

## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product: RNA-Bee, RNA-Stat-60 (Supplied by AMS Biotechnology, Tel: +44 (0)1235 828200)

Cat. Nos. CS-104B, 105B, 501B / CS-110, 111, 112 & 502

Product Name: RNA-Bee / RNA-STAT 60

Synonym: Phenol solution

Chemical Formula: A formulation

Molecular Weight: A formulation

CERCLA RATINGS: (scale 0-3) Health=3 Fire=1 Reactivity=0 Persistence=1

NFPA RATINGS: (scale 0-4) Health=3 Fire=1 Reactivity=0

HMIS RATINGS: (scale 0-4) Health=3 Fire=1 Reactivity=0 PPE=D\*

\* Use chemical fume hood or adequate ventilation.

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component CAS No Percent

Phenol 108-95-2 <50

Nonhazardous Ingredients NA 0004 <20

Thiocyanate compounds NA 0022 <30

Component AIHA ERPG: OSHA IDLH:

Phenol: Not Estab. Not Estab.

Nonhazardous Ingredients: Not Applic. Not Applic.

Thiocyanate compounds: Not Estab. Not Estab.

### 3. HEALTH HAZARD IDENTIFICATION

EFFECTS OF OVEREXPOSURE: Prolonged exposure to phenol fumes or contact with skin can be hazardous and emergency medical attention should be initiated.

ROUTES OF ENTRY: Inhalation: Yes.

Skin: Yes.

Ingestion: Yes.

INHALATION: (phenol) Corrosive, neurotoxin, highly toxic. May cause respiratory tract irritation, injury or arrest.

**ACUTE EFFECTS:** Inhalation may cause severe irritation of the mucous membranes, profuse sweating, headache, intense thirst, nausea and vomiting, abdominal pain, diarrhea, salivation, cyanosis, and convulsions. Methemoglobinemia and hemolysis have been reported occasionally. Death may occur from respiratory, circulatory or cardiac failure.

**CHRONIC EFFECTS:** Symptoms of chronic phenol poisoning may include vomiting, difficulty swallowing, diarrhea, anorexia, headache, vertigo, muscle weakness and pain, mental disturbances, dark or "smokey" urine and possible skin eruptions. Extensive damage to the liver and kidneys may be fatal.

**SKIN CONTACT:** (phenol) Corrosive, neurotoxin.

Dermal contact may irritate/inflame the skin, with burning sensation or localized loss of feeling. Skin is a principle route of entry and toxic quantities may be rapidly absorbed.

**ACUTE AFFECTS:** Contact may cause local anesthesia, skin necrosis, and burns. Phenol burns may be severe, but painless due to damage to nerve endings. Vapors and liquids may be readily absorbed through the skin to cause systemic effects as detailed in acute inhalation exposure.

**CHRONIC EFFECTS:** Prolonged exposure may cause dermatitis, and skin sensitization. Coma and death have been reported following extensive skin exposure. Pathologic findings include congestion of the lungs, liver, spleen, and kidneys. Symptoms of chronic phenol poisoning may occur as detailed in chronic inhalation exposure. Animal studies indicate phenol may have tumor promoting and/or mutagenic capabilities.

**EYE CONTACT:** (phenol) Corrosive to tissue, may cause blindness.

**ACUTE EFFECTS:** May cause tearing, conjunctival swelling, loss of sensation and blurred vision.

**CHRONIC EXPOSURE:** Repeated or prolonged exposure to phenol vapors may cause corneal ulceration, permanent damage or blindness.

**INGESTION:** (phenol) May cause severe burns to the mouth or throat. May cause severe abdominal burning sensation.

#### 4. FIRST AID

**INHALATION:** Remove from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Maintain airway and blood pressure and administer oxygen if available. Treat symptomatically and supportively. Oxygen should be administered by qualified personnel. Get medical attention immediately.

**SKIN CONTACT:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of chemical remains. Use a deluge shower for at least 15 minutes. In case of chemical burns, cover area with sterile, dry dressing, bandage securely, but not too tightly. Get medical attention immediately.

**EYE CONTACT:** Wash eyes immediately with large amounts of water, holding upper and lower lids open. Get medical attention immediately.

**INGESTION:** Wash mouth out if vomiting occurs. Seek immediate medical attention.

Note to attending physician: No known specific antidote. Areas of skin contact smaller than 100 cm<sup>2</sup> may cause a minor health hazard. Systemic doses less than 1 gm may cause a minor health hazard although individual sensitivity may vary. For ingestion exposure: give castor oil or other vegetable oil. Give charcoal slurry if conscious. Treat symptomatically. Observe for 24 hrs. Be prepared for emergency cardiovascular intervention.

## 5. FIRE FIGHTING MEASURES

Moderate fire hazard when exposed to heat or flame. Vapor-air mixtures are explosive above flash point. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back.  
Flash point: >110 C  
Flammability Class (OSHA): IIIB

**EXTINGUISHING MEDIA:** Use Class B extinguishers (oils, hydrocarbon liquids.) Dry chemical, carbon dioxide, halon, water spray or standard foam (1987 Emergency Response Guidebook, DOT P 5800.4) for larger fires, use water spray, fog or standard foam (1987 Emergency Response Guidebook, DOT P 5800.4)

**FIREFIGHTING:** Evacuate area. Wear positive pressure self-contained breathing apparatus. Extinguish using agents indicated. Phenol is combustible and containers may explode in fire. Avoid breathing toxic fumes produced under fire conditions.

## 6. ACCIDENTAL RELEASE MEASURES

Note that accidental releases may be subject to special reporting requirements and other regulatory mandates. Check and comply with local applicable laws and regulations.

**PERSONAL PROTECTIVE EQUIPMENT:** Use gloves, boots, Tyvek suit or other impervious covering to avoid skin contact. Use chemical goggles, face shield, or other appropriate eye protection.

**SPILL AND LEAK PROCEDURES:** Restrict persons not wearing protective equipment from area. Remove all ignition sources. Neutralize spill with slaked lime, sodium bicarbonate or crushed limestone. Collect powdered material and deposit in sealed containers and dispose of phenol as hazardous waste. Isolate area and deny entry.

U.S. DOT EMERGENCY GUIDE # 60

NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK # 153

## 7. HANDLING AND STORAGE

Observe all Federal, state, and local regulations when storing or disposing of this substance. Store in an area appropriate for flammables; a cool, dry, well-ventilated location, away from direct sunlight, heat or sources of ignition. Avoid contact with hypochlorite, strong oxidizers such as chlorine and bromine.

## 8. EXPOSURE CONTROLS and PERSONAL PROTECTION

### GENERAL PROTECTION AND PRECAUTIONS

**PROTECTIVE MEASURES:** Do not touch unprotected skin. Do not wear contact lenses while handling this product. Do not pipette by mouth. Area ventilation is generally adequate, but use fume hood if available.

**AIR PURIFYING RESPIRATOR CANISTERS/CARTRIDGES:** Stacked cartridge for organic vapors (black ANSI color code, NIOSH approved) plus dust, mist (red ANSI color code, NIOSH approved).

**GLOVES AND PROTECTIVE CLOTHING:** Employee must wear appropriate (impervious) clothing and gloves (rubber or neoprene rubber) to prevent any possibility of skin contact with this substance.

**EYE PROTECTION:** Safety glasses should be the minimum eye protection. Wear chemical goggles to reduce exposure to aerosols or mists.

**EMERGENCY WASH FACILITIES:** Where there is any possibility that an employee's eyes and /or skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

**ROUTINE OPERATIONS:** Lab coats, safety glasses with side shields and gloves should be considered minimum body protection. Wash hands thoroughly after use.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Description:** Red to maroon with a sharp, sweet, tarry odor.

**Boiling point:** Not determined

**Melting point:** Not Applic.

**Vapor pressure:** >0.35 mmHg@25C

**Evaporation rate:** Not determined

**Solvent solubility:** Soluble in water and glycerol; relatively soluble in aqueous alkali hydroxides, and dimethyl sulfoxide.

## 10. STABILITY AND REACTIVITY

**STABILITY:** Stable under normal temperatures and pressures.

**INCOMPATIBILITIES:** Acetaldehyde: violent reaction.

**Aluminum and alloys:** may corrode.

**Aluminum chloride + nitrobenzene:** violent explosion.

**1,3-butadiene, boron trifluoride, and diethyletherate:** possible explosion

**Calcium hypochlorite:** exothermic reaction with possible ignition.

**Formaldehyde:** possible exothermic reaction.

**Lead and alloys:** may corrode.

**Magnesium and alloys:** may corrode.

**OXIDIZERS:** (strong) Fire and explosion hazard.

**Peroxodisulfuric acid:** possible explosion.

**Peroxomonosulfuric acid:** explosion.

**Plastics and rubber coatings:** may corrode.

**Sodium nitrate + trifluoroacetic acid:** violent exothermic reaction.

**Sodium nitrite:** may explode.

Zinc and alloys: may corrode.

DECOMPOSITION: Thermal decomposition products may include toxic oxides of carbon.

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

## 11. TOXICOLOGICAL INFORMATION

TOXICITY DATA: Human: (phenol) 10 mg/kg oral-human LDLO. Rat: (TRI Reagent) 673 mg/kg, acute oral LD50; >1000 mg/kg, acute dermal LD50. (TRI Reagent BD) 534 mg/kg, acute oral LD50. Mouse: (phenol) 270 mg/kg LD50 oral. DOT Dermal Toxicity Test, 49CFR 173.137, Class 8, Packing Group II.

### Consensus Exposure Guidelines

ACGIH

Component

Phenol (I)

Nonhazardous Ingredients (II)

Thiocyanate Compounds (III)

TLV-TWA TLV-STEL TLV: CEILING SKIN BEI

(I) 5 ppm Not Estab. Not Estab. Yes 250mg/g creatinine

(II) Not Applic. Not Estab. Not Estab. No Not Applic.

(III) Not Estab. Not Estab. Not Estab. Yes Not Estab.

### Regulatory Exposure Guidelines

OSHA

Component

Phenol

Nonhazardous Ingredients

Thiocyanate Compounds

PEL OSHA STEL Excursion (Time) Skin Warning?

(I) 5 ppm None None Yes

(II) Not Applic. Not Applic. Not Applic. No

(III) Not Estab. Not Estab. Not Estab. No

LOCAL EFFECTS: Corrosive-eye, skin, and mucous membrane.

**ACUTE TOXICITY AND TARGET EFFECTS:** Highly toxic by inhalation, toxic by ingestion and dermal absorption. Neurotoxin, CNS depressant, poisoning may also effect the liver and kidneys. Persons with convulsive disorders and abnormalities of the skin, respiratory tract, liver and kidneys are at increased risk from exposure.

**MUTAGENICITY:** Not expected to occur.

**REPRODUCTIVE EFFECTS:** CAUSES BIRTH DEFECTS IN SOME LABORATORY ANIMALS.

5 PPM (19 MG/M3) ACGIH TWA (SKIN)

5 PPM (19 MG/M3) OSHA TWA (SKIN)

20 MG/M3 (5.2 PPM NIOSH RECOMMENDED 10 HOUR TWA

60 MG/M3 (15.6 PPM) NIOSH RECOMENDED 15 MINUTE CEILING CERCLA

VAPOR PRESSURE 0.36 MMHG 20 C

## 12. ECOLOGICAL INFORMATION

**ECOTOXICOLOGICAL INFORMATION:** Short-term toxic effects are expected to be limited to the immediate area of environmental release, and will be most pronounced in microorganisms. Environmental fate: Expected to rapidly decompose in the environment. Environmental Movement and Partitioning: Short-term movement could be due to high water solubility. Movement expected to be limited by relatively rapid environmental detoxification. Expected to partition strongly into aqueous environmental components.

## 13. DISPOSAL CONSIDERATIONS

EPA WASTE NUMBER (RCRA HAZARD CLASS) U188. All waste disposal activities are subject to federal, state and local laws and regulations. Handle as hazardous waste by keeping in sealed containers until final disposal in a hazardous waste incinerator.

## 14. TRANSPORTATION INFORMATION

Department of Transportation Hazard Classification (DOT) 49CFR172.101; CORROSIVE LIQUID, N.O.S.;

UN1760

Department of Transportation Labeling requirements 49CFR172.101; CLASS 8 PACKING GROUP II, PACKING INSTRUCTIONS 808

Department of Transportation Packaging requirements 49CFR173.202; EXCEPTIONS: 49CFR173.154

Shipping designation: (TRI Reagent: guanidine thiocyanate-phenol solution).

## 15. REGULATORY INFORMATION

OSHA: Classified as A HAZARDOUS CHEMICAL@ under US OSHA HAZCOM REGULATION.

TSCA: Some constituents of this product included in US EPA Toxic Substance Control Act (40 CFR part 710).

SARA SECTION 302 Threshold Planning Quantity: 500/10,000 lbs.

SARA SECTION 304 Reportable quantity: 1000 lbs.

CERCLA SECTION 103 Reportable quantity: 1000 lbs., RQ

SUBJECT TO SARA SECTION 313 Annual toxic chemical release reporting.

EUROPEAN UNION:

MAC (GERMANY): 5 PPM PHENOL IN AIR, 19MG/M3 PHENOL WITH A SKIN WARNING

EINECS#: 2036327

RISK PHASE: WARNING!

R24/25 TOXIC IN CONTACT WITH SKIN AND IF SWALLOWED.

R34 CAUSES BURNS

SAFETY PHRASE:

S28 AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF DETERGENT AND WATER.

S45 IN CASE OF ACCIDENT, OR IF YOU FEEL UNWELL, SEEK MEDICAL ADVICE.

SAFETY SYMBOL: TOXIC

## 16. OTHER INFORMATION

Reviewed by BW, MJ

Revision date 12/09/03

This information is believed to be accurate and represents the information currently available to us. However, we

make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

Abbreviations:

TLV-STEL Threshold Limit Values (Short-Term Exposure Limit)

TLV-TWA Threshold Limit Values (Time-Weighted Average)

OSHA PEL-TWA OSHA Permissible Exposure Level