

# SAFETY DATA SHEET

## Power cDNA Synthesis Kit - RNase Inhibitor (10U/ul)

Date of issue: 2018-06-04

Revision date: Not applicable

Version: R0001.0001

### 1. IDENTIFICATION

#### A. Product name

- Power cDNA Synthesis Kit - RNase Inhibitor (10U/ul)

#### 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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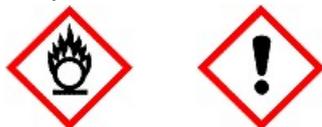
### 2. HAZARD IDENTIFICATION

#### A. GHS Classification

- Oxidizing liquids : Category2  
 - Skin corrosion/irritation : Category2  
 - Serious eye damage/irritation : Category2A

#### B. GHS label elements

##### o Hazard symbols



##### o Signal words

- Danger

##### o Hazard statements

- H272 May intensify fire; oxidizer
- H315 Causes skin irritation
- H319 Causes serious eye irritation

o **Precautionary statements**

**1) Prevention**

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P220 Keep/Store away from clothing//combustible materials.
- P221 Take any precaution to avoid mixing with combustibles, incompatibles material
- 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.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.
- P370+P378 In case of fire: Use Suitable extinguishing media for extinction(Refer Section MSDS 5).

**3) Storage**

- Not applicable

**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(%) |
|--|--|-----------|------------|
| Glycerol   | Glyceritol ; Glycylalcohol ; Glyrol ; Glycerin ; Glycerine ; 1,2,3-Propanetriol ; 1,2,3-Trihydroxypropane ; Glycol alcohol ; Propane-1,2,3-triol ; Glysarin ; Propanetriol | 56-81-5   | 25~50%     |
| 4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid | -  | 7365-45-9 | 0.1~1%     |
| Potassium chloride                                   | Dipotassium dichloride ; Potassium monochloride ;  | 7447-40-7 | 0.1~3%     |
| 2,3-Butanediol, 1,4-dimercapto-, (R*,R*)-            | -  | 3483-12-3 | 0.01~0.1%  |

**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.
- 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.
- Go to the hospital immediately if symptoms(flare, irritate) occur.
- 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.

**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**

- Cool containers with water until well after fire is out.
- Keep unauthorized personnel out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- Notify your local firestation and inform the location of the fire and characteristics hazard.
- Wear appropriate protective equipment.
- Keep containers cool with water spray.
- Fine powder may cause ignition.
- Move people from the area.

**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.
- Do not touch spilled material. Stop leak if you can do it without risk.
- Move container to safe area from the leak area.
- Handling the damaged containers or spilled material after wearing protective equipment.
- 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

- Refer to Engineering controls and personal protective equipment.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- Minimize occurrence of dust and accumulation.

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

- Save in cool, dry and well ventilated place.
- Check regularly for leaks.
- Do not use damaged containers.
- Do not apply direct heat.
- Prevent static electricity and keep away from combustible materials or heat sources.
- Do not store in metal containers.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### A. Exposure limits

- o **ACGIH TLV**
  - [Glycerol] : TWA, 10 mg/m<sup>3</sup>
- o **OSHA PEL**
  - [Glycerol]: 15 mg/m<sup>3</sup> (Total dust), 5 mg/m<sup>3</sup> (Respirable fraction)

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

## 9. PHYSICAL AND CHEMICAL PROPERTIES

[4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid]

|                   |         |
|-------------------|---------|
| A. Appearance     |         |
| - Appearance      | Solid   |
| - Color           | White   |
| B. Odor           | No data |
| C. Odor threshold | No data |
| D. pH             | No data |

|   |                        |
|---|------------------------|
| E. Melting point/Freezing point                 | 234°C                  |
| F. Initial Boiling Point/Boiling Ranges         | No data                |
| 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                              | No data                |
| L. Solubility                                   | Dissolve well in water |
| M. Vapour density                               | No data                |
| N. Specific gravity(Relative density)           | No data                |
| O. Partition coefficient of n-octanol/water     | -4.070                 |
| P. Autoignition temperature                     | No data                |
| Q. Decomposition temperature                    | No data                |
| R. Viscosity                                    | No data                |
| S. Molecular weight                             | 238.31                 |

## [Glycerol]

|   |  |
|---|--|
| A. Appearance                                   |  |
| - Appearance                                    | Liquid (Diamond)                                 |
| - Color   | Colorless  |
| B. Odor   | light smell                                      |
| C. Odor threshold                               | Not available                                    |
| D. pH   | (Neutral)  |
| E. Melting point/Freezing point                 | 18.1°C   |
| F. Initial Boiling Point/Boiling Ranges         | 290 °C   |
| G. Flash point                                  | 177 °C (ca. 101.3kPa)                            |
| H. Evaporation rate                             | Not available                                    |
| I. Flammability(solid, gas)                     | lower limit: 3, upper limit:19 (Flash point 199) |
| J. Upper/Lower Flammability or explosive limits | 19/27%   |
| K. Vapour pressure                              | 0.000168mmHg (at 25 deg C)                       |
| L. Solubility                                   | 1000000mg/l (25 °C)                              |
| M. Vapour density                               | 3.1 ((Air=1))                                    |
| N. Specific gravity(Relative density)           | 1.2613 g/cu cm(at 20 deg C)                      |
| O. Partition coefficient of n-octanol/water     | -1.76  |
| P. Autoignition temperature                     | 405 °C (ca. 101.3kPa)                            |
| Q. Decomposition temperature                    | 290 °C   |
| R. Viscosity                                    | 954 °C ( at 25 C)                                |
| S. Molecular weight                             | 92.09  |

## [Potassium Chloride]

|   |                          |
|---|--------------------------|
| A. Appearance                                   |                          |
| - Appearance                                    | Solid ( Powder, crystal) |
| - Color   | Colorless                |
| B. Odor   | Odorless                 |
| C. Odor threshold                               | Not available            |
| D. pH   | 7                        |
| E. Melting point/Freezing point                 | 770~773 °C               |
| F. Initial Boiling Point/Boiling Ranges         | 1407 °C                  |
| 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                              | (5.73hPa at 906 °C)      |
| L. Solubility                                   | 342000mg/l (at 20 °C)    |
| M. Vapour density                               | Not available            |
| N. Specific gravity(Relative density)           | 1.98                     |

|   |               |
|---|---------------|
| O. Partition coefficient of n-octanol/water | -0.46         |
| P. Autoignition temperature                 | Not available |
| Q. Decomposition temperature                | Not available |
| R. Viscosity                                | Not available |
| S. Molecular weight                         | 74.55         |

[Dithiothreitol]

|   |                               |
|---|-------------------------------|
| A. Appearance                                   |                               |
| - Appearance                                    | Powder                        |
| - Color   | White                         |
| B. Odor   | Unpleasant                    |
| C. Odor threshold                               | No data                       |
| D. pH   | From 4.0-6 to 15.4g/l at 25°C |
| E. Melting point/Freezing point                 | 41-44°C / 42-43°C             |
| F. Initial Boiling Point/Boiling Ranges         | No data                       |
| G. Flash point                                  | 113°C - closeness             |
| H. Evaporation rate                             | No data                       |
| I. Flammability(solid, gas)                     | No data                       |
| J. Upper/Lower Flammability or explosive limits | No data                       |
| K. Vapour pressure                              | No data                       |
| L. Solubility                                   | 15.4g/l at 20°C               |
| M. Vapour density                               | No data                       |
| N. Specific gravity(Relative density)           | No data                       |
| O. Partition coefficient of n-octanol/water     | No data                       |
| P. Autoignition temperature                     | No data                       |
| Q. Decomposition temperature                    | No data                       |
| R. Viscosity                                    | No data                       |
| S. Molecular weight                             | 154.25g/mol                   |

## 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
- Avoid contact with heat, sparks, flame or other ignition sources.
- Keep away from heat source.

### 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

- Causes skin 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
    - [Glycerol] : LD50 = 12600 mg/kg Rat (ChemIDplus)
    - [4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid] : LD50>2,000mg/kg(환경부 유해성 심사 결과 고시)
    - [Potassium chloride] : LD50 2600 mg/kg Rat (HSDB)
  - \* **Dermal**
    - Product (ATEmix) : Not available
    - [Glycerol] : LD50 > 10000 mg/kg Rat (ChemIDplus)
    - [4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid] : LD50>2,000mg/kg(환경부 유해성 심사 결과 고시)
  - \* **Inhalation**
    - Product (ATEmix) : Not available
    - [Glycerol] : LC50 >2.75 mg/ℓ 4 hr Rat (ECHA)
- **Skin corrosion/irritation**
  - Causes skin irritation
- **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**
  - Not available
- **STOT-single exposure**
  - Not available
- **STOT-repeated exposure**
  - Not available
- **Aspiration hazard**
  - Not available

## 12. ECOLOGICAL INFORMATION

### A. Ecotoxicity

- **Fish**
  - [Glycerol] : LC50 >11 mg/ℓ 96 hr Cyprinodon variegatus (ECHA)
  - [Potassium chloride] : LC50 880 mg/ℓ 96 hr Pimephales promelas (OECD SIDS)
- **Crustaceans**
  - [Glycerol] : LC50 1955 mg/ℓ 48 hr Daphnia magna (ECHA)
  - [4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid] : LC50 54263.082 mg/ℓ 48 hr (Estimate)
  - [Potassium chloride] : EC50 177 mg/ℓ 48 hr Daphnia magna (OECD SIDS)
- **Algae**
  - [4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid] : EC50 3237.037 mg/ℓ 96 hr (Estimate)

- [Potassium chloride] : EC50 2500 mg/l 72 hr (IUCLID)

## B. Persistence and degradability

- **Persistence**
  - [Glycerol] : Log Kow -1.76 (HSDB)
  - [4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid] : log Kow -4.070 (NLM)
  - [Potassium chloride] : log Kow -0.46 (OECD SIDS)
- **Degradability**
  - Not available

## C. Bioaccumulative potential

- **Bioaccumulative potential**
  - [4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid] : BCF 3.162 (Estimate)
  - [Potassium chloride] : BCF 0.47 (IUCLID)
- **Biodegradation**
  - [Glycerol] : Biodegradability = 65 (%) 14 day (OECD 1G 301C, OECD SIDS, OECD 1G 301D, IUCLIDE), 94 % 24hr (TOC removal)(FCHA)

## D. Mobility in soil

- [4-(2-Hydroxyethyl)piperazin-1-ylethanesulphonic acid] : Koc 0.01354 (Low potential for soil adsorption)

## 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)

- 1463

### B. Proper shipping name

- CHROMIUM TRIOXIDE, ANHYDROUS

### C. Hazard Class

- 5.1

### 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-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-Q (Oxidizing substances)

## 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

- 2018-06-04

### C. Revision number and Last date revised

- Not applicable

### D. Other

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