

Catalog Number AP 003 CRBS

Highlights:

- Screen single corn, soy or cotton seed or leaf samples for the presence or absence of Cry1Ab or Cry1Ac

Contents of Kit:

- 12 strips of 8 antibody-coated wells, in plate frame
- Cry1Ab/Cry1Ac Positive Control
- Cry1Ab/Cry1Ac Enzyme Conjugate
- Substrate
- Stop Solution
- Wash Buffer Salt Packet

Note: To handle bulk packaged Cry1Ab/Cry1Ac Enzyme Conjugate and Substrate, pour off 5.5 milliliters of Conjugate and 11.5 mL Substrate per plate to be run each day. Use a multiple-channel pipette to dispense. Do not pour excess Substrate back into the reagent bottle.

Extraction Solutions Required but not provided

- Tween-20 – this common lab supply is added to the Wash Buffer to create the extraction solution for corn leaf / seed, cotton leaf / seed, and soy leaf tissue
- GEC 20X – this is added to wash buffer to create a seed extraction buffer for soy single seed (available through EnviroLogix, Part #11616 [1000 mL] or Part #12124 [500 mL])

Intended Use

The EnviroLogix QualiPlate Kit for Cry1Ab/Cry1Ac is designed for the non-quantitative laboratory detection of:

- Cry1Ab protein in Bt11, MON810 or Bt176 corn leaf tissue, or in Bt11 or MON810 corn seed samples;
- Cry1Ac protein in Bollgard®, Bollgard II, or WideStrike™ cotton leaf or seed samples.
- Cry1Ac protein in Intacta® Soy leaf or seed samples.

Note: This is a very sensitive test for Cry1Ab or Cry1Ac—at the customer’s discretion, it may be utilized in quantitative applications, for corn and cotton leaf and seed only, with user-supplied calibrators.

How the Test Works

This EnviroLogix QualiPlate Kit is a “sandwich” Enzyme-Linked ImmunoSorbent Assay (ELISA). In the test, plant leaf or seed sample extracts are added to test wells coated with antibodies raised against Cry1Ab/Cry1Ac toxin. Any residues present in the sample extract bind to the antibodies, and are then detected by addition of enzyme (horseradish peroxidase)-labeled Cry1Ab/Cry1Ac antibody.

After a simple wash step, the results of the assay are visualized with a color development step; color development is proportional to Cry1Ab/Cry1Ac concentration in the sample extract.

Lighter color = Lower concentration

Darker color = Higher concentration

Materials Not Provided

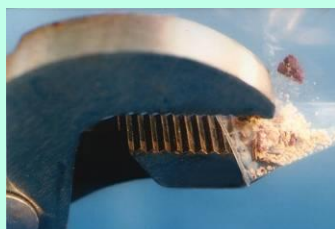
- disposable tip, adjustable air-displacement pipettes which will measure 50 and 100 microliters (µL), preferably of multi-channel style.
- marking pen (indelible)
- tape or Parafilm®
- timer
- microtiter plate reader
- wash bottle, or microtiter plate or strip washer
- orbital plate shaker (optional)
- Tween-20 (see note, left)
- GEC 20X (see note, left)
- Calibrators or Standards. This kit may be used in a quantitative fashion, for corn and cotton only, with user-supplied calibrators. For example, corn flour standards containing known percentages of Bt11- or MON810-expressing corn are available from the European Commission Joint Research Centre, Institute for Reference Materials and Measurements (Retieseweg, B-2440 Geel, Belgium), and can be used to calibrate this test for measurement of ground corn samples. In order for this to work, it is imperative that the samples be ground to the same consistency as the calibrators, and that both are extracted with the



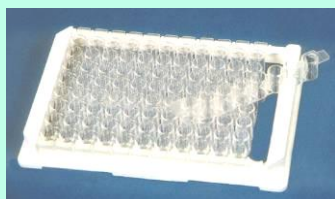
Prepare wash buffer and extraction solutions



Punch leaf sample



Crush single seed



Remove unneeded strips

same extraction buffer, buffer-to-sample ratio, and extraction time. Alternatively, if the user can obtain pure Cry1Ab or Cry1Ac protein, the kit can be calibrated with these materials. In this instance, complete extraction of the protein from the sample is required to obtain the best estimate of the amount of Cry1 protein in the sample.

Preparation of Solutions

Wash Buffer: Add the contents of the packet of **Buffer Salts** (phosphate buffered saline, pH 7.4 - Tween 20) to 1 liter of distilled or de-ionized water, and stir to dissolve. Store refrigerated when not in use; warm to room temperature prior to assay.

Leaf extraction buffer: Add 0.5 mL Tween-20 to 100 mL of prepared Wash Buffer, and stir to dissolve. Store refrigerated when not in use; warm to room temperature prior to assay.

Seed extraction buffer for Cry1Ac cotton or Cry1Ab corn: Add 0.5 mL Tween-20 to 100 mL of prepared Wash Buffer, and stir to dissolve. Store refrigerated when not in use; warm to room temperature prior to assay.

Seed extraction buffer for Cry1Ac soybean: Dilute 20X GEC (Part #11616, 1000 mL or Part #12124, 500 mL), 50 mL/L and adjust pH to 9.6. Store refrigerated when not in use; warm to room temperature prior to assay.

Sample Preparation

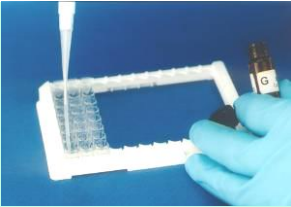
Sample Extraction:

Sample extraction protocols are to be designed and validated by the individual users of this kit. The following suggestions are guidelines, and define the manner in which the kit is performance tested by the manufacturer.

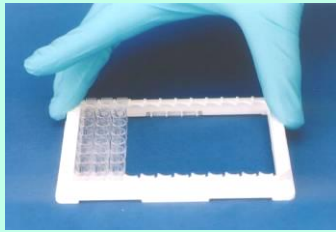
1. **Green leaf samples:** Extract green leaf samples that are 5-10 mm² in size with 250 µL of Extraction Buffer. The extraction efficiency will vary proportionately with the amount of tissue disruption and mixing performed. *Use extreme caution to prevent sample-to-sample cross-contamination with plant tissue or exudate.*
2. **Single seed samples:** Crush seed and extract each with 0.75 to 1 mL of Extraction Buffer. Mix thoroughly, then allow solids to settle before transferring extract to the assay plate.

How to Run the Assay

- Read all of these instructions before running the kit.
- Allow all reagents to reach room temperature before beginning (at least 30 minutes with un-boxed plates and reagents at room temperature - do not remove plates from bag with desiccant until they have warmed up).
- Organize all reagents, sample extracts, and pipettes so that step 1 can be performed in 15 minutes or less. The use of a multichannel pipette is strongly recommended.
- If more than four strips are to be run at one time, the loading time will most likely exceed 15 minutes, and the use of a multi-channel pipette is recommended.
- If four or fewer strips are to be run, use a disposable-tip air-displacement pipette and a clean pipette tip to add each Calibrator and diluted sample extract to the wells. Conjugate, Substrate, and Stop Solution may be added in the same manner; alternatively, use a repeating pipette for these three reagents.



Add Conjugate, Control, and sample extract



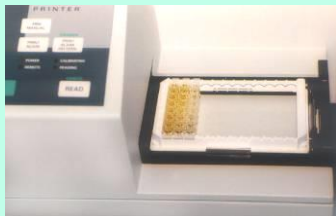
Mix plate



Strip Plate or Bottle Wash method



Complete protocol, then add Stop Solution



Read plates in a Plate Reader within 30 minutes of the addition of Stop Solution

- If fewer than all twelve strips are used, reseal the unneeded strips and the desiccant in the foil pouch provided, and refrigerate.
- Use the well identification markings on the plate edge to guide you when adding the samples and reagents. It is recommended that at least two wells each of Blank (Extraction Buffer) and Cry1Ab Positive Control be run on each plate. Additional quality control samples may be added at the discretion of the user. Sample extracts may be run in either single or duplicate wells. See example of typical assay setup, Figure 1A, on page 4.

1. Add **50 μ L** of **Cry1Ab/Cry1Ac Enzyme Conjugate** to each well of the plate. Immediately follow with **50 μ L** of Extraction Buffer **Blank**, **50 μ L** of **Cry1Ab Positive Control**, and **50 μ L** of each **sample extract** to their respective wells. Follow this same order of addition for all reagents.

NOTE: It is strongly recommended that a multi-channel pipette be used in steps 1, 5, and 7.

2. Thoroughly mix the contents of the wells by moving the plate in a rapid circular motion on the bench top for a full 20-30 seconds. Be careful not to spill the contents!
3. Cover the wells with tape or Parafilm to prevent evaporation and **incubate at ambient temperature for 1 to 2 hours (2 hours required for Cry1Ac soy)**. If an orbital plate shaker is available, shake plate at 200 rpm.

NOTE: Users shall determine appropriate incubation times to give the best results with the tissue disruption/extraction methods in use.

4. After incubation, carefully remove the covering and vigorously shake the contents of the wells into a sink or other suitable container. Flood the wells completely with Wash Buffer, then shake to empty. Repeat this wash step three times. Alternatively, perform these four washes (300+ μ L/well) with a microtiter plate or strip washer. Slap the plate on a paper towel to remove as much water as possible.

5. Add **100 μ L** of **Substrate** to each well.

6. Thoroughly mix the contents of the wells, as in step 2. Cover the wells with new tape or Parafilm and **incubate for 15 to 30 minutes at ambient temperature (30 minutes required for Cry1Ac soy)**. Use orbital shaker if available.

NOTE: Users shall determine appropriate incubation times to give the best results with the tissue disruption/extraction methods in use.

Caution: Stop Solution is 1.0N Hydrochloric acid. Handle carefully.

7. Add **100 μ L** of **Stop Solution** to each well and mix thoroughly. This will turn the well contents yellow.

NOTE: Read the plate within 30 minutes of the addition of Stop Solution.

How to Interpret the Results

Spectrophotometric Measurement

1. Set the wavelength of your microtiter plate reader to 450 nanometers (nm). (If it has dual wavelength capability, use 600, 630 or 650 nm as the reference wavelength.)

- Set the plate reader to blank on the Extraction Buffer **Blank** wells. If the reader cannot do this, measure and record the optical density (OD) of each well's contents, then subtract the average OD of the **Blank** wells from each of the readings.

Interpreting the Results

Compare the OD's of the sample extracts to those of the Positive Control to determine presence or absence of Cry1Ab/Cry1Ac endotoxin in your sample extract. Samples with absorbances close to that of the Blank wells (and less than that of the Positive Control wells) are presumed to be free of Bt endotoxin. Samples with absorbances significantly higher than those of the Blank wells are positive for Bt endotoxin content.

Figure 1A. Example of a typical assay setup

	1	2	3	4	5	6	7	8	9	10	11	12
A	BL	S7	S15	S23	S31	S39	S47	S55	S63	S71	S79	S87
B	PC	S8	S16	S24	S32	S40	S48	S56	S64	S72	S80	S88
C	S1	S9	S17	S25	S33	S41	S49	S57	S65	S73	S81	S89
D	S2	S10	S18	S26	S34	S42	S50	S58	S66	S74	S82	S90
E	S3	S11	S19	S27	S35	S43	S51	S59	S67	S75	S83	S91
F	S4	S12	S20	S28	S36	S44	S52	S60	S68	S76	S84	S92
G	S5	S13	S21	S29	S37	S45	S53	S61	S69	S77	S85	BL
H	S6	S14	S22	S30	S38	S46	S54	S62	S70	S78	S86	PC

“BL” = Blank wells (Extraction Buffer)

“PC” = Cry1Ab Positive Control Wells

“S..” = sample extracts

Precautions and Notes

- Store all Kit components at 4°C to 8°C (39°F to 46°F) when not in use.
- Do not expose Kit components to temperatures greater than 37°C (99°F) or less than 2°C (36°F).
- Allow all reagents to reach ambient temperature (18°C to 27°C or 64°F to 81°F) before use.
- Do not use kit components after the expiration date.
- Do not use reagents or test plates from one Kit with reagents or test plates from a different Kit.
- Do not expose Substrate to sunlight** during pipetting or while incubating in the test wells.
- Do not dilute or adulterate test reagents or use samples not called for in the test procedure.
- Cry1Ab and Cry1Ac proteins can be degraded by heat and sunlight. Take samples from green, actively growing leaves. Leaf samples that cannot be extracted immediately may be stored frozen for up to 1 week prior to analysis. Seeds may be stored for at least 6 months under cool, dry conditions.
- As with all tests, it is recommended that results be confirmed by an alternate method when necessary.
- Observe any applicable regulations when disposing of samples and kit reagents.



**For Technical Support
Contact Us At:**

EnviroLogix
500 Riverside Industrial
Parkway
Portland, ME 04103-1486
USA

Tel: (207) 797-0300
Toll Free: 866-408-4597
Fax: (207) 797-7533

e-mail:
info@envirologix.com

website:
www.envirologix.com



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.

ENVIROLOGIX MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The warranty provided herein and the data, specifications and descriptions of EnviroLogix products appearing in EnviroLogix published catalogues and product literature are EnviroLogix’ sole representations concerning the Products and warranty. No other statements or representations, written or oral, by EnviroLogix’ employees, agents or representatives, except written statements signed by a duly authorized officer of EnviroLogix Inc., are authorized; they should not be relied upon by the customer and are not a part of the contract of sale or of this warranty.

EnviroLogix does not warrant against damages or defects arising in shipping or handling, or out of accident or improper or abnormal use of the Products; against defects in products or components not manufactured by EnviroLogix, or against damages resulting from such non-EnviroLogix made products or components. EnviroLogix passes on to customer the warranty it received (if any) from the maker thereof of such non-EnviroLogix made products or components. This warranty also does not apply to Products to which changes or modifications have been made or attempted by persons other than pursuant to written authorization by EnviroLogix.

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.

*Parafilm is a registered trademark of American Can Corporation
Bollgard and Intacta are registered trademarks of the Monsanto Company
WideStrike is a trademark of Dow AgroSciences
EnviroLogix, the EnviroLogix logo, and QualiPlate are trademarks of EnviroLogix Inc.*

© EnviroLogix 2016



Safety Data Sheet
According to GHS/HA 29CFR 1910.1200

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

1.1 Product Identifier
Trade name: Wash Buffer Salts
Part number: 50-0091, 10099

1.2 Relevant identified uses of the substance or mixture and uses advised against application of the substance or 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 (207) 797-0300 Technical Service

1.4 Emergency telephone number:

SECTION 2. Hazards Identification

2.1 Classification of the Substance or Mixture:
Classification according to OSHA 29CFR 1910.1200 (Hazard Communication): Not a hazardous substance or mixture

2.2 Label Elements:
None required according to 29CFR 1910.1200
Other indications: None

2.3 Additional Information:
No other information

SECTION 3. Composition/information on ingredients

3.1 Mixture: Powdered solid
Synonyms: PBS

Hazardous Components

Chemical name	CAS No	EC No	Amount (%)	Classification
Potassium Chloride	7447-40-7	231-211-8	1-5%	Aquatic Acute 3, Aquatic Chronic 3, H412

Based on the amount of hazardous ingredients in this product, it is not considered hazardous according to 29CFR 1910.1200

SECTION 4. First aid measures

4.1 Description of first aid measures:
After inhalation: Supply fresh air, consult doctor in case of breathing difficulties.
After skin contact: Flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing. Seek medical attention if irritation develops.
After eye contact: Rinse opened eye for several minutes under running water. Seek medical attention if irritation develops.
After swallowing: If swallowed, consult with medical staff or poison control center to determine if any immediate response or follow up actions are recommended. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed:
None

4.3 Indication of any immediate medical attention and special treatment needed:
No special treatment is required

SECTION 5. Firefighting measures

5.1 Extinguishing media:
Suitable extinguishing agents: 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:
Carbon oxides, Oxides of Phosphorus, Potassium, Sodium, Hydrogen Chloride gas

5.3 Advice for firefighters:
Wear protective equipment appropriate for fire conditions including respiratory protective gear

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:
Use PPE, avoid dust formation, ensure adequate ventilation, avoid breathing dust

6.2 Environmental precautions:
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge to the environment must be avoided.

6.3 Methods and material for containment and clean up:
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable closed containers for disposal

6.4 Reference 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. Prevent formation of dust.

7.2 Conditions for safe storage, including any incompatibilities:
Keep containers closed, store in a dry, well ventilated space.

7.3 Specific end use(s):
Apart from the uses mentioned in section 1.2, no other end uses are stipulated.

SECTION 8. Exposure controls/personal protection

8.1 Control parameters:
Components with workplace control Parameters: Contains no substances with occupational exposure limit values

8.2 Exposure controls:
8.2.1 Appropriate engineering controls: Ensure eyewash and safety shower are nearby; provide ventilation if necessary

8.2.2 Personal Protective Equipment:
Eyes: 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

Hands: 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.

Respiratory protection: 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).

Body: Use body protection relative to its type and amount of material being handled

8.2.3 Environmental controls: Sweep or wipe up spills, do not allow into sewers or drains

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties:
a) Appearance: White powder.
b) Odor: None
c) Odor Threshold: No data available
d) pH: 7-4
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: No data available
i) Flammability (solid, gaseous):
i1 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): Water soluble
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
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 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 oxidizing agents and strong acids.

10.6 Hazardous decomposition products:
No data available

SECTION 11. Toxicological information

Acute toxicity: No data available
Irritation:
Irritation: No data available
Dermal:
Skin corrosion/irritation: No data available
Serious eye damage:
Respiratory or skin sensitization: No data available
Mutagenicity and toxicity for reproduction:
Carcinogenicity: No data available
No component of this product at levels greater than 0.1% is identified as probable, possible, or confirmed human carcinogen by IARC, ACGIH, NTP, or OSHA.

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

12.6 Other adverse effects:
No data available

SECTION 13. Disposal considerations

Dispose of excess or unused product in accordance with Local, State and Federal regulations. Contact a licensed professional waste disposal service to dispose of this material.

SECTION 14. Transport information

14.1 UN-Number (DOT, ADR, ADN, IMDG, IATA): Not dangerous goods
14.2 UN proper shipping name (DOT, ADR, ADN, IMDG, IATA): Not dangerous goods
14.3 Transport hazard classes (DOT, ADR, ADN, IMDG, IATA): Not applicable
14.4 Packing group (DOT, ADR, IMDG, IATA): Not applicable
14.5 Environmental hazards: Not applicable
14.6 Special precautions for user: Not applicable
14.7 Transport in bulk according to Annex II of MARPOL 73/78: Not applicable

SECTION 15. Regulatory information

15.1 Safety, health and environmental regulation/legislation specific for the substance or mixture

US Federal Regulations:
SARA Section 302 (Extremely Hazardous Substances): Not listed
Clean Air Act: Not listed
Clean Water Act: Not listed
OSHA: Not listed

US State Regulations:
Massachusetts Right to Know: Disodium Hydrogenorthophosphate CAS No 7558-79-1 Rev Date: 2007-03-01
California Prop. 65 Components: Contains no chemicals known to cause cancer, birth defects, or reproductive harm.

15.2 Chemical Safety Assessment:
Not carried out

SECTION 16. Other information

Hazard Code:
H412 Harmful to aquatic life with long lasting effects

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.



Material Safety Data Sheet
OSHA 29CFR 1910.1200

SECTION 1. Identification of the substance/mixture and of the company/undertaking	
1.1 Product identifier	Stop Solution
Trade name:	L.O.N HCl
Synonyms:	10825, 10827, 10828, 11193, 11776 (XGID007)
Part number:	Laboratory chemicals
1.2 Relevant identified uses of the substance or mixture and uses advised against application of the substance / the preparation:	
1.3 Details of the supplier of the safety data sheet	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	Hazard Classes Metal Corrosive (Cat. 1) H290 Skin Irritation (Cat 2) H315 Serious Eye damage (Cat. 1) H318
Classification according to OSHA 29 CFR 1910.1200	
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

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:	<table border="1"> <thead> <tr> <th>Hydrogen Chloride</th> <th>European (Commission directive 96/94)</th> <th>USA (OSHA)</th> </tr> </thead> <tbody> <tr> <td></td> <td>8hr TWA = 5 ppm (7.5 mg/m³)</td> <td>Ceiling Limit = 5 ppm (7.5 mg/m³)</td> </tr> <tr> <td></td> <td>STEL = 10 ppm (15 mg/m³)</td> <td></td> </tr> </tbody> </table>	Hydrogen Chloride	European (Commission directive 96/94)	USA (OSHA)		8hr TWA = 5 ppm (7.5 mg/m ³)	Ceiling Limit = 5 ppm (7.5 mg/m ³)		STEL = 10 ppm (15 mg/m ³)	
Hydrogen Chloride	European (Commission directive 96/94)	USA (OSHA)									
	8hr TWA = 5 ppm (7.5 mg/m ³)	Ceiling Limit = 5 ppm (7.5 mg/m ³)									
	STEL = 10 ppm (15 mg/m ³)										
8.2 Exposure 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.										
8.2.1 Engineering controls											
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 3. Composition/information on ingredients				
3.2 Mixture				
Aqueous solution 1N Hydrochloric Acid (1N HCl, 3% HCl)				
Chemical name	Amount (%)	CAS No	Classification According to OSHA 29CFR 1910.1200	
			EC No	Hazard Code
Hydrochloric acid	1-4%	7647-01-0		Hazard Classification
				May be Corrosive to Metals H290
				Causes Skin Irritation H315
		231-595-7		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.

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) Color/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 decomposition 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=920mg/kg	rabbit
Acute dermal toxicity		No data	
Acute inhalative toxicity		LC50 = 3124 mg/L	rat
Sensitization:	No sensitizing effects known		
CMR (carcinogenicity, 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 MARPOL 73/78 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 lbTPQ.
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 Prep 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, EnveroLogic 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
EnveroLogic Inc.

Codes:			
H250	May be Corrosive to Metals	P281	Use Personal 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.