



# CERTIFICATION

**AOAC<sup>®</sup> Performance Tested<sup>SM</sup>**

Certificate No.

**010902**

The AOAC Research Institute hereby certifies the test kit known as:

**BAX<sup>®</sup> System PCR Assay for Yeast and Mold**

manufactured by

**Hygiena**

**2 Boulden Circle**

**New Castle, DE 19720**

**USA**

This method has been evaluated in the AOAC<sup>®</sup> Performance Tested Methods<sup>SM</sup> Program and found to perform as stated by the manufacturer contingent to the comments contained in the manuscript. This certificate means that an AOAC<sup>®</sup> Certification Mark License Agreement has been executed which authorizes the manufacturer to display the AOAC Performance Tested<sup>SM</sup> certification mark along with the statement - "THIS METHOD'S PERFORMANCE WAS REVIEWED BY AOAC RESEARCH INSTITUTE AND WAS FOUND TO PERFORM TO THE MANUFACTURER'S SPECIFICATIONS" - on the above mentioned method for a period of one calendar year from the date of this certificate (December 05, 2020 – December 31, 2021). Renewal may be granted at the end of one year under the rules stated in the licensing agreement.

*Scott Coates*

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Scott Coates, Senior Director  
Signature for AOAC Research Institute

December 05, 2020

\_\_\_\_\_  
Date

**METHOD AUTHORS**

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**MODIFICATION JULY 2013:** Steve Hoelzer, F. Morgan Wallace, Lois Fleck, Deana DiCosimo, Jacqueline Harris, Bridget Andaloro, Andrew Farnum, Eugene Davis, and Jeff Rohrbeck

**SUBMITTING COMPANY**

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 Wilmington, DE 19880-0400

**CURRENT SPONSOR**

Hygiena  
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 New Castle, DE 19720  
 USA

**KIT NAME(S)**

DuPont™ Bax® System PCR Assay for Yeast and Mold  
 March 01, 2017, Bax® System PCR Assay for Yeast and Mold

**CATALOG NUMBERS**

KIT2015 (kit); KIT2014 (supplement)

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**APPLICABILITY OF METHOD**

Target organism – Yeast and Mold (all genera, all species)

Matrixes – (25 g) - Yogurt, corn starch, milk-based powdered infant formula

Performance claims - Threshold detection of contaminating fungi in specified matrixes that is statistically indistinguishable from the FDA-BAM method for detecting Yeast and Mold [3].

**REFERENCE METHOD**

Tournas, V., Stack, M.E., Mislivec, P.B., Koch, H.A. and Bandler R. 1998. Bacteriological Analytical Manual Online. Revised 4/2000. US Food & Drug Administration, Center for Food Safety & Applied Nutrition. Chapter 18, *Yeasts, Molds and Mycotoxins*. (2)

**ORIGINAL CERTIFICATION DATE**

January 29, 2009

**CERTIFICATION RENEWAL RECORD**

Renewed Annually through December 2021

**METHOD MODIFICATION RECORD**

1. July 2013
2. March 2017 Level 2
3. January 2018 Level 1
4. May 2019 Level 1

**SUMMARY OF MODIFICATION**

1. Addition of Thermal Block for automated sample lysis.
2. Name change from DuPont Nutrition & Health to Qualicon Diagnostics LLC., a Hygiena company
3. Editorial update of labels, insert, and documents to Hygiena
4. Update to inserts and corporate address change

Under this AOAC® *Performance Tested*<sup>SM</sup> License Number, 010902 this method is distributed by:  
 NONE

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 NONE

**PRINCIPLE OF THE METHOD (1)**

Fungal Cell Disruption – Fungal cells are disrupted and their DNA is sheared into multiple pieces using a mechanical shearing device.

PCR Amplification - The BAX® system Yeast and Mold test kit uses the Polymerase Chain Reaction (PCR) to amplify specific fragments of fungal DNA, which are present in multiple copies per cell and are stable and unaffected by growth environment. The fragments are genetic sequences that are unique to the fungal genome, thus providing a highly reliable indicator that the organism is present. The BAX® system simplifies the PCR process by combining the requisite primers, polymerase and nucleotides into a stable, dry, manufactured tablet already packaged inside the PCR tubes. After amplification, these tubes remain sealed for the detection phase, thus significantly reducing the potential for contamination with one or more molecules of amplified PCR product [2].

Fluorescent Detection - The automated BAX® system uses fluorescent detection to analyze PCR product. Each PCR tablet contains a fluorescent dye, which binds with double-stranded DNA and emits a signal in response to excitation light. During the detection phase, the temperature of the samples is slowly increased to denature the DNA. This releases the dye and causes a drop in emission signal. The BAX® system measures the denaturation temperature and the magnitude of fluorescent signal change [3]. An analysis by the BAX® System software algorithm then evaluates that data to determine a positive or negative result which is displayed as described below.

**DISCUSSION OF THE ORIGINAL VALIDATION STUDY (1)**

The BAX® System PCR Assay for Screening Yeast and Mold demonstrates slightly, though not statistically significantly, greater sensitivity than the reference FDA BAM plating method. The test kit is able to be tuned to achieve comparable threshold level contamination detection when compared with plating methods by adjusting the amount of sample homogenate added to the growth/disrupter tube(s). Since by its nature, the BAX assay is a +/- result whose sensitivity is determined by the amount of sample homogenate evaluated, its use is limited in cases where a product of interest is frequently contaminated at a level near the specified cutoff. In such cases, the time saved by performing the rapid test will often be negated by having to perform many reference method analyses to determine the true level of contamination before product can be released. Conversely, the test kit is most useful in the testing of product where either there is usually no fungal contamination of the food matrix, or where if a fungal contaminate is present, it is there in levels much greater than the specified acceptable cutoff level. In both of these cases, significant time savings can be achieved as a faster release of most lots of product will be possible.

Initial studies performed on soy-based infant formula revealed sporadic low level positive results on non-spiked samples. The sample matrix for this sample type could not be confirmed as culture positive. It is possible that these false positive results are due to a particular property of this product type associated with its method of manufacture. Soy protein is isolated in part through alcohol precipitation steps. This alcohol preparation will have as a potential side effect the preservation of naturally occurring fungal DNA that may survive through to disruption and thus lead to false positive results using this test kit.

The signal seen in this case is a weak positive, and an end user could potentially adjust the target to target plus internal control peak ratio that they would accept as a positive result from the assay. Should a user desire to internally validate a protocol of this nature, they should contact Qualicon for assistance. Because the modification will likely be product specific, this alternative protocol will not be validated through the AOAC-RI validation process. Other plant material produced in a similar fashion to soy protein isolate destined for soy-based infant formula with an early in the production process alcohol-based extraction could demonstrate similar results. Due to the sensitivity of the assay, as few as 10 intact fungal genomes in a disrupter tube following the incubation step would be expected to result in a low level positive result. Fungal DNA in foods at any level would not normally be detected by the assay as validated in this study report due to the fragility of nucleic acid in aqueous environments. Since the methods validated in this study only used the enriched protocol (as opposed to the non-AOAC validated direct testing method described in the BAX® User Guide) that included a 44 hr enrichment step in the disrupter tubes, any free DNA from non-viable cells would be expected to be degraded and not detected. It is only when the fungal DNA is precipitated and preserved in matrixes such as a protein isolate that there is the possibility of a false positive event.

In food matrixes that can start out with a high fungal burden (such as the raw materials for corn starch), Qualicon customers have not found false positive results to be a problem, since any contaminating DNA is not protected and is degraded in either the aqueous starch preparation process or in the BAX® enrichment process.

**Table 1. BAX® system inclusivity (Yeast and Mold assay) (1)**

Source	Strain	Source	ID	BAX Result
ATCC	18577	Soil	<i>Debaryomyces hansenii</i>	POS
ATCC	10259	Unknown	<i>Candida albicans</i>	POS
ATCC	14056	Human	<i>Candida tropicalis</i>	POS
ATCC	9451	Air	<i>Rhodotorula mucilaginosa</i>	POS
ATCC	15125	Unknown	<i>Rhodotorula glutinis</i>	POS
ATCC	10651	Buttermilk	<i>Pichia fermentans</i> Lodder	POS
ATCC	34517	Raw Sugar	<i>Zygosaccharomyces rouxii</i>	POS
ATCC	36240	Grapes	<i>Torulasporea delbrueckii</i>	POS
ATCC	76455	Unknown	<i>Saccharomyces cerevisiae</i>	POS
ATCC	6989	Cheese	<i>Penicillium roquefortii</i>	POS
ATCC	32079	Rotten Orange	<i>Penicillium italicum</i>	POS
ATCC	34928	Sweet Potato	<i>Rhizopus stolonifer</i>	POS
ATCC	26195	Sand	<i>Geotrichum candidum</i>	POS
ATCC	18003	Soil	<i>Trichothecium roseum</i>	POS
ATCC	36963	Soil	<i>Eurotium repens</i> var. <i>columnaris</i>	POS
ATCC	200095	Asparagus	<i>Fusarium oxysporum</i> f. sp. <i>asparagi</i>	POS
ATCC	20476	Plum Tree	<i>Trichoderma viride</i>	POS
ATCC	34892	Fermented Red Rice	<i>Monascus purpureus</i>	POS
ATCC	34668	Carrot Seed	<i>Cladosporium cladosporioides</i>	POS
ATCC	13696	Unknown	<i>Aspergillus parasiticus</i>	POS
ATCC	1011	Unknown	<i>Aspergillus oryzae</i>	POS
ATCC	10058	Dung	<i>Aspergillus clavatus</i>	POS
ATCC	10864	Chinese Galls	<i>Aspergillus niger</i>	POS
ATCC	204446	Tomato	<i>Botrytis cinerea</i> bc-1	POS
ATCC	28987	Onion	<i>Cladosporium herbarum</i>	POS
ATCC	10141	Peas	<i>Acremonium strictum</i>	POS
ATCC	6663	Unknown	<i>Alternaria alternata</i>	POS
ATCC	24905	Rice Fermentation	<i>Amylomyces rouxii</i>	POS
ATCC	28064	Unknown	<i>Anthrödema benhamiae</i>	POS
ATCC	36607	Clinical	<i>Aspergillus fumigatus</i>	POS
ATCC	10535	Painted Pine Board	<i>Aspergillus niger</i>	POS
ATCC	14895	Soy Sauce	<i>Aspergillus oryzae</i>	POS
ATCC	24951	Unknown	<i>Emmonsia crescens</i>	POS

ATCC	48112	Unknown	<i>Fusarium oxysporum</i>	POS
ATCC	16222	Wheat Field Soil	<i>Geomyces pannorum</i> var. <i>pannorum</i>	POS
ATCC	34614	Clotted Carrot	<i>Geotrichum candidum</i>	POS
ATCC	10333	Unknown	<i>Neurospora crassa</i>	POS
ATCC	10002	Unknown	<i>Penicillium chrysogenum</i>	POS
ATCC	9179	Culture Contaminant	<i>Penicillium notatum</i>	POS
ATCC	10110	Cheese	<i>Penicillium roquefortii</i>	POS
ATCC	36779	Unknown	<i>Pilaira anomala</i>	POS
ATCC	22959	Unknown	<i>Rhizopus oligosporus</i>	POS
ATCC	66034	Unknown	<i>Rhizopus stolonifer</i>	POS
ATCC	14284	Human	<i>Sporothrix schenckii</i>	POS
ATCC	9182	Unknown	<i>Stachybotrys chartarum</i>	POS
ATCC	28185	Unknown	<i>Trichophyton mentagrophytes</i>	POS
ATCC	9773	Unknown	<i>Yarrow lipolytica</i>	POS
DuPont	FS34.3	Buttermilk Biscuit Mix	<i>Alternaria alternate</i>	POS
DuPont	FS37.4	Peanut Butter Cookie Mix	<i>Alternaria infectoria</i>	POS
DuPont	FS31.3	Three Cheese Biscuit Mix	<i>Aschersonia</i> sp	POS
DuPont	FS34.5	Buttermilk Biscuit Mix	<i>Aschersonia</i> sp	POS
DuPont	FS20.1	Raisins	<i>Aspergillus awamori</i>	POS
DuPont	FS64.1	Nut & Berry Mix	<i>Aspergillus awamori</i>	POS
DuPont	FS9.1	Brown rice flour	<i>Aspergillus candidus</i>	POS
DuPont	FS31.5	Three Cheese Biscuit Mix	<i>Aspergillus candidus</i>	POS
DuPont	FS55.1	Corn Grits	<i>Aspergillus candidus</i>	POS
DuPont	FS28.1	Flour - Bread	<i>Aspergillus flavus</i>	POS
DuPont	FS65.1	Candied Pecans	<i>Aspergillus flavus</i>	POS
DuPont	FS29.3	Unbleached Flour	<i>Aspergillus flavus</i>	POS
DuPont	FS66.2	Shelled Pecan Halves	<i>Aspergillus flavus</i>	POS
DuPont	FS1.2	Oregano	<i>Aspergillus phoenicis</i>	POS
DuPont	FS2.1	Sesame Seeds	<i>Aspergillus phoenicis</i>	POS
DuPont	FS19.1	Cereal	<i>Aspergillus pseudodeflectus</i>	POS
DuPont	FS53.4	Buckwheat Pancake Mix	<i>Bipolaris micropus</i>	POS
DuPont	FS48.1	Water Crackers	<i>Bipolaris micropus</i>	POS
DuPont	FS49.1	Raisins	<i>Bipolaris micropus</i>	POS
DuPont	FS12.1	Rolled Oats	<i>Bipolaris panici-milacei</i>	POS
DuPont	FS31.2	Three Cheese Biscuit Mix	<i>Bipolaris panici-milacei</i>	POS
DuPont	FS16.1	Dried Basil & Tomato	<i>Candida krissii</i>	POS
DuPont	FS14.1	Crackers	<i>Candida osormensis</i>	POS
DuPont	FS25.1	Thyme	<i>Cryptococcus albidus</i>	POS
DuPont	FS59.2	French Thyme	<i>Cryptococcus albidus</i>	POS
DuPont	FS28.3	Flour - Bread	<i>Cryptococcus alter</i>	POS
DuPont	FS33.1	Cookie Mix	<i>Cryptococcus alter</i>	POS
DuPont	FS50.1	Honey Butter Biscuit Mix	<i>Cryptococcus alter</i>	POS
DuPont	FS3.2	Rosemary	<i>Cryptococcus oeilensis</i>	POS
DuPont	FS6.1	Cereal	<i>Cryptococcus</i> sp	POS
DuPont	FS30.2	Cornbread & Muffin Mix	<i>Cryptococcus</i> sp	POS
DuPont	FS15.1	Cheese	<i>Debaromyces hansenii hansenii</i>	POS
DuPont	FS17.1	Cheese	<i>Debaromyces hansenii hansenii</i>	POS
DuPont	FS18.6	Whole Wheat Flour	<i>Emericella nidulans</i>	POS
DuPont	FS1.1	Oregano	<i>Eurotium rubrum</i>	POS
DuPont	FS52.1	Gingerbread Mix	<i>Fusarium gramnearum</i>	POS
DuPont	FS8.1	Waffle Mix	<i>Fusarium proliferatum</i> var. <i>proliferatum</i>	POS
DuPont	FS24.1	Cornmeal Yellow	<i>Fusarium proliferatum</i> var. <i>proliferatum</i>	POS
DuPont	FS40.4	Blueberry Muffin Mix	<i>Mycosphaerella aronici</i>	POS
DuPont	FS54.1	Gluten Free Flour	<i>Mycosphaerella aronici</i>	POS
DuPont	FS57.1	Dill	<i>Mycosphaerella aronici</i>	POS
DuPont	FS29.2	Unbleached Flour	<i>Penicillium camembertii</i>	POS
DuPont	FS30.1	Cornbread & Muffin Mix	<i>Penicillium camembertii</i>	POS
DuPont	FS45.1	Flaxseed Meal	<i>Penicillium camembertii</i>	POS
DuPont	FS44.1	Oregano	<i>Penicillium chrysogenum</i>	POS
DuPont	FS59.3	French Thyme	<i>Penicillium chrysogenum</i>	POS

DuPont	FS10.1	Soy flour	<i>Penicillium commune</i>	POS
DuPont	FS66.1	Shelled Pecan Halves	<i>Penicillium commune</i>	POS
DuPont	FS62.1	Truffle Mix	<i>Rhodotorula graminis</i>	POS
DuPont	FS32.1	Chocolate Chip Cookie Mix	<i>Saccharomyces cerevisiae</i>	POS

Table 2. BAX® system exclusivity (Yeast and Mold assay) (1)

Strain ID	Source	ID Species	BAX Result
ATCC19433	type strain	<i>Enterococcus faecalis</i>	Negative
ATCC13883	type strain	<i>Klebsiella pneumoniae</i>	Negative
ATCC13047	type strain clinical	<i>Enterobacter cloacae</i>	Negative
DD379	unknown	<i>Bacillus subtilis</i>	Negative
ATCC15313	rabbit	<i>Listeria monocytogenes</i>	Negative
ATCC6539	clinical	<i>Salmonella typhi</i>	Negative
ATCC9610	clinical	<i>Yersinia enterocolitica</i>	Negative
ATCC27664	unknown	<i>Staphylococcus aureus</i>	Negative
ATCC12706	cured meat	<i>Lactobacillus viridescens</i>	Negative
ATCC43889	human clinical	<i>Escherichia coli</i>	Negative
ATCC29930	human clinical	<i>Shigella sonnei</i>	Negative
7AS	poultry	<i>Proteus mirabilis</i>	Negative
ATCC13337	unknown	<i>Hafnia alvei</i>	Negative
DD2416	plant material	<i>Serratia liquefaciens</i>	Negative
ATCC43864	unknown	<i>Citrobacter freundii</i>	Negative
ATCC35654	unknown	<i>Aeromonas species</i>	Negative
ATCC33379	dead puffin	<i>Edwardsiella hoshinae</i>	Negative
DD3064	unknown	<i>Morganella morganii</i>	Negative
ATCC27853	human clinical	<i>Pseudomonas aeruginosa</i>	Negative
ATCC4356	human	<i>Lactobacillus acidophilus</i>	Negative
TD4523	unknown	<i>Vibrio tubiashii</i>	Negative
DD5425	Cheese	<i>Listeria monocytogenes</i>	Negative
DD3019	unknown	<i>Salmonella dublin</i>	Negative
DD3411	hamburger	<i>Listeria welshimeri</i>	Negative
DD3327	cheese	<i>Listeria seeligeri</i>	Negative
DD1979	hamburger	<i>Escherichia coli</i> O157:H7	Negative
DD9775	human clinical	<i>Staphylococcus aureus</i>	Negative
TD3136	unknown	<i>Vibrio mimicus</i>	Negative
DD1144	cheese	<i>Listeria monocytogenes</i>	Negative
ATCC8739	unknown	<i>Escherichia coli</i>	Negative

**Table 5 Method performance for the detection of Yeast and Mold from yogurt, milk-based infant formula, and corn starch by the BAX<sup>®</sup> System. (1)**

Matrix and Organism	Target Level (cfu/g)	Actual Level	Total Samples (each treatment)	BAX <sup>®</sup> Presumptive (# > threshold)	BAX <sup>®</sup> Confirmed <sup>1</sup>	Reference Method (# > threshold )	Sensitivity % <sup>2</sup>	Specificity % <sup>3</sup>	False Negative % <sup>4</sup>	False Positive % <sup>5</sup>	X <sup>2</sup> Value <sup>6</sup>
Yogurt <i>A. niger</i>	Aggregate data	-	20	14	NA	14	NA	NA	0	0	0
	> 50	390	5	5	NA	5	NA	NA	0	0	0
	10-50	53	5	5	NA	5	NA	NA	0	0	0
	1-10	12	5	4	NA	4	NA	NA	0	0	0
	0	0	5	0	NA	0	NA	NA	0	0	0
Yogurt (Independent Laboratory) <i>C. albicans</i>	Aggregate data	-	20	12	12	10	100	100	0	0	0.39
	> 50	54	5	5	5	3	100	100	0	0	2.25
	10-50	30	5	4	4	5	100	100	0	0	1.00
	1-10	10	5	3	3	2	100	100	0	0	0.36
	0	0	5	0	0	0	100	100	0	0	0
Powdered Infant Formula – Milk-Based <i>S. cerevisiae</i>	Aggregate data	-	20	14	14	10	100	100	0	0	1.63
	> 50	172	5	5	5	5	100	100	0	0	0
	10-50	47	5	5	5	4	100	100	0	0	1.00
	1-10	7	5	4	4	1	100	100	0	0	3.24
	0	0	5	0	0	0	100	100	0	0	0
Corn Starch <i>P. chrysogenum</i>	Aggregate data	-	20	12	NA	11	NA	NA	0	0	0.10
	> 50	191	5	5	NA	5	NA	NA	0	0	0
	10-50	68	5	5	NA	5	NA	NA	0	0	0
	1-10	2	5	2	NA	1	NA	NA	0	0	0.42
	0	0	5	0	NA	0	NA	NA	0	0	0

<sup>1</sup> Fungi which grow as yeasts are able to be recovered from disrupter tubes. Since Fungi which grow as molds in solution grow as hyphal masses, no confirmation is possible.

<sup>2</sup> Sensitivity is calculated as 100% – false negative rate

<sup>3</sup> Specificity is calculated as 100% – false positive rate

<sup>4</sup> False negative rate is calculated as BAX (-) Ref (+) BAX enrichment samples / Tot Ref (+) samples

<sup>5</sup> False positive rate is calculated as BAX (+) Ref (-) / Tot Ref (-) samples

<sup>6</sup> Mantel-Haenszel Chi-Square test statistic calculated for un-paired samples

$$X^2 = \frac{(n-1)(ad-bc)^2}{\dots}$$

#### DISCUSSION OF MODIFICATION APPROVED JULY 2013 (4)

The results of the method comparison between the digital DuPont™ Thermal Block and the analog heating/cooling blocks are provided in Table 3 below. For all sample types and BAX® System assays evaluated, the results for samples processed with the DuPont™ Thermal Block and the original heating/cooling blocks demonstrated no significant statistical difference as indicated by POD analysis (the 95% confidence interval of the dPOD included 0 in all cases). For additional figures illustrating the target responses of the individual BAX® System assays, see Appendix B.

All 544 samples inoculated with high levels of the target organism returned positive results with the BAX® System using both sample preparation methods, and all 544 samples tested as unspiked negative controls returned negative results with the BAX® System using both sample preparation methods with the exception of the non-inoculated poultry rinse samples that gave positive results for *Campylobacter jejuni*, while giving negative results for the target *C. coli* that was spiked into the test samples. For samples inoculated with low levels of target organism, the two preparation methods returned identical results for 530 of the 544 samples tested. The results for the 14 samples that returned different results between the two methods are summarized in Table 3. Because the low-spike samples were tested at levels near the limit of detection for the BAX® System assays, some discrepancy between the two methods is expected based on factors such as the distribution of the target organism within the sample.

Analysis of target response in cases where a fractional response was not generated, while demonstrating significant differences from a statistical standpoint in some cases, were not indicative of any difference that would likely be significant in a practical sense. All average differences were less than 10% for melt curve based target peak height, or target peak area to target plus internal control peak areas (for the Yeast and Mold assay) and all average C<sub>t</sub> differences were less than 1 for all real time assay.

Because the difference in results between the two methods demonstrated no significant statistical difference as indicated by the POD analysis, these differences are found to be acceptable in this study for demonstrating equivalency between the two methods.

**Table 3. BAX® System Results – DuPont™ Thermal Block vs. Analog Heating/Cooling Blocks (4)**

BAX® System Assay	Sample Type	Spike Level	Test Portions	Heating/Cooling Blocks			DuPont™ Thermal Block			dPOD <sub>TB</sub> <sup>d</sup>	95% CI <sup>e</sup>
				X <sup>a</sup>	POD <sub>2B</sub> <sup>b</sup>	95% CI <sup>e</sup>	X <sup>a</sup>	POD <sub>TB</sub> <sup>c</sup>	95% CI <sup>e</sup>		
										0	-0.18, 0.18
Yeast and Mold	Yogurt	Low	17	12	0.71	0.44, 0.87	14	0.82	0.59, 0.94	-0.12	-.038, 0.17
		Control	17	0	0	0, 0.19	0	0	0, 0.19	0	-0.19, 0.19
		High	17	17	1	0.82, 1.0	17	1	0.82, 1.0	0	-0.18, 0.18
	Cornstarch	Low	17	7	0.41	0.22, 0.64	6	0.35	0.17, 0.59	0.059	-0.24, 0.35
		Control	17	0	0	0, 0.19	0	0	0, 0.19	0	-0.19, 0.19
		High	17	17	1	0.82, 1.0	17	1	0.82, 1.0	0	-0.18, 0.18
	Powdered infant formula	Low	17	17	1	0.82, 1.0	17	1	0.82, 1.0	0	-0.18, 0.18
		Control	17	0	0	0, 0.19	0	0	0, 0.19	0	-0.19, 0.19

#### REFERENCES CITED

1. Burns, Frank, Andaloro, Bridget, Fleck, Lois, Davis, Eugene, Tice, George, and Wallace, Morgan., Evaluation of the DuPont™ Bax® System Test Kit for Detection of Yeast and Mold in Yogurt, Corn Starch, and Milk-based Powdered Infant Formula, AOAC® *Performance Tested*<sup>SM</sup> certification number 010902.
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4. Hoelzer, S., Wallace, F.M., Fleck, L, DiCosimo, D., Harris, J., Andaloro, B., Farnum, A., Davis, E., and Rohrbeck, J., Evaluation of the DuPont™ Thermal Block for Automated Sample Lysis with the BAX® System Method (Minor Modification), AOAC® *Performance Tested*<sup>SM</sup> certification number 010902. Approved July 2013.