

MATERIAL SAFETY DATA SHEET

Section 1. Company Identification and Product Information

Product Name or Identity: GeneQuence™ <i>Salmonella</i> Test			
Manufacturer's Name: Neogen Corporation		Emergency Phone No.:	517/372-9200
620 Leshar Place		Fax No.:	517/372-0108
Lansing, MI 48912		e-mail:	foodsafety@neogen.com
Date Prepared or Revised: September 2008		Chemtrec: (800) 424-9300 Outside US and Canada: (703) 527-3887	

Section 2. Composition / Information on Hazardous Ingredients

This product is a mixture of the substances listed below with the addition of nonhazardous materials.

Hazardous Components Specific Chemical Identity:	CAS-No.	% Concentration	Hazard Symbol
Sulfuric Acid (Stop Solution)	7664-93-9	11%	T (Toxic), C (Corrosive)
Formamide (Hybridization Solution)	75-12-7	> 99%	Xi (Irritant)
Proteinase K (Lysis Reagent)	39450-01-6	N/A	N/A

Section 3. Health Hazard Identification

Health Hazards: <i>(Acute and Chronic)</i>	<p>Information pertaining to particular dangers for man and environment.</p> <p>R 35 Corrosive. Causes severe burns. May be fatal if swallowed or contact with skin. (Sulfuric Acid)</p> <p>R 60, 61 May impair fertility. May cause harm to the unborn child. (Formamide)</p> <p>R 20 Harmful by inhalation. (Formamide, Proteinase K)</p> <p>R 36, 37, 38 Irritating to eyes, respiratory system, and skin. (Sulfuric Acid, Formamide, Proteinase K)</p> <p>R 42, 43 May cause sensitization by inhalation and skin contact. (Proteinase K)</p>
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Section 4. First Aid Measures

Emergency / First Aid Procedures:	<p>General Information: Effects should be less severe than from exposure to higher concentrations of sulfuric acid.</p> <p>Ingestion: DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Call a physician immediately, show product label or MSDS.</p> <p>Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.</p> <p>Eye Contact: Immediately rinse opened eye for at least 15 minutes under running water, lifting lower and upper eyelids occasionally. Remove contact lenses if able. Seek medical attention immediately.</p> <p>Skin Contact: Immediately wash with plenty of soap and water for at least 15 minutes while removing contaminated clothing. Wash clothing before reuse. Seek medical attention. Excess acid on skin can be neutralized with a 2% solution of bicarbonate of soda.</p>
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Section 5. Fire and Explosion Hazard Data

Flash Point (Method Used): 150°C (Formamide) Closed Cup	Flammable Limits: LEL – N/A UEL – N/A
Extinguishing Media: Use water spray, dry powder, or carbon dioxide. Concentrated solutions of Sulfuric Acid are water reactive.	
Protective Equipment: Firefighters should wear full protective equipment and self-contained breathing apparatus.	
Unusual Fire and Explosion Hazards: Contacts with metals causes formation of flammable and explosive hydrogen gas.	
Hazardous Combustion Products: Sulfuric Acid is not combustible, but it is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Formamide emits toxic fumes under fire conditions.	

Section 6. Accidental Release Measures

Personal Precautions: Consider need for evacuation. Avoid inhalation of vapors and contact with skin and eyes. Wear suitable protective clothing, gloves, and eye protection. Wear self-containing breathing apparatus, rubber boots, and heavy rubber gloves. Place contaminated material in a chemical waste container.

Environmental Precautions: Prevent dispersion of material. Avoid discharge into drains, water courses or onto the ground. Inform authorities if large amounts are involved. Do not flush into sewer.

Clean-up Methods: Contain and recover liquid when possible. Neutralize with alkaline material, then absorb with an inert material and place into chemical waste container. Contact safety officer if questions arise and ventilate area.

Section 7. Handling and Storage

Handling: Avoid inhalation of vapors and contact with skin and eyes. Wear appropriate personal protective equipment. Do not taste or swallow. Protect against physical damage. Ensure good ventilation / exhaustion and do not breathe vapor. Avoid prolonged or repeated exposure. Do not use if skin is cut or scratched.

Storage: Keep container tightly closed in a well-ventilated place. Store in closed original container in a dry place. Keep away from heat, sparks, flame, and incompatible materials. Protect from physical damage.

Other Precautions: Keep respiratory protective device available. Containers may be hazardous when empty since they retain product residues.

Section 8. Exposure Controls / Personal Protection

Components with limit values that require monitoring: Sulfuric Acid (7664-93-9), Formamide (75-12-7)

Chemical Name	Source	Type	Exposure Limits
Sulfuric Acid	US ACGIH TLV	TWA	0.2 mg/m ³
Sulfuric Acid	US OSHA -1 PEL	TWA	1 mg/m ³
Formamide	US OSHA	TWA	18 mg/m ³

Engineering Controls: Provide adequate ventilation. Observe occupational exposure limits and minimize the risk of inhalation of vapors and mist.

Respiratory Protection: Respiratory protection must be used if air contamination exceeds acceptable level. 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. In the US, if respirators are used a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Use a NIOSH-approved respirator (See 29 CFR 1910.134, respiratory protection standard). Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister. Contact health and safety professional or manufacturer for specific information.

Personal Protective Equipment: Personal Protection listed below are general requirements for laboratory personnel. Follow the usual precautionary measures for handling chemicals / powder. Avoid contact with eyes, skin, and clothing. Proper ventilation required. Safety shower and eye bath required. Keep away from food, beverages, and feed. Wash hands before and after entering laboratory. Immediately remove all soiled and contaminated clothing. Avoid contact with eyes and skin.

Breathing Equipment: In case of brief exposure, use a chemical fume hood or a NIOSH / MSHA-approved respiratory.

Hand Protection: Use chemical resistant gloves. Be aware that the liquid may penetrate gloves.

Eye Protection: Wear approved safety goggles.

Body Protection: Wear lab coat or other protective work clothing.

Environmental Exposure Controls: Environmental manager must be informed of all major spillages.

Section 9. Physical and Chemical Properties

Appearance and Odor: Not determined	Evaporation Rate: No data available.
Boiling Point: Not determined	Vapor Pressure: No data available.
Melting Point: Not determined	Vapor Density (Air=1): No data available.
Density: Not determined	Specific Gravity: No data available.
Solubility in Water: Not determined	Viscosity: No data available.

Section 10. Stability and Reactivity

Stability:	Unstable		
	Stable	X	Conditions to Avoid: Stable under normal conditions of use and storage.
Incompatibility (Materials to Avoid): Incompatible with strong oxidizing agents, potassium permanganate, halogens, metals, and reducing agents.			
Hazardous Decomposition or Byproducts: Carbon monoxide, Carbon dioxide, and Nitrogen oxides. Sulfuric Acid reacts with carbonates to generate Carbon dioxide gas.			
Hazardous Polymerization:	May Occur		Conditions to Avoid: Heat, sparks, open flame, and incompatible materials.
	Will Not Occur	X	

Section 11. Toxicological Information

LD/LC50 values that are relevant:
LD₅₀: ORL-RAT, 2140 mg/kg, Sulfuric Acid

LC₅₀: INH-RAT, 510 mg/m³, Sulfuric Acid

LD₅₀: ORL-RAT, 5577 mg/kg, Formamide

Carcinogenicity Classification:
IARC (International Agency for Research on Cancer) – Category 1 as “strong inorganic acid mists containing Sulfuric Acid. This classification applies only to mists containing Sulfuric Acid and not to Sulfuric Acid or Sulfuric Acid solutions.

NTP (National Toxicology Program) - Not Listed

Eye: Produces eye irritation. Exposed individuals may experience blurred vision, redness, pain, and burns to eye tissue. Concentrated solutions can cause blindness.

Ingestion: Symptoms may include severe burns of the mouth, throat, and stomach. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion or skin contact. Circulatory shock can occur. May cause sore throat, vomiting, and diarrhea.

Inhalation: Symptoms may include irritation of the nose and throat, labored breathing, as well as lung edema, damage to the mucous membranes and upper respiratory tract.

Skin: Symptoms may include redness, pain, and burns to the skin. Circulatory collapse with clammy skin, weak and rapid pulse, shallow respirations, and scanty urine may follow ingestion or skin contact. The full extent of tissue damage may not be exhibited for 12 – 24 hours after exposure to Formamide.

Chronic: Long term exposure to mist or vapors may cause damage to teeth. Chronic exposure to mists containing Sulfuric Acid is a cancer hazard. Risk of cancer depends on duration and level of exposure. Chronic exposure to Formamide may cause congenital malformation in the fetus.

Target Organs: Eye, Skin, Lungs, Central Nervous System, Liver, Kidneys

Section 12. Ecological Information

Ecotoxicity Tests: When released into the soil, this material may leach into groundwater. This material (Sulfuric acid) may be toxic to aquatic life.

LC₅₀: Flounder 100 – 330 mg/L / 48 hours aerated water.

Section 13. Disposal Considerations

Waste Disposal Method: Disposal recommendations are based on material as supplied. Disposal must be in accordance with current applicable laws and regulations, and material characteristics at time of disposal. Contact safety officer if questions arise and ventilate area. Dispose in accordance with all applicable federal (40 CFR 261.3), state, and local environmental regulations.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Contact a licensed professional waste disposal service to dispose of this material if questions arise.

Container Information: Do not remove labels from containers until they have been cleaned. Since emptied containers retain product residue, follow label warnings even after container is emptied.

Section 14. Transport Information**DOT Regulations:**

UN No. 3316

Proper Shipping name: Chemical Kit, (contains 11% Sulfuric Acid)

Class 9

Packing Group: III

Label: Excepted/Limited Quantity

Land Transport ADR/RID/TDG (cross-border):

UN No. 3316

Proper Shipping name: Chemical Kit, (contains 11% Sulfuric Acid)

Class 9

Packing Group: III

Label: Excepted/Limited Quantity

Maritime Transport IMDG:

UN No. 3316

Proper Shipping name: Chemical Kit, (contains 11% Sulfuric Acid)

Class 9

Packing Group: III

Label: Excepted/Limited Quantity

Marine Pollutant: Not determined

Air Transport ICAO-TI and IATA-DGR:

UN No. 3316

Proper Shipping name: Chemical Kit, (contains 11% Sulfuric Acid)

Class 9

Packing Group: III

Label: Excepted/Limited Quantity

Section 15. Regulatory Information**EU Regulations, Hazard Symbol(s):**

Sulfuric Acid, C (Corrosive), T (Toxic)

Formamide, Xi (Irritant)

Risk Phrases:

R 35 Corrosive. Causes severe burns. May be fatal if swallowed or contact with skin. (Sulfuric Acid)

R 60, 61 May impair fertility. May cause harm to the unborn child. (Formamide)

R 20 Harmful by inhalation. (Formamide, Proteninase K)

R 36, 37, 38 Irritating to eyes, respiratory system, and skin. (Sulfuric Acid, Formamide, Proteninase K)

R 42, 43 May cause sensitization by inhalation and skin contact. (Proteninase K)



Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 36, 37, 39 Wear suitable protective clothing, gloves, and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately.

Section 16. Other Information

This document is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. Neogen Corporation shall not be held liable for any damage resulting from handling or from contact with the above product. These suggestions should not be confused with state, municipal or insurance requirements, and constitute NO WARRANTY.