# TotalTox™ Aflatoxin

*Catalog AQ 309 BG* *Part #12376*

## Matrices and Detection Ranges:

**(Note: This lot is not enabled for MG3, high-sensitivity peanut)**

| 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 |

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

## 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 5.9 or later is required

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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 | 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
- 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

***Available Accessories:**

| *Item* | *Catalog No.* | *Part #* |
|---|---|---|
| QuickScan™ System | ACC 351 | 13065 |
| 5 oz Sample cups/lids<br>*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* | 20-0047 | 10167 |
| 10 oz Sample cups/lids<br>*Case of 100; for extracting samples >30g* | 20-0129 | 12383 |
| Graduated cylinder (100 mL) | ACC 068 | 11207 |
| MiniPet pipette (100 µL) | ACC 041 | 11202 |
| Coffee filters (100) | ACC 083 | 11434 |
| Centrifugation Set:<br>*Disposables for 50 tests* | ACC 010 | 11214 |
| Microcentrifuge | ACC 064 E | 11204 |
| 50g Sample Extraction Set<br>*Additional EB17 dissolvable pouches and sample cups (100)* | ACC 099 | 12409 |
| 50% Ethanol | ACC E26902-1X | 11156 |
| DB5 Buffer<br>*Add'l Buffer needed for matrices requiring > 100 µL per Strip* | KR-266-7 | 11665 |
| Dilution Set:<br>*Blue dilution tubes and EB17 dissolvable pouches for 50 tests* | ACC 103 | 12500 |
| Dilution Tubes:<br>*Blue dilution tubes for non-EB17 dilution, 50* | ACC 098 | 12236 |
| 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.
   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.

**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.

# 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.<br>2. Centrifuge for the specified time at 2000 x *g* (rcf, ***not rpm***).<br>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.<br>2. Pour extract into filter. Wait no more than 2 min.<br>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<br>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<br>Add 150 mL water | |
| Wheat (70-80% through 20-mesh) | 25g only | Add 1 EB17 pouch to sample<br>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); wait no more than 2 min (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 | Filter or Centrifuge 1 min at 2000 x *g* | 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*

# 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<br>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<br>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 | 25g Samples | 50g Samples | Custom Samples |
|---|---|---|---|---|
| Peanut Seed (MG27) Peanut Oil (MG28) | 29.4g table salt per 100 mL bottled water | 1. Add 20 mL salt water to sample<br>2. Mix well, stir slowly<br>3. Add 50 mL 80% Ethanol | 1. Add 40 mL salt water to sample<br>2. Mix well, stir slowly<br>3. Add 100 mL 80% Ethanol | 1. Add 0.8 mL/g sample salt water to sample<br>2. Mix well, stir slowly<br>3. Add 2 mL/g sample 80% Ethanol |

**Shake:** choose mechanical shaker or hand shaking

| ***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***), pour supernatant into separate vessel for storage.

**Combine Buffer and Extract, then Run Test Strips**

1. Add 300 µL **DB5** to the reaction vial (discard tip).
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. Wait 4 minutes (run time).
6. Immediately cut strips at the top of the arrow tape (discard bottom pads).
7. Insert strip, barcode down, into QuickScan reader.
8. When prompted, select Matrix Group 27 for Peanut Seed and Matrix Group 28 for Peanut Oil.

**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 | 0.8 mL/g sample salt water to sample<br>Mix well, stir slowly<br>2 mL/g sample 80% Ethanol | 1 min – shaker or 2 min by hand | Filter or Centrifuge 1 min at 2000 x *g*, pour supernatant into separate vessel | 300 µL **DB5** + 100 µL extract | 4 min |
| Peanut Oil (MG28) | 4.0 | | | | | |


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## License

EnviroLogix has developed this kit using proprietary reagents.

# 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<br>H315 Skin Irrit. 2<br>H318 Eye Dam. 1<br>H411 Aquatic Chronic 2 | 1 % |
| Surfynol | 9014-85-1 | | H315 Skin irritation 2<br>H318 Eye damage 1<br>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<br>H317 Skin Sens. 1 (C≥ 0.05%)<br>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)<br>Sorghum (MG4)<br>Brown Rice (MG7)<br>Wheat (MG8) (70-80% through 20-mesh) | 1. 25g sample<br>2. 1 EB17 pouch<br>3. 75 mL water*<br>4. Immediately shake vigorously for 10 seconds by hand<br>---*OR*---<br>*(excluding wheat)*<br>1. 50g sample<br>2. 2 EB17 pouches<br>3. 150 mL water*<br>4. Immediately shake vigorously for 10 seconds by hand | 1 min highest speed on shaker table<br>or<br>*(excluding sorghum)*<br>2 min by hand | Filter *(corn, sorghum)*<br>or<br>Centrifuge 30 sec. at 2000 x *g* *(corn, rice, wheat)* | Base Range<br>0 – 30 ppb | **Pre-Mix**<br>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<br>30 – 100 ppb | **Pre-Mix**<br>400 µL Dil'n Sol'n† + 100 µL clarified extract<br>**Transfer**<br>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<br>100 – 300 ppb<br>*(corn, sorghum)* | **Pre-Mix**<br>200 µL Dil'n Sol'n† + 100 µL pre-mix extract from Dil A<br>**Transfer**<br>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)<br><br>Oats (MG22) | 1. 25g sample<br>2. 1 EB17 pouch<br>3. 75 mL water*<br>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**<br>100 µL DB5 buffer +<br>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**<br>400 µL Dil'n Sol'n† +<br>100 µL clarified extract<br>**Transfer**<br>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**<br>200 µL Dil'n Sol'n† +<br>100 µL pre-mix extract from Dil A<br>**Transfer**<br>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<br>2. 1 EB17 pouch<br>3. 60 mL water*<br>Immediately shake vigorously for 10 seconds by hand | 1 min highest speed on shaker table<br>or<br>2 min by hand | Immediately Filter<br>or<br>Centrifuge 1 min. at 2000 x *g* | Base Range 0 – 30 ppb | **Pre-Mix**<br>100 µL DB5 buffer +<br>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)<br>Corn Germ (MG10)<br>Corn Gluten Meal (MG12)<br>Cotton-seed (MG17)<br>Rye (MG21) | 1. 25g sample<br>2. 100 mL 50% ethanol<br>*---OR---*<br>1. 50g sample<br>2. 200 mL 50% ethanol | 1 min highest speed on shaker table<br>or<br>*(excluding rye)*<br>2 min by hand | Centrifuge 1 min. at 2000 x *g*<br>or<br>Filter (*DDGS only**) | Base Range<br>0 – 30 ppb | **Pre-Mix**<br>100 µL DB5 buffer + 100 µL clarified extract in Reaction Tube | Acclimate tube for 2 min^ | 5 min. | 1:1<br>(this is software default) |
| | | | | Dilution A<br>30 – 100 ppb<br>*(DDGS, corn germ, cottonseed, rye)* | **Pre-Mix**<br>400 µL 50% ethanol + 100 µL clarified extract<br>**Transfer**<br>100 µL of this Pre-Mix and 100 µL DB5 | | | 1:A<br>(this must be selected) |
| | | | | Dilution A<br>30 – 100 ppb<br>*(Corn gluten meal)* | **Pre-Mix**<br>300 µL 50% ethanol + 100 µL clarified extract<br>**Transfer**<br>100 µL of this Pre-Mix and 100 µL DB5 | | | |
| | | | | Dilution B<br>100 – 300 ppb<br>*(DDGS, corn germ, rye)* | **Pre-Mix**<br>200 µL 50% ethanol + 100 µL pre-mix extract from Dil A<br>**Transfer**<br>100 µL of this Pre-Mix and 100 µL DB5 | | | 1:B<br>(this must be selected) |
| Corn Fermented Protein (MG26) | 1. 10 g sample<br>2. 40 mL 50% ethanol | | | Base Range<br>0 – 20 ppb | **Pre-Mix**<br>100 µL **DB5** buffer + 100 µL clarified extract in Reaction Tube | | | 1:1<br>(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.

| 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<br>2. 50 mL 50% ethanol<br>*---OR---*<br>1. 50g sample<br>2. 100 mL 50% ethanol | 1 min highest speed on shaker table<br>or<br>2 min by hand | Centrifuge 1 min. at 2000 x *g* | Base Range 0 – 30 ppb | **Pre-Mix**<br>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**<br>400 µL 50% ethanol + 100 µL clarified extract<br>**Transfer**<br>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<br>2. 40 mL 50% ethanol<br>*----OR---*<br>1. 50g sample<br>2. 80 mL 50% ethanol | 1 min highest speed on shaker table<br>or<br>2 min by hand | Centrifuge 1 min. at 2000 x *g* | Base Range 0 – 10 ppb | **Pre-Mix**<br>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<br>2. 35 mL 84% acetonitrile* | 2 min highest speed on shaker table | Settle 30 sec.<br>or<br>Centrifuge 30 sec. at 2000 x *g* | Base Range 0 – 50 ppb | **Pre-Mix**<br>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**<br>500 µL 84% acetonitrile + 100 µL clar. extract<br>**Transfer**<br>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<br>2. Mix well, stir slowly<br>3. 2 mL/g sample 80% Ethanol | 1 min highest speed on shaker table<br>or<br>2 min by hand | Centrifuge 1 min. at 2000 x *g*, pour supernatant into separate vessel | Base Range 0 – 30 ppb | **Pre-Mix**<br>300 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)