QuickStix™ Kit for Enogen™ Corn

AP Test Procedure for Bulk Grain Samples

Highlights:

- *Results in 10 minutes or less*
- *Available as 50-strip kit or in bulk packaging.*

Contents of Kit:

- *50 QuickStix Strips packed in a moisture-resistant canister*
- *50 transfer pipettes*
- *50 reaction vials*
- *EB15 Extraction Buffer (see Sample Preparation Step 3 for instructions)*
- *1N HCl Solution*

Items Not Provided:

- *Waring blender, model 31BL91 or equivalent method, such as a Bunn Grinder*
- *Glass jar adapter (Eberbach # E8495)*
- *Glass Mason jars*
- *Protective cover for blender jar while grinding*
- *Graduated cylinder**
- *1L Bottle to mix up EB15 Extraction Buffer*

**Available as Accessories – see list on Page 3*

Catalog Number AS 070 BG

Intended Use

The EnviroLogix QuickStix Kit for Enogen™ Corn is designed for qualitative detection of the amylase protein in Enogen™ corn in bulk grain samples. Enogen™ corn derived from transformation Event 3272 contains the transgene *amy797E*, which encodes a synthetic thermostable alpha-amylase protein. The assay will detect the amylase protein found in a sample containing 0.25% Enogen™ corn (1 positive grain in a 400 negative grain sample) and requires 10 minutes to run.

How the Test Works

The QuickStix Kit is a "sandwich" type lateral flow strip test. In the test, bulk grain corn and single seed corn extracts are prepared and tested using a strip coated with antibodies raised against amylase protein. Amylase present in the sample extract binds to the antibodies bound on the strip and is then detected by a second anti-amylase antibody that is gold labeled. A positive sample results in a visual pink line forming about half way up the strip along with a second control line.

Each QuickStix Strip has an absorbent pad at each end. The protective tape with the arrow indicates the end of the strip to insert into the reaction vial. The sample will travel up the membrane strip and be absorbed into the larger pad at the top of the strip. The portion of the strip between the protective tape and the absorbent pad at the top of the strip is used to view the reactions as described under "Interpreting the Results".

Sample Preparation

Step 1: Determine Number of Sub-samples

1. Collect a composite sample according to USDA/GIPSA instructions found in the following reference documents:
   - **http://www.gipsa.usda.gov/fgis/handbook/gihbk1_inspec.aspx** - USDA Grain Inspection Handbook, Book 1, Grain Sampling.
   - **http://www.gipsa.usda.gov/fgis/biotech/sample2.htm** - Guidance document entitled Sampling for the Detection of Biotech Grains.
   - **http://www.gipsa.usda.gov/fgis/biotech/sample1.htm** - Practical Application of Sampling for the Detection of Biotech Grains.
   - **www.gipsa.usda.gov/fgis/biotech/samplingplan1.xls** - This website provides a simple to use Sample Planner (29K Excel Spreadsheet). The planner allows you to enter different assumptions in terms of sample size, number of samples, acceptable quality level and to determine the probability of accepting lots with given concentration levels. It also plots the probabilities in graph form for easy interpretation. Specific data can be saved for documentation and future analyses.
2. The following is a helpful reference for use in designing a sampling plan: Remund, K.M., Dixon, D.A., Wright D.L., Holden, L.R. "Statistical considerations in seed purity testing for transgenic traits", Seed Science Research, June 2001, Vol. 11 No.2, pp. 101-119.
3. To select the appropriate sample size, determine the purity standard and the degree of confidence required. Confidence level means the statistical probability that the true Enogen™ level in the seed lot is below the selected purity standard. Table 1 (next page) provides a guideline for determining the number of 400 seed sub-

Corn
Grams of Corn x 1.5 = mL of Extraction Buffer

Avoid pulling up particles when drawing sample

Add 1N HCl, then extract to vial; wait one minute

Then add strip

samples necessary to provide effective screening at different GM concentrations at the 90, 95 and 99% confidence levels.

Table 1-Amylase Corn Screening Levels	Number of 400 kernel subsamples required for screening at specific percentage(s) of Enogen™ corn			
Confidence Level	1.0%	0.5%	0.1%	0.05%
90%	1	2	6	11
95%	1	2	8	14
99%	2	3	11	21

For other sampling scenarios or different screening or confidence levels, refer to the USDA/GIPSA Excel spreadsheet described under Step 1 above, or call EnviroLogix Technical Support for assistance.

Step 2: Determine Average Seed Weight

4. Determine average weight of individual grain to be tested (weigh 100 seeds, divide by 100). Calculate the weight of the number of grains to be tested (Number of grains [100] X Average Weight/Grain). Use this weight for easy measuring of multiple subsamples into respective jars in preparation for grinding.

Step 3: Prepare the Sample

Prepare EB15 Extraction Buffer *–Pour the entire contents of the supplied buffer packet into 1 liter of tap water. Thoroughly mix to dissolve the buffer. Store at room temperature when not in use. (See Precautions and Notes; SDS is attached, pages 5-6).*

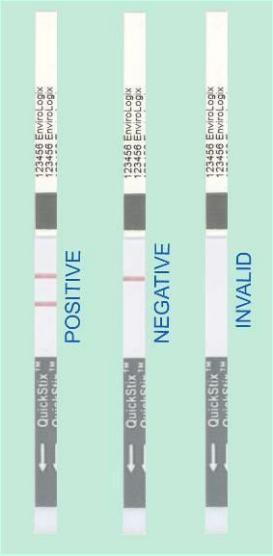
5. Weigh seed sample into a 16-ounce glass Mason jar for grinding. (If subsampling from a larger ground sample, weigh sample into a cup with a cap*.)
6. Put protective cover over the jar attached to the blender.
7. Grind sample with a Waring blender (or equivalent method) and jar adapter on high speed for a grinding time of 20-30 seconds or until all whole grains are broken.
8. Add the volume of Extraction Buffer calculated by the formula at left. *For example: If testing 400 kernels with an average weight of 0.25g: (400 x 0.25) = 100g x 1.5 = 150 mL Extraction Buffer.*
9. Cap the jar and shake vigorously for at least 30 seconds, or longer if needed, to thoroughly wet all of the corn in the sample. Sample will begin to settle immediately and liquid can be drawn off at that time.
10. While sample settles, add one drop of 1N HCl to the reaction vial.
11. Draw up enough liquid extract from above the settled sample to fill the long narrow tip of the transfer pipette up to the line at the top of the flared portion of the pipette bulb (see illustration on left sidebar). Avoid pulling up particles. Dispense extract (0.5 mL) into reaction vial. Allow to react for 1 minute before adding QuickStix to the vial.
12. To prevent cross-contamination, thoroughly clean blender parts and jars to remove dust and residue prior to preparation of a second sample. Use a new transfer pipette and reaction vial for each sample.

How to Run the QuickStix Strip Test

1. Allow refrigerated canisters to come to room temperature before opening. Remove the QuickStix Strips to be used. Avoid bending the strips. Reseal the canister immediately.
2. Place the strip into the reaction vial. The sample will travel up the strip. Reaction vials will stand on their own or may be inserted into the cardboard racks provided.
3. Allow the strip to develop for 10 minutes before making final assay interpretations. Positive sample results may become obvious much more quickly.
4. To retain the strip, cut off and discard the bottom section of the strip covered by the arrow tape.

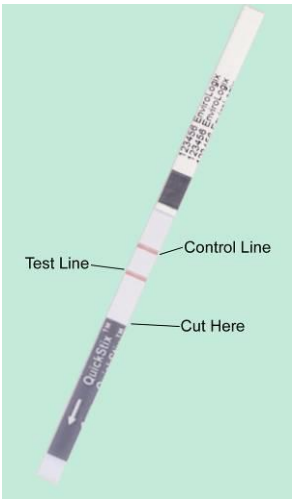
NOTE: Use extreme caution to prevent sample-to-sample cross-contamination with grain, fluids, or disposables.

Wait 10 minutes; read results



Any clearly discernable pink Test Line is considered positive

Interpreting the Results



Development of the Control Line within 10 minutes indicates that the strip has functioned properly. Any strip that does not develop a Control Line should be discarded, and the sample re-tested using another strip.

If the extract is from a bulk grain sample containing at least 0.25% Enogen™ corn (Event 3272), a second line (Test Line) will develop on the membrane strip between the Control Line and the protective tape. *The results should be interpreted as positive for amylase expression.*

If the extract is from a negative sample, the strip will only show the Control Line.

Kit Storage

QuickStix can be stored at room temperature, or refrigerated for a longer shelf life. Note the shelf life on the kit box for each storage temperature. The kit may be used in field applications; however, prolonged exposure to high temperatures may adversely affect the test results. Do not open the desiccated canister until ready to use the test strips.

Precautions and Notes

- This kit is designed to screen for presence or absence only, and is not meant to be quantitative.
- This product is currently not applicable for use in any other crop or in leaf tissue testing.
- As with all tests, it is recommended that results be confirmed by an alternate method if necessary.
- The extraction buffer used in the sample preparation procedure is a high pH (>11) and should be handled using eye and skin protection (safely glasses/goggles and gloves). SDS is attached, pages 5-6. Resulting corn extract is ~pH 9; check your local regulations concerning disposal.
- 1N HCl should be handled using eye and skin protection (safety glasses/goggles and impervious gloves). SDS is attached, pages 7-9.
- The assay has been optimized to be used with the protocol provided in the kit. Deviation from this protocol may invalidate the results of the test.
- 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.
- Warning: a strong positive result may safely be interpreted in as little as 2 minutes after sample addition. **It is not safe to interpret weak positive or negative results prior to 10 minutes.**
- DO NOT leave in direct sunlight or in vehicle. Protect all components from hot or cold extremes of temperature when not in use.

Optional Items Available:

- Graduated cylinder (100 mL) ACC 068
- Set of 50 sample cups with caps ACC 012

For Technical Support Contact Us At:

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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.

This test kit has been approved by Syngenta for detection of the amylase protein in Enogen™ corn.

Enogen™ is a trademark of a Syngenta Group Company
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ENVIROLOGIX™

Safety Data Sheet
According to 29CFR1910.1200

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

1.1 Product identifier
Trade name: **Extraction Buffer**
Part number EB15, EB16, KR242

1.2 Relevant identified uses of the substance or mixture and uses advised against application of the substance / the preparation : Laboratory chemicals

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: EnviroLogix Inc., 500 Riverside Industrial Pkwy. Portland ME 04103, USA (207) 797-0300

1.4 Emergency telephone number: 207-797-0300 (Technical Service)

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture
Classification according to 29CFR 1910.1200: **Hazard Classes**
Acute Toxicity, Oral Cat. 4
Skin corrosion Cat. 1
Serious eye irritation Cat 2

2.2 Label elements
Labeling according to 29CFR 1910.1200 :
Hazard pictograms :

Signal word : Danger

Hazard statements:
H302 Harmful if swallowed
H314 Causes severe skin burns and eye damage
H319 Causes serious eye irritation

Precautionary statements:
P301+P330+P331 If swallowed: rinse mouth do not induce vomiting
P305+ P351+P338 IF IN EYES: Rinse cautiously with water for several Minutes. Remove contact lenses if present and easy to do. Continue rinsing.

2.3 Other Statements None

SECTION 3. Composition/information on ingredients

3.2 Mixture

Chemical name	CAS No	EC No	Amount (%)
Trisodium Phosphate, Dodecahydrate	10101-89-0	231-509-8	75.0% - 80.0&
Sodium Sesquicarbonate	533-96-0	208-580-9	20.0% - 25.0%

SECTION 4. First aid measures

4.1 Description of first aid measures
In case of inhalation. Remove to fresh air. If not breathing give artificial respiration.
In case of skin contact. 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 contact, immediately flush eyes with plenty of water for at least 15 minutes. Lifting eyelids occasionally, until no evidence of chemical remains. Call a physician.
In case of ingestion. Rinse mouth, DO NOT induce vomiting unless directed to do so by medical personnel. Call a physician immediately.

4.2 Information for doctor May cause skin damage/irritation and eye damage/irritation. Treat symptomatically

4.3 Indication of any immediate medical attention and Special treatment needed: None

SECTION 5. Firefighting measures

5.1 Extinguishing media CO_2, extinguishing powder or water spray. Use extinguishing media appropriate to surroundings and circumstances

5.2 Special hazards arising from the substance or mixture : Oxides of Phosphorous and Sodium

5.2 Advice for firefighters Do not enter fire area without proper protective equipment, including respiratory protection

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, addition inhalation 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: Small spills wipe or scrape up and discard in appropriate waste. Clean with water afterwards. Large spills wipe or scrape up material, wash area thoroughly with water. Dispose according to section 13.

6.4 Reference 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 Keep container tightly closed in a dry and well-ventilated space.

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

SECTION 8. Exposure controls/personal protection

8.1 Control Parameters
Components with limit values that require monitoring of the workplace: None

8.2 Exposure Controls

Engineering Controls Utilize general industrial hygiene practice

Personal protective equipment
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).

Environmental Controls Contain spills, do not release to the environment.

SECTION 9. Physical and chemical properties

9.1 Information on Physical and Chemical properties:

a) Form:	Crystalline powder
b) Oder:	None
c) Color:	White
d) pH (1% in water):	11
e) Melting point/Melting range:	No Data Available
f) Boiling point/Boiling range:	No Data Available.
g) Flash point:	Not applicable.
h) Evaporation rate	Not applicable
i) Flammability (solid, gas)	Product is not flammable.
j) Upper/lower flammability or explosive limits	No Data Available
k) Vapor pressure	Not applicable
l) Vapor Density	Not applicable
m) Relative density	No Data Available
n) Water solubility	Moderate.
0) 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
s) Explosive properties	No Data Available
t) Oxidizing properties	No Data Available

9.2 Other information. No further relevant information available.

SECTION 10. Stability and reactivity

10.1 Reactivity: No data available
10.2 Chemical stability: Stable under recommended storage conditions
10.3 Possibility of hazardous reactions: No data available
10.4 Conditions to avoid: No data available
10.5 Incompatible materials Strong acids, Aluminum
10.6 Hazardous decomposition products: No data available; in the event of a fire see section 5

SECTION 11. Toxicological information

11.1 Information on toxicological effects
Acute effects (toxicity tests): Product has not been tested

Skin corrosion/irritation: Causes skin irritation
Serious eye damage/irritation Causes eye irritation

Sensitization skin, respiratory: None known

Additional toxicological information: CMR (carcinogenicity, mutagenicity and toxicity for reproduction) – No Data Available

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

13.1 Waste treatment methods: Hand over to hazardous waste disposers.
Follow federal, state and local regulations for discharge 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.

Uncleaned packaging: Disposal must be in accordance with official regulations.

SECTION 14. Transport information

14.1 UN-Number DOT, ADR, ADN, IMDG, IATA : Not dangerous goods
14.2 UN Proper Shipping Name Not dangerous good
14.3 Transport hazard class(es) Not dangerous goods
14.4 Packing Group Not dangerous goods
14.5 Environmental hazards Avoid release into the environment.
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

SECTION 15. Regulatory information

15.1 US Federal Regulations
TSCA The ingredients of this product are listed on the TSCA inventory.

SARA Section 302 (Extremely Hazardous Substances) No chemicals in this material are subject to requirements of SARA Title III, Section 302

SARA section 313 Not listed

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

EHS Department
EnviroLogix Inc.

Codes:
H302 Harmful if swallowed
H314 Causes severe skin burns and eye irritation
H319 Causes serious eye irritation

P301+P330+P331 If swallowed: rinse mouth do not induce vomiting
P305+P351+P338 If in eyes: rinse cautiously with water for several minutes Remove contact lenses, if present and easy to do Continue Rinsing.

ENVIROLOGIX

Material Safety Data Sheet
OSHA 29CFR 1910.1200

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

1.1 Product identifier
Trade name: **Stop Solution (1.0 N HCl)**
Part number 11776 (XGD007)

1.2 Relevant identified uses of the substance or mixture and uses advised against application of the substance / the preparation : Laboratory chemicals

1.3 Details of the supplier of the safety data sheet
Manufacturer/Supplier: EnviroLogix Inc, 500 Riverside Industrial Pkwy, Portland ME 04103, USA
Phone: (207) 797-0300

1.4 Emergency telephone number: (207) 797-0300 Technical Service

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture
Classification according to OSHA 29 CFR 1910.1200

Hazard Classes
Metal Corrosive (Cat. 1) H290
Skin Irritation (Cat 2) H315
Serious Eye damage (Cat. 1) H318

2.2 Label elements
Labeling according to OSHA 29CFR 1910.1200

Hazard pictograms :

Signal word : Warning

Hazard statements:
H290 May be corrosive to metals
H315 Causes skin irritation
H318 Causes serious eye damage

Precautionary statements:
P281 Use personal protective equipment as required
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305+ P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

2.3 Other Statements None

SECTION 3. Composition/information on ingredients

3.2 Mixture
Aqueous solution 1N Hydrochloric Acid (1N HCl, 3 % HCl)

Chemical name	Amount (%)	CAS No / EC No	Classification According to OSHA 29CFR 1910.1200	
			Hazard Classification	Hazard Code
Hydrochloric acid	1-4 %	7647-01-0 231-595-7	May be Corrosive to Metals	H290
			Causes Skin Irritation	H315
			Causes Serious Eye Damage	H318

SECTION 4. First aid measures

4.1 Description of first aid measures
After inhalation : In case of inhalation. Remove to fresh air. If not breathing give artificial respiration. Get medical attention immediately.
After skin contact : In case of skin contact. 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.
After eye contact : In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Lifting eyelids occasionally, until no evidence of chemical remains. Get medical attention immediately.
After swallowing : In case of ingestion. DO NOT Induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.

4.2 Most important symptoms and effects, both acute And delayed: May cause skin irritation and eye damage

4.3 Indication of any immediate medical attention and special treatment needed: DO NOT use sodium bicarbonate in an attempt to neutralize the acid.

SECTION 5. Firefighting measures

5.1 Extinguishing media: CO_2, 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: Hydrogen Chloride gas

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 and discard in appropriate waste. Clean with water afterwards. Large spills may be neutralized with dilute solutions of sodium carbonate or calcium oxide.

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

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 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

SECTION 8. Exposure controls/personal protection

8.1 Exposure limits:
Components with limit values that require monitoring at the workplace:

Hydrogen Chloride	European (Commission directive 96/94)	USA (OSHA)
	8Hr TWA = 5 ppm (7.5 mg/m3)	Ceiling Limit = 5 ppm (7.5 mg/m3)
	STEL = 10 ppm (15 mg/m3)	

8.2 Exposure Controls:
8.2.1Engineering 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 measures: The usual precautionary measures should be adhered to when handling chemicals.

Eye 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'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.

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 government standards such as NIOSH (US) or CEN (EU).

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 chemical properties:

a) Appearance:	Clear liquid, colorless to slight yellow.
b) Odor:	Pungent (slight)
c) Odor Threshold:	No Data Available
d) pH:	pH 1
e) Melting point/freezing point:	No Data Available
f) Boiling point/Boiling range:	No Data Available.
g) Flash point:	Not applicable.
h) Evaporation rate:	0.36 (Water) compared with n-Butyl Acetate = 1
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:	No Data Available
n) Solubility(ies):	Fully miscible, water.
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 but should be similar to that of water
s) Explosive properties:	No Data Available.
t) Oxidizing properties:	No Data Available

9.2 Other information: No further relevant information available.

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: Metals, Alkali metals, bases, Amines.

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):

7647-01-0 HCl	Effect Dose	Species
Acute oral toxicity	LD50=900mg/kg	rabbit
Acute dermal toxicity	No data	
Acute inhalative toxicity	LC50 = 3124 mg/L	rat

Sensitization: No sensitizing effects known
CMR (carcinogenity, mutagenicity and toxicity for reproduction) effects: No CMR effects.
Additional toxicological information: No Additional Information

SECTION 12. Ecological information

12.1 Toxicity:

Aquatic toxicity (1N HCl)	Effect dose	Exposure time	Species
Acute fish toxicity	LC50=826 mg/L	96h	Leuciscus idus
Acute daphnia toxicity	No data		
Acute algae toxicity	No data		

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 available as a chemical safety assessment, not required/not conducted.
12.6 Other adverse effects:	No Data Available

SECTION 13. Disposal considerations

Waste treatment methods:	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

14.1 UN-Number DOT, ADR, ADN, IMDG, IATA :	UN1789
14.2 UN proper shipping name DOT, ADR, ADN, IMDG, IATA :	HYDROCHLORIC ACID SOLUTION
14.3 Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA):	8
14.4 Packing group (DOT, ADR, IMDG, IATA):	III
14.5 Environmental hazards	Not hazardous to the environment.
14.6 Special precautions for user :	None
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC code:	No information available.

SECTION **15. Regulatory information**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture	
US Federal Regulations	
TSCA	CAS# 7647-01-0 is not listed on the TSCA inventory.
Health and Safety Reporting List	None listed.
Chemical Test Rule	None under a Chemical Test Rule.
CERCLA	CAS# 7647-01-0: 5000 lb final RQ; 2270 Kg final RQ.
SARA Section 302 (Extremely Hazardous Substances)	CAS# 7647-01-0: 500 lb TPQ.
Clean Air Act	CAS# 7647-01-0: is listed as a hazardous air pollutant (HAP).
Clean Water Act	CAS# 7647-01-0: is listed as a hazardous Substance under the CWA.
OSHA	CAS# 7647-01-0: is considered highly hazardous by OSHA.
US State Regulations	CAS# 7647-01-0: can be found on the following state right to know lists: CA, NJ, PA, MN, MA. CA Prop 65: no Significant Risk Level – none of the chemicals in this product are listed.
European/International Regulations	
REACH No:	A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
Canada – DSL/NDSL	CAS# 7647-01-0: 1
Canada – WHMIS	WHMIS classification of E, D2A.
Canadian Ingredient Disclosure List	CAS# 7647-01-0 is listed on the Canadian Ingredient Disclosure List.
15.2 Chemical Safety assessment	Not carried out

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

EHS Department
EnviroLogix, Inc.

Codes:

H290	May be Corrosive to Metals	P281	Use Personnel Protective equipment as Required
H315	Causes Skin Irritation	P302 + P352	IF ON SKIN: Wash with plenty of soap and water
H318	Causes Serious Eye Damage	P305+ P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so Continue rinsing.