MATERIAL SAFETY DATA SHEET

GLYCINE

SECTION 1 - MATERIAL IDENTIFICATION AND INFORMATION

MANUFACTURER'S NAME: **GENOMIC SOLUTIONS, INC.**
ADDRESS: **4355 VARSITY DR.**
ANN ARBOR, MI 48108
TELEPHONE NUMBER: **(734) 975-4800**
US EMERGENCY PHONE: **(800) 535-5053**
INTERNATIONAL EMERGENCY PHONE: **1(352) 323-3500 (Call Collect)**

CAS NUMBER: 56-40-6
RTECS NUMBER: MB7600000

SUBSTANCE: GLYCINE

TRADE NAMES/SYNONYMS:
80-0081, GLYCINE 500G; 80-0162, GLYCINE 2500G; 70-2502, GLYCINE POWDER 2D ELECTROPHORESIS; 70-2869, GLYCINE POWDER 2D 10 KG; 2-AMINOACETIC ACID; AMINOETHANOIC ACID; GLYCOCOLL; GLYCOSTHENE; GLYCINE POWDER; AMINOACETIC ACID; C2H5NO2.

CHEMICAL FAMILY: AMINE, ALIPHATIC

CREATION DATE: 6/1/95
REVISED: 12/12/00

SECTION 2 - PHYSICAL / CHEMICAL CHARACTERISTICS

COMPONENT: GLYCINE
CAS NUMBER: 56-40-6
PERCENTAGE: 100.0
OTHER CONTAMINANTS: NONE

PHYSICAL AND CHEMICAL PROPERTIES

DESCRIPTION: Odorless, colorless to white, monoclinic crystals with a sweet taste.
MOLECULAR WEIGHT: 75.07
MOLECULAR FORMULA: H2-N-C-H2-C-O-O-H
MELTING POINT: 504 F (262 C) decomposes
BOILING POINT: N/A
VAPOR PRESSURE: no data available
VAPOR DENSITY: N/A
SPECIFIC GRAVITY: 1.607
WATER SOLUBILITY: 25% @ 25 C
pH: 4.0 @ 1.5% solution
ODOR THRESHOLD: No data available
EVAPORATION RATE: N/A
SOLVENT SOLUBILITY: Very slightly soluble in ether, pyridine and alcohol.

SECTION 3 - FIRE AND EXPLOSION HAZARD DATA

CERCLA RATINGS (SCALE 0-3): **HEALTH** = 2 **FIRE** = 1 **REACTIVITY** = 0 **PERSISTENCE** = 0
NFPA RATINGS (SCALE 0-4): **HEALTH** = 1 **FIRE** = 1 **REACTIVITY** = 0

EMERGENCY OVERVIEW:
Odorless, colorless to white, monoclinic crystals with a sweet taste. May be irritating to skin. May form flammable or explosive dust-air mixtures. Avoid contact with eyes, skin and clothing. Avoid creation of dust. Wash thoroughly after handling.

POTENTIAL HEALTH EFFECTS

INHALATION:
Short Term Effects: May cause coughing.
Long Term Effects: No information is available.

SKIN CONTACT:
Short Term Effects: May cause irritation.
Long Term Effects: No information available on significant adverse effects.

EYE CONTACT:
Short Term Effects: No information available on significant adverse effects.
Long Term Effects: No information is available.

INGESTION:
Short Term Effects: May cause nausea.
Long Term Effects: No information available on significant adverse effects.

CARCINOGEN STATUS:
OSHA: N
NTP: N
IARC: N

FIRE FIGHTING MEASURES

FIRE AND EXPLOSION HAZARD:
Slight fire hazard when exposed to heat or flame. Dust-air mixtures may ignite or explode.

EXTINGUISHING MEDIA:
Dry chemical, carbon dioxide, water spray or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, use water spray, fog or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

FIREFIGHTING:
Move container from fire area if you can do it without risk. Do not scatter spilled material with high-pressure water streams. Dike fire-control water for later disposal (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 31).
Use agents suitable for type of surrounding fire. Avoid breathing hazardous vapors, keep upwind.

FLASH POINT: no data available
LOWER FLAMMABLE LIMIT: no data available
UPPER FLAMMABLE LIMIT: no data available
AUTOIGNITION: no data available

HAZARDOUS COMBUSTION PRODUCTS:
Thermal decomposition products may include corrosive fumes of ammonia, and toxic oxides of nitrogen and carbon.

SECTION 4 - REACTIVITY HAZARD DATA

STABILITY AND REACTIVITY

REACTIVITY: Stable under normal temperatures and pressures.

CONDITIONS TO AVOID: May burn but does not ignite readily. Avoid contact with strong oxidizers, excessive heat, sparks, or open flame.

INCOMPATIBILITIES:
GLYCINE:
ALKALIES (STRONG): Incompatible.
OXIDIZERS (STRONG): Fire and explosion date.

HAZARDOUS DECOMPOSITION: THERMAL DECOMPOSITION Products may include corrosive fumes of ammonia, and toxic oxides of nitrogen and carbon.

POLYMERIZATION: Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

SECTION 5 - HEALTH HAZARD DATA

EMERGENCY FIRST AID

INHALATION:
First Aid - Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Keep person warm and at rest. Treat symptomatically and supportively. Get medical attention immediately.

SKIN CONTACT:
First Aid - Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

EYE CONTACT:
First Aid - Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

INGESTION:
First Aid - If vomiting occurs, keep head lower than hips to help prevent aspiration. Treat symptomatically and supportively. Get medical attention if needed.

NOTE TO PHYSICIAN
ANTIDOTE:
No specific antidote. Treat symptomatically and supportively.

TOXICOLOGY INFORMATION

GLYCINE:
TOXICITY DATA:

7930 mg/kg Oral-rat LD50
4920 mg/kg oral-mouse LD50
5200 mg/kg subcutaneous-rat LD50
5060 mg/kg subcutaneous-mouse LD50
2600 mg/kg intravenous-rat LD50
2370 mg/kg intravenous-mouse LD50
3000 mg/kg intravenous-cat LDLo
4450 mg/kg intraperitoneal-mouse LD50

CARCINOGEN STATUS: None.
ACUTE TOXICITY LEVEL: Slightly toxic by ingestion.
TARGET EFFECTS: No data available.

HEALTH EFFECTS

INHALATION:
GLYCINE:
Acute Exposure: Inhalation of dust may cause coughing.
Chronic Exposure: No data available.

SKIN CONTACT:
GLYCINE:
Acute Exposure: May cause irritation. Skin absorption may occur.
Chronic Exposure: Prolonged or repeated contact may cause irritation.

EYE CONTACT:
GLYCINE:
Acute Exposure: Contact may cause redness and irritation.
Chronic Exposure: No data available.

INGESTION:
GLYCINE:
Acute Exposure: Ingestion of large quantities may cause nausea.
Chronic Exposure: When fed to chicks, large amounts of glycine have been found to cause a peculiar enlargement of the eyeballs.

SECTION 6 - CONTROL AND PROTECTIVE MEASURES

EXPOSURE LIMITS:
No occupational exposure limits established by OSHA, ACGIH, or NIOSH.

VENTILATION:
Provide local exhaust ventilation. Ventilation equipment should be explosion-proof if explosive concentrations of dust, vapor or fume are present.

EYE PROTECTION:
Employee must wear splash-proof or dust-resistant safety goggles to prevent eye contact with this substance.
EMERGENCY WASH FACILITIES:
Emergency eye wash: Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye wash fountain within the immediate work area for emergency use.

CLOTHING:
Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES:
Employee must wear appropriate protective gloves to prevent contact with this substance.

RESPIRATOR:
The following respirators are recommended based on information found in the physical data, toxicity and health effects sections. They are ranked in order from minimum to maximum respiratory protection. The specific respirator selected must be based on contamination levels found in the work place, must be based on the specific operation, must not exceed the working limits of the respirator and must be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

Any dust and mist respirator with a full facepiece.

Any air-purifying full facepiece respirator with a high-efficiency particulate filter.

Any powered air-purifying respirator with a tight-fitting facepiece and high-efficiency particulate filter.

Any type 'C' supplied-air respirator with a full facepiece operated in pressure-demand or other positive pressure mode or with a full facepiece, helmet or hood operated in continuous-flow mode.

Any self-contained breathing apparatus with a full facepiece operated in pressure-demand or other positive pressure mode.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:
Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

SECTION 7 - PRECAUTIONS FOR SAFE HANDLING & USE/LEAK PROCEDURES

ACCIDENTAL RELEASE MEASURES

OCCUPATIONAL SPILL: Sweep up and place in suitable clean, dry containers for reclamation or later disposal. Do not flush spilled material into sewer. Keep unnecessary people away.

HANDLING AND STORAGE

Observe all federal, state and local regulations when storing this substance. Store away from incompatible substances. Store in a tightly closed container.

DISPOSAL INFORMATION

Observe all federal, state and local regulations when disposing of this substance.

SECTION 8 - TRANSPORTATION AND REGULATORY INFORMATION

TRANSPORTATION INFORMATION:
No classification currently assigned

REGULATORY INFORMATION:

TSCA STATUS:	Y
CERCLA SECTION 103 (40CFR302.4):	N
SARA SECTION 302 (40CFR355.30):	N
SARA SECTION 304 (40CFR355.40):	N
SARA SECTION 313 (40CFR372..65):	N
OSHA PROCESS SAFETY (29CFR1910.119):	N
CALIFORNIA PROPOSITION 65:	N

SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40 CFR 370.21)

ACUTE HAZARD:	N
CHRONIC HAZARD:	N
FIRE HAZARD:	N
REACTIVITY HAZARD:	N
SUDDEN RELEASE HAZARD:	N