Special Test
University of Kentucky Textile Lab

Company:	CSC Network
Contact Person:	Jessica Hunter
Product:	Cotton & Microfiber Bar Mops
Date Received:	8/23/2012
Date Due:	10/5/2012
Technician:	Meredith & Erin

Sample Description:
Bar Mops- 100% Cotton, (5 Suppliers)
Bar Mops – Microfiber (4 Suppliers)

Tests Performed:
ASTM D 5034-2009: Standard Method for Breaking Strength (Grab Test)
AATCC 96-2009: Dimensional Changes in Commercial Laundering of Woven and Knitted Fabrics Except Wool (Dimensional Stability)
ASTM D 3776-2009: Standard Test Method for Mass per Unit Area (Fabric Weight)
AATCC Test Method 130-2010: Soil Release: Oily Stain Release Method – Modified
AATCC Test Method 61-2012: Colorfastness to Laundering: Accelerated
ASTM D 4966-2012 Standard Test Method for Abrasion Resistance of Textiles Fabrics- Modified Abrasion

Procedures:
ASTM D 5034-2009: Standard Method for Breaking Strength (Grab Test)
This test was used to determine the amount of force required to break the bar mops. Three specimens were cut in both the filling and warp directions from a bar mop from each supplier. The six samples from each supplier were evaluated at new, after 10IL, and after 25IL for the cotton bar mops. The microfiber bar mops were evaluated at new, after 10IL, 25IL and 50IL. Breaking strength was performed by the Grab Test, a tensile test, in which the central part of the width of a specimen is gripped in clamps. Breaking force is the maximum force applied to a material carried to rupture. Results are given in pounds of force (lbf).

AATCC 96-2009: Dimensional Changes in Commercial Laundering of Woven and Knitted Fabrics Except Wool (Dimensional Stability)
Prior to testing, the bar mops from each supplier were conditioned overnight at 70° F and 65°% relative humidity. Bench marks for measuring were marked at 12”x 12” on three bar mops from each supplier. The cotton bar mops were washed in a UniMac Industrial washer and dried on a high heat setting for 40 minutes. The microfiber bar mops were washed in a UniMac Industrial washer and dried on a medium heat setting for 40 minutes. Each cotton bar mop was evaluated at new, after 10IL, and after 25IL for dimensional changes. Each microfiber bar mop was evaluated at new, after 10IL, 25IL, and 50 IL.

ASTM D 3776-2009 – Standard Test Method for Mass per Unit Area (Fabric Weight)
Three 5.94 square-inch circles were cut from a bar mop from each supplier using the Universal Sample Cutter. Each sample was conditioned for twenty-four hours and weighed in grams to the nearest one hundredth place. Samples were weighed new. The weight was converted in oz/yard^2 and an average and standard deviation was calculated for each specimen.

AATCC Test Method 130-2010: Soil Release: Oily Stain Release Method – Modified
The soil release test was used to evaluate the fabric's ability to release stains during laundering. Four stains (ketchup, mustard, coffee, and bacon grease) were applied to one bar mop from each supplier. Specimens were subjectively evaluated by two technicians and rated on a scale of 1 to 5 using the AATCC soil release scale; a rating of 1 indicates poor stain removal and a rating of 5 indicates complete stain removal. Stains were applied at new, 9IL, and 24IL for the cotton bar mops. Stain removal was evaluated after 1IL, 10IL and 25IL for the cotton bar mops. For the microfiber bar mops, stains were also applied after 49IL and evaluated after 50IL.

AATCC Test Method 61-2012: Colorfastness to Laundering: Accelerated
In order to determine the whiteness and color retention of the bar mops, the new bar mops were compared with those after 10IL and 25IL, and after 50IL for the microfiber mops. A subjective color evaluation was conducted under a light booth. Three bar mops from each supplier were observed under daylight and fluorescent lighting with and without UV. Under UV light, optical brighteners turn bright blue and glow.

ASTM D 4966-2012 Standard Test Method for Abrasion Resistance of Textiles Fabrics- Modified Abrasion
Abrasion was evaluated for each of the three bar mops from each supplier after 10IL and 25IL as well as after 50IL for the microfiber bar mops. Each bar mop was compared to the ASTM standard and rated on a scale from 1 to 5 with 1 being very severe visual abrasion and 5 being no visual abrasion.

Results:
ASTM D 5034-2009: Standard Method for Breaking Strength (Grab Test)
The following table depicts the average breaking strength by bar mop supplier after 25 IL for cotton and after 50IL for microfiber. After 25IL, the cotton bar mops from Baltic had the highest breaking strength of 45.8lbf; the cotton bar mops from American Dawn had the lowest breaking strength of 39.7lbf. After 50IL, the microfiber bar mops from Calderon Textiles had the highest breaking strength of 123.4lbf; the microfiber bar mops from Venus had the lowest breaking strength of 71.0lbf. Please see the attached spreadsheets labeled "Breaking Strength – Cotton Bar Mops" and "Breaking Strength – Microfiber Bar Mops" for more detailed results.

Suppliers	Average Breaking Strength after 25 IL/50 IL	
	Cotton (25 IL)	Microfiber (50IL)
American Dawn	39.7	86.9
Baltic	45.8	---
Calderon Textiles	45.2	123.4
Golden Star	---	81.7
Venus	46.2	71.0
Non-Approved Supplier	40.5	---

AATCC 96-2009: Dimensional Changes in Commercial Laundering of Woven and Knitted Fabrics Except Wool (Dimensional Stability)

The table below depicts (as a percentage) the average dimensional change for the cotton bar mops after 25IL and the microfiber bar mops after 50IL. The cotton Baltic bar mops averaged the highest dimensional change of -10.13% after 25IL. The cotton Venus bar mops averaged the lowest amount of dimensional change after 25 IL at -2.44%. The microfiber Golden Star bar mops had the highest dimensional change of -3.63%; the microfiber Calderon Textiles bar mops had the lowest dimensional change of -1.27%. Please see the attached spreadsheets labeled "Dimensional Change – Cotton Bar Mops" and "Dimensional Change – Microfiber Bar Mops" for more detailed results.

Supplier	Dimensional Change (%) After 25 IL/50 IL	
	Cotton (25 IL)	Microfiber (50 IL)
American Dawn	-8.01%	-2.41%
Baltic	-10.13%	---
Calderon Textiles	-7.12%	-1.27%
Golden Star	---	-3.63%
Venus	-2.44%	-1.54%
Non-Approved Supplier	-8.30%	---

ASTM D 3776-2009 – Standard Test Method for Mass per Unit Area (Fabric Weight)

Fabric weight was measured at new for both the cotton and microfiber bar mops. The table below depicts the fabric weight (oz/yd^2) of the new bar mops. The attached spreadsheets labeled "Fabric Weight – Cotton Bar Mops" and "Fabric Weight – Microfiber Bar Mops" show more detailed information.

Supplier	Fabric Weight NEW (oz/yd^2)	
	Cotton	Microfiber
American Dawn	42.6	28.44
Baltic	37.2	---
Calderon Textiles	42.5	42.87
Golden Star	---	33.77
Venus	52.8	32.83
Non-Approved Supplier	44.4	---

AATCC Test Method 130-2010: Soil Release: Oily Stain Release Method – Modified

The tables below report the scores given to each supplier after 25IL for the cotton bar mops and after 50IL for the microfiber bar mops. The bar mops were stained with ketchup, mustard, coffee, and bacon grease. To see more detailed results, please see the attached spreadsheet labeled "Soil Release – Cotton Bar Mops" and "Soil-Release – Microfiber Bar Mops."

Cotton Bar Mop Suppliers (25 IL)	Ketchup	Mustard	Coffee	Bacon Grease
American Dawn	3	2	4.5	4.5
Baltic	4	2	5	4.5
Calderon Textiles	3.5	2	5	4
Venus	3.5	2	4.5	4.5
Non-Approved Supplier	3.5	1.5	4.5	4.5

Microfiber Bar Mop Suppliers (50 IL)	Ketchup	Mustard	Coffee	Bacon Grease
American Dawn	4	3.5	5	3
Calderon Textiles	4	1.5	3.5	4
Golden Star	3.5	1	4	5
Venus	4	1	4	4.5

AATCC Test Method 61-2012: Colorfastness to Laundering: Accelerated

The subjective color retention evaluation was completed to determine which cotton bar mops retained whiteness and color after 25IL and which microfiber bar mops retained their whiteness and color after 50IL. The majority of the bar mops yellowed as they were washed. This is most likely due to the mix of multiple stripe colors in the same wash load. The attached spreadsheets labeled "Color Retention – Cotton Bar Mops" and "Color Retention – Microfiber Bar Mops" detail the subjective color retention results of bar mops at new, after 10IL, 25IL, and 50IL.

Supplier	Color Retention after 25 IL/50 IL	
	Cotton (25 IL)	Microfiber (50 IL)
American Dawn	Slightly yellow with darker stripe	Slightly orange/yellow
Baltic	Slightly yellow with darker stripe	---
Calderon Textiles	Slightly yellow with darker stripe	Slightly orange
Golden Star	---	Slightly yellow
Venus	Slightly yellow	Moderately orange
Non-Approved Supplier	Slightly yellow with darker stripe	---

ASTM D 4966-2012 Standard Test Method for Abrasion Resistance of Textiles Fabrics- Modified Abrasion

Abrasion was evaluated on a bar mops from each cotton supplier after 10IL, 25IL and after 50IL for each microfiber supplier. Each bar mop was compared to the ASTM standard and rated on a scale from 1 to 5 with 1 being very severe visual abrasion and 5 being no visual abrasion. The table below lists the average rating given to the supplier's bar mops after 25IL and 50IL. The attached spreadsheets labeled "Abrasion Evaluation – Cotton Bar Mops" and "Abrasion Evaluation – Microfiber Bar Mops" details the individual results.

Supplier	Average Abrasion Rating (25 IL & 50 IL)	
	Cotton (25 IL)	Microfiber (50 IL)
American Dawn	4	5
Baltic	3	---
Calderon Textiles	3	5
Golden Star	---	5
Venus	3	5
Non-Approved Supplier	3	---