



Material Safety Data Sheet

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

Phone: 650-590-3600
Effective Date: 11OCT2011
Rev 01

Page 1 of 8

Product Name: Binding Solution
Product Description: Binding Solution
MSDS Number: 1410BSMSDS
Part Number: 25322, 25310, 25352

1. Product and Company Description

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

For Product Information/Emergency Phone Number:
(800) 424-9300 (CHEMTREC US)
(703) 527-3887 (CHEMTREC International)

For product use see insert

Chemical Name or Synonym:
N/A

2. Chemical Composition

Component/CAS #	Symbol*	Risk Phrases*	EC #	%
Guanidine thiocyanate / 593-84-0	None	None	N/A	30 - 60%

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

3. Hazards Identification

Emergency Overview: WARNING!
HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED.
Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing.
Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
This product contains Guanidine thiocyanate which liberates toxic gas in contact with acids

HMIS and NFPA Ratings: 0 – Minimal or None, 1 – Slight, 2 – Moderate, 3 – Serious, and 4 – Severe

Health:	1
Fire Hazard:	1
Reactivity:	0

Physical Appearance: Clear, colorless liquid

Routes of Entry: Dermal contact. Eye contact. Inhalation. Ingestion.

Potential Acute Health Effects: Harmful by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.

Ingestion:	Harmful if swallowed.
Skin:	Harmful in contact with skin.
Eyes:	No known significant effects or critical hazards.

Potential chronic health effects

Chronic effects:	No known significant effects or critical hazards.
Carcinogenicity:	No known significant effects or critical hazards.
Mutagenicity:	No known significant effects or critical hazards.
Teratogenicity:	No known significant effects or critical hazards.
Developmental effects:	No known significant effects or critical hazards.
Fertility effects:	No known significant effects or critical hazards.

Over-exposure signs/symptoms:

Inhalation:	No specific data.
Ingestion:	No specific data.
Skin:	No specific data.
Eyes:	No specific data.

Medical conditions aggravated by overexposure: Repeated or prolonged exposure is not known to aggravate any medical condition.

See toxicological information (section 11)

4. First Aid Measures

Eye Contact: Check for and remove any contact lenses. In case of contact with eyes, rinse immediately with plenty of water. Get medical attention if symptoms occur.

Skin Contact: Wash with soap and water. Get medical attention if symptoms occur.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms appear.

Ingestion: Do not induce vomiting. Never give anything by mouth to an unconscious person. Get medical attention if symptoms appear.

Protection of first-aiders: No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

Notes to physician: In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

5. Fire Fighting Measures

Flammability of the product: May be combustible at high temperature.

Extinguishing Media, suitable: Use extinguishing media suitable for the surrounding fire.

Extinguishing Media, not suitable: None known.

Hazardous thermal decomposition products:

Decomposition products may include the following materials:

- Carbon dioxide
- Carbon monoxide
- Nitrogen oxides
- Sulfur oxides
- Metal oxide/oxides

Special Fire Fighting Procedures: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental Release Measures

Personal Precaution: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8).

Environmental Precautions: Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Note: See section 8 for personal protective equipment and section 13 for waste disposal.

Methods for Cleaning Up Small Spill: Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Methods for Cleaning Up Large Spill: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

7. Handling and Storage

Handling: Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use.

Storage: Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

8. Exposure Controls / Personal Protection

Recommended Monitoring Procedures: If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Hygiene Measures: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering Controls: Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Personal Protective Equipment:

Eye Protection: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Hand Protection: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Skin and Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Respiratory Protection: Use a properly fitted, air-purifying or supplied air respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Environmental Exposure Controls: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. Physical and Chemical Properties

Physical state: Liquid.

10. Stability and Reactivity

Stability:	The product is stable.
Materials to Avoid:	Reactive or incompatible with the following materials: oxidizing materials. This product contains Guanidine thiocyanate which liberates toxic gas in contact with acids.
Conditions to Avoid:	No specific data.
Hazardous Decomposition Products:	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Possibility of Hazardous Reactions:	Under normal condition of storage and use, hazardous reaction will not occur.

11. Toxicological Information

Acute Toxicity:

Product / Ingredient Name	Species	Dose	Result	Exposure
Guanidine thiocyanate	Rat	593 mg/kg	LD50 Oral	---

Potential Acute Health Effects:

Inhalation:	Harmful by inhalation. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
Ingestion:	Harmful if swallowed.
Skin:	Harmful in contact with skin.
Eyes:	No known significant effects or critical hazards.

12. Ecological Information

Ecotoxicological Information: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Aquatic Ecotoxicity:

Product / Ingredient Name	Species	Exposure	Result
Guanidine thiocyanate	Daphnia	48 hours	Acute EC50 42.4 mg/l
Guanidine thiocyanate	Fish	96 hours	Acute LC50 89.1 mg/l

Other Adverse Effects: No known significant effects or critical hazards.

13. Disposal Considerations

Waste Disposal Method: The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any byproducts should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

14. Transportation Information

This product is not regulated and no special precautions are needed according to DOT, ADR/RID (cross border), TDG, IMDG and IATA/ICAO.

15. Regulatory Information

U.S. Federal Regulations:

Toxic Substances Control Act (TSCA): Guanidine thiocyanate

U.S. State:

California Proposition 65: This product does not contain chemicals known to the State of California to cause cancer or to cause birth defects or other reproductive harm.

State Regulatory Lists:

The following chemicals are listed by individual states; other product-specific health and safety data in other sections of the MSDS may also be applicable for state requirements. Not meant to be all inclusive. For details on your regulatory requirements, you should contact the appropriate agency in your state:

Chemical Name

N/A

State

N/A

Canada:

Inventory Status (DSL): Listed and/or exempt

WHMIS Classification: Class D-1B: Material causing immediate and serious toxic effects (Toxic).

European/International Regulations:

Inventory Status (DSL): Listed and/or exempt

EU Marking and Labeling: None

Other Inventory Information:

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

16. Other Information

Label Requirements: Harmful if inhaled, absorbed through skin or swallowed.

National Paint & Coating Hazardous Materials Identification System – HMIS(R):

Health Hazard:	1
Flammability:	1
Reactivity:	0
Personal Protection	The customer is responsible for determining the PPE code for this material.

Key Legend Information:

N/A – Not Applicable

ND – Not Determined

ACGIH – American Conference of
Governmental Industrial Hygienists

OSHA – Occupational Safety and Health
Administration

TLV – Threshold Limit Value

PEL – Permissible Exposure Limit

TWA – Time Weighted Average

STEL – Short Term Exposure Limit

NTP – National Toxicology Program

IARC – International Agency for Research on
Cancer

RTECS - Registry of Toxic Effects of Chemical
Substances

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201 Industrial Road, Suite #310
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Product Name: DNase 1 Solution
Product Description: DNase 1
MSDS Number: 1410D1SMSDS
Part Number: 25326, 25304, 25356

1. Product and Company Description

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

For Product Information/Emergency Phone Number:
(800) 424-9300 (CHEMTREC US)
(703) 527-3887 (CHEMTREC International)

For product use see insert

Chemical Name or Synonym:
N/A

2. Chemical Composition

Component/CAS #
DNase I / 9003-98-9

3. Hazards Identification

Label precautionary statements. Irritating to eyes, respiratory system, and, skin.
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Wear suitable protective clothing.

4. First Aid Measures

Eyes: Flush eyes with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating eyelids. Call a physician.
Skin: Wash skin with soap and copious amount of water.
Ingestion: If the person is conscious, wash out mouth with water. Call a physician.
Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

5. Fire Fighting Measures

Extinguishing Agents: Water spray, carbon dioxide, dry chemical powder or appropriate foam.

Special Fire Fighting Procedures: None needed.

Unusual Fire and Explosion Hazards: Not known.

6. Accidental Release Measures

Personal Precaution: Chemical safety goggles, rubber boots and rubber gloves.

Cleaning / Collecting Measures: Sweep up, place in a bag and hold for waste disposal.

7. Handling and Storage

Refer to Section 8 below.

8. Exposure Controls / Personal Protection

Personal Protective Equipment: Chemical safety goggles, compatible chemical-respirator, NIOSH/MSHA-approved respirator, and safety shower and eye bath.

General Protective and Hygiene Measures: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Irritant. Keep tightly closed. Store in a cool dry place.

Engineering Controls: Mechanical exhaust required. None needed

9. Physical and Chemical Properties

Physical state: Liquid.

Color: Clear.

Odor: None.

10. Stability and Reactivity

Thermal Decomposition / Conditions to Avoid: No decomposition if used according to specifications.

Dangerous Reaction: No dangerous reactions known.

Dangerous Products of Decomposition: No known dangerous decomposition products.

Incompatibility: Reactive with oxidizing agents.

Conditions of Instability: excess heat, dust generation, incompatible materials

11. Toxicological Information

Primary Irritant Effects:	Harmful if inhaled or ingested.
On the Skin:	Slightly hazardous in case of skin contact (irritant)
On the Eye:	Causes eye irritation.
Sensitization:	No sensitizing effects known.
Chronic Effects:	May affect genetic material (mutagenic)

12. Ecological Information

Ecotoxicity:	Not available.
BOD5 and COD:	Not available.
Special Remarks on the Products of Biodegradation:	Not available.

13. Disposal Considerations

Disposal of in accordance with federal, provincial and local environmental regulations. Do not allow product to reach sewage system.

14. Transportation Information

DOT Classification:	Not a DOT controlled material (United States).
Identification:	Not applicable.
Special Provisions for Transport:	Not applicable.

15. Regulatory Information

Irritating to eyes, respiratory system and skin. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing.

16. Other Information

Key Legend Information:	PEL – Permissible Exposure Limit
N/A – Not Applicable	TWA – Time Weighted Average
ND – Not Determined	STEL – Short Term Exposure Limit
ACGIH – American Conference of Governmental Industrial Hygienists	NTP – National Toxicology Program
OSHA – Occupational Safety and Health Administration	IARC – International Agency for Research on Cancer
TLV – Threshold Limit Value	RTECS - Registry of Toxic Effects of Chemical Substances

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Product Name: Enzyme Incubation Buffer
Product Description: Buffer
MSDS Number: 1410EIBMSDS
Part Number: 25325, 25704, 25355

1. Product and Company Description

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

For Product Information/Emergency Phone Number:
(800) 424-9300 (CHEMTREC US)
(703) 527-3887 (CHEMTREC International)

For product use see insert

Chemical Name or Synonym:
N/A

2. Chemical Composition

Component/CAS #

Tris / 77-86-1

3. Hazards Identification

Emergency Overview: WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

HMIS and NFPA Ratings: 0 – Minimal or None, 1 – Slight, 2 – Moderate, 3 – Serious, and 4 – Severe

Health:	1
Fire Hazard:	1
Reactivity:	1
Contact Rating:	2

Lab Protective Equipment: Goggles; Lab Coat; Vent Hood; Proper Gloves

Potential Health Effects:

Inhalation: Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

Ingestion: Mild alkali. Causes irritation and reddening to the mucous membranes of the mouth, esophagus, and gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Large oral doses may cause weakness, collapse, blood clotting and coma. Estimated lethal dose: 50 grams.

Skin Contact: Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact: Causes irritation, redness and pain.

Chronic Exposure: Chronic dermatitis may follow skin contact.

Aggravation of Pre-existing Conditions: No information found.

4. First Aid Measures

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

Skin Contact: Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

5. Fire Fighting Measures

Fire: As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source. Slight fire hazard when exposed to heat or flame.

Explosion: Not considered to be an explosion hazard.

Fire Extinguishing Media: Water spray, dry chemical, alcohol foam, or carbon dioxide.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls / Personal Protection

Airborne Exposure Limits: None established.
Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. 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. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection: Wear protective gloves and clean body-covering clothing.
Eye Protection: Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance: Liquid, colorless.
Odor: None.
Solubility: 550 mg/mL
Density: No information found.
pH: 8.8

10. Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products: Burning may produce carbon monoxide, carbon dioxide, and nitrogen oxides.
Hazardous Polymerization: Will not occur.
Incompatibles: Copper, brass, aluminum, and oxidizing agents.
Conditions to Avoid: Heat, incompatibles.

11. Toxicological Information

Routes of Entry:	Ingestion.
Toxicity to Animals:	Oral rat LD50: 5900 mg/kg
Chronic Effects on Humans:	Not available.
Other Toxic Effects on Humans:	Hazardous in case of ingestion.
Special Remarks on Toxicity to Animals:	Not available.
Special Remarks on Chronic Effects on Humans:	Not available.
Special Remarks on other Toxic Effects on Humans:	Not available.

12. Ecological Information

Environmental Fate:	No information found.
Environmental Toxicity:	No information found.

13. Disposal Considerations

Disposal of in accordance with federal, provincial and local environmental regulations.

14. Transportation Information

NAERG: Not applicable

Regulator Information

UN/IMDG/IATA/TDG: Not regulated by any transport mode

DOT Classification: Not a DOT controlled material (United States).

Identification: Not applicable.

Special Provisions for Transport: Not applicable.

15. Regulatory Information

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. Other Information

US Label Requirements: USE WITH CARE.

National Paint & Coating Hazardous Materials Identification System – HMIS(R):

Health Hazard:	1
Flammability:	1
Reactivity:	1

Key Legend Information:

N/A – Not Applicable

ND – Not Determined

ACGIH – American Conference of
Governmental Industrial Hygienists

OSHA – Occupational Safety and Health
Administration

TLV – Threshold Limit Value

PEL – Permissible Exposure Limit

TWA – Time Weighted Average

STEL – Short Term Exposure Limit

NTP – National Toxicology Program

IARC – International Agency for Research on
Cancer

RTECS - Registry of Toxic Effects of Chemical
Substances



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NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
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Phone: 650-590-3600
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Product Name: Proteinase K
Product Description: Proteinase K
MSDS Number: 1410PKMSDS
Part Number: 25327, 17904, 25357

1. Product and Company Description

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

For Product Information/Emergency Phone Number:
(800) 424-9300 (CHEMTREC US)
(703) 527-3887 (CHEMTREC International)

For product use see insert

Chemical Name or Synonym:
N/A

2. Chemical Composition

Component/CAS #
Proteinase K / 39450-01-6

3. Hazards Identification

Potential Acute Health Effects: Hazardous in case of inhalation (lung irritant; lung sensitizer). Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of ingestion.

Potential chronic health effects: Slightly hazardous in case of skin contact (sensitizer), of Inhalation (lung sensitizer).

Carcinogenic Effects: Not available.

Mutagenic Effects: Not available.

Teratogenic Effects: Not available.

Developmental Toxicity: Not available. The substance may be toxic to lungs. Repeated or prolonged exposure to the substance can produce target organ damage.

4. First Aid Measures

- Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.
- Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.
- Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
- Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid.
DO NOT induce vomiting. Call a physician immediately. Loosen tight clothing, such as a collar, tie, belt or waistband.

Notes to Physician: Treat symptomatically and supportively.

5. Fire Fighting Measures

- Flammability:** May be combustible at high temperatures.
- Extinguishing Media:** Use dry chemical powder for small fires. For large fires use water spray, fog or foam. Do not use water jet.
- Flash Point:** Not available.
- Fire Hazards in Presence of Various Substances:** Slightly flammable to flammable in presence of heat.
Nonflammable in presence of shocks.
- Explosion hazards in presence of various substances:** Slightly explosive in presence of open flames and sparks. Non-explosive in presence of shocks.

6. Accidental Release Measures

- Small spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.
- Large spill:** Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

7. Handling and Storage

- Handling:** Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust.
- Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area. Store at -20°C.

8. Exposure Controls / Personal Protection

Engineering measures:	Use process enclosures, local exhaust ventilation or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fumes or mist use ventilation to keep exposure to airborne contaminants below the exposure limits.
Personal Protective Equipment	
Respiratory protection:	Respiratory protection is not required under normal use of this product. If respiratory protection is needed, follow the OSHA regulation, 29CFR1910.134. Always use a NIOSH approved respirator when necessary.
Hand protection:	Wear appropriate protective gloves to prevent skin contact. Replace torn or punctured gloves promptly.
Skin and body protection:	Wear appropriate body protection to prevent skin contact.
Eye protection:	Wear appropriate eye protection to prevent eye contact.
Hygiene measures:	Avoid contact with skin, eyes and clothing.

9. Physical and Chemical Properties

Color:	White.
Odor:	Slight.
Physical state:	Solid.
Solubility in water:	Soluble.

10. Stability and Reactivity

Stability:	Stable under recommended storage conditions
Polymerization:	Will not occur.
Conditions of instability:	Excess heat, dust generation.

11. Toxicological Information

Routes of entry:	Inhalation, ingestion
Toxicity to animals:	LD50: Not available. LC50: Not available.
Chronic effects on humans:	May cause damage to the lungs
Other toxic effects on humans:	Hazardous in case of inhalation (lung irritant; lung sensitizer). Slightly hazardous in case of skin contact, of ingestion.

Special remarks on other toxic effects on humans: Potential health effects: Skin: causes irritation; may cause sensitization (allergic reactions).

Eyes:	Causes irritation.
Inhalation:	Causes respiratory tract and mucous membrane irritation. May cause allergic reaction by inhalation. Repeated exposures may cause asthma.

The toxicological properties of this substance have not been fully investigated.

12. Ecological Information

Environmental Fate: No information found.
Environmental Toxicity: No information found.
Products of biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

13. Disposal Considerations

Waste from residues / unused products: Waste disposal must be in accordance with appropriate Federal, Provincial, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Residue from fires extinguished with this material may be hazardous.

14. Transportation Information

Not regulated.

15. Regulatory Information

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. Other Information

Key Legend Information:

N/A – Not Applicable

ND – Not Determined

ACGIH – American Conference of
Governmental Industrial Hygienists

OSHA – Occupational Safety and Health
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TLV – Threshold Limit Value

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Phone: 650-590-3600
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Product Name: Wash Solution
Product Description: Wash Solution
MSDS Number: 1410WSMSDS
Part Number: 25323, 17204, 25353

1. Product and Company Description

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

For Product Information/Emergency Phone Number:
(800) 424-9300 (CHEMTREC US)
(703) 527-3887 (CHEMTREC International)

For product use see insert

Chemical Name or Synonym:
N/A

2. Chemical Composition

Component/CAS #
Tris / 77-86-1
EDTA / 60-00-4

3. Hazards Identification

Emergency Overview: IRRITANT

HMIS and NFPA Ratings: 0 – Minimal or None, 1 – Slight, 2 – Moderate, 3 – Serious, and 4 – Severe

Health: 2
Fire Hazard: 0
Reactivity: 0

4. First Aid Measures

- Eye:** In case of contact, immediately flush eyes with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.
- Skin:** In case of contact, immediately wash skin with soap and copious amounts of water. Wash contaminated clothing before reuse.
- Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- Ingestion:** If swallowed, wash out mouth with water provided person is conscious. Call a physician.

5. Fire Fighting Measures

- Extinguishing Media:** Water spray. Carbon dioxide, dry chemical powder or appropriate foam.
- Firefighting Procedures:** Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
- Unusual Fire and Explosions Hazards:** Emits toxic fumes under fire conditions.

6. Accidental Release Measures

- Personal Precaution:** To minimize contact wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves.
- Environmental Precaution:** Do not let product enter drains.
- Methods for Cleaning Up:** Pick up and arrange disposal without creating dust. Keep suitable in closed container for disposal.

7. Handling and Storage

- Handling:** User exposure: avoid inhalation. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Wash thoroughly after handling. Also see section 8.
- Storage:** Suitable: keep tightly closed and in a well ventilated area.

8. Exposure Controls / Personal Protection

Contains no substances with occupational exposure limit values.

Personal Protective Equipment

- Respiratory Protection:** Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) Or Type P1 (EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
- Hand Protection:** Handle with gloves.
- Eye Protection:** Safety glasses
- Skin and Body Protection:** Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Hygiene Measures:** Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. Physical and Chemical Properties**Appearance and Physical Properties:** liquid**Safety Data:**

pH:	7.5
Melting point:	171.2 - 172.3 °C (340.2 - 342.1 °F)
Boiling point:	219 - 220 °C (426 - 428 °F) at 13.3 HPA (10.0 MMHG)

10. Stability and Reactivity

Stability:	Stable. Materials to avoid: strong oxidizing agents.
Hazardous Decomposition Products:	Hazardous decomposition products: nature of decomposition products not known.
Hazardous Polymerization:	Hazardous polymerization will not occur.

11. Toxicological Information

Acute Toxicity:	LD50 oral - rat - 2,580 Mg/Kg
Irritation and Corrosion:	Eyes - rabbit - eye irritation
Sensitization:	Will not occur

Chronic Exposure:

IARC:	No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGHI:	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen By ACGHI.
NTP:	No components of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No components of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.**Potential Health Effects:**

Inhalation:	May be harmful if inhaled. Causes respiratory tract irritation.
Skin:	May be harmful if absorbed through skin. Causes skin irritation.
Eyes:	Causes eye irritation.
Ingestion:	Maybe harmful if swallowed.

12. Ecological Information**Elimination Information (Persistence and Degradability):**

Bioaccumulation Lepomis Macrochirus - 28 D
Bioconcentration Factor (BCF): 1.8

E Cotoxicity Effects:

Toxicity to fish mortality NOEC - Lepomis Macrochirus - 24 Mg/L - 96 H
LC50 - Lepomis Macrochirus (Bluegill) - 34 - 62 Mg/L - 96 H
Toxicity to Daphnia and other aquatic invertebrates.
EC50 - Daphnia Magna (Water Flea) - 113 Mg/L - 48 H

13. Disposal Considerations

Disposal of in accordance with federal, provincial and local environmental regulations.

14. Transportation Information**DOT (US):**

Un-Number: 3077 class: 9 Packing group: III

Proper shipping name: environmentally hazardous substances, solid, N.O.S. (EDTA Acid)

Marine pollutant: no

Poison inhalation hazard: no

IMDG:

Not hazardous

IATA:

Not hazardous

15. Regulatory Information

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. Other Information**National Paint & Coating Hazardous Materials Identification System – HMIS(R):**

Health Hazard:	2
Flammability:	0
Reactivity:	0

Key Legend Information:

N/A – Not Applicable

ND – Not Determined

ACGIH – American Conference of

Governmental Industrial Hygienists

OSHA – Occupational Safety and Health

Administration

TLV – Threshold Limit Value

PEL – Permissible Exposure Limit

TWA – Time Weighted Average

STEL – Short Term Exposure Limit

NTP – National Toxicology Program

IARC – International Agency for Research on
Cancer

RTECS - Registry of Toxic Effects of Chemical
Substances

The information contained herein is based on the data available to us and is believed to be correct. However NuGEN Technologies, Inc. makes no warranty, expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof.



Material Safety Data Sheet

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

Phone: 650-590-3600
Effective Date: 13OCT2011
Rev 08

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Product Name: Various – See attached list
Product Description: Dilute aqueous solution containing no hazardous ingredients at concentrations $\geq 1\%$ or carcinogenic ingredients at $\geq 0.1\%$.
MSDS Number: NHIMSDS
Part Number: See attached list

1. Product and Company Description

NuGEN Technologies, Inc.
201 Industrial Road, Suite #310
San Carlos, CA 94070

For Product Information/Emergency Phone Number:
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For product use see insert

Chemical Name or Synonym:
N/A

2. Chemical Composition

Component/CAS #	Symbol*	Risk Phrases*	EC #	%
No hazardous ingredients	N/A	N/A	N/A	N/A

The ingredients listed in this section include only those items that have $\geq 1\%$ of a component classified as hazardous and $\geq 0.1\%$ of a component classified as carcinogenic.

3. Hazards Identification

This preparation is not classified as hazardous according to the latest adaptations of European Union Directives 67/548/EEC and 1999/45/EC.

This product is not hazardous per OSHA 29CFR 1910.1200.

4. First Aid Measures

- Eyes:** Flush eyes with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating eyelids. Call a physician.
- Skin:** Wash skin with soap and copious amount of water.
- Ingestion:** If the person is conscious, wash out mouth with water. Never give fluids or induce vomiting if the victim is unconscious or having convulsions. Call a physician.
- Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

5. Fire Fighting Measures

- Extinguishing Media:** Use extinguishing media appropriate for surrounding fire.
- Special Fire Fighting Procedures:** Wear self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
- Fire and Explosion Hazards:** None.

6. Accidental Release Measures

- Cleanup and Disposal of Spill:**
Wear suitable laboratory protective clothing. Discard any product, residue, disposable container or liner in full compliance with national regulations.

7. Handling and Storage

- Handling/Storage:**
Observe good laboratory handling practices. Always wash hands thoroughly after removing protective gloves. Avoid breathing vapors or mists. Ensure containers are labeled and tightly closed. Store product in a temperature controlled environment.

8. Exposure Controls / Personal Protection

- Exposure Guidelines:** None
- Engineering Controls:** Safety shower and eye wash. Mechanical exhaust.
- Personal Protective Equipment**
- Eye Protection:** Safety goggles.
 - Hand Protection:** Compatible resistant gloves.
 - Skin Protection:** Compatible lab coat or apron.
 - Respiratory Protection:** None required.
- Hygiene Measure:** General practices, wash (hands and skin) thoroughly after handling. Remove and wash contaminated clothing.

9. Physical and Chemical Properties

- Physical State:** Clear liquid
- Odor:** None
- pH:** ND
- Specific Gravity:** ND

Water Solubility: Soluble
Melting Point: ~0°C
Freezing Point: ~0°C
Boiling Point: ~100°C
Vapor Pressure: ND
Vapor Density: ND
Percent Volatiles: ND
Viscosity: ND
Molecular Weight: Not applicable

10. Stability and Reactivity

Chemical Stability: Stable
Conditions to Avoid: Excessive Heat
Materials / Chemicals to Be Avoided: Strong oxidizing and reducing agents
Hazardous Decomposition Products: When heated to decomposition oxides of carbon may be emitted.
Hazardous Polymerization: Will not occur.

11. Toxicological Information

Acute and Chronic Affects Based On Routes Of Exposure

Eye Contact: No known significant effects or critical hazards.
Skin Contact: No known significant effects or critical hazards.
Ingestion: No known significant effects or critical hazards.
Inhalation: No known significant effects or critical hazards.

Chronic Exposure

Target Organ(s): Not available.

Aggravation of Pre-existing Conditions: None known

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen.

IARC: No component of this product present at levels greater than or equal to 0.1 % is identified as probable, possible or confirmed human carcinogen.

ACGIH: No component of this product present at levels greater than or equal to 0.1 % is identified as a known or suspected human carcinogen or confirmed animal with unknown relevance humans.

12. Ecological Information

No data available.

13. Disposal Considerations

Waste Disposal Method:

Discard any product, residue, disposable container or liner in full compliance with national regulations.

Container Handling and Disposal:

Dispose of container and unused contents in accordance with national regulations.

14. Transportation Information

This product is not dangerous and no special precautions are needed according to DOT, ADR/RID (cross border), IMDG and IATA/ICAO.

15. Regulatory Information**United States****SARA Title III Hazard Classes:**

Fire Hazard: No
Reactive Hazard: No
Release of Pressure: No
Acute Health Hazard: No
Chronic Health Hazard: No

TSCA

All components of this product are on the TSCA inventory or are not required to be listed.

Other Regulations:

U.S. State: None

European/International Regulations**EU Marking and Labeling**

Symbol: None
Risk Phrases: None
Safety Phrases: None

Canada

WHMIS Classification: Uncontrolled product according to WHMIS classification criteria

Inventory Information

EU The substances in this preparation have been checked against the European Inventory of Existing Commercial Chemical Substances (EINECS), the European List of Notified Chemical Substances (ELINCS), and the no Longer Polymer (NLP) list. Substances not identified on these inventories are exempt.

Canada This product contains components on the Domestic Substances List.

Japan All components of this product are included on the Japanese (ENCS) Inventory or are not required to be listed

16. Other Information**DISCLAIMER**

The information provided on the MSDS is furnished in good faith and based on our present knowledge. However, this MSDS shall not constitute a guarantee of any kind. Personnel handling this material must make independent determinations of the suitability and completeness of information from all sources to assure proper use and disposal of this material and the safety and health of employees and customers. This product is for R&D use only. Not for drug, household or other uses.

Notice to Users:

Many of the reagents provided by NuGEN Technologies, Inc. are mixtures which contain hazardous ingredients only at concentrations <1% or carcinogenic ingredients at <0.1%. At such levels, less than the Threshold Limit Values, no special handling precautions are necessary. This MSDS provides general safety precautions appropriate to such reagents.

List of Products containing no hazardous ingredients as outlined above:

Product Name	Part Number	Subassembly Part Number
D1 Nuclease-Free Water	S01001	
ER1 End Repair Buffer Mix	F01147	S01309, S01437
L2 Ligation Adaptor Mix (5uM ea)	F01148	S01312
P1 Amplification Buffer Mix	F01149	S01314, S01439
P2 Amplification Primer Mix (10uM ea)	F01150	S01315, S01326, S01440
L2BC1 Ligation Adaptor Mix	F01151	S01318
L2BC2 Ligation Adaptor Mix	F01152	S01319
L2BC3 Ligation Adaptor Mix	F01153	S01320
L2BC4 Ligation Adaptor Mix	F01154	S01321
L2BC5 Ligation Adaptor Mix	F01155	S01322
L2BC6 Ligation Adaptor Mix	F01156	S01323
L2BC7 Ligation Adaptor Mix	F01157	S01324
L2BC8 Ligation Adaptor Mix	F01158	S01325
L2 VER 2 Ligation Adaptor	F01160	S01338
F1 VER 2 Fragmentation Buffer	F01161	S01343
ER1 VER 2 End Repair Buffer	F01162	S01345
AT1 A-tailing Buffer	F01163	S01347
E1 VER 2 DS Primer	F01164	S01349
Library Spike Mix	F01171	S01354
B4 VER 1 Second Strand Primer	F01173	S01362
B1 VER 5 Second Strand Buffer	F01174	S01363
L2-BC9 Ligation Adaptor Mix	F01177	S01365
L2-BC10 Ligation Adaptor Mix	F01178	S01366
L2-BC11 Ligation Adaptor Mix	F01179	S01367
L2-BC12 Ligation Adaptor Mix	F01180	S01368
L2-BC13 Ligation Adaptor Mix	F01181	S01369
L2-BC14 Ligation Adaptor Mix	F01182	S01370
L2-BC15 Ligation Adaptor Mix	F01183	S01371
L2-BC16 Ligation Adaptor Mix	F01184	S01372
qPCR Primer Mix 1	N/A	S01355
qPCR Primer Mix 2	N/A	S01356
qPCR Primer Mix 3	N/A	S01357
C2 VER 10 SPIA Buffer Mix	F01185	S01401, S01404, S01408, S01470, S01472, S01498
C2 VER 11 SPIA Buffer Mix	F01188	S01410, S01412, S01414
L2V2-BC1 Ligation Adaptor Mix	F01189	S01417
L2V2-BC2 Ligation Adaptor Mix	F01190	S01418
L2V2-BC3 Ligation Adaptor Mix	F01191	S01419
L2V2-BC4 Ligation Adaptor Mix	F01192	S01420
L2V2-BC5 Ligation Adaptor Mix	F01193	S01421
L2V2-BC6 Ligation Adaptor Mix	F01194	S01422
L2V2-BC7 Ligation Adaptor Mix	F01195	S01423
L2V2-BC8 Ligation Adaptor Mix	F01196	S01424
L2V2-BC9 Ligation Adaptor Mix	F01197	S01425
L2V2-BC10 Ligation Adaptor Mix	F01198	S01426
L2V2-BC11 Ligation Adaptor Mix	F01199	S01427
L2V2-BC12 Ligation Adaptor Mix	F01200	S01428
L2V2-BC13 Ligation Adaptor Mix	F01201	S01429

L2V2-BC14 Ligation Adaptor Mix	F01202	S01430
L2V2-BC15 Ligation Adaptor Mix	F01203	S01431
L2V2-BC16 Ligation Adaptor Mix	F01204	S01432
L2 VER 3 Ligation Adaptor Mix	F01206	S01441
L2V3BC1-8 Ligation Adaptor Mix	F01209	S01443, S01444, S01445, S01446, S01447, S01448, S01449, S01450
L2V3BC9-16 Ligation Adaptor Mix	F01210	S01451, S01452, S01453, S01454, S01455, S01456, S01457, S01458
P2 VER 2 Amplification Primer Mix	F01207	S01442, S01459
384 Plex Plate A Ligation Adaptor Mix	F01225	S01460
384 Plex Plate B Ligation Adaptor Mix	F01226	S01461
384 Plex Plate C Ligation Adaptor Mix	F01227	S01462
384 Plex Plate D Ligation Adaptor Mix	F01228	S01463
L2 VER 5 Ligation Adaptor Mix	F01249	S01492
A1 VER 7 First Strand Primer	R01179	S01358
Digestion Buffer	25321, 25301, 25351	N/A
RNA Elution Solution	25324, 23503, 25354	N/A