



# SAFETY DATA SHEET

## DNA-spin Plasmid DNA Purification Kit - Neutralization Buffer

Date of issue: 2018-05-23

Revision date: 2018-05-23

Version: R0003.0001

### 1. IDENTIFICATION

#### A. Product name

- DNA-spin Plasmid DNA Purification Kit - Neutralization 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  
 - Dept. : CRT center  
 - Telephone number : +82-31-739-5737  
 - Emergency telephone number :  
 - Fax number : +82-31-739-5264  
 - E-mail address : intronbio@intronbio.com

### 2. HAZARD IDENTIFICATION

#### A. GHS Classification

- Flammable liquids : Category3  
 - Acute toxicity (oral) : Category4  
 - Acute toxicity (dermal) : Category4  
 - Skin corrosion/irritation : Category1A  
 - Serious eye damage/irritation : Category1  
 - Respiratory sensitization : Category1  
 - Specific target organ toxicity(Single exposure) : Category1  
 - Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)

#### B. GHS label elements

##### o Hazard symbols



○ **Signal words**

- Danger

○ **Hazard statements**

- H226 Flammable liquid and vapour
- H302 Harmful if swallowed
- H312 Harmful in contact with skin
- H314 Causes severe skin burns and eye damage
- H318 Causes serious eye damage
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H335 May cause respiratory irritation.
- H370 Causes damage to organs(Refer Section SDS 11)

○ **Precautionary statements**

**1) Prevention**

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 Keep container tightly closed.
- P240 Ground/bond container and receiving equipment.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P242 Use only non-sparking tools. Flammable liquids (chapter 2.6) 1, 2, 3
- P243 Take precautionary measures against static discharge.
- P260 Do not breathe dust/fume/gas/mist/vapours/spray.
- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash hands thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P285 In case of inadequate ventilation wear respiratory protection.

**2) Response**

- P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P307+P311 If exposed: Call a POISON CENTER or doctor/physician.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 Specific treatment
- P330 Rinse mouth.
- P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
- P363 Wash contaminated clothing before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

**3) Storage**

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P403+P235 Store in a well-ventilated place. Keep cool.
- 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)

○ **NFPA grade (0 ~ 4 level)**

- Health : 3, Flammability : 0, Reactivity : 0

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Guanidine, monohydrochloride	Guanidine, hydrochloride (1:1) ; Guanidinium chloride ; Guanidine chloride ; Guanidinium hydrochloride ;	50-01-1	25 ~ 50%
Acetic acid	Acetic acid, glacial ; Ethanoic acid ; Methanecarboxylic acid ; Pyroligneous acid ; Vinegar acid ; Vosol ; Ethylic acid ;	64-19-7	10 ~ 25%

### 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.
- 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.
- Wash thoroughly after handling.

#### 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.
- Go to the hospital immediately if symptoms (flare, irritate) occur.
- 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.
- Remove to fresh air and keep at rest in a position comfortable for breathing.

### 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

- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Using a unattended and water devices in case of large fire and leave alone to burn if you do not imperative.

- Avoid inhalation of materials or combustion by-products.
- Do not access if the tank on fire.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Keep containers cool with water spray.
- Due to the extremely low flash point, irrigating fire extinguishing may be less effective when put out a fire.

## 6. ACCIDENTAL RELEASE MEASURES

### A. Personal precautions, protective equipment and emergency procedures

- Wear proper personal protective apparatus as indicated in Section 8 and avoid skin contact and inhalation.
- Ventilate closed spaces before entering.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Handling the damaged containers or spilled material after wearing protective equipment.
- 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.
- Do not use plastic containers.

## 7. HANDLING AND STORAGE

### A. Precautions for safe handling

- Avoid direct physical contact.
- Since emptied containers retain product residue (vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Comply with all applicable laws and regulations for handling
- Dealing only with a well-ventilated place.
- Avoid contact with heat, sparks, flame or other ignition sources.

### B. Conditions for safe storage, including any incompatibilities

- Save in cool, dry and well ventilated place.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- Keep in the original container.
- Please pay attention to incompatibilities materials and conditions to avoid.
- Collected them in sealed containers.
- Do not eat, drink or smoke when using this product.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### A. Exposure limits

- o ACGIH TLV
  - [Acetic acid] : TWA 10 ppm (25 mg/m<sup>3</sup>) STEL, 15 ppm (37 mg/m<sup>3</sup>)
- o OSHA PEL
  - [Acetic acid]: 10ppm 25mg/m<sup>3</sup>

### 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

- **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.
- **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.
- **Hand protection**
  - Wear appropriate chemical resistant glove.
- **Skin protection**
  - Wear appropriate chemical resistant protective clothing.
- **Others**
  - Not available

### 9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance	
- Appearance	Not available
- Color	Not available
B. Odor	Not available
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	Not available
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	Not available
L. Solubility	Not available
M. Vapour density	Not available
N. Specific gravity(Relative density)	Not available
O. Partition coefficient of n-octanol/water	Not available
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	Not available

[Guanidine, monohydrochloride]

A. Appearance	
- Appearance	Not available
- Color	Not available
B. Odor	Odorless
C. Odor threshold	Not available
D. pH	6.2 (10% solution)
E. Melting point/Freezing point	178 ~ 185°C
F. Initial Boiling Point/Boiling Ranges	Not available
G. Flash point	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	Not available
K. Vapour pressure	0.00000176 mmHg (25°C estimated)
L. Solubility	215g/100ml (20°C)
M. Vapour density	Not available
N. Specific gravity(Relative density)	1.3

O. Partition coefficient of n-octanol/water	-1.7
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	95.5

[Acetic acid]

A. Appearance	
- Appearance	Not available
- Color	Not available
B. Odor	Vinegar odor
C. Odor threshold	Not available
D. pH	2.4 (1.0M solution)
E. Melting point/Freezing point	17°C
F. Initial Boiling Point/Boiling Ranges	118 °C
G. Flash point	39 °C
H. Evaporation rate	0.97 (Butyl acetate=1)
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	16 / 5.4%
K. Vapour pressure	15.7 mmHg (25°C)
L. Solubility	100g/100ml (25°C(Water solubility))
M. Vapour density	2.07 (Air=1)
N. Specific gravity(Relative density)	1.0492
O. Partition coefficient of n-octanol/water	-0.17 (=log pow)
P. Autoignition temperature	427°C
Q. Decomposition temperature	Not available
R. Viscosity	1.22 cP (20°C)
S. Molecular weight	60.05

## 10. STABILITY AND REACTIVITY

### A. Chemical Stability

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

### B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.

### C. Conditions to avoid

- Avoid contact with incompatible materials and condition.
- Avoid : Accumulation of electrostatic charges, Heating, Flames and hot surfaces
- Avoid contact with heat, sparks, flame or other ignition sources.

### 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)
  - May cause allergy or asthma symptoms or breathing difficulties if inhaled
  - May cause respiratory irritation.
- (Oral)
  - Harmful if swallowed
- (Eye·Skin)
  - Causes serious eye damage

- Causes severe skin burns and eye damage

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

- **Acute toxicity**
  - \* **Oral**
    - Product (ATEmix) : 300mg/kg < ATEmix <= 2000mg/kg
    - [Guanidine, monohydrochloride] : LD50 475 mg/kg Rat
    - [Acetic acid] : LD50 = 3310 mg/kg Rat (NITE)
  - \* **Dermal**
    - Product (ATEmix) : 300mg/kg < ATEmix <= 2000mg/kg
    - [Guanidine, monohydrochloride] : LD50 > 2000 mg/kg Rabbit
    - [Acetic acid] : LD50 = 1060 mg/kg rabbit (NITE)
  - \* **Inhalation**
    - Product (ATEmix) : Not available
    - [Guanidine, monohydrochloride] : LC50 5.319 mg/ℓ 4 hr Rat
    - [Acetic acid] : LC50 = 39.3 mg/L/4 hr Rat (NLM)
- **Skin corrosion/irritation**
  - Causes severe skin burns and eye damage
- **Serious eye damage/irritation**
  - Causes serious eye damage
- **Respiratory sensitization**
  - May cause allergy or asthma symptoms or breathing difficulties if inhaled
- **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**
  - Not available
- **STOT-single exposure**
  - Causes damage to organs
  - May cause respiratory irritation.
- **STOT-repeated exposure**
  - Not available
- **Aspiration hazard**
  - Not available

## 12. ECOLOGICAL INFORMATION

### A. Ecotoxicity

- **Fish**
  - [Guanidine, monohydrochloride] : LC50 1758 mg/ℓ 48 hr
  - [Acetic acid] : ECHA LC50 >1000 mg/ℓ 96 hr Oncorhynchus mykiss(OECD TG 203, GLP)
- **Crustaceans**
  - [Acetic acid] : ECHA EC50 >300.82 mg/ℓ 48 hr Daphnia magna(OECD TG 202, GLP)
- **Algae**
  - [Acetic acid] : ECHA EC50 >1000 mg/ℓ 72 hr Skeletonema costatum(ISO 10253, GLP)

**B. Persistence and degradability**

- **Persistence**
  - [Acetic acid] : log Kow -0.17 (Howard, 1997)
- **Degradability**
  - Not available

**C. Bioaccumulative potential**

- **Bioaccumulative potential**
  - Not available
- **Biodegradation**
  - [Acetic acid] : 96% 20 day(ECHA), Biodegradability = 74 (%) (NITE)

**D. Mobility in soil**

- [Acetic acid] : 1.153 Koc (TGD guideline, QSAR)(ECHA)

**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 separtly, 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)**

- 2789

**B. Proper shipping name**

- ACETIC ACID, GLACIAL OR ACETIC ACID SOLUTION, WITH MORE THAN 80 PERCENT ACID, BY MASS

**C. Hazard Class**

- 8

**D. IMDG CODE/IATA DGR Packing group**

- II

**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 : F-E (Non-water-reactive flammable liquids)
- EmS SPILLAGE SCHEDULE : S-C (Flammable corrosive liquids)

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

- **POPs Management Law**
  - Not applicable



- **Information of EU Classification**
  - \* **Classification**
    - [Guanidine, monohydrochloride] : H302, H319, H315
    - [Acetic acid] : H226, H314
- **U.S. Federal regulations**
  - \* **OSHA PROCESS SAFETY (29CFR1910.119)**
    - Not applicable
  - \* **CERCLA Section 103 (40CFR302.4)**
    - [Acetic acid] : 2267.995 kg 5000 lb
  - \* **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

- 2018-05-23

### C. Revision number and Last date revised

- 2 times, 2018-05-23

### D. Other

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