CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2012
DateRun:	05/07/2012
Experimenters:	Jason Marshall
ClientType:	Cleaning Equipment Mfr
ProjectNumber:	Project #2
Substrates:	Vinyl Composite Tiles
PartType:	Coupon
Contaminants:	Food
Cleaning Methods:	Mechanical Agitation
Analytical Methods:	ATP Measurement
Purpose:	To determine the cleaning effectiveness of the Kaivac product, OmniFlex Crossover Cleaning System with AutoVac Attachment and compare these results with nominal autoscrubber and microfiber mopping cleaning systems.

Experimental Procedure:

The process involves cleaning flat, hard non-porous surface, specifically finished Vinyl Composite Tile. An 8'x4' VCT floor was sterilized prior to testing by using a steam-vapor unit and then squeegeed dry. Baseline measurements using a Hygiena ATP meter and swab. Measurements were made using a 4"x 4" template to draw swabbing area onto the floor surface. Twenty strokes were made (10 back & forth) in one direction moving across the area and rotating the swab as one moves across the area. A second 20 strokes were made perpendicular to the first direction in the same manner.

An ATP Soil Solution was made using 30 ML of freshly squeezed green seedless grape juice mixed with 32 oz of distilled water. The solution was applied to the surface at a rate of 4 oz/32 square feet using a hand held spray bottle. The soiled floor was then allowed to air dry at room temperature. A floor fan was utilized to reduce drying times. Once the floor was dry, two dirty ATP readings were made, one for the early cleaning path and toward the end of the cleaning path. A dilution of Kaivac Kaio was made at 4 oz per gallon using tap water at room temperature.

For the microfiber mop cleaning system, the mop cloth was immersed into the cleaning solution and wrung out. The mop cloth was attached to the mop handle. Cleaning started in one corner of the floor and cleaning proceeded along the long direction of the floor. At the end of the floor, the mop was swiveled to return back down the floor, offset by the width of the mop head. A total of 4 passes were completed with the mop head following this up and back pattern. Once floor dried, final ATP readings were made to determine effectiveness of soil removal.

For the OmniFlex system, the floor was prepared in the exact method as the mop cleaning. The microfiber pad was presoaked in the clean solution and attached to the unit. The vacuum unit was turned on and the cleaning solution flow was set the predetermined rate ("5 o'clock" on the dial). The same walking rate was utilized from the mop cleaning process. A total of three passes were completed. An additional ATP reading was made of the collected soil in system's dirty reservoir.

The floor scrubbing machine was operated at mid level for pressure and water flow. Fresh 3M pads were attached to the unit. The floor was prepared in the same manner as the previous processes. A total of three passes were completed. An additional ATP reading was made of the collected soil in system's dirty reservoir.

Final ATP readings were compared against dirty levels and baseline floor readings. Three runs were made for each cleaning method.

Results:

Average baseline level of ATP of the floor were calculated for each of three runs. The mop baseline averaged 96.7, the OmniFlex baseline was 195.3 and the floor scrubber baseline was 69.3. After applying the ATP soil mixture, the dirty readings ranged from 2915 to 8205. Average dirty readings for the three cleaning methods were 6439, 3902 and 6094 for the first cleaning area for mop, OmniFlex and floor scrubber. The second area had average readings of 7165, 6925 and 7191.

Cleaning reduced the ATP levels for all three methods at the first area. The mop had the least reduction in ATP level. Both the OmniFlex and floor scrubber had significant reduction of ATP. The second area had less reduction in ATP for the mop but the two machines had more reduction than the first section. When comparing the average reduction in ATP for both areas on the floor for each method, the OmniFlex had the most reduction followed closely by the floor scrubber. These two units resulted in a 98% reduction in ATP. The mop had an average removal of ATP of 44%.

The ATP level of the collected solution for OmniFlex was 575 and for floor scrubber 730.

The Table lists the ATP readings for each method and trial run.

Method	Run	Baseline clean	Area 1 dirty	Area 1 clean	Area 2 dirty	Area 2 clean
Mop	1	75	4640	2149	7788	7391
	2	73	7850	3543	7135	5401

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	3	142	6827	1368	6572	2963
OmniFlex	1	212	4807	41	8205	37
	2	146	3985	153	6004	27
	3	228	2915	251	6565	52
Floor Scrubber	1	78	6574	84	7649	62
	2	78	7131	185	7981	58
	3	52	4578	82	5942	111
Mop	Ave	96.7	6439.0	2353.3	7165.0	5251.7
OmniFlex		195.3	3902.3	148.3	6924.7	38.7
Floor Scrubber		69.3	6094.3	117.0	7190.7	77.0

Summary

Method	Ave ATP Dirty	Ave ATP Clean	% Reduction
TURI Lab ATP only			
Mop	6802.0	3802.5	44.1
OmniFlex	5413.5	93.5	98.3
Floor Scrubber	6642.5	97.0	98.5

Summary:

Substrates:	Vinyl Composite Tiles				
Contaminants:	Food				
Company Name:	**Product Name:**	**Conc.:**	**Efficiency:**	**Effective:**	**Observations:**
Kaivac	Kaio	3.125	44.10	☐	Mop - ATP reduction
Kaivac	Kaio	3.125	98.30	☑	OmniFlex ATP reduction
Kaivac	Kaio	3.125	98.50	☑	Floor Scrubber ATP reduction

Conclusion:

Both the OmniFlex and floor scrubbing methods had significant (98%) reduction in the levels of ATP on the VCT flooring. The mop method had minimal reduction in ATP, 44%.