

# MATERIAL SAFETY DATA SHEET

Specimens in Carosafe  
CAROLINA BIOLOGICAL SUPPLY COMPANY

Revised: 05/15/08  
Replaces: 05/09/08  
Printed: 05/16/08

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## 1. PRODUCT DESCRIPTION

Product Name: Specimens in Carosafe®  
Product Code(s): Various  
Size: Various  
Chemical Name: Product is a mixture  
CAS Number: See section 2  
Formula: See section 2  
Synonyms: None  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Principal Hazardous Components:

Propylene Glycol (CAS# 57-55-6)  
2-amino-2-ethyl-1,3-propanediol (CAS# 115-70-8)  
Ethylene Glycol Phenyl Ether (CAS# 122-99-6)

The specimen will contain some residual formaldehyde (CAS# 50-00-0) from the fixation process. The amount of formaldehyde present is specific to the type of specimen and will vary with time.

TLV and PEL units:

Propylene Glycol: N/A  
2-amino-2-ethyl-1,3-propanediol: N/A  
Ethylene Glycol Phenyl Ether: N/A  
Formaldehyde: ACGIH-TLV: 0.3 ppm  
OSHA-PEL: 0.75 ppm

## 3. HAZARD IDENTIFICATION

Emergency Overview: Do not take internally. Can irritate eyes and skin. Vapor of some components can be irritating if inhaled.

## 4. FIRST AID MEASURES

Emergency and First Aid Procedures:

Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.  
Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.

Ingestion - Do not induce vomiting. If swallowed, if conscious, give plenty of water immediately and call a physician or poison control center. Never give anything by mouth to an unconscious person.

Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm, quiet, and get medical attention.

## 5. FIREFIGHTING PROCEDURES

Flash Point (Method Used): N/A

NFPA Rating (for propylene glycol):

Health	0
Flammability	1
Reactivity	0

Extinguisher Media:

Use dry chemical, CO2 or appropriate foam.

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Flammable Limits in Air % by Volume: N/A

Autoignition Temperature: N/A

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Under intense heat, components of this mixture may produce hazardous decomposition products, give off irritating vapors, and give off heavy smoke and flammable vapors.

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled: Use appropriate personal protective equipment during cleanup. Containerize for disposal. Decontaminate clothing and spill area with detergent and flush with copious amounts of water.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Avoid contact with skin, eyes and clothing. Store in a cool, dry, well-ventilated area below 120 F.

Other Precautions: Avoid breathing vapors.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type): None needed under normal conditions of use.

Ventilation:

Local Exhaust:	Yes
Mechanical(General):	Yes
Special:	No
Other:	No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight:	Does not apply. Product is a mixture.
Melting Point:	No data available
Boiling Point:	No data available
Vapor Pressure:	No data available
Vapor Density(Air=1):	No data available
Specific Gravity(H <sub>2</sub> O=1):	>1
Percent Volatile by Volume:	No data available
Evaporation Rate(H <sub>2</sub> O=1):	No data available
Solubility in Water:	Complete
Appearance and Odor:	Colorless, odorless solution

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: Temperatures above 425 F, flame

Incompatibility(Materials to Avoid): Water reactive materials, strong oxidizers, copper, brass, aluminum, magnesium, lead, zinc, strong bases

Hazardous Decomposition Products: If heated to decomposition, oxides of carbon and nitrogen may be evolved.

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Hazardous Polymerization: Will not occur

## 11. TOXICITY DATA

Toxicity Data: Propylene Glycol: Oral Rat LD50: 20,000 mg/kg  
Formaldehyde: Oral Rat LD50: 500 mg/kg

Effects of Overexposure:

Acute: See section 3

Chronic: None of the components of Carosafe are listed as causing cancer. Mutation data, reproductive data, and tumorigenic data cited for formaldehyde. Formaldehyde is listed as an ACGIH suspected human carcinogen and as a NTP anticipated human carcinogen.

Conditions Aggravated by Overexposure: N/A

Target Organs: N/A

Primary Route(s) of Entry: Ingestion, skin, eye contact

## 12. ECOLOGICAL DATA

EPA Waste Numbers: N/A

## 13. DISPOSAL INFORMATION

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.

Always contact a permitted waste disposer (TSD) to assure compliance.

## 14. TRANSPORT INFORMATION

Not regulated for transport

## 15. REGULATORY INFORMATION

WARNING: This product contains formaldehyde, a material known to the state of California to cause cancer.

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute Chronic

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals		CERCLA Sec. 103 RQ lbs.	RCRA Sec. 261.33
		Name	Chemical List Category		
Propylene Glycol	No	No	No	No	No
Formaldehyde	500	Yes	No	100	Yes
2-amino-2-ethyl-1,3-propanediol	No	No	No	No	No
Ethylene Glycol	No	No	No	No	No
Phenyl Ether					

## 16. ADDITIONAL INFORMATION

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists

CAS Number..Chemical Abstracts Service Number

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CERCLA.....Comprehensive Environmental Response, Compensation, and  
Liability Act  
DOT.....U.S. Department of Transportation  
IARC.....International Agency of Research on Cancer  
mppcf.....million particles per cubic foot  
N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

## Safety Precautions For Handling Carolina Preserved Specimens

To achieve the necessary level of safety in the laboratory, the instructor should be familiar with all chemicals present and the necessary precautions to be taken in using them.

Carolina provides specimens preserved in alcohol, *Carosafe*<sup>™</sup> (contains ethylene glycol), and formalin solutions. Information is provided in the catalog regarding which particular preservative is used in a certain type of specimen. Note that specimens are never provided in a formalin preservative unless this is specifically requested by the customer. Note also that specimens that are preserved with embalming fluids, and are never treated with *Carosafe*<sup>™</sup>, are provided with a specific Material Safety Data Sheet (MSDS) prepared for that particular embalming fluid. Regardless of the preservative that is used, we recommend you follow these safety tips whenever working with preserved specimens:

1. Wear appropriate protective eyewear at all times.
2. Wear appropriate protective equipment such as gloves and lab coats.
3. Work only in a well ventilated area
4. Prohibit eating, drinking, and smoking in the work area.
5. In the event of contact, wash skin with soap and water; flush eyes with water.
6. If overexposure to any chemical occurs, seek medical attention immediately.
7. Be careful with sharp objects such as pins, scalpels, and the spines and teeth of specimens.

Formalin preserved or embalmed specimens should always be used in a well-ventilated area to prevent irritation to the eyes, skin, or respiratory tract. The use of goggles lessens eye irritation from formaldehyde vapors. If direct contact to eyes or skin occurs, wash thoroughly with water.

Isopropanol is very flammable, so avoid all sparks, open flames, and excessive heat.

Although it is unlikely to be ingested, ethylene glycol can be toxic if taken orally. Due to the low vapor pressure of ethylene glycol, it is very unlikely that any vapors would ever be encountered, but vapors may be a problem if the liquid is heated to excessive temperatures. We know of no reason that this should occur under normal conditions of use.

When working with preserved materials, be careful with sharp objects such as pins, scalpels, and the spines and teeth of specimens. When using a scalpel, we recommend cutting away from oneself and ensuring that fingers are kept out of the cutting path at all times.

Carolina preserved specimens are available in *Carosafe*<sup>™</sup>, an ethylene glycol based shipping and holding fluid. *Carosafe*<sup>™</sup> is not a fixative; it is a preservative designed to prevent mold and tissue deterioration after the tissue has been properly fixed with formalin. *Carosafe*<sup>™</sup> is an effective substitute for the standard formalin preservative and acts to hold the unpleasant odor of formaldehyde to an absolute minimum. Additionally, Carolina preserved animals may be ordered "damp-packed". Our tradename for this improved method of packaging is *Caropak*<sup>™</sup>. Preserved animals shipped in *Caropaks* have been processed with *Carosafe*<sup>™</sup>, and are as "odorless" as effective fixation and preservation techniques allow.

The reverse side of this sheet contains further safety and health information regarding the three most common chemicals used by Carolina in the preservation process. This information is given in the form of a columnar table which contains all of the information required by OSHA to be present on a Material Safety Data Sheet (MSDS) under the Hazard Communication Standard (29 CFR 1910.1200). Additional information may be obtained by calling Carolina during regular business hours at 910-584-0381.

# Carolina Biological Supply Company

2700 York Road, Burlington, North Carolina 27215

## Comparative Safety of Preservatives

	Formaldehyde	Isopropanol	Carosafe™ (Ethylene Glycol)
<b>Physical Data</b>			
Hazardous Components (OSHA - 1994)	Methanol (TWA 200 ppm) Formaldehyde (TWA 0.75 ppm)	Isopropanol (TWA 400 ppm)	Ethylene Glycol (TWA = 50 ppm Ceiling concentration)
Flash Point	184° Fahrenheit (Combustible)	53° Fahrenheit (Flammable)	241° Fahrenheit
Lower Explosion Limits LEL	7%	2%	3.2%
Fire Extinguishing Media	Alcohol Foam, Water Fog, Carbon Dioxide, Dry Chemical	Alcohol Foam, Carbon Dioxide, Dry Chemical	Water fog, Carbon Dioxide, Dry Chemical
Unusual Fire or Explosion	Vapor heavier than air, may travel along ground to distant ignition source and flash back.	No unusual fire hazards noted. Closed containers exposed to fire may explode.	None
Threshold Limit Value (TLV) ACGIH	200 ppm (TWA) Methanol 0.3 ppm Ceiling Formaldehyde	400 ppm (TWA)	50 ppm Ceiling
<b>Effects of Overexposure</b>			
Eyes	Vapor causes severe irritation, redness, tearing, blurred vision. Liquid may cause severe or permanent damage.	Direct contact may cause irritation.	Direct contact may cause irritation.
Skin (Contact)	Irritation, dermatitis, strong sensitizer.	Mild irritation possible.	Mild irritation possible.
Inhalation	Irritation of respiratory tract, dyspnea, headache, bronchitis, pulmonary edema, gastroenteritis.	Irritation of respiratory tract, headache, and at high concentrations, narcosis.	Reported irritant effects at extremely high (10000 mg/cubic meter) concentrations of vapor.
Ingestion	May be fatal or cause blindness if ingested. LD50 (oral-rat)=500 mg/kg (RTECS, 1986)	May cause nausea, vomiting, headaches, dizziness, gastrointestinal irritation. LD50 (oral-rat) = 5045 mg/kg (RTECS, 1986)	May be harmful or fatal if ingested. Ethylene glycol has been reported as causing liver and kidney damage when ingested. LD50 (oral-rat) = 4700 mg/kg (RTECS, 1986)
Chronic Effects	Listed by the National Toxicology Program (NTP) as reasonably anticipated to cause cancer in humans. Also listed by IARC and OSHA as possible human carcinogen.	Not listed as causing cancer by NTP, IARC, or OSHA. No other chronic effects noted.	Not listed as causing cancer by NTP, IARC, or OSHA. No other chronic effects noted.
Target Organs	If inhaled, eyes, nasal passages, throat.	None	Liver and kidneys (if ingested)
First Aid Measures	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If ingested, if conscious, immediately induce vomiting. If eye or skin contact, immediately flush with flooding amounts of water for at least 15 minutes. Seek medical attention for all instances of overexposure to this chemical.	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If ingested, if conscious, immediately induce vomiting. If eye or skin contact, immediately flush with flooding amounts of water for at least 15 minutes. Seek medical attention for all instances of overexposure to this chemical.	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If ingested, if conscious, immediately induce vomiting. If eye or skin contact, immediately flush with flooding amounts of water for at least 15 minutes. Seek medical attention for all instances of overexposure to this chemical.
Spill Control Measures	If a spill occurs, cleanup personnel should wear full protective clothing and NIOSH approved self-contained breathing apparatus. Eliminate sources of ignition. Keep non-essential personnel away. Absorb spilled material on vermiculite or other suitable absorbent. Containerize for disposal.	Eliminate sources of ignition. Cleanup personnel should wear proper protective clothing and equipment to avoid contact with liquid. Respiratory protection may be required. Absorb material on activated carbon or other suitable absorbent. Containerize for disposal. Flush area of spill with water.	Cleanup personnel should wear proper protective clothing and equipment to avoid contact with liquid. Absorb material on vermiculite or other suitable absorbent material. Containerize for disposal. Flush area of spill with water.
Disposal	Dispose in accordance with all applicable local, state, and federal regulations. Contact local or state waste agencies if disposal questions arise.	Dispose in accordance with all applicable local, state, and federal regulations. Contact local or state waste agencies if disposal questions arise.	Dispose in accordance with all applicable local, state, and federal regulations. Contact local or state waste agencies if disposal questions arise.
Personal Protection	Wear gloves, lab coat, splash goggles and any other appropriate equipment suggested by the laboratory supervisor.	Wear gloves, lab coat, splash goggles and any other appropriate equipment suggested by the laboratory supervisor.	Wear gloves, lab coat, splash goggles and any other appropriate equipment suggested by the laboratory supervisor.
Storage Information	Store tightly closed in a location suitable for general chemical storage.	Store in a location suitable for flammable liquid storage.	Suitable for storage in a general chemical storage area.

TWA - Time Weighted Average; ACGIH - American Conference of Governmental Industrial Hygienists; IARC - International Agency for Research on Cancer; OSHA - Occupational Safety and Health Administration; PEL - Permissible Exposure Limit; NIOSH - National Institute for Occupational Safety and Health; RTECS - Registry of Toxic Effects of Chemical Substances. LD50 - Lethal Dose for 50% of a population.

Carolina Biological Supply Company, 2700 York Road, Burlington, North Carolina, 27215, 910-584-0381