

Intended Use

The TotalTarget Kit for Gluten Detection is designed to quickly extract and quantitate gluten in oats (for corn, corn meal, corn grits, or corn flour, use AT-Gluten-C, Part#13028). The TotalTarget Kit will detect gluten protein with the limit of quantitation at 4 ppm, when used in conjunction with the QuickScan System. The range of this kit detects gluten up to 35 ppm.

Important Notes:

- Before testing, the enclosed Multi-Matrix Barcode Card (MMBC) must be scanned just once for each kit lot to upload information to the QuickScan. The software will prompt users to select a Matrix Group (MG) before proceeding to the result screen.
- QuickScan Software Version 5.6 or later is required

Contents of Kit:

- 10 TotalTarget Strips packed in a moisture-resistant canister
- 10 reaction tubes (clear)
- 10 dilution tubes (blue)
- 20 pipette tips (1-200 µL)
- Oats extraction reagents
 - Grain Extraction Buffer Concentrate
 - DB2 Dilution Buffer
- Multi-Matrix Barcode Card - kit lot specific

How the Test Works

A composite sample is collected, ground, and extracted to solubilize any gluten residues present. The extract is diluted into a buffer before being run on the test strip. Each 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 traceable, quantitative results.



Items Not Provided:	*Available Accessories:		
<ul style="list-style-type: none">• QuickScan System*• 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• Centrifuge and vials*• Graduated cylinder*• Orbital/rotary shaker• Pipette to deliver 100 µL*• Pipette to deliver 500µL• Timer• Scissors• Distilled, deionized or bottled water	<i>Item</i>	<i>Catalog No.</i>	<i>Part #</i>
	QuickScan™ System	ACC 331	12721
	5 oz Sample cups/lids	20-0047	10167
	<i>Case of 500; for extracting samples up to 30g</i>		
	Graduated cylinder (100 mL)	ACC 068	11207
	MiniPet pipette 100 µL (one/location free)	ACC 041	11202
	Centrifugation Set:	ACC 010	11214
	<i>Disposables for 50 tests</i>		
	Microcentrifuge	ACC 064 E	11204
	1 mL adjustable pipette	ACC1303-PRO-1000	11964
	Incubator	ACC-BSH301	12458
	Coffee filters (100)	ACC-083	11434
*Available as Accessories			

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.** Strips inserted into the reader are read by touching or clicking on the “Read Test” button on 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.

Precautions – Read First!

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. Test extracts within 5 minutes of diluting with Buffer for optimal performance.
5. When the Grain Extraction Buffer Concentrate is stored refrigerated, a crystalline precipitate may form on the bottom of the container. Warm the buffer to room temperature to resolubilize prior to diluting to the working concentration. The use of a warm water bath and gentle mixing is recommended.

Sample Preparation

- The Grain Extraction Buffer Concentrate provided must be diluted before use. See Notes section for instructions.
 - Allow refrigerated canisters to come to room temperature before opening.
 - 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
1. Collect a composite sample according to your own sampling plan or USDA/FGIS (formerly GIPSA) guidelines. Consult USDA 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. For example, the “Turkish” setting on a Bunn grinder generally returns a grind consistency in coarser grains that is suitable for testing. It is recommended to test your grinding protocol and/or settings using the 20-mesh sieve method, and to check periodically that it is remaining consistent.
 3. Mix ground material thoroughly before sub-sampling, to minimize variability.
 4. Weigh 25 g samples into a container that will allow enough head room for the liquid to move forcefully when shaken vigorously.

Sample Extraction

1. Measure **1X** Grain Extraction Buffer* with a graduated cylinder or other appropriate measuring device and add 75 mL to the sub-sample in the extraction vessel. *See note under Sample Preparation for instructions on preparing 1X Grain Extraction Buffer.
2. Immediately cap sample cup tightly and shake by hand vigorously for 10 seconds to ensure proper wetting of the ground sample, and place on shaker at the highest speed (≥ 300 rpm) for 1 minute, or shake by hand vigorously for 2 minutes. *Samples that are not thoroughly mixed may adversely affect test results due to incomplete extraction.*
3. Immediately remove a portion of the top layer of the extract and centrifuge it for 30 seconds at 2000 x g (not RPM). Consult centrifuge manual for g force calculation, follow manufacturer’s instructions for operation and balancing. To clarify by filtration, pour extract through approved coffee filter (ACC-083); wait no more than 2 minutes.
4. Dilute 100 μ L sample with 200 μ L distilled, deionized or flat (non-carbonated) bottled water (1:3) into a clean blue dilution tube (provided) and mix thoroughly. Proceed to testing sample.

TIPS!

Get Complete Extraction

- Fully wet samples before the next shaking step
- Avoid delay between buffer 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 Dilution Buffer capped, when possible
- Use new pipette tips for each step

Running the Test

Note: Diluted sample extract should be tested within 5 minutes of dilution with dilution buffer. Be sure strips and dilution buffer are at room temperature and ready for use prior to continuing.

1. Remove the TotalTarget strips to be used from the room temperature canister, being careful to avoid bending the strips. Reseal the canister immediately.
2. With a **new** pipette tip, transfer **100 µL** of DB2 Dilution Buffer into a reaction tube, then discard tip.
3. Using a **new** pipette tip, add **100 µL total** of the clarified, diluted extract to the reaction tube containing dilution buffer. Mix well with pipette by stirring or drawing liquids up and down in the pipette tip. Discard pipette tip. *Avoid transferring any floating particulates on top of the centrifuged sample if possible.*
4. Place the reaction tube in the 22°C incubator; equilibrate for 2 minutes. Note: 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)

Note: Samples that are not thoroughly mixed and/or accurately pipetted will adversely affect test results. After adding the sample, the final volume in the reaction vial should be **200 µL**. Do not reuse diluted samples. Always use a new reaction tube and two pipette tips for each test, and discard vials and tips after use.

How to Run the TotalTarget Strip Test

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.

1. Place the strip into the reaction vial containing the dilution buffer and sample extract. The arrow tape on the end of the strip should point into the reaction vial.
2. Sample extract will travel up the strip (flow may not be visible immediately—this is expected and normal).
3. Allow the strip to develop for **5 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. When prompted, select Matrix Group MG6 for Oats.

Kit Storage

This 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 commodities do not interfere with gluten detection at concentrations of 20% or greater

Almond flour	Amaranth flour	Arrowroot	Black bean flour
Brown rice flour	Buckwheat flour	Chestnut flour	Coconut flour
Ground coffee	Corn meal	Dried fruits (raisins)	Egg powder
Faba bean flour	Flax seed flour/ meal	Green pea flour	Hazelnut flour
Milk powder	Millet flour	Oat flour*	Parsley flakes
Peanut	Pork sausage	Potato flour	Quinoa flour
Pea protein	Salmon	Sesame flour	Sorghum flour
Soya flour	Sweet rice flour	Tapioca flour	Tea (Ground)
Walnuts	White bean flour	White rice flour	Yellow pea flour

Guar gum and xanthan gum do not interfere at 2% or less but may interfere at higher concentrations.

Notes

- This kit is designed to give quantitative results using the QuickScan System from 4.0 to 35ppm of gluten protein in raw ingredients. Gluten limit of quantification is at 4 ppm for wheat, rye and barley. This test is not intended to be visually interpreted.
- This product is currently not validated for use in testing any other grains than those listed in this Product Insert.
- Strips must be read wet promptly at five minutes.
- Protect all components from hot or cold extremes of temperature when not in use. Do not leave in direct sunlight or in vehicle.
- Pipettes lose calibration accuracy over time. Calibrate or replace pipettes at least annually.
- 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.
- **To Prepare 1X Grain Extraction Buffer:** In a clean vessel with a cover, dilute the Grain Extraction Buffer Concentrate 20-fold, using 19 parts distilled, deionized or flat (non-carbonated) bottled water and one part concentrate to create 1X Grain Extraction Buffer. Mix to make homogenous. For example, add 25 mL of Grain Extraction Buffer Concentrate into 475 mL water and mix thoroughly. If prepared with purified water, Grain Buffer can be stored for up to 7 days at room temperature. If prepared with tap water, Buffer should be used the same day, or may be stored refrigerated for longer life, up to 30 days. (note: bring Buffer to room temperature before testing).



**For Technical Support
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LIMITED WARRANTY

EnviroLogix Inc. (“EnviroLogix”) warrants the products sold hereunder (“the Products”) against defects in materials and workmanship when used in accordance with the applicable instructions for a period not to extend beyond a product’s printed expiration date. If the Products do not conform to this Limited Warranty and the customer notifies EnviroLogix in writing of such defects during the warranty period, including an offer by the customer to return the Products to EnviroLogix for evaluation, EnviroLogix will repair or replace, at its option, any product or part thereof that proves defective in materials or workmanship within the warranty period.

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THIS WARRANTY IS EXCLUSIVE. The sole and exclusive obligation of EnviroLogix shall be to repair or replace the defective Products in the manner and for the period provided above. EnviroLogix shall not have any other obligation with respect to the Products or any part thereof, whether based on contract, tort, strict liability or otherwise. Under no circumstances, whether based on this Limited Warranty or otherwise, shall EnviroLogix be liable for incidental, special, or consequential damages.


This Limited Warranty states the entire obligation of EnviroLogix with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in full force and effect.

License

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

1.1 Product identifier

Trade name: Extraction Buffer GEC 20X

Part number: 10556, 12124, (KR 033/004)

Synonyms: Grain Extraction Concentrate 20X; Grain Buffer Concentrate 20X

1.2 Relevant identified uses of the substance or mixture and uses advised against application of the substance / 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
Tele: (207)-797-0300

1.4 Emergency telephone number: (207) 797-0500 Technical Service

SECTION 2. Hazards identification.

2.1 Classification of the substance or mixture	Hazard Classes	Hazard Statements
Classification according to OSHA 29CFR 1910.1200:	Not Classified	None

2.2 Label elements

Labeling according to OSHA 29CFR 1910.1200

Hazard pictograms: Not required

Signal word: None

Hazard statements: None


Precautionary statements: None

2.3 Other Hazards None

SECTION 3. Composition/information on ingredients.

3.2 Mixture	Ingredients	EC Number	CAS Number	Classification	Concentration % w/w
	Sodium Carbonate	207-839-8	497-19-8	h3c2 Irritation 2 (1319)	3.1

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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: May cause slight skin or eye irritation

4.3 Recommendation of any immediate medical attention or special treatment needed: None

SECTION 5. Firefighting measures.

5.1 Extinguishing media: Use extinguishing measures suitable for local circumstances and the surrounding environment

5.2 Special hazards arising from the substance or mixture: None

5.3 Advice for firefighters: Wear protective equipment suitable 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 safety 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 clean up: Absorb in paper towel 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 information 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 kits in original packaging in well ventilated areas away from heat.

7.3 Specific end use(s): Apart from those specified in Section 1.2, no other specific uses are stipulated.

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SECTION 8. Exposure controls/personal protection.

8.1 Control Parameters

Components with limit values that require monitoring at the workplace: None

8.2 Exposure controls

8.2.1 Engineering Controls: No specific recommendations, use in well ventilated areas

8.2.2 Recommendations for PPE:

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

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.

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 Controls: Contain spills, do not release to the 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: 9.6

e) Melting point/freezing point: No Data Available

f) Boiling point/boiling range: No Data Available

g) Flash point: No Data Available

h) Evaporation rate: Not 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: Fully miscible, water.

n) Solubility(ies): No Data Available

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

a) Explosive properties: No Data Available

b) Oxidizing properties: No Data Available

9.2 Other information: No further relevant information available.

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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 decomposition products should not be produced.

SECTION 11. Toxicological information.

The toxicological properties of this product have not been investigated

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 assessment: Not Carried Out

12.6 Other adverse effects: No Data Available

SECTION 13. Disposal considerations.

Hand over to hazardous waste disposers.

Follow federal, state and local regulations for waste control regulations, US EPA guidelines for waste classification determination is listed in 40 CFR part 261.3; follow European Directive on waste, 2008/98/EC.

SECTION 14. Transport information.

14.1 UN Number: Non-regulated, non-hazardous for transport

14.2 UN proper shipping name: Non-regulated, non-hazardous for transport

14.3 Transport hazard classes(es): Non-regulated, non-hazardous for transport


14.4 Packing group: Non-regulated, non-hazardous for transport

14.5 Environmental hazards: None

14.6 Special precautions for user: None

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

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SECTION 15. Regulatory information.

15.1 Safety, health, and environmental regulations

U.S. 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
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15.2 Chemical Safety Assessment

Not carried out	
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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.

*Envirologix Inc.
EHS Department*

Codes:

H319 Causes serious eye irritation

SDS: GLEC X 20

Summary Guide for Approved Matrices						
Approved Matrix	Add to Sample Extraction Vessel (in this order)	Then shake immediately	Clarify	Pre-mix as noted, then Transfer to Reaction Tube	Add Reaction Tube to Incubator Set at 22°C	Add Strip for
Oats (MG6)	1. 25g sample 2. 75 mL 1x GEC 3. Immediately shake vigorously for 10 seconds by hand	1 min highest speed on shaker table or 2 min by hand	Filter or Centrifuge 30 sec. at 2000 x g	<u>Pre-Mix</u> 200 µL water* + 100 µL clarified extract <u>Transfer</u> 100 µL of this Pre-Mix and 100 µL DB2	Acclimate tube for 2 min [^]	5 min.

Notes:

*Use distilled, deionized, or flat (non-carbonated) bottled 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)