

MATERIAL SAFETY DATA SHEET

1. Chemical product and company identification

A. Product name Proteomic Stabilizer PROT1
Product code PROT1, PROT1-250ML, PROT1-1L, MTS1P-100/CS

B. Recommended use and Limitations on use

Recommended use Stabilization of whole blood samples.
Limitations on use Research use only.

Manufacturer/Importer/Distributor information

Company name Smart Tube, Inc.
Address 6658 W. Sunset Road, Suite 100
Las Vegas, NV 89118
USA
Website www.smarttubeinc.com
For product information call +1 855 397 8467
For emergencies only call CHEMTREC:
080 822 1374 (Toll Free)

2. Hazards identification

A. Hazard category/Classification

Physical hazards	Not classified.	
Health hazards	Acute toxicity, inhalation	Category 3
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
	Sensitization, skin	Category 1
	Germ cell mutagenicity	Category 2
	Carcinogenicity	Category 1A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
Environmental hazards	Not classified.	

B. Warning label items including precautionary statement

• Pictogram



• Signal word

Danger

• Hazard statement

H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H335	May cause respiratory irritation.
H341	Suspected of causing genetic defects.
H350	May cause cancer.

• Precautionary statement

Prevention

P201	Obtain special instructions before use.
P261	Avoid breathing mist/vapors.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P304 + P340	IF INHALED: Remove person to fresh air and keep 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.

Storage

P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
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C. Other hazards not included in the hazard category criteria (e.g. dust explosion hazard) None known.

Supplemental information None.

3. Composition/information on ingredients

Chemical identity	Common and alternative names	CAS number	ID number	Content in percent (%)
Diethylene glycol		111-46-6	KE-27694	3 - 7
Formaldehyde		50-00-0	KE-17074, 97-1-345	3 - 7

Composition comments All concentrations are in percent by weight unless otherwise indicated. Components not listed are either non-hazardous or are below reportable limits.

4. First aid measures

A. In case of eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

B. In case of skin contact Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

C. In case of inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a poison center or doctor/physician.

D. In case of swallowing Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical advice/attention if you feel unwell.

E. Note to physician Provide general supportive measures and treat symptomatically. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

Most important symptoms/effects, acute and delayed Skin irritation. May cause redness and pain. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. May cause respiratory irritation. May cause an allergic skin reaction. Dermatitis. Rash. Prolonged exposure may cause chronic effects.

General advice IF exposed or concerned: Get medical advice/attention. If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

5. Fire-fighting measures

A. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media No restrictions known.

B. Specific hazards arising from the chemical (example: hazardous combustion products) During fire, hazardous combustion products are released that may include: Carbon oxides.

C. Specific methods of fire-fighting

Special protective equipment for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special fire fighting procedures Move containers from fire area if you can do so without risk.

General fire hazards No unusual fire or explosion hazards noted.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency measures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist/vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the MSDS.

B. Environmental precautions Avoid discharge into drains, water courses or onto the ground.

C. Methods and materials for containment and cleaning up

This product is miscible in water.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water. Retain and dispose of contaminated wash water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. Put material in suitable, covered, labeled containers. For waste disposal, see section 13 of the SDS.

7. Handling and storage

A. Precautions for safe handling

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid breathing mist/vapors. Do not get this material in contact with eyes. Avoid contact with skin and clothing. Do not taste or swallow. Avoid prolonged exposure. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Observe good industrial hygiene practices.

B. Conditions for safe storage (including any incompatibilities)

Store locked up. Store in tightly closed container. Store in a well-ventilated place. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

A. Exposure limit values, biological limit values, etc

Korea. OELs. Standards for Exposure to Chemical Substances and Physically Hazardous Factors

Components	Type	Value
Formaldehyde (CAS 50-00-0)	TWA	0.3 ppm
US. ACGIH Threshold Limit Values		
Components	Type	Value
Formaldehyde (CAS 50-00-0)	STEL	0.3 ppm
	TWA	0.1 ppm

Biological limit values

No biological exposure limits noted for the ingredient(s).

B. Appropriate engineering controls

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. Eye wash facilities and emergency shower must be available when handling this product.

C. Personal protective equipment

• Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. KOSHA Certified chemical respirator with organic vapor cartridge. Check with respiratory protective equipment suppliers.

• Eye protection

When working with liquids wear splash-proof chemical goggles and face shield unless full facepiece respiratory protection is worn. KOSHA Certified chemical goggles are recommended.

• Hand protection

Wear appropriate KOSHA Certified chemical resistant gloves.
Nitrile or neoprene gloves are recommended.
- material thickness: 3.9 mm
- break through time: 120 min
Suitable KOSHA Certified gloves can be recommended by the glove supplier.

• Body protection

Wear appropriate chemical resistant clothing. Use of an impervious KOSHA Certified apron is recommended.

Hygiene measures

Observe any medical surveillance requirements. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

A. Appearance

Physical state	Liquid.
Form	Liquid.
Color	Colorless.

B. Odor

Formaldehyde.

C. Odor threshold

Not determined.

D. pH	7.8
E. Melting point/freezing point	
Melting point	Property has not been measured.
F. Boiling point, initial boiling point, and boiling range	212 °F (100 °C)
G. Flash point	Does not flash.
H. Evaporation rate	Property has not been measured.
I. Flammability (solid, gas)	Not applicable.
J. Upper/lower limit on flammability or explosive limits	
Explosive limit - lower (%)	Not applicable.
Explosive limit - upper (%)	Not applicable.
K. Vapor pressure	Property has not been measured.
L. Solubility	
Solubility (water)	Miscible in water.
M. Vapor density	Property has not been measured.
N. Specific gravity	Not available.
O. n-octanol/water partition coefficient	Not applicable, product is a mixture.
P. Auto-ignition temperature	Not applicable.
Q. Decomposition temperature	Property has not been measured.
R. Viscosity	1 cP (77 °F (25 °C))
S. Molecular weight	Not available.
Other data	
Explosive properties	Not explosive.
Kinematic viscosity	Property has not been measured.
Oxidizing properties	Not oxidizing.
Particle size	Not applicable, material is a liquid.

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
A. Stability and hazardous reaction potential	
Stability	Material is stable under normal conditions.
Hazardous reaction potential	No dangerous reaction known under conditions of normal use.
B. Conditions to avoid (e.g. static discharge, shock or vibration, etc)	Contact with incompatible materials.
C. Incompatible materials	Strong oxidizing agents.
D. Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

A. Information on likely routes of exposure	
• Respiratory organs	Toxic if inhaled.
• Skin	Causes skin irritation. May cause an allergic skin reaction.
• Eyes	Causes serious eye damage.
• Mouth	May be harmful if swallowed.
B. Information on health hazards	
• Acute toxicity (list all possible routes of exposure)	Toxic if inhaled. May be harmful if swallowed.

Components	Species	Test Results
Diethylene glycol (CAS 111-46-6)		
Acute		
Dermal		
LD50	Rabbit	11890 mg/kg

Components	Species	Test Results
Formaldehyde (CAS 50-00-0)		
Acute		
Inhalation		
Vapor		
LC50	Rat	< 0.58 mg/l, 4 Hours
Oral		
LD50	Rat	460 mg/kg
Other		
LD50	Rabbit	270 mg/kg
• Corrosivity or irritation to the skin	Causes skin irritation.	
• Serious eye damage/eye irritation	Causes serious eye damage.	
• Respiratory sensitization	Does not meet classification criteria.	
• Skin sensitization	May cause an allergic skin reaction.	
• Carcinogenic properties /Carcinogenicity	May cause cancer.	

IARC Monographs. Overall Evaluation of Carcinogenicity

Formaldehyde (CAS 50-00-0) 1 Carcinogenic to humans.

• Mutagenic properties /Mutagenicity	Suspected of causing genetic defects.
• Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
• Specific target organ toxicity - single exposure	May cause respiratory irritation.
• Specific target organ toxicity - repeated exposure	Not classified.
• Aspiration hazard	Not an aspiration hazard.

12. Ecological information

A. Ecotoxicity

Components	Species	Test Results
Formaldehyde (CAS 50-00-0)		
Aquatic		
Algae	EC50	Desmodesmus subspicatus 3.48 mg/l, 72 hours
Crustacea	LC50	Daphnia pulex 5.8 mg/l, 48 hours
Fish	LC50	Morone saxatilis 6.7 mg/l, 96 hours
Hazardous to the aquatic environment, acute hazard	Harmful to aquatic life.	

B. Persistence/degradability No data is available on the degradability of this product.

C. Bioaccumulative potential No data available on bioaccumulation.

Octanol/water partition coefficient log Kow

Formaldehyde (CAS 50-00-0) 0.35

D. Mobility in soil This product is miscible in water. Expected to be mobile in soil.

E. Other adverse effects The product contains volatile organic compounds which have a photochemical ozone creation potential.

13. Disposal considerations

A. Method of disposal Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container (in accordance with related regulations).

B. Disposal considerations (including disposal of contaminated containers or packaging) Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

Waste code The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

14. Transport information

KRDG

- A. UN number Not applicable.
B. UN proper shipping name Not applicable.
C. Transport hazard class(es)
 Class Not applicable.
 Subsidiary risk -
D. Packing group Not applicable.
E. Environmental hazards No.
F. Special precautions for user
 Special precautions Not applicable.

IATA

- A. UN number Not applicable.
B. UN proper shipping name Not applicable.
C. Transport hazard class(es)
 Class Not applicable.
 Subsidiary risk -
D. Packing group Not applicable.
E. Environmental hazards No.
F. Special precautions for user
 Special precautions Not applicable.

IMDG

- A. UN number Not applicable.
B. UN proper shipping name Not applicable.
C. Transport hazard class(es)
 Class Not applicable.
 Subsidiary risk -
D. Packing group Not applicable.
E. Environmental hazards
 Marine pollutant No.
EmS Not applicable.
F. Special precautions for user
 Special precautions Not applicable.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not established.

15. Regulatory information

A. Restrictions under the Industrial Safety and Health Law

Harmful Substances Prohibited from Manufacturing

Not regulated.

Harmful Substances Requiring Permission for Manufacture or Use

Not regulated.

Controlled Hazardous Substances

Formaldehyde (CAS 50-00-0)

Harmful Substances Requiring Special Medical Examination

Formaldehyde (CAS 50-00-0)

Workplace Environmental Monitoring Harmful Materials

Formaldehyde (CAS 50-00-0)

Occupational Exposure Limit

Formaldehyde (CAS 50-00-0)

B. Restrictions under the Chemicals Control Law (Previously Toxic Chemicals Control Law)

Accidental Release Prevention Substances

Formaldehyde (CAS 50-00-0)

FORMALDEHYDE

Act on the Registration and Evaluation of Chemicals

Banned Toxic Chemicals

Not regulated.

Designated Existing Chemicals Subject to Registration (PEC) (MoE No. 2015-92)

Formaldehyde (CAS 50-00-0)

Restricted Chemical Substances

Formaldehyde (CAS 50-00-0)

FORMALDEHYDE

Toxic Chemicals

Formaldehyde (CAS 50-00-0)

97-1-345

C. Restrictions under the Dangerous Substance Safety Management Act

Not dangerous goods under the Dangerous Substance Safety Management Law

D. Restrictions under the Wastes Control Act

Halogenated Materials in Waste Organic Solvents

Not regulated.

Hazardous Substances

Not regulated

E. Restrictions under other foreign or domestic laws

Clean Air Conservation Act

Air Pollutants

Formaldehyde (CAS 50-00-0)

Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides (Rules on PIC, MoE No. 2014-252, Dec. 31, 2014; Standards for Pesticides, RDA No. 2014-26), as amended

Not listed.

Specific Air Pollutants

Formaldehyde (CAS 50-00-0)

Further information

This material safety data sheet was prepared in accordance with Ministry of Employment and Labor Notice No 2020-130.

Inventory status

Country(s) or region

Korea

Inventory name

Existing Chemicals List (ECL)

On inventory (yes/no)*

Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

A. Source of information

ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
EPA: AQUIRE database
HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
KECI, January 27, 2015, amended through MoE 2016-138, July 13, 2016
Korea. Banned Chemicals (AREC "K-REACH" Article 27; Designation of Restricted or Banned Chemicals, Appendices 4 and 5)
Korea. Dangerous Substances Threshold Quantity (Presidential Decree of Dangerous Substances Safety Management Act No. 18406, Schedule 1)
Korea. Existing Chemicals Inventory (KECI, January 27, 2015)
Korea. Harmful Substances Prohibited from Manufacturing (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 29)
Korea. Harmful Substances Requiring Permission for Manufacture or Use (Presidential Decree on the Industrial Safety and Health Act (No. 13053), Article 30)
Korea. OELs. Regulation for Permitted Concentration of Hazardous Substances (Ministry of Labor (MOL) Public Notice No. 1986-45, as amended)
Korea. Prohibited Chemical Substances (AREC "K-REACH" Article 27; Designation of Toxic, Restricted or Banned Chemicals Appendices 4 and 5)
Korea. Regulated volatile organic compounds (VOCs) (MOE Notice No. 2001-36, March 8, 2001, as amended)
Korea. Restricted Chemical Substances (AREC "K-REACH" Article 27; Designation of Toxic, Restricted or Banned Chemicals Appendices 2 and 3)
Korea. Restricted Chemicals (AREC "K-REACH" Article 27; Designation of Restricted or Banned Chemicals, Appendices 2 and 3)
Korea. Toxic Chemicals (AREC "K-REACH" Article 20; Designation of Toxic Chemicals, Appendix)
Korea. Toxic Chemicals (AREC "K-REACH" Article 20; Designation of Toxic, Restricted or Banned Chemicals Appendix 1)
Korea. Toxic Chemical Control Law (TCCL), pre-1997 List
Korea. Toxic Release Inventory (TRI) Chemicals (MOE Public Notice No. 2002-166, Nov. 8, 2002)
National Toxicology Program (NTP) Report on Carcinogens
NLM: Hazardous Substances Data Base

B. Issue date

23-February-2022

C. Number of revisions and date of most recent revision

23-February-2022 (01 revision)

D. Other

None.

Disclaimer

Smart Tube, Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.