ENVIROLOGIX™

QuickTox™ Kit for QuickScan DON (Vomitoxin)

Catalog Number AQ 204 BG

Highlights:

- *Quantitative and traceable results in QuickScan*
- *Read strips wet – no drying necessary*
- *Simple protocol*
- *No incubation equipment needed*

Contents of Kit:

- *50 QuickTox Strips packed in a moisture-resistant canister*
- *50 reaction vials*
- *100 pipette tips*
- *DB1 Buffer*
- *Available in 50-strip individual kit format or bulk packaging*

Items Not Provided:

- *Orbital/rotary shaker*
- *Plastic sample cups with lids**
- *Tap water*
- *20 mesh screen*
- *Graduated cylinder**
- *Pipette to deliver 100 µL**
- *Tubes for additional dilution of high samples (optional)*
- *Timer*
- *Scissors*
- *QuickScan System**
- *Mini-centrifuge and tubes (if testing wheat derivatives)*

**Available as accessories – see list on Page 4*

Correct 20 mesh grind for corn and wheat

Intended Use

This QuickTox Kit for QuickScan DON is designed to quickly extract and screen whole wheat, wheat bran, wheat middlings, wheat flour and whole corn for the presence of Deoxynivalenol (DON) residues. The Kit will then provide quantitative results when used in conjunction with the QuickScan System. Please refer to the table below for levels of quantification for each matrix. For extended-range quantification of DON levels above 10 ppm, please contact Tech Service.

	Quantification Range	Extended Quantification Range with Dilution
Corn grain	0.2 to 5 ppm	Up to 10 ppm
Whole wheat	0.2 to 5 ppm	Up to 10 ppm
Wheat middlings	0.2 to 5 ppm	Up to 10 ppm
Wheat bran	0.2 to 5 ppm	n/a
Wheat flour	0.2 to 2 ppm	n/a

How the Test Works

A composite wheat or corn sample is first collected, then extracted to solubilize any DON present. Each sample should be ground to a fineness of 20 mesh and extracted with room temperature tap water. 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 ten 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.

Preparation of the Sample

Please note: sample extract should be tested immediately after dilution with DB1 Buffer (Step 8). Make sure strips and DB1 Buffer are at room temperature and ready for use before the dilution step.

Determine number and size of sub-samples

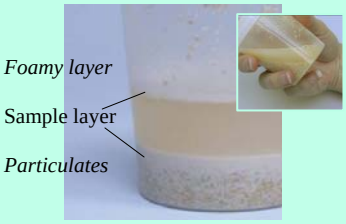
1. Collect a composite wheat or corn sample according to your own sampling plan or USDA/ GIPSA guidelines. Consult USDA/GIPSA reference documents such as **http://archive.gipsa.usda.gov/reference-library/handbooks/grain-insp/grbook1/bk1.pdf** to help design a plan that fits your needs.
2. Grind samples using a mill which provides a sample that passes through a 20 mesh sieve (note: wheat flour does not need to be ground). Mix ground material thoroughly before sub-sampling.

Follow steps marked "A" for whole wheat or corn
Follow steps marked "B" for wheat derivatives

Measure tap water, add to ground sample

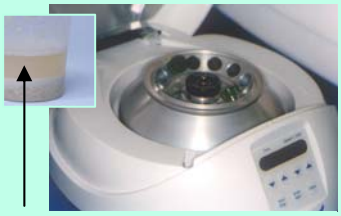
Shake mechanically or by hand

Protocol A



Allow to settle into layers; angling the cup to draw off extract will help avoid the top foamy layer and the lower particulate layer

Protocol B



Remove top layer of extract to centrifuge tube and spin for 3 minutes at 2000 x g

Add Buffer to vial first, then add extract; mix well with pipette tip

A. Extract whole wheat or corn sample

A3. Weigh 20 to 50 grams of milled sample into a disposable sample cup with lid or other suitable container and add five volumes of room temperature tap water (5 mL per gram of sample, i.e. 10 grams, add 50 mL).

A4. Cap sample cup tightly and place on shaker (alternatively, shake vigorously by hand) for **30 seconds**. Shaker should be operated at the highest speed. Samples that are not thoroughly mixed may adversely affect test results due to incomplete extraction.

A5. Extract will immediately begin to separate into 2 layers (a more finely ground beginning sample may take a few minutes to settle). The top (tan) layer containing the DON residues will be used in testing. In some instances a foamy layer will float above the desired top layer.

A6. Using a calibrated pipette with a **new tip**, place 100 microliters (100 µL) DB1 Buffer into a reaction vial. Take care not to contaminate DB1 Buffer—use a new tip for each test and keep covered when not in use.

A7. With **another new** pipette tip, remove 100 µL from the top (tan) layer of extract, avoiding particulates. The best technique is to tip the extraction cup at a 45 degree angle, exposing the supernatant beneath the foamy layer, and avoiding particulates. Add extract to reaction vial containing DB1 Buffer.

A8. **Mix DB1 Buffer and sample extract thoroughly** by stirring or drawing the liquids up and down in the pipette tip until the mixture is uniformly light tan.

NOTE: Samples that are not thoroughly mixed and/or accurately pipetted will adversely affect test results. **Avoid foam and particulates during pipetting, and ensure that the pipette tip does not become clogged with particulate**. 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 DB1 Buffer, one for extract) for each sample.

For testing <u>whole wheat or whole corn</u> samples at levels greater than 5 ppm (up to 10 ppm):

If after running and reading the test, the initial result is greater than 5 ppm ("> 5 ppm" on QuickScan), and further knowledge about the level of contamination is desired, samples can be retested by further dilution of the sample extract.

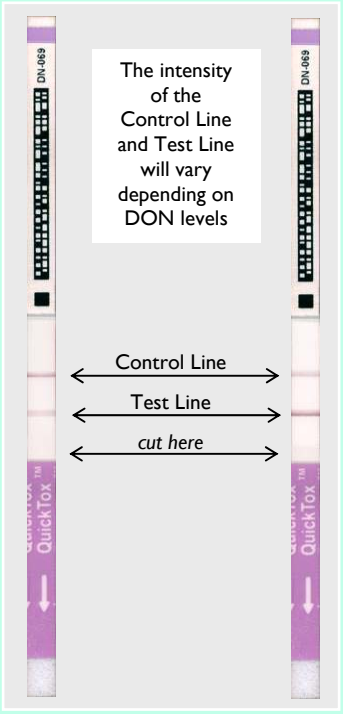
a. In a separate tube (not provided), combine one part of room temperature tap water with one part extract from the top layer of the original extraction (measure carefully). **Mix well**.

b. Using a calibrated pipette with a **new tip**, place 100 µL DB1 Buffer into a reaction vial.

c. With a fresh pipette tip, add 100 µL of the newly diluted extract to the reaction vial containing DB1 Buffer. Mix thoroughly. Because the extract is diluted two-fold, its addition to the buffer may not turn the mixture tan.

d. Follow the instructions under How to Run. Choose 1:2 under the dilution tab on QuickScan Results Screen—the System will calculate and record the DON level in diluted samples.

Place strip in vial
Wait 10 minutes for results



Cut strip and place in QuickScan reader immediately —no drying step!

Place strip in QuickScan carrier

B. Extract wheat bran, wheat middlings, wheat flour

B3. Weigh 20 to 50 grams of milled sample into a disposable sample cup with lid or other suitable container and add five volumes of room temperature tap water (5 mL per gram of sample, i.e. 10 grams, add 50 mL).

B4. Cap sample cup tightly and place on shaker (alternatively, shake vigorously by hand) for **60 seconds**. Shaker should be operated at the highest speed. Samples that are not thoroughly mixed may adversely affect test results due to incomplete extraction.

B5. Extract will immediately begin to separate into 2 layers (a more finely ground beginning sample may take a few minutes to settle). Remove about 1 mL of the top layer and centrifuge it for 3 minutes at 2000 x *g* (not RPM). Consult centrifuge manual for *g* force calculation, and follow manufacturer's instructions for operation and balancing.

B6. Using a calibrated pipette with a **new tip**, place 100 microliters (100 µL) DB1 Buffer into a reaction vial. Take care not to contaminate DB1 Buffer—use a new tip for each test and keep covered when not in use.

B7. With **another new** pipette tip, remove 100 µL from the centrifuged extract, avoiding particulates. Add extract to reaction vial containing DB1 Buffer.

B8. **Mix DB1 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. **Avoid foam and particulates during pipetting, and ensure that the pipette tip does not become clogged with particulate**. 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 DB1 Buffer, one for extract) for each sample.

For testing <u>wheat middling</u> samples at levels greater than 5 ppm (up to 10 ppm):

Note: extended quantification not available for bran or flour samples.

If after running and reading the test, the initial result is greater than 5 ppm ("> 5 ppm" on QuickScan), and further knowledge about the level of contamination is desired, samples can be retested by further dilution of the sample extract.

a. In a separate tube (not provided), combine one part of room temperature tap water with one part centrifuged extract from the top layer of the original extraction (measure carefully). **Mix well**.

b. Using a calibrated pipette with a **new tip**, place 100 µL DB1 Buffer into a reaction vial.

c. With a fresh pipette tip, add 100 µL of the newly diluted extract to the reaction vial containing DB1 Buffer. Mix thoroughly.

d. Follow the instructions under How to Run. Choose 1:2 under the dilution tab on QuickScan Results Screen—the System will calculate and record the DON level in diluted samples.

How to Run the QuickTox Strip Test

1. Allow refrigerated canisters to come to room temperature before opening. Remove the QuickTox Strips to be used. Avoid bending the strips. Reseal the canister immediately.
2. Place the strip into the reaction vial containing the DB1 Buffer and sample extract. The arrow tape on the end of the strip should point into the reaction vial.
3. The sample extract will travel up the strip (flow may not be visible immediately—this is expected and normal). Reaction vials will stand on their own.
4. Allow the strip to develop for **10** minutes. Immediately cut off and discard the bottom section of the strip covered by the arrow tape. Insert strip into the QuickScan reader for quantitation.

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/quickscan.

In summary, a strip is inserted face down in the carrier with the barcoded end closest to the handle. The carrier is inserted into the reader and the strips are read by touching or clicking on the “Read Test” area of the screen. Results are then recorded in an electronic worksheet, allowing each user to report and track data easily.

Results are reported in the range of 0.2 to 5 ppm. Results less than 0.2 ppm are reported as "<LOD" (less than Limit of Detection) and results greater than 5 ppm are reported as "> 5 ppm." If quantification is desired above 5 ppm, a further dilution of the sample extract can be performed for most matrices (see "For testing samples at levels greater than 5 ppm" above). For quantification of DON levels above 10 ppm, please contact Tech Service (1-866-408-4597 or 1-207-797-0300).

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. 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 100 ppm level.

- Aflatoxin B1
- Fumonisin B_1
- Ochratoxin A
- Zearalenone

Precautions and Notes

- This product is currently not applicable for use in testing any other grains.
- As with all screening tests, it is recommended that results be confirmed by an alternative 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 or protein in question.
- Strips must be read wet promptly at ten minutes.
- Protect all components from hot or cold extremes of temperature when not in use. Do not leave in direct sunlight or in vehicle.
- For convenience, accessories and solvent can be ordered from EnviroLogix (see list, below).

Accessories:

Available through EnviroLogix:	*Catalog #*	
▪ QuickScan™ System	ACC 131	
▪ Negative Ground Wheat Sample	CON 012	
▪ Positive Ground Wheat Sample	CON 112	
▪ Sample cups with lids	ACC 012-50	(50/package)
▪ Graduated cylinder	ACC 023	(50 mL)
▪ MiniPet pipette (one/location free)	ACC 041	

For Technical Support Contact Us At:

EnviroLogix
500 Riverside Industrial Parkway
Portland, ME 04103-1486
USA
Tel: (207) 797-0300
Toll Free: 866-408-4597
Fax: (207) 797-7533

e-mail:
info@envirologix.com

website:
www.envirologix.com

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