

SAFETY DATA SHEET

DNA-maxi Endotoxin-Free Plasmid DNA Purification Kit

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1. IDENTIFICATION

A. Product name

- DNA-maxi Endotoxin-Free Plasmid DNA Purification Kit

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

- Flammable liquids : Category2
 - Corrosive to metals : Category1
 - Acute toxicity (dermal) : Category4
 - Skin corrosion/irritation : Category1A
 - Serious eye damage/irritation : Category1
 - Aspiration hazard : Category2

B. GHS label elements

o Hazard symbols



- **Signal words**

- Danger

- **Hazard statements**

- H225 Highly flammable liquid and vapour
- H290 May be corrosive to metals
- H305 May be harmful if swallowed and enters airways
- H312 Harmful in contact with skin
- H314 Causes severe skin burns and eye damage
- H318 Causes serious eye damage

- **Precautionary statements**

- 1) **Prevention**

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P233 Keep container tightly closed.
- P234 Keep only in original container.
- 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.
- P264 Wash hands thoroughly after handling.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

- 2) **Response**

- P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- 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.
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 Specific treatment
- P331 Do NOT induce vomiting.
- P363 Wash contaminated clothing before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).
- P390 Absorb spillage to prevent material damage.

- 3) **Storage**

- P403+P235 Store in a well-ventilated place. Keep cool.
- P405 Store locked up.
- P406 Store in corrosive resistant/... container with a resistant inner liner.

- 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(%)
Acetic acid	Acetic acid, glacial ; Ethanoic acid ; Methanecarboxylic acid ; Pyroligneous acid ; Vinegar acid ; Vosol ; Ethylic acid ;	64-19-7	10 ~ 25%
2-Propanol	Isopropanol ; Dimethylcarbinol ; Isopropyl alcohol ; n-Propan-2-ol ; Propan-2-ol ; i-Propyl alcohol ; 2-Propanol	67-63-0	10 ~ 25%

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	1.0 ~ 2.5%
Sodium hydroxide	Caustic soda ; Sodium hydroxide ; Sodium hydrate ; Ascarite	1310-73-2	0.1 ~1%

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.

D. Ingestion contact

- Please be advised by doctor whether induction of vomit is demanded or not.
- Rinse your mouth with water immediately.
- If swallowed, large amounts of water to drink and do not induce vomiting.

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.

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

- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Using a unattended and water devices in case of large fire and leave alone to burn if you do not imperative.
- Do not access if the tank on fire.
- Use appropriate extinguishing measure suitable for surrounding fire.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Fine powder may cause ignition.
- 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.
- Move container to safe area from the leak area.
- Avoid dust formation.
- Moist with water to prevent dust scattering.
- Avoid skin contact and inhalation.

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.
- Do not use plastic containers.

7. HANDLING AND STORAGE

A. Precautions for safe handling

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Avoid contact with incompatible materials.
- Get the manual before use.
- Refer to Engineering controls and personal protective equipment.
- Minimize occurrence of dust and accumulation.
- Avoid contact with heat, sparks, flame or other ignition sources.
- Avoid contact with strong oxidizing agent.

B. Conditions for safe storage, including any incompatibilities

- Do not apply direct heat.
- Save applicable laws and regulations.
- Do not apply any physical shock to container.
- Keep in the original container.
- No open fire.
- Collected them in sealed containers.
- Do not store in metal containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits

- **ACGIH TLV**
 - [Acetic acid] : TWA 10 ppm (25 mg/m³) STEL, 15 ppm (37 mg/m³)
 - [2-Propanol] : TWA, 200 ppm (491 mg/m³), STEL, 400 ppm (984 mg/m³)
 - [Sodium hydroxide] : Ceiling 2 mg/m³
- **OSHA PEL**
 - [Acetic acid]:10ppm 25mg/m³
 - [2-Propanol]:400ppm 980mg/m³
 - [Sodium hydroxide]: 2mg/m³

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.
- 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.

○ **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

[Acetic acid]

A. Appearance	
- Appearance	Liquid
- Color	Colorless
B. Odor	Vinegar odor
C. Odor threshold	Not available

D. pH	2.4 (1.0M solution)
E. Melting point/Freezing point	16.635°C
F. Initial Boiling Point/Boiling Ranges	117.9°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	4 / 19.9%
K. Vapour pressure	15.7 mmHg (25°C)
L. Solubility	100 g / 100ml (25°C (Water solubility))
M. Vapour density	2.07 (air=1)
N. Specific gravity(Relative density)	1.0446 (25°C)
O. Partition coefficient of n-octanol/water	-0.17 (= log pow)
P. Autoignition temperature	485°C
Q. Decomposition temperature	37.3 (kg, 20°C)
R. Viscosity	1056000 (25°C)
S. Molecular weight	60.052

[2-Propanol]

A. Appearance	
- Appearance	Liquid
- Color	Colorless
B. Odor	Very weak smell, alcohol smell
C. Odor threshold	90 mg/m ²
D. pH	Not available
E. Melting point/Freezing point	-87.9°C
F. Initial Boiling Point/Boiling Ranges	82.3°C
G. Flash point	11.7°C
H. Evaporation rate	1.7 (Butyl acetate=1)
I. Flammability(solid, gas)	Not available
J. Upper/Lower Flammability or explosive limits	12 / 2%
K. Vapour pressure	45.4 mmHg (25°C)
L. Solubility	100 g / 100ml
M. Vapour density	2.1
N. Specific gravity(Relative density)	0.785 (water=1)
O. Partition coefficient of n-octanol/water	0.05
P. Autoignition temperature	456°C
Q. Decomposition temperature	Not available
R. Viscosity	2.4 (25°C)
S. Molecular weight	60.1

[Sodium dodecyl sulfate]

A. Appearance	
- Appearance	Solid, crystals, flakes, powder
- Color	White
B. Odor	Very weak smell, alcohol 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	Not available
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Not available
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	1.6
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	288.38

[Sodium hydroxide]

A. Appearance	
- Appearance	Solid
- Color	White
B. Odor	Odorless
C. Odor threshold	Not available
D. pH	0.05% solution 12; 0.5% solution 13; 5% solution 14
E. Melting point/Freezing point	318°C
F. Initial Boiling Point/Boiling Ranges	1390°C
G. Flash point	Not applicable
H. Evaporation rate	Not available
I. Flammability(solid, gas)	Non-combustible
J. Vapour pressure	Not available
K. Solubility	109 g / 100ml (20°C, Available in alcohol, glycerol)
L. Vapour density	Not applicable
M. Specific gravity(Relative density)	2.1
M. Partition coefficient of n-octanol/water	-3.88 (estimated)
O. Autoignition temperature	Nonflammable
P. Decomposition temperature	Not available
Q. Viscosity	Not available
R. Molecular weight	40

10. STABILITY AND REACTIVITY

A. Chemical Stability

- Stable under normal conditions of use and storage.

B. Possibility of hazardous reactions

- Cylinders exposed to fire may vent and release flammable gas.
- May be corrosive to metals.

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.
- Avoid contact with metals.

D. Incompatible materials

- Avoid contact with strong oxidizing agent and strong reducing agent.

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 be harmful if swallowed and enters airways
- (Oral)
 - Not available
- (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

o Acute toxicity

* Oral

- Product (ATEmix) : 2000mg/kg < ATEmix <= 5000mg/kg
- [Acetic acid] : LD50 = 3310 mg/kg Rat (NITE)
- [2-Propanol] : LD50 = 4710mg/kg Rat (HSDB) LD50 5840 mg/kg Rat (OECD TG 401, ECHA)
- [Sodium dodecyl sulfate] : LD50 1200 mg/kg Rat (SIDS)

* Dermal

- Product (ATEmix) : 300mg/kg < ATEmix <= 2000mg/kg
- [Acetic acid] : LD50 = 1060 mg/kg rabbit (NITE)
- [2-Propanol] : LD50 = 12870 mg/kg rabbit (HSDB), LD50 16400 mg/kg Rabbit (OECD TG402, ECHA)
- [Sodium dodecyl sulfate] : LD50 600 mg/kg Rabbit (SIDS)
- [Sodium hydroxide] : LD50 1350 mg/kg Rabbit (HSDB)

* Inhalation

- Product (ATEmix) : Not available
- [Acetic acid] : LC50 = 39.3 mg/L/4 hr Rat (NLM)
- [2-Propanol] : LC50 = 72.6 mg/l 4 hr Rat (HSDB), LC50 >10000 ppm 6 hr Rat (OECE TG 403, GLP)

o Skin corrosion/irritation

- Causes severe skin burns and eye damage

o Serious eye damage/irritation

- Causes serious eye damage

o Respiratory sensitization

- Not available

o Skin sensitization

- Not available

o Carcinogenicity

* IARC

- [2-Propanol] : Group 3

* OSHA

- Not available

* ACGIH

- [2-Propanol] : A4

* NTP

- Not available

* EU CLP

- Not available

o Germ cell mutagenicity

- Not available

o Reproductive toxicity

- Not available

o STOT-single exposure

- Not available

o STOT-repeated exposure

- Not available

o Aspiration hazard

- May be harmful if swallowed and enters airways

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

o Fish

- [Acetic acid] : ECHA LC50 >1000 mg/l 96 hr Oncorhynchus mykiss(OECD TG 203, GLP)
- [2-Propanol] : LC50 >100 mg/l 96 hr Oryzias latipes (NITE: MOE eco-toxicity tests of chemicals, 1997)
- [Sodium dodecyl sulfate] : LC50 1.31 mg/l 96 hr Cyprinus carpio (ECOTOX)
- [Sodium hydroxide] : LC50 45.4 mg/l 96 hr

- **Crustaceans**

- [Acetic acid] : ECHA EC50 >300.82 mg/ℓ 48 hr Daphnia magna(OECD TG 202, GLP)
- [2-Propanol] : ECHA LC50 5102 mg/ℓ 24 hr Daphnia magna(OECD TG 202)
- [Sodium dodecyl sulfate] : EC50 6 mg/ℓ 48 hr Daphnia magna (ECOTOX)
- [Sodium hydroxide] : LC50 40.4 mg/ℓ 48 hr (SIDS)

- **Algae**

- [Acetic acid] : ECHA EC50 >1000 mg/ℓ 72 hr Skeletonema costatum(ISO 10253, GLP)
- [2-Propanol] : EC50 = 2.2 mg/ℓ 96 hr
- [Sodium dodecyl sulfate] : EC50 1.2 mg/ℓ 96 hr Skeletonema costatum (ECOTOX)

B. Persistence and degradability

- **Persistence**

- [Acetic acid] : log Kow -0.17 (Howard, 1997)
- [Sodium dodecyl sulfate] : log Kow 1.60
- [Sodium hydroxide] : log Kow -3.88 (SRC)

- **Degradability**

- Not available

C. Bioaccumulative potential

- **Bioaccumulative potential**

- [Sodium dodecyl sulfate] : BCF 2.1 ~ 7.1 (OECD SIDS)
- [Sodium hydroxide] : BCF -3.88 (SRC)

- **Biodegradation**

- [Acetic acid] : 96% 20 day(ECHA), Biodegradability = 74 (%) (NITE)
- [Sodium dodecyl sulfate] : 100 (%) 28 day (AFNOR T 90.302 (1997), IUCLID)

D. Mobility in soil

- [Acetic acid] : 1.153 Koc (TGD guideline, QSAR)(ECHA)
- [2-Propanol] : log koc= 0.03

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)

- 1219

B. Proper shipping name

- ISOPROPANOL OR ISOPROPYL ALCOHOL

C. Hazard Class

- 3

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-D (Flammable liquids)

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

- **POPs Management Law**
 - Not applicable
- **Information of EU Classification**
 - * **Classification**
 - [Acetic acid] : H226, H314
 - [2-Propanol] : H225, H319, H336
 - [Sodium hydroxide] : H314
- **U.S. Federal regulations**
 - * **OSHA PROCESS SAFETY (29CFR1910.119)**
 - Not applicable
 - * **CERCLA Section 103 (40CFR302.4)**
 - [Acetic acid] : 2267.995 kg 5000 lb
 - [Sodium hydroxide] : 453.599 kg 1000 lb
 - * **EPCRA Section 302 (40CFR355.30)**
 - Not applicable
 - * **EPCRA Section 304 (40CFR355.40)**
 - Not applicable
 - * **EPCRA Section 313 (40CFR372.65)**
 - [2-Propanol] : 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

- 2018-05-24

C. Revision number and Last date revised

- Not applicable

D. Other

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