

**1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING**

**Product code** E01010A  
**Product name** RNAzol® RT RNA Isolation Reagent

**Contact manufacturer**

GeneCopoeia, Inc.

9620 Medical Center Drive, Suite 101  
Rockville, MD 20850  
USA

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**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	CAS-No	Weight %
Phenol	108-95-2	30-60
Guanidine isothiocyanate	593-84-0	15-40
Ammonium thiocyanate	1762-95-4	7-13

Contact with acids or bleach liberates toxic gases. DO NOT ADD acids or bleach to any liquid wastes containing this product. We recommend handling all chemicals with caution.

**3. HAZARDS IDENTIFICATION**

**GHS – Classification**

**Signal Word**

DANGER



**Health Hazards**

Acute oral toxicity	Category 4
Acute dermal toxicity	Category 4
Acute Inhalation Toxicity - Vapors	Category 4
Skin corrosion/irritation	Category 1 B
Serious eye damage/eye irritation	Category 1
Specific target organ systemic toxicity (single exposure)	Category 3
Specific target organ systemic toxicity (repeated exposure)	Category 3

## Health Hazards (continued)

Mutagenicity	Mutagenic category 2
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### Physical hazards

Not hazardous

### Hazard Statements

H314 - Causes severe skin burns and eye damage  
H341 - Suspected of causing genetic defects  
H373 - May cause damage to organs through prolonged or repeated exposure  
H412 - Harmful to aquatic life with long lasting effects  
H302 - Harmful if swallowed  
H312 - Harmful in contact with skin  
H332 - Harmful if inhaled  
H335 - May cause respiratory irritation

### Precautionary Statements

P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
P301 + P330 + P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting  
P303 + P361 + P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
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  
P308 + P313 - IF exposed or concerned: Get medical advice/attention  
P273 - Avoid release to the environment  
P280 - Wear protective gloves/protective clothing/eye protection/face protection

### Principle Routes of Exposure

#### Potential Health Effects

<b>Eyes</b>	Causes burns. Risk of serious damage to eyes. Corrosive to the eyes and may cause severe damage including blindness.
<b>Skin</b>	Causes burns. Possible risk of irreversible effects. Harmful in contact with skin.
<b>Inhalation</b>	Irritating to skin and mucous membranes. Harmful by inhalation.
<b>Ingestion</b>	Harmful if swallowed. Ingestion causes burns of the upper digestive and respiratory tracts. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

### Specific effects

<b>Carcinogenic effects</b>	Phenol has been classified by the International Agency for Research on Cancer (IARC) as not classifiable as to carcinogenicity to humans (Group 3).
<b>Mutagenic effects</b>	Not Applicable
<b>Reproductive toxicity</b>	Not Applicable
<b>Sensitization</b>	Not Applicable
<b>Target Organ Effects</b>	Skin Lungs Liver Spleen

Kidney

**HMIS**

Health	3 * Chronic Hazard
Flammability	1
Reactivity	0

**4. FIRST AID MEASURES**

**Skin contact** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.

**Eye contact** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.

**Ingestion** Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

**Inhalation** Remove to fresh air. Call a physician or poison control center immediately.

**Notes to physician** Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

**Suitable extinguishing media** Dry chemical. Carbon dioxide (CO2). Water spray. Foam.

**Special protective equipment for firefighters** Wear self-contained breathing apparatus and protective suit.

**Australia HazChem Code** 2X

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions** ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

**Methods for cleaning up** Prevent product from entering drains. Soak up with inert absorbent material. 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.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not allow material to contaminate ground water system.

See Section 12 for more information

**7. HANDLING AND STORAGE**

**Handling**

Always wear recommended Personal Protective Equipment. Avoid contact with skin, eyes or clothing. Remove all sources of ignition.

**Storage**

Keep containers tightly closed in a cool, well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Protect from sunlight.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Exposure limits**

Chemical name	OSHA PEL	OSHA PEL (Ceiling)	ACGIH OEL (TWA)	ACGIH OEL (STEL)
Phenol	5 ppm 19 mg/m <sup>3</sup>	None	5 ppm	None
Guanidine isothiocyanate	None	None	None	None
Ammonium thiocyanate	5 mg/m <sup>3</sup>	None	None	None

**Engineering measures**

Use in a chemical fume hood

**Personal protective equipment**

Personal Protective Equipment requirements are dependent on the user institution's risk assessment and are specific to the risk assessment for each laboratory where this material may be used.

**Respiratory protection**

In case of insufficient ventilation wear suitable respiratory equipment

**Respirator**

Up to 50 ppm

**Recommendations, National  
Institute of Occupational  
Safety and Health, U.S.**

(APF = 10) Any air-purifying half-mask respirator with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used:

N99, R99, P99, N100, R100, P100.

(APF = 10) Any supplied-air respirator

Up to 125 ppm:

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode.

(APF = 25) Any powered air-purifying respirator with an organic vapor cartridge in combination with a high-efficiency particulate filter.

Up to 250 ppm:

(APF = 50) Any air-purifying full-facepiece respirator equipped with organic vapor cartridge(s) in combination with an N100, R100, or P100 filter.

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter.

(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and organic vapor cartridge(s) in combination with a high-efficiency particulate filter.

(APF = 50) Any self-contained breathing apparatus with a full facepiece.

(APF = 50) Any supplied-air respirator with a full facepiece.

Emergency or planned entry into unknown concentrations or IDLH conditions:

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

(APF = 10,000) 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 positive-pressure breathing apparatus.

Escape:

(APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister having an N100, R100, or P100 filter. /Any appropriate escape-type, self-contained breathing apparatus.

**Hand protection**

Impervious gloves. S24 - Avoid contact with skin. S36 - Wear suitable protective clothing.

**Eye protection**

Tight sealing safety goggles.

**Skin and body protection**

Impervious clothing.

**Hygiene measures**

Contaminated work clothing should not be allowed out of the workplace. Avoid contact with skin, eyes or clothing. Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure**

**Controls**

Prevent product from entering drains.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

General information

<b>Form</b>	Liquid.	
<b>Appearance</b>	Red, maroon.	
<b>Odor</b>	Medicinal, sweet, tar-like.	
<b>Boiling point/range</b>	°C No data available	°F No data available
<b>Melting point/range</b>	°C No data available	°F No data available
<b>Flash point</b>	°C No data available	°F No data available
<b>Autoignition temperature</b>	°C No data available	°F No data available
<b>Oxidizing properties</b>	No information available	
<b>Water solubility</b>	Soluble	

**10. STABILITY AND REACTIVITY**

<b>Stability</b>	Stable under normal conditions.
<b>Materials to avoid</b>	Strong oxidizing agents. Strong acids. Isocyanates. Heat. Nitriles, Nitrides. Alkaline earth metals. Strong oxidizers, alkali metals and alkaline earth metals may cause fires or explosions.
<b>Hazardous decomposition</b>	Toxic gas. Sulphur oxides. Hydrogen cyanide (hydrocyanic acid). Carbon oxides,
<b>Products</b>	Nitrogen Oxides.
<b>Polymerization</b>	Hazardous polymerization does not occur.

**11. TOXICOLOGICAL INFORMATION**

Acute toxicity

Chemical name	LD50 (oral, rat/mouse)	LD50 (dermal, rat/rabbit)	LC50 (inhalation, rat/mouse)
Phenol	= 317 mg/kg (Rat)	No data available	=316mg/m3(Rat)
Guanidine isothiocyanate	571 mg/kg	2000 mg/kg	5.319 mg/L (4H)

Ammonium thiocyanate	= 500 mg/kg (Rat)	No data available	No data available
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**Principle Routes of Exposure**

**Potential Health Effects**

<b>Eyes</b>	Causes burns. Risk of serious damage to eyes Corrosive to the eyes and may cause severe damage including blindness.
<b>Skin</b>	Causes burns. Possible risk of irreversible effects Harmful in contact with skin. Irritating to skin and mucous membranes.
<b>Inhalation</b>	Harmful by inhalation
<b>Ingestion</b>	Harmful if swallowed Ingestion causes burns of the upper digestive and respiratory tracts Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea
<b>Carcinogenic effects</b>	Phenol has been classified by the International Agency for Research on Cancer (IARC) as not classifiable as to carcinogenicity to humans (Group 3).
<b>Mutagenic effects</b>	No information available.
<b>Reproductive toxicity</b>	No information available.
<b>Sensitization</b>	No information available.
<b>Target organ effects</b>	Skin. Lungs. Liver. Spleen. Kidney.

**12. ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
<b>Chronic aquatic toxicity</b>	Category 3
<b>Mobility</b>	See log Pow
<b>Biodegradation</b>	Inherently biodegradable
<b>Bioaccumulation</b>	No information available

Chemical name	Freshwater algae data	Water flea data	Freshwater fish species data	Microtox data	Log Pow
Phenol	Desmodesmus subspicatus EC50 187 - 279 mg/L (72 h) Pseudokirchneriella subcapitata EC50 46.42 mg/L (96 h)	Daphnia magna EC50 4.24 - 10.7 mg/L (48 h) Daphnia magna EC50 10.2 - 15.5 mg/L (48 h)	=316mg/m3(Rat)		logPow1.47

**13. DISPOSAL CONSIDERATIONS**

Dispose of contents/containers in accordance with local regulations.

**14. TRANSPORT INFORMATION**

**IATA**

**Proper shipping name** Corrosive liquid, n.o.s. (guanidine thiocyanate-phenol solution).  
**Hazard Class** 8  
**Subsidiary class** None  
**Packing group** II  
**UN-No** 1760  
**ERG Code** 153

## 15. REGULATORY INFORMATION

Component	TSCA
Phenol, 108-95-2 (30-60)	Listed
Guanidine isothiocyanate, 593-84-0 (15-40)	Listed
Ammonium thiocyanate 1762-95-4 (7-13)	Listed

### US Federal Regulations

#### SARA 313

This product contains the following toxic chemical(s) subject to the notification requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986. This law requires certain manufacturers to report on annual emissions of specified chemicals and chemical categories. Please note that if you repackage, or otherwise redistribute, this product to industrial customers, a notice similar to this one should be sent to those customers:

Chemical name	CAS-No.	Weight %	SARA 313-Threshold values
Phenol	108-95-2	30-60	1.0
Ammonium thiocyanate	1762-95-4	7-13	1.0

#### **Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

This product contains the following HAPs:

Component	CAS-No.	Weight %	HAPS data
Phenol	108-95-2	30-60	Present
Ammonium thiocyanate	1762-95-4	7-13	Present (XCN where X=H or any other group where a formal dissociation may occur. For example KCN or Ca[CN]2)

### US state regulations

Chemical name	Massachusetts -RTK	New Jersey-RTK	Pennsylvania-RTK	Illinois-RTK	Rhode Island-RTK
Phenol	Listed	Listed	Listed	Listed	Listed
Guanidine isothiocyanate	-	-	-	-	-
Ammonium thiocyanate	Listed	-	Listed	Listed	Listed

#### **California Proposition 65**

This product does not contain any Proposition 65 chemicals.

### WHMIS Hazard Class

D1A - Very toxic materials  
 E - Corrosive material



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

## 16. OTHER INFORMATION

**Reason for revision** Not Applicable. SDS sections updated.

For research use only.

"The above information was acquired by diligent search and/or investigation and the recommendations are based on prudent application of professional judgment. The information shall not be taken as being all inclusive and is to be used only as a guide. All materials and mixtures may present unknown hazards and should be used with caution. Since the Company cannot control the actual methods, volumes, or conditions of use, the Company shall not be held liable for any damages or losses resulting from the handling or from contact with the product as described herein.

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**End of Safety Data Sheet**