

# CLEANING LABORATORY EVALUATION SUMMARY

SCL #: 2006  
 DateRun: 06/29/2006  
 Experimenters: Jason Marshall  
 ClientType: Consultant  
 ProjectNumber: Project #1  
 Substrates: Wood  
 PartType: Coupon  
 Contaminants: Coatings  
 Cleaning Methods:  
 Analytical Methods: Performance Test, Visual

Purpose: To evaluate impact resistance for various floor finishes

Experimental Procedure: The moisture content at the time of testing will influence results due to the hygroscopic nature of the base materials. Therefore, efforts must be taken to ensure that the moisture content and temperature remain constant during the evaluation period. Ideally, the sample floor should be kept at 65+/-1% relative humidity and 68+/-6 F. During laboratory testing, conditions were 64% relative humidity and the temperature was ~74 F.

**Sample Preparation**

The flooring material supplied was Hardwood flooring made from Red Oak. The boards were 3/4" thick, 2 1/4" wide and cut into 8" sections.

Three coupons were coated with a supplied floor finish according to the manufacturers' specifications. The finish was applied using a 1" Pure Bristle 1500 paint brush. To ensure proper coating application rates, the coatings were applied via pipettes to surface. Three coats were used for each floor finish as this was common number of coating layers suggested by the various manufacturers.

The first two coatings were allowed to dry for 2 hours prior to the application of the next coat. The second coat for the current process was allowed to dry overnight before the application of final coat. The Completed coupons were allowed to sit for a minimum period of 24 hours before performance evaluations were conducted.

**Falling-Ball Indentation**

This test is designed to obtain a measure of the resistance of a flooring finish to impacts from dropped objects. Four drops were made for each coupon for a total of twelve drops per finish. Each drop was made at a 6" intervals starting at 6" and ending at 72". The ball used for the drops was a 440-C stainless steel 2" diameter ball, grade 100. The dropping apparatus used is shown in Figure 2. Carbon paper was placed on the coupon surface to assist in determining where the indentation was made.

**Figure 2. Dropping Apparatus**

The same Brown & Sharpe Micrometer was used to measure the indentations to the coated coupons. A plot was made of the height of drop and residual indentation and the slope of the best fit line was calculated. From the plots, the intercept of the height of drop at 72" was recorded as the index of indentation resistance. Results for each finish were compared each other.

Results: Impact depth was calculated by subtracting the average initial coating thickness from the thickness measured at the point of impact for each drop height. The initial average coating thickness was calculated from the three initial coating measurements made for each coupon.

\*Due to the construction of the floor boards and the location of the impact from the ball, additional baseline readings had to be recorded for certain areas on the coupons. These values are designated by the coupon number and "A" (alternate).

Coupon	Coated Thickness			Drop Height										
	Middle	End 1	End 2	6	12	18	24	30	36	42	48	54	60	66
1	0.7512	0.7498	0.7549	0.7437			0.7320							
1A	0.6755	0.6770	0.6693		0.6717	0.6554								
2	0.7535	0.7566	0.7560					0.7397	0.7288					
2A	0.6751	0.6699	0.6811							0.6518	0.6486			
3	0.7588	0.7609	0.7585										0.7227	
3A	0.6767	0.6722	0.6776									0.6549		0.647
4	0.7648	0.7702	0.7655			0.7521	0.7491							
4A	0.6727	0.6742	0.6751	0.6720	0.6667									
5	0.7560	0.7582	0.7601					0.7518	0.7266		0.7176			
5A	0.6707	0.6682	0.6744							0.6543				

