

SAFETY DATA SHEET

GangNam-STAIN™ Prestained Protein Ladder

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1. IDENTIFICATION

A. Product name

- GangNam-STAIN™ Prestained Protein Ladder

B. Recommended use and restriction on use

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

C. Manufacturer / Supplier / Distributor information

○ 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

○ 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) : Category2
 - Skin corrosion/irritation : Category2
 - Serious eye damage/irritation : Category2A
 - Germ cell mutagenicity : Category2
 - Specific target organ toxicity(Single exposure) : Category3(Respiratory tract irritation)

B. GHS label elements

○ Hazard symbols



○ Signal words

- Danger

○ **Hazard statements**

- H310 Fatal in contact with skin
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H335 May cause respiratory irritation.
- H341 Suspected of causing genetic defects

○ **Precautionary statements**

1) Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P261 Avoid breathing dust/fume.
- P262 Do not get in eyes, on skin, or on clothing.
- 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.

2) Response

- P302+P350 IF ON SKIN: Gently wash with plenty of soap and water.
- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- 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.
- P308+P313 If exposed or concerned: Get medical advice/attention.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- P321 Specific treatment
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P361 Remove/Take off immediately all contaminated clothing.
- P362 Take off contaminated clothing and wash before reuse.
- P363 Wash contaminated clothing before reuse.

3) Storage

- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- 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 : 2, Flammability : 0, Reactivity : 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	Trade names and Synonyms	CAS No.	Content(%)
Water	Dihydrogen oxide ; Oxidane	7732-18-5	50
Urea	Carbamide ; Carbamide Resin ; Carbamimidic acid ; Carbonyldiamide ; Carbonyldiamine ;	57-13-6	25
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	10

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

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

- Move containers from fire area, if you can do without the risk.
- Cool containers with water until well after fire is 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.
- Using an unattended and water devices in case of large fire and leave alone to burn if you do not imperative.
- 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.
- Remove all sources of ignition.
- Avoid dust formation.
- Moist with water to prevent dust scattering.
- Avoid skin contact and inhalation.
- Cleanup and disposal under expert supervision is advised.
- 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

- Since emptied containers retain product residue(vapor, liquid, solid) follow all MSDS and label warnings even after container is emptied.
- Dealing only with a well-ventilated place.
- Do not handle until all safety precautions have been read and understood.
- Operators should wear antistatic footwear and clothing.
- 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

- Check regularly for leaks.
- Do not use damaged containers.
- Do not apply direct heat.
- Do not apply any physical shock to container.
- 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
 - [Glycerol] : TWA, 10 mg/m³
- o OSHA PEL
 - [Glycerol]: 15 mg/m³ (Total dust), 5 mg/m³ (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 glove.

o Skin protection

- Wear appropriate clothing.

o 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

A. Appearance	
- Appearance	Solid, Crystal, fragment, powder
- Color	white
B. Odor	very weak smell
C. Odor threshold	Not available
D. pH	Not available
E. Melting point/Freezing point	204~207 °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	-/-
K. Vapour pressure	0.0000000000047mmHg (at 25C(estimation))
L. Solubility	-10%
M. Vapour density	Not available
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

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 (ca. 101.3kPa)
H. Evaporation rate	Not available
I. Flammability(solid, gas)	low limit: 3, upper limit: 19 (Flash point 199 °C)
J. Upper/Lower Flammability or explosive limits	19/2.7%
K. Vapour pressure	0.000168mmHg (at 25 deg C)
L. Solubility	1000000mg/l (25 °C)
M. Vapour density	3.1 ((Air=1))
C. Odor threshold	1.2613g/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 (at 25 C)
S. Molecular weight	92.09

A. Appearance	
- Appearance	Solid(crystal)
- Color	white
B. Odor	nearly odorless (chloroform smell(NIOSH))
C. Odor threshold	Not available
D. pH	7.2 (10% water solution)
E. Melting point/Freezing point	132.7~135 °C
F. Initial Boiling Point/Boiling Ranges	(Degradation)
G. Flash point	No ignition
H. Evaporation rate	Not available
I. Flammability(solid, gas)	No ignition
J. Upper/Lower Flammability or explosive limits	-/- (No ignition)
K. Vapour pressure	0.000012mmHg (at 25)
L. Solubility	545000mg/l (In water, @ 25)
M. Vapour density	2.07
N. Specific gravity(Relative density)	1.323 (@20 °C)
O. Partition coefficient of n-octanol/water	-2.11
C. Odor threshold	(No ignition)
Q. Decomposition temperature	(Degradation)
R. Viscosity	1.78 cP (40% solution @ 20 °C, 1.61 mPa.s @ 15 °C, 1.50 mPa.s (saturated solution) @ 20 °C)
S. Molecular weight	60.06

A. Appearance	
- Appearance	Liquid

- Color	Colorless (Transparent)
B. Odor	Odorless
C. Odor threshold	Not available
D. pH	7
E. Melting point/Freezing point	0°C
F. Initial Boiling Point/Boiling Ranges	100°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	23.8mmHg (25)
L. Solubility	100g/100ml
M. Vapour density	Not available
N. Specific gravity(Relative density)	1
O. Partition coefficient of n-octanol/water	-1.38
P. Autoignition temperature	Not available
Q. Decomposition temperature	Not available
R. Viscosity	Not available
S. Molecular weight	18.02

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)
 - May cause respiratory irritation.
- (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) : >5000mg/kg
 - [Water] : LD50 > 90000 mg/kg Rat (KOSHA)
 - [Urea] : LD50 = 14300 mg/kg Rat (male)(SIDS)
 - [Glycerol] : LD50 = 12600 mg/kg Rat (ChemIDplus)
 - [Sodium dodecyl sulfate] : LD50 1200 mg/kg Rat (SIDS)
 - * Dermal
 - Product (ATEmix) : >5000mg/kg

- [Urea] : LD50 = 8200 mg/kg Rat (IUCLID)
- [Glycerol] : LD50 > 10000 mg/kg Rat (ChemIDplus)
- [Sodium dodecyl sulfate] : LD50 600 mg/kg Rabbit (SIDS)
- * **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**
 - Suspected of causing genetic defects
- **Reproductive toxicity**
 - Not available
- **STOT-single exposure**
 - May cause respiratory irritation.
- **STOT-repeated exposure**
 - Not available
- **Aspiration hazard**
 - Not available

12. ECOLOGICAL INFORMATION

A. Ecotoxicity

- **Fish**
 - [Urea] : LC50 = 22500 mg/ℓ 96 hr (OECD Screening Information Data Set)
 - [Glycerol] : LC50 >11 mg/ℓ 96 hr *Cyprinodon variegatus* (ECHA)
 - [Sodium dodecyl sulfate] : LC50 1.31 mg/ℓ 96 hr *Cyprinus carpio* (ECOTOX)
- **Crustaceans**
 - [Urea] : EC50 = 10000 mg/ℓ 24 hr *Daphnia magna* (SIDS)
 - [Glycerol] : LC50 1955 mg/ℓ 48 hr *Daphnia magna* (ECHA)
 - [Sodium dodecyl sulfate] : EC50 6 mg/ℓ 48 hr *Daphnia magna* (ECOTOX)
- **Algae**
 - [Urea] : EC50 = 42184 mg/ℓ 96 hr (Estimate)
 - [Sodium dodecyl sulfate] : EC50 1.2 mg/ℓ 96 hr *Skeletonema costatum* (ECOTOX)

B. Persistence and degradability

- **Persistence**
 - [Water] : log Kow = -1.38
 - [Urea] : log Kow = -2.11
 - [Glycerol] : Log Kow -1.76 (HSDB)
 - [Sodium dodecyl sulfate] : log Kow 1.60
- **Degradability**

- Not available

C. Bioaccumulative potential

o Bioaccumulative potential

- [Urea] : BCF = 1 (IUCLID)
- [Sodium dodecyl sulfate] : BCF 2.1 ~ 7.1 (OECD SIDS)

o Biodegradation

- [Urea] : Biodegradability = 96 (%) 16 day (IUCLID)
- [Glycerol] : Biodegradability = 65 (%) 14 day (OECD 1G 301C, OECD SIDS, OECD 1G 301D, IUCLIDE), 94 % 24hr (TOC removal)(FCHA)
- [Sodium dodecyl sulfate] : 100 (%) 28 day (AFNOR T 90.302 (1997), IUCLID)

D. Mobility in soil

- Not available

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)

- 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 : F-A (General fire schedule)
- EmS SPILLAGE SCHEDULE : S-A (Toxic substances)
- Air transport(IATA): Not subject to IATA regulations.

15. REGULATORY INFORMATION

A. National and/or international regulatory information

o 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).