

R-BIOPHARM
RIDA QUICK DON

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GENERAL INFORMATION

The RIDA QUICK DON test method, product number R5908 is a lateral flow test for the quantitative analysis of Deoxynivalenol (DON) in barley, corn, corn bran, corn flour, corn germ, corn gluten meal, corn grits, corn meal, corn/soy blend, dried distillers grains, dried distillers grains with solubles, flaking grits, malted barley, milled rice, oats, popcorn, rough rice, rye, sorghum, soybeans, and wheat. The test kit is providing quantitative Deoxynivalenol measurements between 0.5 – 5 parts per million (ppm).

The instructions presented in this document cover only the procedure for performing the analytical test for official inspections. For questions regarding this procedure, contact Dr. Ajit Ghosh of the Technology and Science Division by phone at 816-891-0417 or email at Ajit.K.Ghosh@usda.gov.

Refer to the current policies and/or instructions issued by the Policies, Procedures, and Market Analysis Branch (PPMAB) of the Field Management Division for information on use of this test kit in official inspections including sampling, general sample preparation, reporting and certification of test results, laboratory safety, and hazardous waste management. For questions regarding these policies and/or instructions, contact Patrick McCluskey of PPMAB by phone at 816-659-8403 or email at Patrick.J.McCluskey@usda.gov.

Approved Test Kit Information

Test Kit Vendor:	<i>R-Biopharm Inc. 877-789-3033</i>
Test Kit Name:	RIDA QUICK DON
Product Number:	R5908
Effective Date of Instructions:	06/24/2016
Instructions Revision Number	1
Conformance Range:	0.5 – 5.0 ppm
Number of Analyses to Cover Conformance Range:	2
Type of Service:	Quantitative
Supplemental Analysis:	Yes
Approved Commodities:	Barley, corn, corn bran, corn flour, corn germ, corn gluten meal, corn grits, corn meal, corn/soy blend, dried distillers grains, dried distillers grains with solubles (DDGS), malted barley, milled rice, oats, popcorn, rough rice, rye, sorghum, soybeans, and wheat
Extraction method:	For samples ground so that at least 90% passes a No. 20 sieve, shake vigorously 50 grams ground sample with 375 milliliters (mL) of deionized or distilled water for 1 minute. For samples ground so that 60 – 89% passes a No. 20 sieve, shake vigorously 50 grams of the ground sample with 375 mL of deionized water for 3 minutes.
Test Format:	Lateral Flow
Detection Method:	RIDA QUICK SCAN Reader, Model ZG5005

SAMPLE PREPARATION AND EXTRACTION PROCEDURES

Extraction Procedure for barley, corn, corn bran, corn flour, corn germ, corn gluten meal, corn grits, corn meal, corn/soy blend, dried distillers grains, dried distillers grains with solubles, flaking grits, malted barley, milled rice, oats, popcorn, rough rice, rye, sorghum, soybeans, and wheat

- (1) Weigh 50 ± 0.2 grams ground samples into a Whirl Pak bag.
- (2) Add 375 mL of deionized or distilled water and close the bag securely to prevent spillage.
- (3) For samples ground so that at least 90% passes a No. 20 sieve, shake vigorously for 1 minute by hand or by mechanical shaker with similar shaking action. For samples ground so that 60 – 89% passes a No. 20 sieve, shake vigorously for 3 minutes by hand or by mechanical shaker with similar shaking action.
- (4) Filter the extract through a Whatman #1 and collect filtered extract in a suitable container labeled with a sample ID number. This is good for next 30 minutes.

TEST PROCEDURES

a. Analysis Procedure for 0.5 to 3.5 ppm Quantitation Range.

- (1) Allow test strips to reach room temperature (approximately 30 minutes).
- (2) Remove the desired amount of test strips to run.

NOTE: Do not run more than 4 strips per run.

- (3) Pipette 200 μ L of mobile solvent (provided with the kit) into a clean micro centrifuge tube. Add 200 μ L of filtered sample extract to the same tube.
- (4) Close the micro centrifuge tube and mix well by inverting and flicking the tube five times.
- (5) Using a new pipette tip, pipette 100 μ L of diluted sample extract directly onto the sample port of the test strip.
- (6) Incubate the strip at room temperature for 5 minutes.
- (7) Insert the stick into the QUICK SCAN reader and read using selected Method “DON 0.5-3.5 ppm”

b. Analysis Procedure for 0.7 to 5 ppm Quantitation Range.

- (1) Pipette 200 μ L of deionized or distilled into a clean micro centrifuge tube. Add 200 μ L of filtered sample extract to the same tube (dilution factor is 2). Mix by inverting the tube 5 times. This is diluted extract.

- (2) Pipette 200 μL of diluted extract into a clean micro centrifuge tube. Add 200 μL of mobile solvent (provided with the kit) to the same tube. Mix by inverting the tube 5 times.
- (3) Using a new pipette tip, pipette 100 μL of diluted sample extract (from 2) directly onto the sample port of the test strip.
- (4) Incubate the strip at room temperature for 5 minutes.
- (5) Insert the stick into the QUICK SCAN reader and press read using selected Method "DON 0.70-6.0 ppm"

c. Reading Results with RIDA QUICK SCAN Reader.

- (1) Turn on the RIDA QUICK SCAN Reader by holding down the center button for approx 3 seconds.
- (2) Visually verify that the selected method reads DON 0.35-3.0 ppm (or DON 0.70-6.0 ppm)
 - a. If the method does not read the desired method, press the down button until method is selected.
 - b. Press either the left or right button to change the selected method until it reads the desired method.
- (3) Press the down button until Start Scan is highlighted. Press the center button.
- (4) Visually match the Checksum on the reader to the Checksum on the QA sheet provided with the test kit.
 - a. If the Checksum does not match, connect the barcode scanner to the reader through the RS232 port on the left side. Highlight Barcode Input and press the center button. Scan the 2-D barcode on the provided QA sheet. Visually confirm that the Checksums match.
 - b. If a barcode scanner is not available, highlight Manual input and press the center button. Manually change the parameters shown on the screen to match the QA sheet by highlighting first Batch No. Press the center button. Using the up, down, left, and right buttons, change the numbers to match the QA sheet. Press the center button when finished. Proceed the next page by highlighting the word next and pressing the center button. Change PrmJ and PrmK to match the QA sheet by repeating the steps for Batch No. Press Back twice and verify that the Checksum matches the QA sheet.
- (5) Highlight start scan. Insert the stick into the right side of the reader after 5 minutes and press the center key. Results will be displayed after 10-15 seconds.
- (6) Print the test results or proceed to the next test.
- (7) Additional information regarding reader settings and operation should be obtained from R-Biopharm staff.

SUPPLEMENTAL ANALYSIS

Supplemental analysis (corn and wheat only) is a procedure followed when a result is observed above the upper limit of the concentration range used in GIPSA's test kit performance evaluation. The range for performance evaluation of quantitative DON test kits is 0.5 – 5.0 ppm. Therefore, supplemental analysis would be performed for a result above 5.0 ppm. In supplemental analysis, the extract is diluted so the resulting concentration is between the lower and upper limits of the test kit evaluation range (i.e., 0.5 – 5.0 ppm for Deoxynivalenol), and a correction for dilution is applied to derive at the final result. Supplemental analysis is performed only at the request of the applicant.

1. Dilution of the Sample Extract

If quantitative results are above the testing conformance limit (i.e., 5.0 ppm) of the test kit, test results could be reported as exceeding the limit. To determine and report a DON level higher than 5.0 ppm, the sample extract must be diluted so that a value between 0.5 and 5.0 ppm is obtained.

The final DON concentration is calculated by selecting the Method "DON 1.0-10.0ppm"

2. Example

If the original analysis reported the Deoxynivalenol value at greater than 5.0 ppm, the sample extract would be diluted using the following procedures in order to obtain a true value.

- a. Dilute 200µL (0.2 mL) of the filtered sample extract with 400µL (0.4 mL) of distilled water. The total volume is 600 µL. Dilution Factor (DF) is 3.
- b. Pipette 200 µL of above diluted extract into a clean micro centrifuge tube. Add 200 µL of mobile solvent (provided with the kit) to the same tube. Mix by inverting the tube 5 times.
- c. Using a new pipette tip, pipette 100 µL of diluted sample extract (from b) directly onto the sample port of the test strip.
- d. Incubate the strip at room temperature for 5 minutes.
- e. Insert the stick into the QUICK SCAN reader and press read using selected Method "DON 1.0-10.0 ppm"

REPORTING AND CERTIFYING TEST RESULTS

Refer to the current instructions issued by the Policies, Procedures, and Market Analysis Branch of the Field Management Division for reporting and certification of test results. For questions regarding these instructions, contact Patrick McCluskey (816-659-8403 or Patrick.J.McCluskey@udsa.gov).

STORAGE CONDITIONS AND PRECAUTIONS

a. Storage Conditions

The reagents supplied with the test kit can be used until the expiration date on the kit label when stored refrigerated at temperatures between 36° F and 46° F.

b. Precautions

- (1) Do not interchange individual reagents between kits of different lot numbers.
- (2) Do not use the test kits beyond the noted expiration date.
- (3) Test strips are sensitive to humidity. Do not open test strip pouches until they are to be used.

EQUIPMENT AND SUPPLIES

a. Materials Provided in Test Kits

- (1) 20 individually packaged DON test strips
- (2) Mobile Solvent

b. Materials Required but not Provided

- (1) RIDA QUICK SCAN Reader, Whirl Pak bags,
- (2) 100 µL Pipettor and pipette tips, 20-200 µL adjustable Pipettor and pipette tips.
- (3) Graduated cylinders (plastic or glass): 250 mL and 1 L.
- (4) Whatman #1 filters, Sample cups and lids,
- (5) Micro centrifuge tubes, Micro centrifuge tube rack
- (6) Transfer pipettes, Balance, and 1L Nalgene bottle
- (7) Waste receptacle, Timer: 3 channel minimum, Waterproof marker, Sharpie or equivalent
- (8) Deionized or distilled water

REVISION HISTORY

Revision 1 (06/24/2016)

- Changed extraction procedure. Samples ground to 90% passing a No. 20 sieve are extracted by shaking for 1 min. Samples ground to 60 – 89% passing a No. 20 sieve are extracted by shaking for 3 minutes.
- The words “(e.g., grinding and dividing)” were taken out from the 3rd paragraph of “**GENERAL INFORMATION**” section on page 1.

Revision 0 (06/11/2015)