

SAFETY DATA SHEET

i-genomic Plant DNA Extraction Mini Kit - Buffer PG (Lysis Buffer)

Date of issue: 2018-05-29

Revision date: Not applicable

Version: R0001.0001

1. IDENTIFICATION

A. Product name

- i-genomic Plant DNA Extraction Mini Kit - Buffer PG (Lysis Buffer)

B. Recommended use and restriction on use

- General use : Laboratory chemicals
 - Restriction on use : Not available

C. Manufacturer / Supplier / Distributor information

o Manufacturer information

- Company name : iNtRON Biotechnology, Inc.
 - Address : #1011 Jungang Induspia V B/D, 137, Sagimakgol-ro, Jungwon-gu, Seongnam, Gyeonggi-do, 13202, Korea
 - Dept. : CRT center
 - Telephone number : +82-31-739-5737
 - Emergency telephone number :
 - Fax number : +82-31-739-5264
 - E-mail address : intronbio@intronbio.com

o Supplier/Distributor information

- Company name : iNtRON Biotechnology, Inc.
 - Address : #1011 Jungang Induspia V B/D, 137, Sagimakgol-ro, Jungwon-gu, Seongnam, Gyeonggi-do, 13202, Korea
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2. HAZARD IDENTIFICATION

A. GHS Classification

- Acute toxicity (dermal) : Category3
 - Serious eye damage/irritation : Category2A
 - Reproductive toxicity : Category2

B. GHS label elements

o Hazard symbols



o Signal words

- Danger

o Hazard statements

- H311 Toxic in contact with skin
- H319 Causes serious eye irritation
- H361 Suspected of damaging fertility or the unborn child

o **Precautionary statements**

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P264 Wash hands thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

2) Response

- 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.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P361 Remove/Take off immediately all contaminated clothing.
- P363 Wash contaminated clothing before reuse.

3) Storage

- P405 Store locked up.

4) Disposal

- P501 Dispose of contents/container in accordance with local/regional/national/international regulation

C. Other hazards which do not result in classification : (NFPA Classification)

o **NFPA grade (0 ~ 4 level)**

- Health : 2, Flammability : 0, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | Trade names and Synonyms | CAS No. | Content(%) |
|---|---|---------|------------|
| 2-Amino-2-(hydroxymethyl)-1,3-propanediol | 1,3-Propanediol, 2-amino-2-(hydroxymethyl)- ; Trometamol ; Tris(hydroxymethyl)methylamine ; Tris buffer ; Trihydroxymethylaminomethane ; Propane-1,3-diol, 2-amino-2-(hydroxymethyl)- ; Aminomethane ; Tromethamine ; 2-Amino-1,3-dihydroxy-2-(hydroxymethyl)propane ; 2-Amino-2-(hydroxymethyl)propane-1,3-diol ; 2-Amino-2-methylol-1,3-propanediol ; Aminotri(hydroxymethyl)methane ; Aminotrimethylolmethane ; Aminotris(hydroxymethyl)methane ; Methanamine, 1,1,1-tris(hydroxymethyl)- ; Tri(hydroxymethyl)methylamine ; Trimethylolaminomethane ; Tris(hydroxymethyl)aminomethane ; Tris(hydroxymethyl)methanamine ; Tris(methylolamino)methane ; [2-Hydroxy-1,1-bis(hydroxymethyl)ethyl]amine ; Tromethane ; Tromethanmin ; | 77-86-1 | 5 ~ 20% |

| | | | |
|---|--|-----------|----------|
| Ethylenediaminetetraacetic acid disodium salt | Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)-, disodium salt ; Acetic acid, (ethylenedinitrilo)tetra-, disodium salt ; EDTA Disodium-salt ; Ethylenediaminetetraacetic acid, disodium salt ; Glycine, N,N'-1,2-ethanediylbis[N-(carboxymethyl)-, disodium salt ; Acetic acid, (ethylenedinitrilo)tetra-, disodium salt ; N,N'-1,2-Ethanediylbis[N-(carboxymethyl)glycine], disodium salt, dihydrate ; Disodium dihydrogen ethylenediaminetetraacetate | 139-33-3 | 5 ~ 20% |
| Sodium chloride | Common salt ; Halite ; | 7647-14-5 | 5 ~ 20% |
| Sodium dodecyl sulfate | Sodium lauryl sulfate ; Dodecyl sodium sulfate ; Lauryl sodium sulfate ; Sodium dodecyl sulphate ; Dodecyl alcohol, hydrogen sulfate, sodium salt ; Lauryl sulfate sodium salt ; Sulfuric acid, monododecyl ester, sodium salt ; | 151-21-3 | 3 ~ 15% |
| Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs. | - | 9005-64-5 | 0.5 ~ 4% |

4. FIRST AID MEASURES

A. Eye contact

- Do not rub your eyes.
- Immediately flush eyes with plenty of water for at least 15 minutes and call a doctor/physician.
- Get medical attention immediately.
- Go to the hospital immediately if symptoms (flare, irritate) occur.
- Remove contact lenses if worn.

B. Skin contact

- Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
- Laundering enough contaminated clothing before reuse.
- Get medical attention immediately.
- Prevent the spread of the skin.
- Take the doctor's examination.

C. Inhalation contact

- When exposed to large amounts of steam and mist, move to fresh air.
- Take specific treatment if needed.
- Get medical attention immediately.
- If breathing is stopped or irregular, give artificial respiration and supply oxygen.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- Get medical attention immediately.

E. Delayed and immediate effects and also chronic effects from short and long term exposure

- Not available

F. Notes to physician

- Notify medical personnel of contaminated situations and have them take appropriate protective measures.
- If exposed or concerned, get medical attention/advice.

5. FIREFIGHTING MEASURES

A. Suitable (Unsuitable) extinguishing media

- Dry chemical, carbon dioxide, regular foam extinguishing agent, spray
- Avoid use of water jet for extinguishing

B. Specific hazards arising from the chemical

- Not available

C. Special protective actions for firefighters

- Cool containers with water until well after fire is out.
- Avoid inhalation of materials or combustion by-products.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Fine powder may cause ignition.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures

- Ventilate closed spaces before entering.
- Must work against the wind, let the upwind people to evacuate.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Remove all sources of ignition.
- Avoid dust formation.
- Moist with water to prevent dust scattering.
- Avoid skin contact and inhalation.
- Keep unauthorized people away, isolate hazard area and deny entry.

B. Environmental precautions

- Prevent runoff and contact with waterways, drains or sewers.
- If large amounts have been spilled, inform the relevant authorities.

C. Methods and materials for containment and cleaning up

- Large spill : Stay upwind and keep out of low areas. Dike for later disposal.
- Notification to central government, local government. When emissions at least of the standard amount
- Dispose of waste in accordance with local regulation.
- Appropriate container for disposal of spilled material collected.
- Dust spills : Cover dust spills with plastic sheet or waterproof cloth to minimize spreading and avoid contact with water.
- Small liquid state spills: Appropriate container for disposal of spilled material collected.
- For disposal of spilled material in appropriate containers collected and clear surface.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Avoid contact with incompatible materials.
- Comply with all applicable laws and regulations for handling
- Get the manual before use.
- Dealing only with a well-ventilated place.
- Minimize occurrence of dust and accumulation.
- Contaminated work clothing should not be allowed out of the workplace.

B. Conditions for safe storage, including any incompatibilities

- Keep in the original container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- Keep sealed when not in use.

- Prevent static electricity and keep away from combustible materials or heat sources.
- Collected them in sealed containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- o **ACGIH TLV**
 - Not available
- o **OSHA PEL**
 - Not available

B. Engineering controls

- A system of local and/or general exhaust is recommended to keep employee exposures above the Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. The use of local exhaust ventilation is recommended to control emissions near the source.

C. Individual protection measures, such as personal protective equipment

- o **Respiratory protection**
 - Under conditions of frequent use or heavy exposure, Respiratory protection may be needed.
 - Respiratory protection is ranked in order from minimum to maximum.
 - Consider warning properties before use.
 - Dust, mist, fume-purifying respiratory protection
 - Any air-purifying respirator with a corpuscle filter of high efficiency
 - Any respiratory protection with a electromotion fan(for dust, mist, fume-purifying)
 - Self-contained breathing apparatus with a corpuscle filter of high efficiency
 - For Unknown Concentration or Immediately Dangerous to Life or Health : Any supplied-air respirator with full facepiece and operated in a pressure-demand or other positive-pressure mode in combination with a separate escape supply. Any self-contained breathing apparatus with a full facepiece.
- o **Eye protection**
 - Wear primary eye protection such as splash resistant safety goggles with a secondary protection face shield.
 - Provide an emergency eye wash station and quick drench shower in the immediate work area.
- o **Hand protection**
 - Wear appropriate glove.
- o **Skin protection**
 - Wear appropriate clothing.
- o **Others**
 - Not available

9. PHYSICAL AND CHEMICAL PROPERTIES

[Sodium chloride]

| | |
|---|------------------------------|
| A. Appearance | |
| - Appearance | Solid |
| - Color | Colorless, white |
| B. Odor | Odorless |
| C. Odor threshold | No data |
| D. pH | 6.7 (6.7-7.3) |
| E. Melting point/Freezing point | 801°C |
| F. Initial Boiling Point/Boiling Ranges | 1413°C |
| G. Flash point | No data |
| H. Evaporation rate | No data |
| I. Flammability(solid, gas) | No data |
| J. Upper/Lower Flammability or explosive limits | -/- |
| K. Vapour pressure | 9.01575 mmHg (at 1026.85 °C) |
| L. Solubility | 360000 mg/l |
| M. Vapour density | No data |
| N. Specific gravity(Relative density) | 2.16 |
| O. Partition coefficient of n-octanol/water | -0.46 |

| | |
|------------------------------|---------|
| P. Autoignition temperature | No data |
| Q. Decomposition temperature | No data |
| R. Viscosity | No data |
| S. Molecular weight | 58.44 |

[Ethylenediaminetetraacetic acid disodium salt]

| | |
|---|---|
| A. Appearance | |
| - Appearance | Solid, Crystalline powder |
| - Color | White |
| B. Odor | Not available |
| C. Odor threshold | Not available |
| D. pH | 4.0~6.0 (5% solution) |
| E. Melting point/Freezing point | Not available |
| F. Initial Boiling Point/Boiling Ranges | Not applicable |
| G. Flash point | Not available |
| H. Evaporation rate | Not available |
| I. Flammability(solid, gas) | Not available |
| J. Upper/Lower Flammability or explosive limits | - / - |
| K. Vapour pressure | 0.000000000000000757 mmHg (at 25°C estimated) |
| L. Solubility | 1000000 g/ml (at 25°C estimated) |
| M. Vapour density | Not applicable |
| N. Specific gravity(Relative density) | None |
| O. Partition coefficient of n-octanol/water | -11.70 (estimated) |
| P. Autoignition temperature | Not available |
| Q. Decomposition temperature | 250°C |
| R. Viscosity | Not available |
| S. Molecular weight | 336.21 |

[2-Amino-2-(hydroxymethyl)-1,3-propanediol]

| | |
|---|---------------------------|
| A. Appearance | |
| - Appearance | Solid |
| - Color | White |
| B. Odor | A slightly unique incense |
| C. Odor threshold | Not available |
| D. pH | 10.4 |
| E. Melting point/Freezing point | 171 ~ 172 °C |
| F. Initial Boiling Point/Boiling Ranges | 219 °C ~ 220 °C |
| G. Flash point | 170 °C |
| H. Evaporation rate | Not available |
| I. Flammability(solid, gas) | Not available |
| J. Upper/Lower Flammability or explosive limits | - / - |
| K. Vapour pressure | 0.000002 mmHg (at 25°C) |
| L. Solubility | 550 mg/l |
| M. Vapour density | Not available |
| N. Specific gravity(Relative density) | 1.328 |
| O. Partition coefficient of n-octanol/water | -1.56 |
| P. Autoignition temperature | Not available |
| Q. Decomposition temperature | Not available |
| R. Viscosity | Not available |
| S. Molecular weight | 121.14 |

[Sodium dodecyl sulfate]

| | |
|---------------|---------------------------------|
| A. Appearance | |
| - Appearance | Solid, crystals, flakes, powder |
| - Color | White |
| B. Odor | Very weak smell |

| | |
|---|--|
| C. Odor threshold | None |
| D. pH | Not applicable |
| E. Melting point/Freezing point | 204 ~ 207°C |
| F. Initial Boiling Point/Boiling Ranges | Not applicable |
| G. Flash point | No data |
| H. Evaporation rate | No data |
| I. Flammability(solid, gas) | No data |
| J. Upper/Lower Flammability or explosive limits | - / - |
| K. Vapour pressure | 0.00000000000047 mmHg (at 25C estimated) |
| L. Solubility | 10% |
| M. Vapour density | Not applicable |
| N. Specific gravity(Relative density) | >1.1 (water=1) |
| O. Partition coefficient of n-octanol/water | 1.60 |
| P. Autoignition temperature | No data |
| Q. Decomposition temperature | No data |
| R. Viscosity | No data |
| S. Molecular weight | 288.38 |

[Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.]

| | |
|---|----------------------------------|
| A. Appearance | |
| - Appearance | Liquid |
| - Color | Yellow to tan |
| B. Odor | Very weak smell |
| C. Odor threshold | No data |
| D. pH | No data |
| E. Melting point/Freezing point | -10°C |
| F. Initial Boiling Point/Boiling Ranges | 100°C |
| G. Flash point | > 149°C |
| H. Evaporation rate | None |
| I. Flammability(solid, gas) | No data |
| J. Upper/Lower Flammability or explosive limits | -/- |
| K. Vapour pressure | 1.0 mmHg (at 20C) |
| L. Solubility | 15.84 mg/l (at 25C estimated) |
| M. Vapour density | >1 |
| N. Specific gravity(Relative density) | 1.084 (g/cm ³ at 45C) |
| O. Partition coefficient of n-octanol/water | -2.03 (estimated) |
| P. Autoignition temperature | No data |
| Q. Decomposition temperature | No data |
| R. Viscosity | 400cP |
| S. Molecular weight | 1007.27 (estimated) |

10. STABILITY AND REACTIVITY

A. Chemical Stability

- This material is stable under recommended storage and handling conditions.

B. Possibility of hazardous reactions

- Hazardous Polymerization will not occur.

C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
 - Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces

D. Incompatible materials

- Not available

E. Hazardous decomposition products

- May emit flammable vapour if involved in fire.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposure

- **(Respiratory tracts)**
 - Not available
- **(Oral)**
 - Not available
- **(Eye·Skin)**
 - Causes serious eye irritation

B. Delayed and immediate effects and also chronic effects from short and long term exposure

- **Acute toxicity**
 - * **Oral**
 - Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
 - [2-Amino-2-(hydroxymethyl)-1,3-propanediol] : LD50 = 5900 mg/kg rabbit (Thomson Micromedex)
 - [Ethylenediaminetetraacetic acid disodium salt] : LD50 2000 mg/kg Rat
 - [Sodium chloride] : LD50 = 3000 mg/kg Rat (IUCLID)
 - [Sodium dodecyl sulfate] : LD50 1200 mg/kg Rat (SIDS)
 - [Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.] : LD50 = 36700 mg/kg Rat
 - * **Dermal**
 - Product (ATEmix) : 1000mg/kg < ATEmix <= 2000mg/kg
 - [Sodium chloride] : LD50 > 10000 mg/kg Rabbit (Thomson Micromedex)
 - [Sodium dodecyl sulfate] : LD50 600 mg/kg Rabbit (SIDS)
 - * **Inhalation**
 - Product (ATEmix) : Not available
 - [Sodium chloride] : LC50 > 10.5 mg/l 4 hr Rat (Thomson Micromedex)
- **Skin corrosion/irritation**
 - Not available
- **Serious eye damage/irritation**
 - Causes serious eye irritation
- **Respiratory sensitization**
 - Not available
- **Skin sensitization**
 - Not available
- **Carcinogenicity**
 - * **IARC**
 - Not available
 - * **OSHA**
 - Not available
 - * **ACGIH**
 - Not available
 - * **NTP**
 - Not available
 - * **EU CLP**
 - Not available
- **Germ cell mutagenicity**
 - Not available
- **Reproductive toxicity**
 - Suspected of damaging fertility or the unborn child
- **STOT-single exposure**
 - Not available
- **STOT-repeated exposure**
 - Not available
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

o Fish

- [2-Amino-2-(hydroxymethyl)-1,3-propanediol] : LC50 = 955.892 mg/ℓ 96 hr (Estimate)
- [Ethylenediaminetetraacetic acid disodium salt] : LC50 320 mg/ℓ 96 hr *Poecilia reticulata* (IUCLID)
- [Sodium chloride] : LC50 1294.6 mg/ℓ 96 hr *Lepomis macrochirus* (ECOTOX)
- [Sodium dodecyl sulfate] : LC50 1.31 mg/ℓ 96 hr *Cyprinus carpio* (ECOTOX)

o Crustaceans

- [2-Amino-2-(hydroxymethyl)-1,3-propanediol] : EC50 = 19.793 mg/ℓ 48 hr (Estimate)
- [Sodium chloride] : EC50 402.6 mg/ℓ 48 hr *Daphnia magna* (ECOTOX)
- [Sodium dodecyl sulfate] : EC50 6 mg/ℓ 48 hr *Daphnia magna* (ECOTOX)

o Algae

- [2-Amino-2-(hydroxymethyl)-1,3-propanediol] : EC50 = 163.053 mg/ℓ 96 hr (Estimate)
- [Sodium dodecyl sulfate] : EC50 1.2 mg/ℓ 96 hr *Skeletonema costatum* (ECOTOX)

B. Persistence and degradability

o Persistence

- [2-Amino-2-(hydroxymethyl)-1,3-propanediol] : log Kow = -1.56 (HSDB)
- [Ethylenediaminetetraacetic acid disodium salt] : log Kow -11.70 (Estimate)
- [Sodium chloride] : log Kow -0.46 (Estimate)
- [Sodium dodecyl sulfate] : log Kow 1.60
- [Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.] : log Kow -2.03 (Estimate)

o Degradability

- Not available

C. Bioaccumulative potential

o Bioaccumulative potential

- [2-Amino-2-(hydroxymethyl)-1,3-propanediol] : BCF = 3 (HSDB)
- [Ethylenediaminetetraacetic acid disodium salt] : BCF 3.162 (Estimate)
- [Sodium chloride] : BCF 3.162 (Estimate)
- [Sodium dodecyl sulfate] : BCF 2.1 ~ 7.1 (OECD SIDS)
- [Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.] : BCF 3.16 (Estimate)

o Biodegradation

- [Sodium dodecyl sulfate] : 100 (%) 28 day (AFNOR T 90.302 (1997), IUCLID)
- [Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.] : (non-biodegradable, not degraded and has a high potential to accumulate in vivo) (EPI Suite)

D. Mobility in soil

- [Sorbitan, monododecanoate, poly(oxy-1,2-ethanediyl) derivs.] : Koc = 239700000 (Can be adsorbed in the soil, Estimates)

E. Other adverse effects

- Not available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods

- Since more than two kinds of designaed waste is mixed, it is difficult to treat seperatly, then can be reduction or stabilization by incineration or similar process.
- If water separation is possible, pre-process with Water separation process.
- Dispose by incineration.

B. Special precautions for disposal

- The user of this product must disposal by oneself or entrust to waste disposer or person who other's waste recycle and dispose, person who establish and operate waste disposal facilities.
- Dispose of waste in accordance with all applicable laws and regulations.

14. TRANSPORT INFORMATION

A. UN No. (IMDG CODE/IATA DGR)

- Not applicable

B. Proper shipping name

- Not applicable

C. Hazard Class

- Not applicable

D. IMDG CODE/IATA DGR Packing group

- Not applicable

E. Marine pollutant

- Not applicable

F. Special precautions for user related to transport or transportation measures

- Local transport follows in accordance with Dangerous goods Safety Management Law.
- Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
- EmS FIRE SCHEDULE : Not available
- EmS SPILLAGE SCHEDULE : Not available
- Air transport(IATA): Not subject to IATA regulations.

15. REGULATORY INFORMATION**A. National and/or international regulatory information**

- **POPs Management Law**
 - Not applicable
- **Information of EU Classification**
 - * **Classification**
 - Not applicable
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - Not applicable
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - Not applicable
- **Rotterdam Convention listed ingredients**
 - Not applicable
- **Stockholm Convention listed ingredients**
 - Not applicable
- **Montreal Protocol listed ingredients**
 - Not applicable

16. OTHER INFORMATION**A. Reference**

- The information contained herein is believed to be accurate. It is provided independently of any sale of the product for purpose of hazard communication. It is not intended to constitute performance information concerning the product. No express warranty, or implied warranty of merchantability or fitness for a particular purpose is made with respect to the product or the information contained herein.
- This Safety Data Sheet was compiled with data and information from the following sources: KOSHA, NITE, ESIS, NLM, SIDS, IPCS

B. Issue date

- 2018-05-29

C. Revision number and Last date revised

- Not applicable

D. Other

- This SDS is prepared according to the Globally Harmonized System (GHS).