ENVIROLOGIX

QuickTox™ Kit for QuickScan Aflatoxin

Catalog Number AQ 109 BG *Part #10420*

Important Notes:

- **QuickScan Software Version 4.11.0, Update 1 or later is required**
- **Scan the Multi-Matrix Barcode Card (MMBC) once per kit lot**
- **Run for required time & read promptly for accurate results**

Contents of Kit:

- 50 QuickTox Strips packed in a moisture-resistant canister
- 50 reaction vials
- 100 pipette tips
- DB2 Buffer
- Multi-Matrix Barcode Card - kit lot specific

Intended Use

This QuickTox Kit for QuickScan Aflatoxin is designed to quickly extract and screen corn, wheat, sorghum, oats, barley, rough rice and soybean meal for the presence of total aflatoxins. The QuickTox Kit is designed to provide quantitative results for aflatoxin residues ranging from 2.5 ppb to 35 ppb in the standard assay, and up to 100 ppb with additional dilution. The limit of detection is less than 3 ppb.

How the Test Works

A composite sample is first collected, then extracted to solubilize any aflatoxin present. Each sample should be ground to a fineness of 20 mesh and extracted with diluted solvent. This extract is further diluted for testing with the QuickTox Kit.

Each QuickTox Strip has an absorbent pad at each end. The protective tape with the arrow indicates which end of the strip to insert into the reaction vial. The sample extract travels up the membrane strip and is absorbed into the larger pad at the top of the strip. At five minutes, the strip is cut off 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. All matrices for this kit are assigned to Matrix Group 1 (MG1). The QuickScan System software reads the test strip, retrieves information encoded on the Multi-Matrix Barcode Card (MMBC), and obtains a result for the matrix being tested. Scanning the Multi-Matrix Barcode Card once per kit lot is required.

Items Not Provided:

- QuickScan System*
- Bunn grinder or equivalent
- 20 mesh screen
- Extraction cups with lids* or other suitable vessels for sample extraction
- Graduated cylinder*
- Orbital/rotary shaker
- Pipette to deliver 100 µL*
- Microcentrifuge* (for oats or barley)
- Tubes and pipettes for centrifugation*
- Vials for additional dilution of high samples*
- Pipette to deliver larger volumes for dilutions
- Timer
- Scissors
- Distilled, deionized or bottled water

*Available as Accessories →

Available Accessories:

Item	Cat. No.	Part #
QuickScan™ System	ACC 331	12721
Sample cups with lids *(500/case)*	ACC 012-CS	10167
Graduated cylinder *(100 mL)*	ACC 068	11207
MiniPet pipette 100 µL *(one/location free)*	ACC 041	11202
50% Ethanol (1 bottle, 4L)	ACC E26902-1X4	11156
Dilution set *(extra tips and vials for 100 dilutions when testing samples above 35 ppb)*	ACC 080	11219
Centrifugation Set: *Disposables for 50 tests*	ACC 010	11214
Microcentrifuge	ACC 064 E	11204

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. **Ethanol:** Ethanol is flammable and toxic. 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. Observe any applicable regulations when disposing of samples and kit reagents.
   a. Purchase 50% ethanol, or prepare using 100% ethanol as follows: 50% Ethanol Preparation Instructions: For 100 mL, measure 50 mL 100% ethanol [reagent grade or better]; pour into suitable container with cap. Add 50 mL deionized or distilled water. Cap tightly and shake to mix. Use care when uncapping.

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, test strips, and Buffer are at room temperature before use.
4. Test extracts within 5 minutes of diluting with Buffer for optimal performance.
5. Pipettes lose calibration accuracy over time. Calibrate or replace pipettes at least annually

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 vial per test
- Keep DB2 capped, when possible
- Use new pipette tips for each step

Sample Preparation

Please note: sample extract should be tested shortly after dilution with Buffer. Make sure strips and Buffer are at room temperature and ready for use before the dilution step.

Determine number and size of sub-samples

1. Collect a composite sample according to your own sampling plan or USDA/ GIPSA guidelines. Consult USDA/ GIPSA reference documents such as **www.gipsa.usda.gov/fgis/handbook/BK1/BookI_2015-09-18.pdf** to help design a plan that fits your needs.
2. Grind samples using a mill which provides a sample that passes through a 20 mesh sieve. Mix ground material thoroughly before sub-sampling.

Extract sample

3. Weigh 20 to 50 grams of milled sample into a disposable sample cup with lid and add two volumes of 50% ethanol (2 mL per gram of sample, i.e. 20 grams, add 40 mL). To purchase or prepare a 50% ethanol solvent, see Precautions.
4. Cap sample cup tightly and place on shaker for 1 minute. Shaker should be operated at the highest speed. Alternatively, samples may be shaken by hand for 1½ to 2 minutes. Samples that are not thoroughly mixed may adversely affect test results due to incomplete extraction.

5A. For corn, wheat, sorghum, rough rice and soybean meal, extracts will immediately begin to separate into two layers (more finely ground beginning samples may take a few minutes to settle). The top layer containing the aflatoxin residues will be used in testing.

5B. For oats and barley, fill a micro-centrifuge tube with extract. Centrifuge for 30 seconds at 2000 x *g* (not RPM). The top layer containing the aflatoxin residues will be used in testing.

Combine Buffer and Extract

1. Using a calibrated pipette with a new tip, place 100 microliters (100 µL) Buffer into a reaction vial. Take care not to contaminate Buffer—use a new tip for each test and keep covered when not in use.
2. With another new pipette tip, remove 100 µL from the top layer of extract, avoiding particulates. Add extract to reaction vial containing Buffer.
3. Mix Buffer and sample extract thoroughly by stirring or drawing the liquids up and down in the pipette tip.

NOTE: Samples that are not thoroughly mixed and/or accurately pipetted will adversely affect test results. After diluting the sample, the final volume in the reaction vial should be 200 µL. Do not reuse diluted samples. Use a new reaction vial for each sample. Use two pipette tips (one for Buffer, one for extract) for each sample.

Run Test Strips

1. Add test strip to vial, arrows down, set time and run test for 5 minutes.
2. Immediately cut strips at the top of the arrow tape (discard bottom pads).
3. Insert strip into QuickScan Reader.
4. Touch or click "Read Test".

Range with Dilution

For testing samples at levels greater than the assay's base range

If after running and reading the test, the initial result is greater than 35 ppb ("> 35 ppb" on QuickScan), and further knowledge about the level of contamination is desired, samples can be retested by further dilution of the sample extract.

1. In a separate tube (not provided), combine five parts of 50% ethanol solvent with one part extract from the top layer of the original extraction (measure carefully). **Mix well**.
2. Using a calibrated pipette with a **new tip**, place 100 µL Buffer into a reaction vial.
3. With a fresh pipette tip, add 100 µL of the newly diluted extract to the reaction vial containing Buffer and mix thoroughly.
4. Follow the instructions under Run Test Strips. Choose 1:A under the dilution tab on QuickScan Results Screen—the System will calculate and record the aflatoxin level in diluted samples.

   Note: A Dilution Set with enough disposable tips and vials for 100 dilutions is offered for this purpose (Cat. No. ACC 080).

Use of the QuickScan System

Detailed instructions for use of the QuickScan System are supplied with each unit, and can also be found at envirologix.com/quickscan. 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.

Results are reported in the range of 2.5 to 35 ppb. Results less than 2.5 ppb are reported as "<LOD" (less than Limit of Detection) and results greater than 35 ppb are reported as ">35 ppb." If quantification of a sample above 35 ppb is desired, a further dilution of the sample extract can be performed (see "Range with Dilution" above).

Kit Storage

This QuickTox 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.

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 corn, wheat, sorghum, oats, barley, rough rice, and soybean meal.
- This assay is calibrated against corn reference samples supplied by Trilogy Analytical Laboratory, Washington, MO, and other vendors and associated HPLC data. Performance in other sample matrices has been validated using fortified samples.
- 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 protocol provided in the kit. Deviation from this protocol may invalidate the results of the test. Proper and thorough mixing, along with 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 seed lot 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.

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License

EnviroLogix has developed this kit using proprietary reagents.