CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2012
DateRun:	03/15/2012
Experimenters:	Jason Marshall, Junhee Cho, Timothy Weil
ClientType:	Cleaning Equipment Mfr
ProjectNumber:	Project #3
Substrates:	Textile
PartType:	Coupon
Contaminants:	Fibers
Cleaning Methods:	Mechanical Agitation
Analytical Methods:	Gravimetric, Visual, Timing
Purpose:	To evaluate the pet hair removal process of lint roller tool from large space on several upholstery type fabrics
Experimental Procedure:	Using the previously established soil loading rate, a 30”x40” section of fabric was coated with approximately 0.2250 grams of Persian long hair cat. The bundles were evenly placed across the 1200 square inch surface. Following hair application, a plastic coupon was then passed over the surface to better distribute the hair and impart static charge to the surface and hair. Four fabric types were provided by the client. They are described here as green with white, yellow with red flowers, red with yellow dragon flies, and brown. Each fabric was pretreated by rolling the tape across the surface to remove excess loose fabric. Basic hair removal process: Initial weight of a tape roll was made on a gravimetric balance (0.0001g) to establish the baseline weight of the roll. The tape roll was then attached to the holder/handle and passed across the soiled surface until no more hair was being removed from the surface. At this time the roller was weighed to determine soil collection. The used tape was removed from the roll and the roll was weighed to measure the new clean weight. The roller then was used from where it left off on the surface. This process was continued until the full 30x40 surface was cleared of hair. Two time recordings were made. The first was the overall time to completely clean the surface. The second time recording measured the time the roller was actually cleaning the surface. This would stop once the hair was not being removed from the surface and while the roll was being weighed and when the tape roll was being changed out. This was an attempt to record a cleaning time that was comparable to the agitator cleaning process. Agitator-hair removal process: The agitator side of the unit was then passed across the surface using short strokes to complete the cleaning of the large area. Any hair that was removed from the surface area by the agitator was collected and weighed to determine removal rate. The soiling and cleaning process was repeated. In addition, the time to completely clean the surface with the agitator alone was recorded. Units Tested: Three types of lint roller tape were evaluated, two from oneCare and one from a comparative product. The oneCare rolls included the evercare Classic and the Ezpeel tab extra sticky products. The comparative product was a jumbo size lint roller from an industry leading company. In addition to the tape rolls, three devices were used. Two supplied agitator handles and a comparative pet hair removal device. Each roll of tape was normalized to provide the same size tape section for the various runs.
Results:	Two of the fabrics still had excess fabric removed during the testing evaluation which resulted in increased soil removal rates (resulting in over 100% removal of hair). All three tapes were most affected for the rough upholstery and the tapestry fabrics. The three agitators only had interference for the rough upholstery fabric. In addition, the 3M roller had static issues on the sateen and suede most of the surfaces. The Evercare tapes had trouble on the brown fabric. Fabric 1 Rough Upholstery All products tested needed around 1 minute to clean the full surface. However, the three tapes needed 2 to 3 times to complete cleaning when incorporating change out of the tape during the process. The Nub agitator resulted in the least amount of excess fabric removal. The three tape units required 3 change outs of the tape to completely clean the surface. Fabric 2 Tapestry All products except the Fur Fighter needed less than 1 minute to clean the full surface. The 3 tapes needed less time than the agitators when looking at the direct comparison of cleaning time only. However, the three tapes needed between 1:00 and 2:00 minutes to complete cleaning when incorporating change out of the tape during the process. The three tape units required 2 change outs of the tape to completely clean the surface.

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Fabric 3 Sateen
All products except the Fur Fighter needed less than 1 minute to clean the full surface when looking at the direct comparison of cleaning time only. However, the three tapes needed between 1:20 and 2:30 minutes to complete cleaning when incorporating change out of the tape during the process. The three tape units required 2-3 change outs of the tape to completely clean the surface. The 3M product had greater than 100% removal which was due to the static interference.

Fabric 4 Suede
All products except the Fur Fighter needed less than 1:30 minutes to clean the full surface when looking at the direct comparison of cleaning time only. However, the three tapes needed between 2:30 and 3:30 minutes to complete cleaning when incorporating change out of the tape during the process. The three tape units required 3-4 change outs of the tape to completely clean the surface. The 3M product had greater than 100% removal which was due to the static interference.

Comparison of time for hair removal showed that the agitators ranged from 1.5 to 3 times as fast as the tape cleaning of the same surface when looking at overall cleaning times.

The Nub agitator was 2.0 to 2.6 times faster than tape, the wave was 1.9 to 2.5 times faster than tape and the fur fighter was 1.7 to 2.2 times faster than tape.

Summary:

Conclusion: The supplied agitators were found to be quicker (1.5 to 2.5 times as fast) at removing hair from several fabric types. The agitators also were found to be less damaging to the surface by removing less fabric from the surface during cleaning as seen from the greater than 100% removal rates for the tape rollers.