of the coating forms a skin and traps them within the film. Reclaimed paint is likely to have higher viscosity and solids content than fresh paint simply because solvent (in this case the primary solvent is water) evaporates during spraying.

Many other factors may contribute to increased viscosity and haziness in reclaimed paint. The nature of the process lends itself to some degree of contamination from stain drippings as well as the possibility of other foreign materials becoming incorporated into the paint. These factors, not to be addressed further, may contribute to changes in product performance.

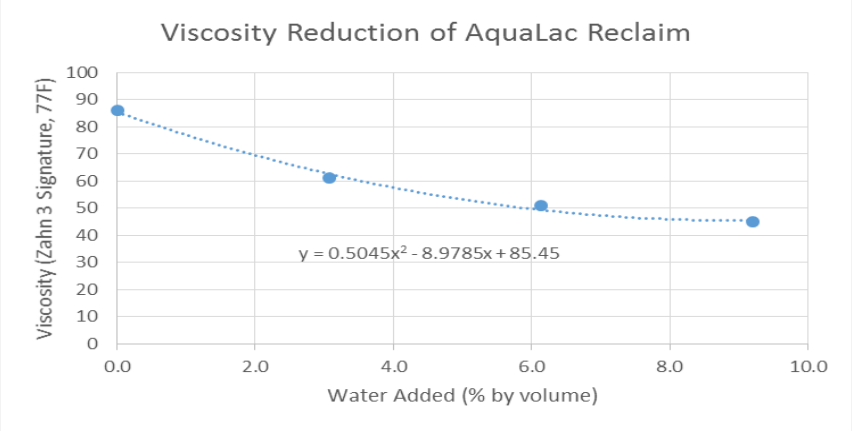
Objective: Determine whether adding water to reclaimed AquaLac returns the viscosity to the original range.

Experimental approach:

- Test solids and viscosity of a sample of reclaimed AquaLac (one reclaim cycle).
- Add water (purified by reverse osmosis) to reduce viscosity to original manufacturing target range; test solids to determine whether the solids level returned to the original manufacturing target range.

Results: As received, the sample of reclaimed AquaLac exhibited Zahn 3 Signature viscosity at 77°F of 86 seconds with a solids content of 31.7%. A total of 9.0% by weight (9.2% by volume) of water was added to return the product to the original manufacturing viscosity range. The added water returned the solids content to 29.9% which was within the original manufacturing target range.

	RO Water Added		Viscosity	Solids (% wt)
Test:	NA	NA	Zahn 3 Signature, 77F	Solids 14
Units:	weight %	volume %	Seconds	weight %
			Target: 42 - 48	Target 28 - 31
	0.0	0.0	86	31.7
	3.0	3.1	61	NT
	6.0	6.1	51	NT
	9.0	9.2	45	29.9



Conclusions: The viscosity increase was due to solvent (i.e., water) loss during the spraying process or subsequent handling. Water can be added to return the product to the original viscosity and solids ranges.

To aid adjustments in the field the table below provides recommendations for water additions depending upon the starting viscosity of the reclaim. In general minerals and disinfectants in tap water may negatively impact the performance of water-based paints. For the most reliable results use distilled or deionized water or water purified via reverse osmosis.

	Starting Viscosity	Water to add		
Test:	Zahn 3 Signature, 77F	NA	NA	NA
Units:	Seconds	% by volume	fluid ounces per gallon	pints per gallon
	50	3	4	0.24
	53	4	5	0.32
	58	5	6	0.40
	63	6	8	0.48
	70	7	9	0.56
	77	8	10	0.64
	85	9	12	0.72