TotalTox™ Aflatoxin

Catalog AQ 309 BG *Part #12376*

Matrices and Detection Ranges:

Matrix Group ID	Protocol	Results reported in the range of:	Limit of Detection (LOD)*	Highest Approved Level*
AF MG1 - Corn	Base Range	0 - 30 ppb	2.7 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
	Dilution B	0 - >300 ppb	100 ppb	300 ppb
AF MG2 - DDGS	Base Range	0 - 30 ppb	3.0 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
	Dilution B	0 - >300 ppb	100 ppb	300 ppb
AF MG4 - Sorghum	Base Range	0 - 30 ppb	3.0 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
	Dilution B	0 - >300 ppb	100 ppb	300 ppb
AF MG5 – Masa flour	Base Range only	0 - 30 ppb	2.7 ppb	30 ppb
AF MG6 – Corn flour	Base Range only	0 - 30 ppb	2.7 ppb	30 ppb
AF MG7 – Brown rice	Base Range	0 - 30 ppb	2.7 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
AF MG8 – Wheat	Base Range	0 - 30 ppb	2.7 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
AF MG9 – Corn (High sensitivity)	Base Range only	0 - 10 ppb	1.5 ppb	10 ppb
AF MG10 – Corn Germ	Base Range	0 - 30 ppb	2.5 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
	Dilution B	0 - >300 ppb	100 ppb	300 ppb
AF MG12 – Corn Gluten Meal	Base Range	0 - 30 ppb	2.5 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
AF MG13 – Corn Gluten Feed	Base Range	0 - 50 ppb	2.7 ppb	50 ppb
	Dilution A	0 - >200 ppb	50 ppb	200 ppb
AF MG15 – Soybean Meal	Base Range	0 - 30 ppb	2.5 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
AF MG17 – Cottonseed (delinted)	Base Range	0 - 30 ppb	2.5 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
AF MG18 – Barley	Base Range	0 - 30 ppb	2.5 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
	Dilution B	0 - >300 ppb	100 ppb	300 ppb
AF MG21 – Rye	Base Range	0 - 30 ppb	2.5 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
	Dilution B	0 - >300 ppb	100 ppb	300 ppb
AF MG22 – Oats	Base Range	0 - 30 ppb	2.7 ppb	30 ppb
	Dilution A	0 - >100 ppb	30 ppb	100 ppb
AF MG26 – Corn Fermented Protein	Base Range	0-20 ppb	3 ppb	20 ppb
AF MG27 – Peanut Seed	Base Range	0 - 30 ppb	2 ppb	30 ppb
AF MG28 – Peanut Oil	Base Range	0 - 30 ppb	4 ppb	30 ppb
AF MG30 – Peanut Hull	Base Range	0 - 30 ppb	10 ppb	30 ppb
AF MG40 – Custom Corn	Base Range	0 - 41ppb	2.7ppb	30ppb

**Do not assume accuracy for results reported below the protocol's LOD or above the protocol's highest approved level*

Scan to View Verified Matrices:

Important Notes:

- This kit has been certified as a *Performance Tested Method*SM, #012104 by the AOAC Research Institute for use in corn.
- Before testing, the enclosed Multi-Matrix Barcode Card (MMBC) must be scanned just once for each kit lot to upload information to the QuickScan
- QuickScan Software Version 5.11 or later is required
- **Verified Matrix** is a customer-specific sample type that has been rapidly and reliably tested using EnviroLogix strips through our agile Matrix Addition process—delivering fit-for-purpose protocol guidance where full validation is not required. Because the samples used in verification may not represent global sample variation, Verified Matrices are not covered under the EnviroLogix limited warranty. We recommend evaluating performance using your own samples prior to incorporating a Verified Matrix into your operations.
- **Validated Matrix** are listed in the table on page 1 and are covered under the EnviroLogix limited warranty.

PERFORMANCE TESTED AOAC RESEARCH INSTITUTE LICENSE NUMBER 012104

A Summary Guide for testing is provided on Page 15-19. More details for each step in the process are described below and are important for achieving optimal, accurate results.

Matrices

Note: Scanning the Multi-Matrix Barcode Card once per kit lot is required. The QuickScan software will prompt users to select a Matrix Group (MG) before proceeding to the result screen. **If you only plan to test matrices within the MG1 group (Corn), scan the side of the MMBC card that only has the MG1 barcode. This allows the software to skip the Matrix Group selection step.**		
▪ Corn, Sorghum, Brown rice, Wheat, Barley, Oats	EB17 Buffer Extraction	**SET A** PROCEDURE: PAGE 6
▪ DDGS, Corn germ, Corn gluten meal, Corn high sensitivity, Rye, Soybean Meal, Cottonseed, Corn Fermented Protein	50% Ethanol Extraction	**SET B** PROCEDURE: PAGE 7
▪ Masa flour, Corn flour	EB17 Buffer Special Extraction	**SET C** PROCEDURE: PAGE 8
▪ Corn Gluten Feed	84% Acetonitrile	**SET D** PROCEDURE: PAGE 9
▪ Peanut Seed, Peanut Oil, Peanut Hull	Salt Water & 80% Ethanol Mix	**SET E** PROCEDURE: PAGE 10

Intended Use

TotalTox Aflatoxin is designed to quickly provide quantitative results for the presence of total aflatoxins. Please refer to Matrix Groups table on page 1 for the Limit of Detection (LOD) and Assay Range(s) for each matrix.

Contents of Kit:

- 50 TotalTox Strips packed in a moisture-resistant canister
- 50 EB17 dissolvable pouches (1 pkt per 25g sample [per 10g sample for flour matrices])
- 50 reaction tubes
- 100 pipette tips (1-200 µL)
- DB5 Buffer
- Multi-Matrix Barcode Card - kit lot specific

Items Not Provided:

- QuickScan System*
- Incubator (base + block)*
- Bunn grinder or equivalent
- 20-mesh screen (available through Seedburo or other vendor)
- Digital scale for weighing samples
- Extraction cups with lids* or other suitable vessels for sample extraction

***Available Accessories:**

Item	*Catalog No.*	*Part #*
QuickScan™ System	ACC 351	13065
5 oz Sample cups/lids	20-0047	10167
Case of 500; for extracting samples up to 30g. Note: if using these cups with an acetonitrile extraction, they may leak; seal covers onto cups with Parafilm or similar sealant		
10 oz Sample cups/lids	20-0129	12383
Case of 100; for extracting samples >30g		
Graduated cylinder (100 mL)	ACC 068	11207
MiniPet pipette (100 µL)	ACC 041	11202
Coffee filters (100)	ACC 083	11434
Centrifugation Set: *Disposables for 50 tests*	ACC 010	11214
Microcentrifuge	ACC 064 E	11204
50g Sample Extraction Set	ACC 099	12409
Additional EB17 dissolvable pouches and sample cups (100)		
50% Ethanol	ACC E26902-1X	11156

- Graduated cylinder*
- Orbital/rotary shaker
- Pipette to deliver 100 µL*
- Pipette to deliver larger volumes (if desired) for dilutions*
- Ethanol 50%* (Reagent Alcohol, for some matrices)
- Ethanol 80% (Reagent Alcohol, for some matrices)
- Table Salt (for some matrices)
- Acetonitrile 84% (for some matrices)
- Timer
- Scissors
- Distilled, deionized or bottled water

DB5 Buffer	KR-266-7	11665
Add'l Buffer needed for matrices requiring > 100 µL per Strip		
Dilution Set:	ACC 103	12500
Blue dilution tubes and EB17 dissolvable pouches for 50 tests		
Dilution Tubes:	ACC 098	12236
Blue dilution tubes for non-EB17 dilution, 50		
1 mL adjustable pipette	ACC 1303-PRO-1000	11964
Pipette tips for 1 mL pipette (50)	20-0127	12243
Incubator	ACC BSH301	12458

How the Test Works

A composite sample is collected, ground, and extracted to solubilize any aflatoxin present. The extract is further diluted into correct buffer before being run on the TotalTox test strip. Each TotalTox Strip has an absorbent pad at each end. The sample extract travels up the test strip and is absorbed into the larger pad at the top of the strip. At the end of the reaction time, the strip is cut at the top of the arrow tape, the bottom pads are discarded, and the strip is inserted into the QuickScan reader to obtain quantitative results.

Matrix specific extractions and analysis protocols are chosen for accuracy and precision. Each matrix is assigned to a Matrix Group (MG). Each MG has a common standard curve, Limit of Detection (LOD), and maximum reported value. When the user selects the MG during testing, the QuickScan System software reads the test strip, retrieves information encoded in the strip's barcode and on the Multi-Matrix Barcode Card (MMBC), and uses the appropriate curve to obtain a result for the matrix being tested.

Precautions – Read First!

SAFETY

1. **Disposal of aflatoxin-contaminated materials.** Follow your facility's safety procedures for disposal of samples and extracts potentially containing or known to contain aflatoxin.
2. **EB17 Dissolvable Pouches contain powder that is flammable and an irritant**. See attached Safety Data Sheet.
   a. If the pouches are damaged, avoid inhaling powder or contact with the skin, eyes, or clothing. Wear personal protective equipment including safety glasses, gloves, mask and lab coat when handling. Keep powder away from heat, sparks and open flame.
   b. Observe any applicable regulations when disposing of extracted samples and kit reagents.
   c. Do not treat either the EB17 extracts or the EB17 extraction labware with bleach; the Extraction Pouch powder is incompatible with strong oxidizers.
3. **Ethanol is flammable and toxic**.
   a. Avoid inhaling vapors or contact with the skin, eyes, or clothing. Wear personal protective equipment including safety glasses, nitrile gloves (not latex), a vapor mask and a lab coat when handling. Keep containers tightly closed and away from heat, sparks and open flame.
   b. Observe any applicable regulations when disposing of samples and kit reagents.
4. **Acetonitrile may leak.**
   a. Use caution with extraction cups, assure a tight seal.

GENERAL

1. The intended user should read the entire product instructions, including all safety precautions, before use of this kit. The operator should be capable of using common testing equipment including an appropriate grinder or mill, pipettes, graduated cylinders, etc. Training on use of this product and the QuickScan System is available from EnviroLogix.
2. Test strip canisters are desiccated; before opening canisters, ensure they have warmed to room temperature. After removing test strips, reseal the canister immediately. Avoid bending test strips.
3. Ensure all samples, extraction reagents (including water), test strips, and Buffer are at room temperature before use.
4. As soon as water is added to the sample containing dissolvable EB17 pouches, the sample must be shaken immediately in a hard-walled container to prevent the extraction powder from clumping and not going into solution.
5. Test extracts within 5 minutes of diluting with Buffer for optimal performance.

b. To avoid leaks when using Sample Cups (20-0047), wrap Parafilm® or similar product around the outside cup threads in the direction of the threads before capping.	

Sample Preparation

1. Collect a composite sample according to your own sampling plan or FGIS guidelines. Consult USDA/AMS/FGIS/GIPSA reference documents to help design a plan that fits your needs. Contact Technical Support for more information.
2. Grind samples to provide a consistency such that 95% passes through a 20-mesh sieve. **Note: No need to further grind masa flour or corn flour. Note: Wheat should be ground such that 70-80% passes through a 20-mesh sieve**.
3. Mix ground material thoroughly before sub-sampling, to minimize variability.
4. Weigh 25g or 50g samples (or 10g flour or corn fermented protein samples) into containers that will allow enough head room for the liquid to move forcefully when shaken vigorously. EB17-extracted matrices require **hard-walled** containers.

Sample Clarification

Depending on the sample matrix, there may be multiple acceptable methods for removing particulate from the extract.

Centrifugation	Filtration
1. Fill a microcentrifuge tube with extract. 2. Centrifuge for the specified time at 2000 x *g* (rcf, ***not rpm***). 3. Use the top layer of extract for all matrices except flour; there may be a white floating layer above that extract that should not be used for testing.	1. Add an approved coffee filter (e.g. BUNN Part #BUNBCF100B) to a clean vessel. 2. Pour extract into filter. Wait no more than 2 min. 3. Pull back the filter to access the filtered extract.

Testing in Base Range

Refer to Matrix Group instructions (pages 6-10) or Summary Table (pages 15-19) for base range testing.

Range with Dilution

If, after running and reading the test, the initial result is greater than the upper end of the Base Range, samples can be diluted and retested to extend quantitation (see table on page 1). Combine extract with the appropriate Dilution Reagent to create a diluted extract. Measure carefully and mix well.

Dilution Reagents

Corn/MG1, Sorghum/MG4, Brown rice/MG7, Wheat/MG8, Barley/MG18, Oats/MG22
EB17 Dilution Solution: Dissolve 1 EB17 pouch in 150 mL of water and mix well; Dilution Solution mixture will appear cloudy. Label, date, and document the preparation. Dilution Solution can be stored at ambient temperature for 30 days. Thoroughly mix before use.
DDGS/MG2, Corn Germ /MG10; Corn Gluten Meal/MG12, Rye/MG21
50% Ethanol
Corn Gluten Feed/MG13
84% Acetonitrile

Dilution A: For testing samples at levels greater than 30 ppb (> 30 ppb in Base Range)

A1. Mix 400 µL Dilution Reagent + 100 µL clarified extract in a blue Dilution Tube or other suitable vessel. Save this diluted extract. **Note: For Corn gluten meal, use 300 µL Dilution Reagent; for Corn gluten feed, use 500 µL Dilution Reagent.**

A2. Rerun assay as indicated in Base Range but using diluted extract (see pages 5-7). *Example: for corn, pipette 100 µL DB5 + 100 µL of the diluted extract into a new reaction tube; place tube in 22°C incubator for 2 min^, add a new test strip, and wait 4 minutes for test results.*

A3. In the QuickScan Results Screen, use the dilution tab pull down menu to select Dilution A (1:A). The System will adjust and display the aflatoxin level from diluted samples. Adjusted results are valid in the range of **30-100 ppb**.

Dilution B: For testing samples that read greater than 100 ppb in the Dilution A protocol (after selecting 1:A from the Dilution Tab)

B1. Mix 200 µL Dilution Reagent + 100 µL diluted extract from Step A1 above, in a blue Dilution Tube or other suitable vessel.

B2. Rerun assay as in Step A2 above.

B3. In the QuickScan Results Screen, use the dilution tab pull down menu to select Dilution B (1:B). The System will adjust and display the aflatoxin level from diluted samples. Adjusted results are valid in the range of **100-300 ppb**.

^ The tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F).

Use of the QuickScan System

Detailed instructions for use of the QuickScan System are supplied with each unit, and can also be found at www.envirologix.com/support. The lot-specific Multi-Matrix Barcode Card (MMBC) must be scanned into the system prior to testing. In summary, a strip is inserted into the reader and the strips are read by touching or clicking on the "Read Test" area of the screen. The "Select Matrix Groups" screen will appear if more than one barcode was scanned into the system from the MMBC. Select the group that displays the matrix run. Results are then recorded in an electronic worksheet, allowing each user to report and track data easily.

Kit Storage

This TotalTox Kit should be stored refrigerated. Note the shelf life on the kit box. Prolonged exposure to high temperatures may adversely affect the test results; protect all components from extreme hot or cold temperatures. Do not leave in direct sunlight or in a vehicle. Do not open the desiccated canister until ready to use the strips. Prolonged exposure of the test strips to environmental conditions may adversely affect the test results; protect test strips from environmental conditions by allowing canister acclimate to room temperature before opening and closing canister as soon as test strips are removed.

Cross-reactivity

The following mycotoxins have been tested with this kit and no false positive results occurred at the 200 ppm level: DON (deoxynivalenol), Fumonisin B_1, Ochratoxin A, Zearalenone.

Notes

- This product is currently not applicable for use in testing any other crops beyond those specified in this Product Insert.
- This assay is calibrated against reference samples supplied by Trilogy Analytical Laboratory, Washington, MO, and other vendors and associated HPLC data.
- As with all screening tests, it is recommended that results be confirmed by an alternate method when necessary.
- The assay has been optimized for use with the protocols provided in the kit. Deviation from these protocols may invalidate the results of the test. Room temperature components, proper and thorough mixing, timing, and accurate pipetting are essential to accurate results.
- The results generated through the proper use of this diagnostic tool reflect the condition of the working sample directly tested. Extrapolation as to the condition of the originating lot, from which the working sample was derived, should be based on sound sampling procedures and statistical calculations which address random sampling effects, non-random sampling effects and assay system uncertainty. A negative result obtained when properly testing the working sample does not necessarily mean the originating lot is entirely negative for the analyte in question.

Set A: EB17-Extracted Matrices

- Review Sample Preparation on page 3 for grinding consistency and notes. Wheat requires a unique grind quality (also noted below).
- Turn on the incubator and set to 22°C for a minimum of 10 minutes before testing. Ensure that the temperature display has stabilized and indicates "OK" before starting the assay. All reagents should be at room temperature.
- Use distilled, deionized, or flat (non-carbonated) bottled water. Drinkable (potable) tap water may be used, with customer validation of water supply. Contact Technical Support to purchase a control set and protocol that can be used to verify your water supply.
- If testing 50-gram samples, additional EB17 pouches are required (50g Sample Set, Catalog No. ACC-099).

Sample Extraction:

Corn, Sorghum, Brown Rice (95% through 20-mesh)	25g	Add 1 EB17 pouch to sample Add 75 mL water	Wet sample immediately by vigorously shaking for 10 seconds.* If needed, shake the sample against the palm of your other hand or a hard surface to loosen up any dry sample areas. **Immediately** proceed to next shaking step.
	50g	Add 2 EB17 pouches to sample Add 150 mL water	
Wheat (70-80% through 20-mesh)	25g only	Add 1 EB17 pouch to sample Add 75 mL water	
Barley, Oats (95% through 20-mesh)			

***Shake:** choose mechanical shaker or hand shaking
(sorghum: mechanical shaker only)

Shaker Table: mix at highest speed (≥ 300rpm) for 1 minute	***By Hand:*** shake vigorously for 2 minutes

Clarify Extract: choose centrifuge or filter
(sorghum: filter only; rice, wheat, barley, oats: centrifuge only)

Centrifuge: 30 seconds at 2000 x *g* (rcf, ***not rpm***)	***Filter:*** Pour through approved coffee filter (ACC 083); wait no more than 2 min

Combine Buffer and Extract, then Run Test Strips

1. Add DB5 to the Reaction Tube (discard tip).
2. Add clarified extract to the Reaction Tube.
3. Mix thoroughly with extract pipette tip, discard tip.
4. Place the Reaction Tube in the 22°C incubator; equilibrate for 2 minutes. **Note: tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F).**
5. Add test strip to tube, arrows down, wait 4 minutes (run time).
6. Immediately cut strips at the top of the arrow tape (discard bottom pads).
7. Insert strip into QuickScan Reader.
8. When prompted, select Matrix Group for the matrix being tested.

TIPS!

Get Complete Extraction
- Fully wet samples before the next shaking step
- Avoid delay between water addition and shaking
- Assure liquid is moving forcefully though the sample while shaking

For Best Performance
- Pipette up and down while mixing
- Read strips promptly after run time

Avoid Contamination
- Use a new Reaction Tube per test
- Keep DB5 capped, when possible
- Use new pipette tips for each step

TABLE A: EB17-Extracted Matrix Summary (Base Range)

Matrix	LOD (ppb)	First	Second	Third	Shake	Clarify	Reaction Tube	Run
Corn	2.7	25g	1 x EB17	75mL water	1min shaker* *or* 2min by hand	Filter* *or* Centrifuge*	100 µL DB5 + 100 µL extract	4min (5min: barley, oats)
Sorghum	3.0	50g (corn, sorg., rice only)	2 x EB17	150mL water				
Brown Rice	2.7							
Wheat	2.7							
Barley	2.5							
Oats	3.0							

**Sorghum: Mechanical shaker only; filter only; Rice, wheat, barley, oats: centrifuge only*

SET B: Ethanol-extracted Matrices

- Review Sample Preparation on page 3 for grinding consistency and notes.
- Turn on the incubator and set to 22°C for a minimum of 10 minutes before testing. Ensure that the temperature display has stabilized and indicates "OK" before starting the assay. All reagents should be at room temperature.

Sample Extraction:

Matrix	Ratio	25g Samples	50g Samples
DDGS, Corn germ, Corn gluten meal, Rye, Cottonseed (delinted)	4x 50% ethanol	Add 100 mL to sample	Add 200 mL to sample
Soybean Meal	2x 50% ethanol	Add 50 mL to sample	Add 100 mL to sample
Corn High Sensitivity	1.6x 50% ethanol	Add 40 mL to sample	Add 80 mL to sample
Corn Fermented Protein	4x 50% ethanol	10 g sample: 40 mL 50% ethanol	

Shake: choose mechanical shaker or hand shaking
(rye: mechanical only)

Shaker Table: mix at highest speed for 1 minute	***By Hand:*** shake vigorously for 2 minutes

Clarify Extract: Centrifuge for 1 minute at 2000 x *g* (rcf, ***not rpm***) or filter through approved coffee filter (ACC-083) and wait no more than 2 min (filter method available for DDGS only).

Combine Buffer and Extract, then Run Test Strips

1. Add DB5 to the Reaction Tube (discard tip).
2. Add clarified extract to the Reaction Tube.
3. Mix thoroughly with extract pipette tip, discard tip.
4. Place the Reaction Tube in the 22°C incubator; equilibrate for 2 minutes. **Note: tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F).**
5. Add test strip to tube, arrows down, wait 5 minutes (run time).
6. Immediately cut strips at the top of the arrow tape (discard bottom pads).
7. Insert strip into QuickScan Reader.
8. When prompted, select Matrix Group for the matrix being tested.

TIPS!

Get Complete Extraction
- Fully wet samples before shaking
- Assure liquid is moving forcefully though the sample while shaking

For Best Performance
- Pipette up and down while mixing
- Read strips promptly after run time

Avoid Contamination
- Use a new Reaction Tube per test
- Keep DB5 capped when possible
- Use new pipette tips for each step

TABLE B: 50% Ethanol-Extracted Matrix Summary (base range)

Matrix	LOD (ppb)	Extractant	Shake	Clarify	Add to Reaction Tube	Run Time
DDGS (MG2)	3.0	4x 50% ethanol	1 min – shaker* or 2 min by hand	Centrifuge 1 min at 2000 x *g* or Filter**	100 µL **DB5** + 100 µL extract	5 min
Corn Germ (MG10), Rye (MG21)	2.5					
Corn Gluten Meal (MG12)	3.5					
Cottonseed (delinted) (MG17)	2.5					
Soybean Meal (MG15)	2.5	2x 50% ethanol				
Corn High Sensitivity (MG9)	1.5	1.6x 50% ethanol				
Corn Fermented Protein (MG26)	3.0	40 mL 50% ethanol		Centrifuge 1 min at 2000 x *g*		

**Rye: Mechanical shaker only*

***Only DDGS can clarify via centrifuge or filter. Other matrices in Table B must be clarified by centrifuge only.*

Set C: Masa Flour, Corn Flour

- Review Sample Preparation on page 3 for grinding consistency and notes.
- Turn on the incubator and set to 22°C for a minimum of 10 minutes before testing. Ensure that the temperature display has stabilized and indicates "OK" before starting the assay. All reagents should be at room temperature.
- Use distilled, deionized, or flat (non-carbonated) bottled water. Drinkable (potable) tap water may be used, with customer validation of water supply. Contact Technical Support to purchase a control set and protocol that can be used to verify your water supply.

Sample Extraction:

Masa flour, Corn flour	10g	Add 1 EB17 pouch to sample Add 60 mL water	Wet sample immediately, by vigorously shaking for 10 seconds by hand. If needed, shake the sample against the palm of your other hand or a hard surface to loosen up any dry sample areas. **Immediately** proceed to next shaking step.

Shake: choose mechanical shaker or hand shaking

Shaker Table: mix at highest speed (≥ 300rpm) for 1 minute	***By Hand:*** shake vigorously for 2 minutes

Clarify Extract: Clarify **immediately** after shaking; choose centrifuge or filter

Centrifuge: 1 minute at 2000 x *g* (rcf, ***not rpm***); poke through white floating layer (if present) to access extract	***Filter:*** Pour through approved coffee filter (ACC 083); wait no more than 2 min

Combine Buffer and Extract, then Run Test Strips

1. Add DB5 to the Reaction Tube (discard tip).
2. Add clarified extract to the Reaction Tube.
3. Mix thoroughly with extract pipette tip, discard tip.
4. Place the Reaction Tube in the 22°C incubator; equilibrate for 2 minutes. **Note: tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F).**
5. Add test strip to tube, arrows down, wait 4 minutes (run time).
6. Immediately cut strips at the top of the arrow tape (discard bottom pads)
7. Insert strip into QuickScan Reader.
8. When prompted, select Matrix Group for the matrix being tested.

TIPS!

Get Complete Extraction

- Fully wet samples before the next shaking step
- Avoid delay between water addition and shaking
- Assure liquid is moving forcefully though the sample while shaking

For Best Performance

- Pipette up and down while mixing
- Read strips promptly after run time

Avoid Contamination

- Use a new Reaction Tube per test
- Keep DB5 capped, when possible
- Use new pipette tips for each step

TABLE C: Masa/Corn Flour Matrix Summary (base range)

Matrix	LOD (ppb)	First	Second	Third	Shake	Clarify	Reaction Tube	Run
Masa, Corn Flour	2.7	10g	1 x EB17	60 mL water	1 min – shaker or 2 min – by hand	Filter or Centri-fuge	100 µL DB5 + 200 µL extract	4 min

Set D: Corn Gluten Feed

- Review Sample Preparation on page 3 for grinding consistency and notes.
- Turn on the incubator and set to 22°C for a minimum of 10 minutes before testing. Ensure that the temperature display has stabilized and indicates "OK" before starting the assay. All reagents should be at room temperature.
- Use distilled, deionized, or flat (non-carbonated) bottled water. Drinkable (potable) tap water may be used, with customer validation of water supply. Contact Technical Support to purchase a control set and protocol that can be used to verify your water supply.

Sample Extraction

Corn Gluten Feed	25g	Add 35 mL 84% Acetonitrile	Tightly close extraction container. Wet sample immediately, by vigorously shaking for 10 seconds by hand. If needed, shake the sample against the palm of your other hand or a hard surface to loosen up any dry sample areas. **Immediately** proceed to next shaking step.

Shake: choose mechanical shaker

Shaker Table: mix at highest speed (≥ 300rpm) for 2 minutes

Clarify Extract: Clarify **immediately** after shaking; choose to settle or centrifuge

Settle: 30 seconds	***Centrifuge:*** 30 seconds at 2000 x *g* (rcf, ***not rpm***);

Combine Buffer and Extract, then Run Test Strips

1. Add DB5 to the Reaction Tube (discard tip).
2. Add clarified extract to the Reaction Tube.
3. Mix thoroughly with extract pipette tip, discard tip
4. Place the Reaction Tube in the 22°C incubator; equilibrate for 2 minutes. **Note: tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F).**
5. Add test strip to tube, arrows down, wait 5 minutes (run time).
6. Immediately cut strips at the top of the arrow tape (discard bottom pads).
7. Insert strip into QuickScan Reader.
8. When prompted, select Matrix Group for the matrix being tested.

TIPS!

Get Complete Extraction
- Make sure to close extraction vessel tightly to prevent solvent leak
- Fully wet samples before the next shaking step
- Assure sludge is moving forcefully in extraction vessel while shaking

For Best Performance
- Pipette up and down while mixing
- Read strips promptly after run time

Avoid Contamination
- Use a new Reaction Tube per test
- Keep DB5 capped, when possible
- Use new pipette tips for each step

TABLE D: Corn Gluten Feed

Matrix	LOD (ppb)	Sample size	Extractant	Shake	Clarify	Reaction Tube	Run
Corn Gluten Feed	2.7	25g	35 mL 84% ACN	2 min – shaker	Settle or centrifuge	175 µL DB5 + 25 µL extract	5 min

SET E: Salt Water & Ethanol Mix-extracted Matrices

- Review Sample Preparation on page 3 for grinding consistency and notes.
- Turn on the incubator and set to 22°C for a minimum of 10 minutes before testing. Ensure that the temperature display has stabilized and indicates "OK" before starting the assay. All reagents should be at room temperature.

Sample Extraction:

Matrix	Salt Water Ratio	20g Samples	25g Samples	50g Samples	Custom Samples
Peanut Seed (MG27) Peanut Oil (MG28)	29.4g table salt per 100 mL bottled water, mix well until salt is completely in solution	1. Add 16 mL salt water to sample 2. Mix well, stir slowly 3. Add 40 mL 80% Ethanol	1. Add 20 mL salt water to sample 2. Mix well, stir slowly 3. Add 50 mL 80% Ethanol	1. Add 40 mL salt water to sample 2. Mix well, stir slowly 3. Add 100 mL 80% Ethanol	1. Add 0.8 mL/g sample salt water to sample 2. Mix well, stir slowly 3. Add 2 mL/g sample 80% Ethanol
Peanut Hull (MG30		1. Add 25 mL salt water to sample 2. Cover and shake sample until fully wetted (approx. 15 sec) 3. Tap cup on table to remove any dry spots, if necessary 4. Add 50 mL 80% Ethanol	n/a	n/a	n/a

Shake: choose mechanical shaker <u>or</u> hand shaking. Vigorously shake until the sample is fully wetted and no sample is stuck to the container walls

Clarify Extract: choose Centrifuge <u>or</u> Filter depending on matrix.

Shaker Table: mix at highest speed for 1 minute	***By Hand:*** shake vigorously for 2 minutes
Centrifuge: Centrifuge for 1 minute at 2000 x *g* (rcf, ***<u>not rpm</u>***), pour supernatant into separate vessel for storage.	***Filter:*** Pour through approved coffee filter (ACC 083); wait no more than 2 min

<u>Only peanut seed and peanut oil are approved for centrifugation. Peanut hulls should be filtered instead.</u>

Combine Buffer and Extract, then Run Test Strips

1. Add **DB5** to the reaction vial (discard tip), depending on matrix:
   - Peanut Seed, Peanut Oil: Add 300 µL **DB5**
   - Peanut Hull: Add 200 µL **DB5**
2. Add 100 µL clarified extract to the reaction vial.
3. Mix thoroughly with extract pipette tip, discard tip.
4. Add test strip to vial, arrows down.
5. Place the Reaction Tube in the 22°C incubator; equilibrate for 2 minutes. **Note: tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F).**
6. Wait 4 minutes (run time).
7. Immediately cut strips at the top of the arrow tape (discard bottom pads).
8. Insert strip, barcode down, into QuickScan reader.
9. When prompted, select Matrix Group for the matrix being tested.

TIPS!

Get Complete Extraction
- Fully wet samples before shaking
- Assure liquid is moving forcefully though the sample while shaking

For Best Performance
- Pipette up and down while mixing
- Do not reuse diluted samples
- Read strips promptly after run time

Avoid Contamination
- Use a new Reaction Tube per test
- Keep DB5 capped when possible
- Use new pipette tips for each step

TABLE E: Salt Water & 80% Ethanol-Extracted Matrix Summary (Base Range)

Matrix	LOD (ppb)	Extractant	Shake	Clarify	Add to Reaction Tube	Run Time
Peanut Seed (MG27)	2	0.8 mL/g sample salt water to sample Mix well, stir slowly 2 mL/g sample 80% Ethanol	1 min – shaker or 2 min by hand	Centrifuge 1 min at 2000 x *g*, pour supernatant into separate vessel	300 µL **DB5** + 100 µL extract	4 min
Peanut Oil (MG28)	4					
Peanut Hull (MG30)	10	Add 25 mL salt water to 20g sample Cover and shake sample until fully wetted Add 50 mL 80% Ethanol	1 min - shaker	Filter (up to 2 mins)	200 µL **DB5** + 100 µL extract	



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Safety data sheet

SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Trade name: Extraction Buffer
Part number: EB17(11198, 12382)

1.2 Relevant identified uses of the substance or mixture and uses advised against: Laboratory chemicals; kit component. Not to be used for purposes other than those specified in product literature.

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: EnviroLogix Inc., 500 Riverside Industrial Pkwy. Portland ME 04103, USA
Information department: Technical Service
1.4 Emergency telephone number: (207) 797-0300

SECTION 2. Hazards identification.

2.1 Classification of the substance or mixture

Classification according to OSHA 29CFR 1910.1200 and Regulation EC 1272/2008 (CLP):

Flammable Solid category 2	H228	Flammable solid
Acute Toxicity Oral 4	H302	Harmful if swallowed
Acute Toxicity Inhalation 4	H322	Harmful if inhaled
Skin Irritation category 2	H315	Causes skin irritation
Serious eye damage category 1	H318	Causes serious eye damage
Specific Target Organ Toxicity Single Exposure category 3	H335	May cause respiratory irritation
Aquatic Toxicity-Chronic category 3	H412	Harmful to the environment with long lasting effects

2.2 Label elements
Labeling according to OSHA 29CFR 1910.1200 and Regulation (EC) 1272/2008

Hazard pictograms :



Signal word: Danger

Hazard statements:

H228	Flammable solid.
H302 + H322	Harmful if swallowed or inhaled
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.

Precautionary statements:

P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection.
P301 + P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.
P304 + P340	IF INHALED: Remove to fresh air and keep comfortable for breathing.
P305 + P351 + P338	If in Eyes: Rinse cautiously with water for several minutes; remove contact lenses if present and easy to do. Continue rinsing.
P403 + P233	Store in a well ventilated place. Keep container tightly closed

2.3 Other hazards: No additional hazards listed

SECTION 3. Composition/information on ingredients.

3.1 Substances: Information not relevant

32 Mixtures: Extraction Reagent Powder (EB17)

Chemical name	CAS No	EC No	Amount (%)	Classification OSHA 29CFR1910.1200
Sodium Lauryl Sulfate	151-21-3	205-788-1	60 to 85	Flam. Sol. 2 H228; Acute Tox. Oral 4 H302; Acute Tox. Inhal. 4 H322; Skin Irrit. 2 H315; Eye Dam. 1 H318; STOT SE 3 Resp. H335; Aquatic Tox. Chronic 3 H412;
Benzenesulfonic Acid, 4 C10 –C13 sec-Alkyl Derivatives	85536-14-7	287-494-3	1.5 to 2	Acute Tox. 4 H302; Skin Corr. 1C H314; Aquatic Tox. Chronic 3 H412

SECTION 4. First aid measures.

4.1 Description of first aid measures

After inhalation ..... If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

After skin contact ..... Flush skin with water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse.

After eye contact ..... Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation develops.

After swallowing ..... Do NOT induce vomiting unless directed to do so by medical personnel. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed Difficulty breathing, Skin irritation, Eye irritation
Do NOT induce vomiting unless directed to do so by medical personnel. If large quantities of this material are swallowed, call a physician immediately.

4.3 Indication of any immediate medical attention and special treatment needed. No special treatment is required

SECTION 5. Firefighting measures.

5.1 Extinguishing media
Suitable extinguishing agents: SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

5.2 Special hazards arising from the substance or mixture : When heated to decomposition it emits toxic fumes of sulfur oxides, and sodium oxide.

5.3 Advice for firefighters
Protective equipment: Wear appropriate PPE for fire conditions including self-contained breathing apparatus for firefighting if necessary. Use water spray to cool unopened containers.

SECTION 6. Accidental release measures.

6.1 Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Assure adequate ventilation. Remove all sources of ignition. Evacuate personnel to a safe area. Avoid breathing dust.

6.2 Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

6.3 Methods and material for containment and clean up: Sweep up and shovel. Prevent entry into sewers, dike if needed. Eliminate all ignition sources. Call for assistance on disposal.
Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

6.4 Reference to other sections: For safe handling refer to Section 7. For information on PPE refer to Section 8. For disposal, refer to Section 13.

SECTION 7. Handling and storage.

7.1 Precautions for safe handling: Keep away from heat. Keep away from sources of ignition. Prevent electrostatic buildup. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

7.2 Conditions for safe storage, including any incompatibilities: Keep away from incompatibles such as oxidizing agents.
Keep container tightly closed. Keep container in a cool, well-ventilated area.

7.3 Specific end use(s): Besides the uses described in Section 1.2 there are no other specific uses

SECTION 8. Exposure controls/personal protection.

8.1 Exposure controls
Additional information about design of technical systems: None required

Exposure limits
Components with limit values that require monitoring at the workplace:

Chemical	Exposure Limits
Sodium Lauryl Sulfate	**OSHA** Observe limits for particulate not otherwise regulated: 15 mg/m3 total dust, 5 mg/m³ respirable fraction (OSHA PEL) 10 mg/ m³ inhalable particulate, 3 mg/m³ respirable particulate. (ACGIH TLV) **EH40/2005** Inhalable dust: 10mg/m³; Respirable dust: 4mg/m³

Exposure controls - Engineering Controls: Facilities using or storing this material should be equipped with an eyewash and safety shower. Provide local exhaust or general dilution ventilation.

Personal protective equipment
Breathing equipment..... Appropriate respiratory protection should be determined according to local conditions using risk analysis protocols. An approved disposable air-purifying particulate respirator may be used as a backup to engineering controls. Always use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Protection of hands..... Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

SECTION 12. Ecological information.

12.1 Toxicity: Sodium Lauryl Sulfate
Aquatic toxicity: Note: Aquatic Toxicity of mixture is based on Sodium Lauryl Sulfate;

Aquatic toxicity LC50	Effect dose	Exposure	Species
Acute fish toxicity	10.2-22.8 mg/l	96 hours	Pimephales promelas
Acute daphnia toxicity	1.8 mg/l	48 hours	daphnia magna
Acute algae toxicity	117 mg/l	96 hours	Pseudokirchneriella subcapitata
	53 mg/l	96 hours	Desmodesmus subspicatus
	30-100 mg/l	96 hours	Desmodesmus subspicatus

12.2 Persistence and degradability : Biodegradability Result: 90 % - Readily biodegradable. Ratio BOD/ThBOD 95.9 %

12.3 Bio accumulative potential : Cyprinus carpio (Carp) - 72 h Bioconcentration factor (BCF): 3.9 - 5.3
12.4 Mobility in soil : Not available
12.5 Results of PBT and vPvB assessment: Not available as a chemical safety assessment, not required/not conducted.

12.6 Other adverse effects No others listed.

SECTION 13. Disposal considerations.

Waste treatment methods/ Uncleaned packaging: Dispose of contents and containers in accordance with local, state and federal regulations.

SECTION 14. Transport information.

14.1 UN-Number DOT, ADR, ADN, IMDG, IATA : UN2926
14.2 UN proper shipping name DOT, ADR, ADN, IMDG, IATA : FLAMMABLE SOLID, TOXIC, ORGANIC, N.O.S. (Sodium dodecyl sulfate)
14.3 Transport hazard class(es)
Class (DOT, ADR, ADN, IMDG, IATA): 4.1 (6.1)

14.4Packing group (DOT, ADR, IMDG, IATA): PG111

14.5 Environmental hazards
Marine pollutant: Not applicable.
14.6 Special precautions for user : Not applicable.
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Eye protection..... Safety glasses with side shields; goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Eye and face protection regulations are described by OSHA (US) in 29 CFR 1910.133. Do not wear contact lenses when working with chemicals.

SECTION 9. Physical and chemical properties.

9.1 Information on basic physical and chemical properties	**Extraction Reagent Powder (EB17)– no CAS number**
Appearance:	Solid –Powder, White
Odor:	Odorless
Odor threshold:	not applicable
pH :	9.5 (1% sol/water)
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	No data available
Evaporation rate:	No data available
Flammability(solid, gas):	May be combustible at high temperature
Upper/lower flammability or explosive limits:	No data available
Vapor pressure	No data available
Vapor density:	No data available
Relative density	No data available
Solubility(ies):	Soluble in water
Partition coefficient: n-octanol/water;	No data available
Auto-Ignition Temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing Properties	Not applicable
9.2 Other information	None

SECTION 10. Stability and reactivity.

10.1 Reactivity:	Not self-reactive.
10.2 Chemical stability	Stable under normal temperatures and pressures
10.3 Possibility of hazardous reactions :	Reaction with strong oxidizers may cause fire.
10.4 Conditions to avoid :	Heat, flames, and sparks
10.5 Incompatible materials:	Oxidizing agents (eg bleach).
10.6 Hazardous decomposition products:	Carbon monoxide, carbon dioxide, sulfur oxides, carbon dioxide, nitrogen oxides, silicone Oxides.

SECTION 11. Toxicological information.

Acute effects (toxicity tests):

Sodium lauryl sulfate - 151-21-3		
Acute oral toxicity	LD50= 1200 mg/kg	rat
Acute dermal toxicity	LD50= > 2000 mg/kg	rabbit
Acute inhalation toxicity	LC50= 3900 mg/m3, 1hour	rat

Sensitization: No sensitizing effects known

Additional toxicological information: CMR (carcinogenicity, mutagenicity and toxicity for reproduction) – no CMR effects.

SECTION 15. Regulatory information.

15.1 Safety, health and environmental regulations

HMIS Classification (US).....
Health hazard: 2 , Flammability: 1 , Physical Hazards: 0

NFPA Rating (US) .....
Health hazard: 2 , Fire: 1 , Reactivity Hazard: 0

US Federal Regulations

TSCA	TSCA 8(b) inventory: Sodium lauryl sulfate
Health and Safety Reporting List	
CERCLA	Listed.
SARA Section 302 (Extremely Hazardous Substances)	Not listed
Clean Air Act	Not listed
Clean Water Act	Not listed
OSHA	Not listed

European/International Regulations

European labeling in accordance with EC Directives	This product is on the European Inventory of Existing Commercial Chemical Substances (EINECS No. 205-788-1)
Canada – DSL/NDSL	Listed
Canada – WHMIS	CLASS D-2B: Material causing other toxic effects (TOXIC).
Other	China: Listed on National Inventory. Japan: Listed on National Inventory (ENCS). Korea: Listed on National Inventory (KECI). Philippines: Listed on National Inventory (PICCS). Australia: Listed on AICS.
15.2 Chemical safety assessment	Not carried out.

SECTION 16. Other information.

This information is true based on our present knowledge. However, EnviroLogix makes no representation of its accuracy or completeness. Persons receiving this information must exercise their independent judgment in determining the product's safety and suitability for its intended use. This document shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship
EHS Department
EnviroLogix Inc.

Code Definitions:

H228	Flammable solid.
H302 + H322	Harmful if swallowed or inhaled
H315	Causes skin irritation.
H318	Causes serious eye damage.
H335	May cause respiratory irritation.
H412	Harmful to aquatic life with long lasting effects.
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/ eye protection.
P301 + P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell.
P304 + P340	IF INHALED: Remove to fresh air and keep comfortable for breathing.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes; remove contact lenses if Present and easy to do. Continue rinsing.
P403 + P233	Store in a well ventilated place. Keep container tightly closed

Safety data sheet

SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier
Trade name: **DB 5 Dilution Buffer**
Part number 11150, 11665, 12495 (KR-266)

1.2 Relevant identified uses of the substance or mixture and uses advised against application of the substance / the preparation : Laboratory chemicals; kit component. Not to be used for purposes other than those specified in product literature.

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: EnviroLogix Inc., 500 Riverside Industrial Pkwy. Portland ME 04103, USA
Phone: (207) 797-0300

1.4 Emergency telephone number: (207) 797-0300 Technical Service

SECTION 2. Hazards identification.

2.1 Classification of the substance or mixture

Classification according to 29CFR 1910.1200: Eye Damage Category 1
Aquatic Toxic, Chronic Category 2

2.2 Label elements

Labeling according to 29CFR 1910.1200:

Pictogram: 

Signal word: Warning

Hazard Statements: H318 Causes serious eye damage

H411 Toxic to aquatic life with long lasting effects

Precautionary Statements: P264 Wash hands thoroughly after handling

P280 Wear protective gloves/protective clothing/eye Protection/face protection

P305+P351+P338 IF IN EYES: Rinse cautiously with Water for several minutes. Remove contact lenses If present and easy to do. Continue rinsing.

P337+P313 IF eye irritation persists: Get medical attention/advice

2.3 Other Statements Restricted to professional users

SECTION 3. Composition/information on ingredients.

3.2 Mixture

Chemical name	CAS No	EC No	Classification According to 29CFR 1910.1200	Amount (%)
Sodium Tetraborate Decahydrate	1303-96-4	215-540-4	H360 Rep 1B	< 3 %
p-tertiary Octylphenoxy polyethyl alcohol (Triton X-100)	9002-93-1		H302 Acute Tox. Oral 4 H315 Skin Irrit. 2 H318 Eye Dam. 1 H411 Aquatic Chronic 2	1 %
Surfynol	9014-85-1		H315 Skin irritation 2 H318 Eye damage 1 H335 STOT SE 3	2 %
1,2 Benzisothiazolin-3-one (Proxel- GXL)	2634-33-5	220-120-9	H302 Acute Tox. 4; H315 Skin Irrit. 2 H317 Skin Sens. 1 (C≥ 0.05%) H318 Eye Dam. 1 ; H400 Aquatic Acute 1	0.048 %

SECTION 4. First aid measures.

4.1 Description of first aid measures

After inhalation : In case of inhalation. Remove to fresh air. If not breathing give artificial respiration. Get medical attention immediately.

After skin contact : In case of skin contact. Remove contaminated clothing and shoes immediately. Wash affected area with mild soap or detergent for at least 10 minutes or until no evidence of chemical remains.

After eye contact : In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Lifting eyelids occasionally, until no evidence of chemical remains. Get medical attention immediately.

After swallowing : In case of ingestion, DO NOT Induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed: None

4.3 Indication of any immediate medical attention and special treatment needed: None

SECTION 5. Firefighting measures.

5.1 Extinguishing media: CO_2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture: None

5.3 Advice for firefighters: Wear protective gear appropriate for fire conditions including respiratory protective gear.

SECTION 6. Accidental release measures.

6.1 Personal precautions, protective equipment and emergency procedures: In the case of spilled mixture wear gloves to prevent skin contact. In the case of a large spill, additional protection is recommended.

6.2 Environmental precautions: Do not discharge mixture to sewer system or waterways.

6.3 Methods and material for containment and cleanup: Absorb in paper towel and discard in appropriate waste. Clean with water afterwards. Large spills may be neutralized with dilute solutions of sodium carbonate or calcium oxide.

6.4 References to other sections: For safe handling refer to Section 7. For information on PPE refer to Section 8. For disposal refer to Section 13

SECTION 7. Handling and storage.

7.1 Precautions for safe handling: Practice good chemical hygiene when handling. Avoid contact with eyes, skin, and clothing.

7.2 Conditions for safe storage, including any incompatibilities: Store in tightly closed, non-metal container, in a corrosive compatible area. Prevent direct sunlight and heat. Store in well aired storage rooms.

7.3 Specific end use(s): Apart from the uses mentioned in section 1.2, no other specific uses are stipulated

SECTION Exposure controls/personal protection.

8.1 Exposure limits:

Components with limit values that require monitoring at the workplace:

	EH40/2005	OSHA
Sodium Tetraborate Decahydrate	8 Hr TWA = 5mg/m^3	8 Hr TWA = 10 mg/m^3

8.2 Exposure Controls:

8.2.1Engineering controls: Facilities using this mixture should be equipped with an eyewash and safety shower. Use general or local exhaust ventilation to keep airborne concentrations below permissible exposure limits.

8.2.2 General protective and hygienic measures: The usual precautionary measures should be adhered to when handling chemicals.

Eye Protection: Safety glasses with side shields, goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU). Eye and face protection regulations are described by OSHA (US) in 29CFR1910.133. Do not wear contact lenses when working with chemicals

Hand Protection: Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Breathing Equipment: Appropriate respiratory protection should be determined according to local conditions using risk analysis protocols. An approved disposable air purifying particulate respirator may be used as a backup to engineering controls. Always use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

8.2.3 Environmental exposure controls: Contain spills, do not allow into environment

SECTION 9. Physical and chemical properties.

9.1 Information on basic physical and chemical properties:

a) Appearance:	Clear liquid, colorless to slight yellow.
b) Odor:	None
c) Odor Threshold:	No Data Available
d) pH:	8.6
e) Melting point/freezing point:	No Data Available
f) Boiling point/Boiling range:	No Data Available.
g) Flash point:	Not applicable.
h) Evaporation rate:	No Data Available
i) Flammability (solid, gaseous):	No Data Available
j) Upper/lower flammability or explosive limits:	No Data Available
k) Vapor pressure:	No Data Available
l) Vapor density	No Data Available
m) Relative density:	No Data Available
n) Solubility(ies):	Fully miscible, water.
o) Partition Coefficient: n-Octanol/water:	No Data Available
p) Auto-ignition temperature:	No Data Available
q) Decomposition temperature:	No Data Available
r) Viscosity:	No Data Available
s) Explosive properties:	No Data Available.
t) Oxidizing properties:	No Data Available

9.2 Other information: No further relevant information available.

SECTION 10. Stability and reactivity.

10.1 Reactivity: No data available

10.2 Chemical Stability: Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions: Under normal conditions of storage and use, hazardous reactions will not occur.

10 4 Conditions to avoid: No specific data

10.5 Incompatible materials: No Data Available.

10.6 Hazardous decomposition products: Under normal conditions of storage and use, hazardous decompositions products should not be produced.

SECTION 11. Toxicological information.

Information on Toxicological Effects

Triton X-100

Acute toxicity: Oral LD50 –Rat- 1800mg/kg
Dermal LD50- Rabbit- 8000 mg/kg

Sensitization: No sensitizing effects known

CMR (carcinogenity, mutagenicity and toxicity for reproduction) effects: No CMR effects.

Additional toxicological information: No Additional Information

SECTION 12. Ecological information.

12.1 Toxicity:
Triton X-100 Fish: LC50 Pimephales promelas (fathead minnow) – 8.9mg/l – 96.0 hr
Daphnia: EC50 – Daphnia – 26 mg/l – 48 hr

12.2 Persistence and degradability : No Data Available

12.3 Bio accumulative potential: No Data Available

12.4 Mobility in soil : No Data Available

12.5 Results of PBT and vPvB assessment: Not available as a chemical safety assessment, not required/not conducted.

12.6 Other adverse effects: No Data Available

SECTION 13. Disposal considerations.

Waste treatment methods: Contact a licensed professional waste disposal service to dispose of this material. Disposal of surplus or waste solutions must be in accordance with applicable local, state, and national laws and regulations.

SECTION 14. Transport information.

14.1 UN-Number DOT, ADR, ADN, IMDG, IATA : Not Hazardous for Transport

14.2 UN proper shipping name DOT, ADR, ADN, IMDG, IATA : Not Hazardous for Transport

14.3 Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA): Not Hazardous for Transport

14.4 Packing group (DOT, ADR, IMDG, IATA): Not Hazardous for Transport

14.5 Environmental hazards No environmental hazard.

14.6 Special precautions for user : None

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code: No information available.

SECTION 15. Regulatory information.

15.1 Safety, health, and environmental regulations

US Federal Regulations

OSHA Not a hazardous material

SARA 313 Not listed

US State Regulations

European/International Regulations

European labeling in accordance with EC Directives Not hazardous according to European directives

15.2 Chemical Safety Assessment Not carried out

SECTION 16. Other information.

This information is true based on our present knowledge. However, EnviroLogix makes no representation of its accuracy or completeness. Persons receiving this information must exercise their independent judgment in determining the product's safety and suitability for its intended use. This document shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship

EHS Department
EnviroLogix Inc.

Codes:

H302 Harmful if swallowed **H315** Causes skin irritation **H317** May cause an allergic skin reaction
H318 Causes Serious Eye Damage **H335** May cause respiratory irritation **H411** Toxic to Aquatic Life with Long Lasting Effects

Summary Guide for Approved Matrices								
Approved Matrix	**Add to Sample Extraction Vessel (in this order)**	**Then shake immediately**	**Clarify**	**Run the Base Range Protocol First, followed by Dilution A and Dilution B Protocols, if necessary**	**Pre-mix as noted, then Transfer to Reaction Tube**	**Add Reaction Tube to Incubator Set at 22°C**	**Add Strip for**	**Read in QuickScan: Dilution Tab on the Result Page Should Display**
Corn (MG1) Sorghum (MG4) Brown Rice (MG7) Wheat (MG8) (70-80% through 20-mesh)	1. 25g sample 2. 1 EB17 pouch 3. 75 mL water* 4. Immediately shake vigorously for 10 seconds by hand ---*OR*--- *(excluding wheat)* 1. 50g sample 2. 2 EB17 pouches 3. 150 mL water* 4. Immediately shake vigorously for 10 seconds by hand	1 min highest speed on shaker table or *(excluding sorghum)* 2 min by hand	Filter *(corn, sorghum)* or Centrifuge 30 sec. at 2000 x *g* *(corn, rice, wheat)*	Base Range 0 – 30 ppb	**Pre-Mix** 100 µL DB5 buffer + 100 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	4 min.	1:1 (this is software default)
				Dilution A 30 – 100 ppb	**Pre-Mix** 400 µL Dil'n Sol'n† + 100 µL clarified extract **Transfer** 100 µL of this Pre-Mix and 100 µL DB5	Acclimate tube for 2 min^	4 min.	1:A (this must be selected)
				Dilution B 100 – 300 ppb *(corn, sorghum)*	**Pre-Mix** 200 µL Dil'n Sol'n† + 100 µL pre-mix extract from Dil A **Transfer** 100 µL of this Pre-Mix and 100 µL DB5	Acclimate tube for 2 min^	4 min.	1:B (this must be selected)

Notes:

*Use distilled, deionized, or flat (non-carbonated) bottled water

†Dilution Solution = Mix 1 x EB17 pouch with 150 mL water

^The tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F)

Summary Guide for Approved Matrices (cont.)								
Approved Matrix	**Add to Sample Extraction Vessel (in this order)**	**Then shake immediately**	**Clarify**	**Run the Base Range, then Dilution A and Dilution B Protocols**	**Pre-mix as noted, then Transfer to Reaction Tube**	**Add Reaction Tube to Incubator Set at 22°C**	**Add Strip for**	**Read in QuickScan: Dilution Tab Should Display**
Barley (MG18) Oats (MG22)	1. 25g sample 2. 1 EB17 pouch 3. 75 mL water* 4. Immediately shake vigorously for 10 seconds by hand	1 min highest speed on shaker table	Centrifuge 30 sec. at 2000 x *g*	Base Range 0 – 30 ppb	**Pre-Mix** 100 µL DB5 buffer + 100 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	5 min.	1:1 (this is software default)
				Dilution A 30 – 100 ppb	**Pre-Mix** 400 µL Dil'n Sol'n† + 100 µL clarified extract **Transfer** 100 µL of this Pre-Mix and 100 µL DB5	Acclimate tube for 2 min^	5 min.	1:A (this must be selected)
				Dilution B 100 – 300 ppb *(barley)*	**Pre-Mix** 200 µL Dil'n Sol'n† + 100 µL pre-mix extract from Dil A **Transfer** 100 µL of this Pre-Mix and 100 µL DB5	Acclimate tube for 2 min^	5 min.	1:B (this must be selected)
Masa flour (MG5), Corn flour (MG6)	1. 10g sample 2. 1 EB17 pouch 3. 60 mL water* Immediately shake vigorously for 10 seconds by hand	1 min highest speed on shaker table or 2 min by hand	Immediately Filter or Centrifuge 1 min. at 2000 x *g*	Base Range 0 – 30 ppb	**Pre-Mix** 100 µL DB5 buffer + 200 µL extract in Reaction Tube	Acclimate tube for 2 min^	4 min.	1:1 (this is software default)

Notes:

*Use distilled, deionized, or flat (non-carbonated) bottled water

†Dilution Solution = Mix 1 x EB17 pouch with 150 mL water

^The tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F)

Summary Guide for Approved Matrices (cont.)								
Approved Matrix	**Add to Sample Extraction Vessel (in this order)**	**Then shake immediately**	**Clarify**	**Run the Base Range, then Dilution A and Dilution B Protocols**	**Pre-mix as noted, then Transfer to Reaction Tube**	**Add Reaction Tube to Incubator Set at 22°C**	**Add Strip for**	**Read in QuickScan: Dilution Tab Should Display**
DDGS (MG2) Corn Germ (MG10) Corn Gluten Meal (MG12) Cotton-seed (MG17) Rye (MG21)	1. 25g sample 2. 100 mL 50% ethanol *---OR---* 1. 50g sample 2. 200 mL 50% ethanol	1 min highest speed on shaker table or *(excluding rye)* 2 min by hand	Centrifuge 1 min. at 2000 x *g* or Filter (*DDGS only**)	Base Range 0 – 30 ppb	**Pre-Mix** 100 µL DB5 buffer + 100 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	5 min.	1:1 (this is software default)
				Dilution A 30 – 100 ppb *(DDGS, corn germ, cottonseed, rye)*	**Pre-Mix** 400 µL 50% ethanol + 100 µL clarified extract **Transfer** 100 µL of this Pre-Mix and 100 µL DB5			1:A (this must be selected)
				Dilution A 30 – 100 ppb *(Corn gluten meal)*	**Pre-Mix** 300 µL 50% ethanol + 100 µL clarified extract **Transfer** 100 µL of this Pre-Mix and 100 µL DB5			
				Dilution B 100 – 300 ppb *(DDGS, corn germ, rye)*	**Pre-Mix** 200 µL 50% ethanol + 100 µL pre-mix extract from Dil A **Transfer** 100 µL of this Pre-Mix and 100 µL DB5			1:B (this must be selected)
Corn Fermented Protein (MG26)	1. 10 g sample 2. 40 mL 50% ethanol			Base Range 0 – 20 ppb	**Pre-Mix** 100 µL **DB5** buffer + 100 µL clarified extract in Reaction Tube			1:1 (this is software default)

Notes:

^The tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F)

*Only DDGS can be clarified via the filter method for ethanol-extraction matrices. DDGS can be clarified by either centrifuge or filter.

Summary Guide for Approved Matrices (cont.)								
Approved Matrix	**Add to Sample Extraction Vessel (in this order)**	**Then shake immediately**	**Clarify**	**Run the Base Range, then Dilution A and Dilution B Protocols**	**Pre-mix as noted, then Transfer to Reaction Tube**	**Add Reaction Tube to Incubator Set at 22°C**	**Add Strip for**	**Read in QuickScan: Dilution Tab Should Display**
Soybean Meal (MG15)	1. 25g sample 2. 50 mL 50% ethanol *---OR---* 1. 50g sample 2. 100 mL 50% ethanol	1 min highest speed on shaker table or 2 min by hand	Centrifuge 1 min. at 2000 x *g*	Base Range 0 – 30 ppb	**Pre-Mix** 100 µL DB5 buffer + 100 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	5 min.	1:1 (this is software default)
				Dilution A 30 – 100 ppb	**Pre-Mix** 400 µL 50% ethanol + 100 µL clarified extract **Transfer** 100 µL of this Pre-Mix and 100 µL DB5	Acclimate tube for 2 min^	5 min.	1:A (this must be selected)
Corn High Sensi-tivity (MG9)	1. 25g sample 2. 40 mL 50% ethanol *----OR---* 1. 50g sample 2. 80 mL 50% ethanol	1 min highest speed on shaker table or 2 min by hand	Centrifuge 1 min. at 2000 x *g*	Base Range 0 – 10 ppb	**Pre-Mix** 100 µL DB5 buffer + 100 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	5 min.	1:1 (this is software default)
Corn Gluten Feed (MG13)	1. 25g sample 2. 35 mL 84% acetonitrile*	2 min highest speed on shaker table	Settle 30 sec. or Centrifuge 30 sec. at 2000 x *g*	Base Range 0 – 50 ppb	**Pre-Mix** 175 µL DB5 buffer + 25 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	5 min.	1:1 (this is software default)
				Dilution A 50 – 200 ppb	**Pre-Mix** 500 µL 84% acetonitrile + 100 µL clar. extract **Transfer** 25 µL of this Pre-Mix and 175 µL DB5	Acclimate tube for 2 min^	5 min.	1:A (this must be selected)

Notes: *Acetonitrile may leak when extracting; refer to page 3 for preventative measures.
^The tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F)

Summary Guide for Approved Matrices (cont.)								
Approved Matrix	**Add to Sample Extraction Vessel (in this order)**	**Then shake immediately**	**Clarify**	**Run the Base Range, then Dilution A and Dilution B Protocols**	**Pre-mix as noted, then Transfer to Reaction Tube**	**Add Reaction Tube to Incubator Set at 22°C**	**Add Strip for**	**Read in QuickScan: Dilution Tab Should Display**
Peanut Seed (MG27) Peanut Oil (MG28)	1. 0.8 mL/g sample salt water to sample 2. Vigorously shake until the sample is fully wetted and no sample is stuck to the container walls 3. 2 mL/g sample 80% Ethanol	1 min highest speed on shaker table or 2 min by hand	Centrifuge 1 min. at 2000 x *g*, pour supernatant into separate vessel	Base Range 0 – 30 ppb	**Pre-Mix** 300 µL DB5 buffer + 100 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	4 min.	1:1 (this is software default)
Peanut Hull (MG30)	1. 20g sample 2. Add 25 mL salt water to sample 3. Cover and shake sample until fully wetted (approx. 15 sec) 4. Tap cup on table to remove any dry spots, if necessary 5. Add 50 mL 80% Ethanol	1 min highest speed on shaker table	Filter	Base Range 0 – 30 ppb	**Pre-Mix** 200 µL DB5 buffer + 100 µL clarified extract in Reaction Tube			
Custom Corn 1 (MG 40)	1. 25g sample 2. 1 EB17 pouch 3. 75 mL water* 4. Immediately shake vigorously for 10 seconds by hand	When the shaker table gets up to speed (greater or equal to 300rpm), shake for 1 on shaker table	Filter	Base Range 0-30ppb	**Pre-Mix** 100 µL DB5 buffer + 100 µL clarified extract in Reaction Tube	Acclimate tube for 2 min^	4 min.	1:1 (this is software default)

^The tube acclimation step is only required if the temperature of the testing environment is unknown or outside of 20 - 24°C (68 - 75°F)