

# QuickTox™ Kit for QuickScan DON3 (Vomitoxin)

### Highlights:

- Results in 3 minutes
- Quantitative and traceable results in QuickScan
- Quantitate up to 12 ppm with no extra steps
- Range extension in corn and wheat up to 30 ppm with additional dilution step.
- Read strips wet no drying necessary
- Simple protocol
- No incubation equipment needed

### Contents of Kit:

- 50 QuickTox Strips packed in a moisture-resistant canister
- 100 reaction vials
- 100 pipette tips
- DB6 Buffer, kit lot specific

### Items Not Provided:

- Orbital/rotary shaker
- Plastic sample cups with lids\* or other extraction vessels
- Bottled, distilled or deionized water
- 20 mesh screen
- Graduated cylinder\*
- Pipettes and tips to deliver 200 μL and 800 μL\*
- Approved Coffee Filters (EnviroLogix validated)\*
- Timer
- Scissors
- Osterizer Blender Model 4094 or equivalent (wheat gluten only)
- Oster Mini Blend Jar Part no. 4888-3 (for samples <35g, wheat gluten only)
- Microcentrifuge (wheat gluten only)\*
- Tubes and pipettes for centrifugation (wheat gluten only)\*
- OuickScan System\*

\*Available as accessories – see list on Page 7 Catalog Number AQ 254 BG

Part #11176

### Intended Use

The QuickTox Kit for QuickScan DON3 is designed to quickly extract and screen milled samples for the presence of Deoxynivalenol (DON) residues. The QuickTox Kit will then provide quantitative results when used in conjunction with the QuickScan System. The QuickTox Kit is designed to provide quantitative results up to 12 ppm in the base range

### **Important Notes:**

- QuickScan Software Ver.
   4.7 update 2 or later is required
- Run for 3 minutes and read promptly
- The Limit of Detection (LOD) is 0.29 ppm; do not assume accuracy of results less than 0.29 ppm
- DB6 Buffer is specific for each Kit Lot (marked on Buffer bottle)

Place this portion in QuickScan Reader

and up to 30 ppm in corn and wheat with additional sample dilution. Commodities include corn, corn flour, corn germ, corn gluten meal, corn gluten feed, DDGS; wheat, wheat bran, wheat midds, wheat flour, white wheat flour, wheat gluten, wheat red dog; barley, malted barley; oats; sorghum; soybean meal; milled rice and rough rice; and whole rye.

## How the Test Works

A composite 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 distilled, deionized, flat bottled water, or qualified drinkable (potable) 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 three 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 DB6 Buffer (Step 7). Make sure strips and DB6 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 <a href="https://www.gipsa.usda.gov/fgis/handbook/gihbk1\_inspec.aspx">www.gipsa.usda.gov/fgis/handbook/gihbk1\_inspec.aspx</a> to help design a plan that fits your needs.
- 2. Grind samples using a mill which provides a sample such that ≥95% passes through a 20 mesh sieve. Mix ground material thoroughly before sub-sampling.



Correct 20 mesh grind



Measure water, add to ground sample (Step 3)



Shake mechanically or by hand (Step 4)



Filter extract (Step 5)

Alternate Step 5 (wheat+corn only)



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

### **Extract Sample**

Different commodities require different extraction ratios. Choose your commodity and follow the instructions for extraction listed in the table below:

Note: Potable tap water may be utilized instead of distilled, deionized or bottled water, following customer validation of water supply. Please contact EnviroLogix to purchase a control set and protocol that can be used to verify your water supply.

Corn gluten meal, corn gluten feed, wheat flour, malted barley, DDGS, whole rye		Corn, corn flour, corn germ, wheat, wheat midds, wheat bran, wheat red dog, barley, rough rice, soybean meal, wheat gluten†	Oats*, white wheat flour*, milled rice, sorghum	
	<b>4X</b>	5X	<b>6X</b>	
3.	U	3. Weigh 20 to 50 grams	3. Weigh 20 to 50 grams	
	of milled sample into a	of milled sample into a	of milled sample into a	
	disposable sample cup	disposable sample cup	disposable sample cup	
	with lid or other suitable	with lid or other suitable	with lid or other suitable	
	container and add	container and add	container and add	
	four volumes of room	<b>five volumes</b> of room	six volumes of room	
	temperature bottled	temperature bottled	temperature bottled	
	(flat), deionized, or	(flat), deionized, or	(flat), deionized, or	
	distilled water (4 mL	distilled water (5 mL per	distilled water (6 mL	
	per gram of sample, i.e.	gram of sample, i.e. 20	per gram of sample, i.e.	
	20 grams, add 80 mL).	grams, add 100 mL).	20 grams, add 120 mL).	

\* Shake time one minute; see Step 4

 $\ \, \dagger \ \, Blender \ \, extraction + centrifugation \ \, required - see \ \, Blender \ \, Extraction \ \, instructions \ \, below$ 

- 4. Cap sample cup tightly, disperse water making sure the entire sample is wetted and place on shaker (alternatively, shake vigorously by hand) for 30 seconds (\*oats and white wheat flour requires a 1 minute shake). Shaker should be operated at the highest speed. Samples that are not thoroughly mixed may adversely affect test results due to incomplete extraction.
- 5. Add an approved coffee filter (example: BUNN part #BUNBCF100B) to a clean vessel and pour extract into the filter. Pull back an edge of the filter to gain access to the filtered extract.

Alternatively, for corn and wheat only, allow extract to separate into 2 layers. The top layer containing the DON residues will be used in testing. In some instances a foamy layer will float above the desired top layer. The best technique to retrieve this extract for Step 7 below is to tip the extraction cup at a 45 degree angle, exposing the supernatant beneath the foamy layer, avoiding particulates.

### Blender Extraction + centrifugation (wheat gluten):

- Determine weight of sample and calculate appropriate volume of water (5 mL per gram of sample, i.e. 50 grams, add 250 mL). Choose blender vessel based upon sample weight:
  - o For samples between 20 and 35g, use the Oster mini-blend jar part number 4888-3.
  - o For samples between 35 and 50g, use the standard glass extraction vessel that arrived with the blender.
- Add the appropriate volume of water to the blender vessel first, then add the sample.

# <u>Blender extraction (wheat gluten</u> only)

Add water and wheat gluten to blender and blend for 1 minute



Immediately centrifuge for 1 minute and use clear liquid top layer for testing

### Dispense liquids:



Add Buffer to Dilution Vial first, then add extract; mix well with pipette tip (Step 6,7)



Transfer mixture to Testing Vial (Step 8)



Insert strip
Wait 3 minutes for results

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

- Blend on highest speed for 1 minute.
- Immediately fill a microcentrifuge tube with extract. Centrifuge for 1 minute at 2000 x g (not RPM). The clear liquid top layer containing the DON residues will be used in testing.

**Dispense liquids** (use 2 vials and 2 pipette tips for each sample being tested: the first set for dilution, the second set for testing):

### Dilution (vial #1):

- 6. Using a calibrated pipette with a **new tip**, place 800 microliters (800 μL) DB6 Buffer into the (first) dilution vial. Take care not to contaminate DB6 Buffer—use a new tip for each test and keep covered when not in use. **Please note**: DB6 Buffer is matched with specific DON3 kit lot numbers; be sure to use the DB6 that is provided with the kit (do not mix and match buffers with different kit lots). There is a "use with" label on the DB6 that will indicate the matching DON3 lot number.
- 7. With **another new** pipette tip, remove 200  $\mu$ L of the extract. Add that extract to the dilution vial containing the DB6 Buffer and mix well with pipette by stirring or drawing liquids up and down in the pipette tip until the mixture is uniform.

### Testing (vial #2):

8. With the same pipette tip, add 200  $\mu L$  of the mixed sample to the (second) reaction vial, used for testing.

**NOTE:** Samples that are not thoroughly mixed and/or accurately pipetted will adversely affect test results. When following the alternate settling protocol for corn and wheat, avoid foam and particulates during pipetting, and ensure that the pipette tip does not become clogged with particulate. The run volume in the reaction vial should be 200  $\mu$ L. Do not reuse diluted samples. Use new reaction vials for each sample. Use two pipette tips (one for DB6 Buffer, one for extract) for each sample.

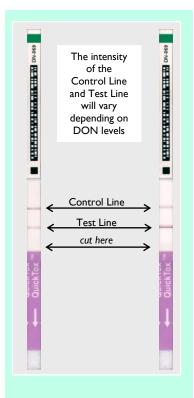
# For testing corn and wheat samples at levels greater than 12 ppm (up to 30 ppm):

If after running and reading the test, the initial result is greater than 12 ppm ("> 12 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 dilution vial (not provided), combine seven parts of water with one part filtered extract (for example, 700  $\mu L$  water and 100  $\mu L$  filtered DON extract). **Mix well**.
- b. Using a calibrated pipette with a **new tip**, place  $800~\mu L$  DB6 Buffer into a dilution vial.
- c. With **another new** pipette tip, add 200  $\mu$ L of the newly diluted extract to the dilution vial containing Buffer and mix thoroughly.
- d. With the same pipette tip, add 200 μL of the mixed sample to a new reaction vial, used for testing. Follow the instructions under How to Run the QuickTox Strip Test. Choose 1:7.5 under the dilution tab on the QuickScan Results Screen—the System will calculate and record the DON level in the diluted samples.

# How to Run the QuickTox Strip Test

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.





Place strip in QuickScan carrier



- Place the strip into the reaction vial containing the 200 μL of DB6 buffer/sample mixture (Vial #2). The arrow tape on the end of the strip should point into the reaction vial.
- The sample extract will travel up the strip (flow may not be visible immediately, this is normal). Reaction vials will stand on their own.
- Allow the strip to develop for three (3) minutes. Immediately cut off and discard
  the bottom section of the strip covered by the arrow tape and 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 <a href="mailto:envirologix.com/quickscan">envirologix.com/quickscan</a>. 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. 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 to 12 ppm. The limit of detection (LOD) is 0.29 ppm; accuracy of results less than 0.29 ppm should not be assumed. Results greater than 12 ppm are reported as "> 12 ppm."

# 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 B1, Ochratoxin A, and Zearalenone.

## **Precautions and Notes**

- Running for 3 minutes and reading the strip(s) promptly is required for accurate results.
- Accuracy of results less than 0.29 ppm should not be assumed.
- This product is currently not applicable for use in testing any other grains.
- Pipettes lose calibration accuracy over time. Calibrate or replace pipettes at least annually.
- Observe any applicable regulations when disposing of samples and extracts.
- This assay is calibrated against wheat and corn reference samples supplied by Trilogy Analytical Laboratory, Washington, MO, and other vendors and associated HPLC data. Where possible, performance in other sample matrices has been validated using naturally contaminated samples. Where naturally contaminated samples are not available, performance has been validated using fortified samples.
- 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 protocols provided in the kit. Deviation from these protocols may invalidate the results of the test. Room-temperature components, proper and thorough mixing, accurate pipetting, and using the correct corresponding DB6 Buffer provided in the kit 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.
- 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 can be ordered from EnviroLogix (see list, next



## **Accessories:**

1 mL adjustable pipette

Pipette tips for 1 mL

pipette (50)

(helpful for extended dilution)



QuickScan<sup>TM</sup> System ACC 331 12721

Sample cups with lids (500/case) ACC 012-CS 10167 for samples up to 30 g; larger samples require different mixing vessels

•	Graduated cylinder (100 mL)	ACC 068	11207
•	200 μL MiniPet pipette (one/location free)	ACC 067	11206
•	Coffee filters (100)	ACC 083	11434
•	Microcentrifuge	ACC 064E	11204
•	Centrifugation Set: Disposables for 50 tests	ACC 010	11214
•	QuickTox Dilution Set (enough for 100 dilutions)	ACC 080	11219

ACC 1303

20-0107

11964

12243









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EnviroLogix has developed this kit using proprietary reagents.

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#### Safety data sheet

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

Part number
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

1.4 Emergency telephone number:

SECTION 2. Hazards identification.

2.1 Classification of the substance or mixture

Classification according to 29CFR 1910.1200: Not Classified

2.2 Label elements
Labeling according to 29CFR 1910.1200

None Hazard Statements:

SECTION 3. Composition/information on ingredients. 3.2 Mixture

2.3 Other Statements:

CAS No EC No Classification According to 29CFR 1910.1200 Amount (%)

1303-96-4 215-540-4

SECTION 4. First aid measures.

1. Description of first aid measures

In case of inhalation. Remove to fresh air. If not breathing give artificial respiration. Get medical attention immediately. In case of skin containst. 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. In case of eye contast, immediately flush eyes with plenty of water for at least 13 minutes. Lifting eyelids occasionally, until no evidence of chemical remains. Get medical attention immediately in the evidence of chemical remains. Get medical attention immediately made and the experimental contains a contained attention. Never give anything by mouth to an unconscious person. Call a physician immediately. After eye contact:

After swallowing:

4.2 Most important symptoms and effects, both acute and delayed:

4.3 Indication of any immediate medical attention and special treatment needed:

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CDC DDC Dilution Buffe

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OSHA

#### SECTION 8. Exposure controls/personal protection.

8.1 Exposure limits:

Components with limit values that require monitoring at the workplace:

Sodium Tetraborate Decahydrate 8 Hr TWA = 5mg/m<sup>3</sup> 8 Hr TWA = 10 mg/m<sup>3</sup>

EH40/2005

8.2 Exposure Controls: 8.2.1 Engineering 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

Eve 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' souter 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 774 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 goovernment standards such as NIOSH (US) or CEN (EM) (US) or CEN (EM).

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

Clear liquid, colorless to slight yellow

SECTION 9. Physical and chemica p.1. Information on basic physical and hemical properties:
a) Appearance b) Odor:
b) Odor Threshold:
d) pit:
d) Melting point/freezing point:
f) Boiling point/freezing point:
f) Hammability coild, gaseous;
g) Upper-lower flammability or explosive limits:
b) Vapor pressure:
f) Vapor density
f) Solobility(ies):
g) Solobilit None No Data Available 8.6 No Data Available No Data Available. Not applicable. No Data Available No Data Available

9.2 Other information:

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SECTION 5. Firefighting measures.

5.1 Extinguishing media: CO2, 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 or suitable absorbent for larger spills and discard in appropriate waste. Clean with water afterwards.

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.

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

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

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SECTION 10. Stability and reactivity.

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 No Data Available. 10.5 Incompatible materials:

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 Acute effects (toxicity tests): No Data Available No sensitizing effects known

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

SECTION 12. Ecological information.

12.1 Toxicity: No Data Available 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

Not available as a chemical safety assessment, not required/not conducted.

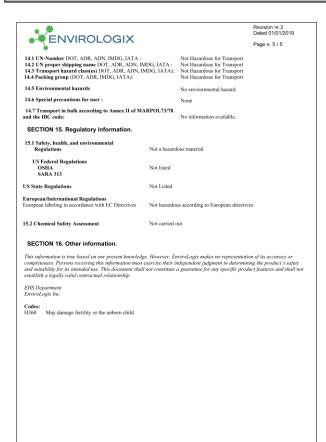
No Data Available

SECTION 13. Disposal considerations.

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.

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