

SAFETY DATA SHEET



www.ranaco.com

FORMALIN FIXED SPECIMENS IN PRESERVED HOLDING SOLUTION – EXCLUDING FETAL PIGS, CATS, GRASSFROGS, BULLFROGS, RABBITS, RATS, MINK

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Formalin Fixed Specimens In Preserved Holding Solution – Excluding Fetal Pigs, Cats, Grassfrogs, Bullfrogs, Rabbits, Rats, Mink
Recommended Use: Science education applications
Synonyms: None
Manufacturer/Supplier: Ranaco Corporation, 4345 E Irvington Road, Tucson, AZ 85714
General Information: 800-528-7023
Transportation Emergency Number: 800-424-9300 Chemtrec – 24 hours assistance

SECTION 2: HAZARD IDENTIFICATION

DANGER



Targeted organs:

Eyes, Skin, Central Nervous System, Respiratory Tract

GHS Classification:

Acute Toxicity, oral (Category 4)
Acute Toxicity, dermal (Category 4)
Skin Irritation (Category 2)
Eye irritation (Category 2A)
Skin sensitization (Category 1)
Acute toxicity, inhalation (Category 4)
Carcinogenicity (Category 2)

Hazard Statements:

Maybe harmful if swallowed.
Causes skin irritation.
Causes eye irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.
May cause cancer.

Precautionary Statements:

Obtain special instructions before use.
Wear protective gloves and eye protection.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF SWALLOWED: Immediately call a POISON CENTER or physician
IF exposed or concerned: Get medical advice/attention.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local/regional/national regulations.

Ca Prop 65: This product contains a chemical known to the State of California to cause cancer or reproductive toxicity.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS # | % |
|----------------------------------|-----------|-----------------|
| Formaldehyde | 50-00-0 | > 0.1% - < 0.6% |
| Methanol | 67-56-1 | < 0.03% |
| Propylene Glycol | 57-55-6 | < 9% |
| Ethylene Glycol Monophenyl Ether | 122-99-6 | < 1% |
| Water | 7732-18-5 | Balance |

SECTION 4: FIRST AID MEASURES

SKIN CONTACT: Wash affected area with soap and water. Seek medical attention if symptoms develop.

EYE CONTACT: Rinse cautiously for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. Seek medical attention if irritation persists.

INHALATION: Remove to fresh air. Get medical treatment if symptoms persist.

INGESTION: Immediately call a POISON CENTER or physician. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person.

SIGNS AND SYMPTOMS OF EXPOSURE: Irritation of skin, eyes, respiratory tract. Repeated exposure may cause dermatitis or other allergic reactions.

SECTION 5: FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use dry chemical, CO₂, water spray (fog) or alcohol foam.

FIRE FIGHTING METHODS AND PROTECTION: Firefighters should wear self-contained breathing apparatus and wear full protective equipment.

FIRE AND/OR EXPLOSION HAZARDS: During a fire, smoke generated can be irritating or toxic.

HAZARDOUS COMBUSTION PRODUCTS: Products of combustion include but are not limited to carbon monoxide and carbon dioxide.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Avoid breathing vapors. Use gloves and eye protection to clean up spills.

EMERGENCY PROCEDURES: Ventilate area of spill. Eliminate all sources of ignition. Remove non-essential personnel.

ENVIRONMENTAL PRECAUTIONS: No special hazards. Follow applicable federal, state, provincial and local regulations regarding releases.

METHODS FOR CONTAINMENT AND CLEAN-UP: Absorb with liquid binding material and place in a sealed container. Dispose of waste in accordance with federal, state, provincial and local regulations.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Do not eat, drink or smoke when using this product. Avoid breathing vapors. Avoid direct skin or eye contact with liquids. Do not ingest. Wash hands with soap and water after use or handling of product.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES: Store at room temperature in a dry well ventilated area.

Keep specimen container tightly closed when not in use.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

| Chemical Name | ACGIH (TLV) | OSHA (PEL) | NIOSH (REL) |
|----------------------------------|--------------------------------------|------------------------------|--------------------------------|
| Formaldehyde | C 0.3 ppm / C 0.37 mg/m ³ | TWA: 0.75 ppm / STEL: 2ppm | TWA: 0.016 ppm / STEL: 0.1 ppm |
| Methanol | TWA: 200 ppm / STEL: 250 ppm | TWA: 200 ppm / STEL: 260 ppm | TWA: 200 ppm / STEL: 250 ppm |
| Ethylene Glycol Monophenyl Ether | Not available | Not available | Not available |
| | WEEL | | |
| Propylene Glycol | TWA 10 mg/m ³ Aerosol | Not available | Not available |

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility, a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles or face shield, apron and appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory Protection: None should be needed in normal handling and room temperatures. If use conditions generate fumes above the OSHA regulations, use of a NIOSH/MSHA approved respirator is required.

ACGIH: American Conference of Industrial Hygienists, OSHA: U.S. Occupational Safety and Health Administration, NIOSH: U.S. National Institute for Occupational Safety and Health, PEL: Permissible Exposure Limit, TWA: Time Weighted Average, STEL: Short Term Exposure Limit, REL: Recommended Exposure Limit, WEEL: Workplace Environmental Exposure Limit

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

Appearance: Specimen with/without clear colorless liquid

Odor: Mild pungent odor

Odor Threshold: Data not available

pH: Data not available

Melting/Freezing Point: Data not available

Boiling Point: Data not available

Flash Point: Data not available

Evaporation Rate (Water = 1) : >1

Flammability (solid/gas): Data not available

Explosion Limits: Lower/Upper: Data not available

Vapor Pressure (mmHg): Data not available

Vapor Density: Data not available

Relative Density (Specific Gravity): >1

Solubility(ies): Complete in water

Partition Coefficient: Data not available

Auto-ignition Temperature: Data not available

Decomposition Temperature: Data not available

Viscosity: Data not available

Molecular Formula: Mixture

Molecular Weight: Mixture

SECTION 10: STABILITY & REACTIVITY

Reactivity: None under normal conditions.

Chemical Stability: Stable

Conditions to Avoid: Excessive temperatures which cause evaporation.

Incompatible Materials: Strong acids, phenol, strong oxidizers, strong bases, hydrochloric acid, ammonia, iodine, alkalies, tannin, iron products, gelatin, bisulfate

Hazardous Polymerization: None under normal conditions.

Hazardous Decomposition Products: May include, but are not limited to carbon monoxide, carbon dioxide, gaseous formaldehyde, aldehydes, ketones, alcohols, ethers and organic acids

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: Formalin Fixed Specimens in Preserved Holding Solution have not been tested as a mixture. Information about individual components is supplied.

Formaldehyde – Oral-rat LD50: 100 mg/kg; Inhalation-rat LC50: 250 ppm/4 hours; Dermal-rat: 270 mg/kg

Methanol - Oral-rat LD50: 5,600 mg/kg; Inhalation-rat LC50: 6,400 ppm/4 hours, 145,000 ppm/ 1 hour; Dermal-rat: 15,800 mg/kg

Propylene Glycol – Ingestion-rat LD50: > 20,000 mg/kg; Skin absorption-rabbit LD50: > 20,000 mg/kg

Ethylene Glycol Monophenyl Ether- Oral-rat LD50: 1,840 mg/kg; Dermal-rabbit: >2,214 mg/kg

Chronic Effects: Data not available.

Skin Corrosion/Irritation:

Causes skin irritation. May cause an allergic skin reaction.

Serious Eye Damage/Irritation:

Causes eye irritation or damage.

Respiratory or Skin Sensitization:

May cause sensitization by skin contact

Germ Cell Mutagenicity:

Data not available.

Carcinogenicity: Data not available. Information about individual components is supplied.

Formaldehyde – Classified as a carcinogen by the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) and OSHA. Ca Prop 65: Formaldehyde is known to the State of California to cause cancer.

Reproductive Toxicity: Data not available. Information about individual components is supplied.

Formaldehyde - Ca Prop 65: Formaldehyde is known to the State of California to cause reproductive toxicity.

Specific Target Organ Toxicity – Single exposure: Data not available.

Specific Target Organ Toxicity– Repeated exposure: Data not available.

Aspiration Hazard: Data not available.

Potential Health Effects:

Inhalation: May cause respiratory irritation.

Ingestion: May be harmful if swallowed.

Skin: May cause skin irritation. May cause an allergic skin reaction.

Eyes: May cause eye irritation or damage.

Signs and Symptoms of Exposure:

The chemical, physical and toxicological properties have not been thoroughly investigated for this product/mixture. Specific data is not available. Exercise appropriate procedures to minimize hazards.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish: No data available.

Toxicity to daphnia and other aquatic invertebrates: No data available.

Toxicity to algae: No data available.

Persistence and degradability: No data available.

Bioaccumulative potential: No data available.

Mobility in soil: No data available.

PBT and vPvB assessment: No data available.

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of contents/container in accordance with local/regional/national regulations.

SECTION 14: TRANSPORTATION INFORMATION (US DOT /CANADA TDG)

UN/NA Number: Not applicable

Shipping Name: Not regulated

Hazard Class: Not applicable

Packing Group: Not applicable

Reportable Quantity: No

Marine Pollutant: No

Exceptions: Not applicable

2012 ERG Guide#: Not applicable

SECTION 15: REGULATORY INFORMATION

Toxic Substances Control Act (TSCA): All components of this product are included on the TSCA inventory.

| Component | TSCA | CERLCA (RQ) | RCRA CODE | DSL | NDSL | WHMIS CLASSIFICATION |
|----------------------------------|--------|----------------------|-----------|--------|------------|----------------------|
| Formaldehyde | Listed | 100 lbs (45.4 kg) | U122 | Listed | Not Listed | D1A; D2A; D2B |
| Methanol | Listed | 5,000 lbs (2,270 kg) | U154 | Listed | Not Listed | B2; D1B; D2A; D2B |
| Propylene Glycol | Listed | None | None | Listed | Not Listed | None |
| Ethylene Glycol Monophenyl Ether | Listed | None | None | Listed | Not Listed | B3 |

California Proposition 65: This product contains a chemical known to the State of California to cause cancer or reproductive toxicity.

SECTION 16: OTHER INFORMATION

Date Prepared: April 16, 2015

RANACO disclaims all expressed or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein. All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, **RANACO** makes no representations as to its accuracy or sufficiency. Conditions of use are beyond **RANACO**'s control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.



GHS SAFETY DATA SHEET

EMBALMING FLUID

LC999

Date Revised: August 1, 2012
Supersedes: July 7, 1994

UN GHS, 4th edition, 2011

SECTION 1: PRODUCT & COMPANY IDENTIFICATION






| | | | |
|---------------|-------------------------|---------------|----------------------------|
| PRODUCT NAME: | EMBALMING FLUID | MANUFACTURER: | Nebraska Scientific |
| PRODUCT USE: | BIOLOGICAL PRESERVATION | | 3823 Leavenworth Street |
| SUPPLIER: | | | Omaha, NE 68105-1180 |
| | | | Tel: 800-228-7117 |
| | | | Fax: 402-346-2216 |

EMERGENCY: 1-800-228-7117 (available 8:00am – 5:00pm U.S. Central Time Zone)

SECTION 2: HAZARDS IDENTIFICATION

GHS CLASSIFICATION:

| RISK | CATEGORY | SIGNAL WORD | RISK CLASSIFICATION | SYMBOL |
|--------------------------------|----------|-------------|---|--------|
| PHYSICAL | 1 | WARNING | MAY BE CORROSIVE TO METALS | |
| ACUTE TOXICITY-ORAL | 3 | DANGER | TOXIC IF SWALLOWED | |
| ACUTE TOXICITY- DERMAL | 3 | DANGER | TOXIC IN CONTACT WITH SKIN | |
| ACUTE TOXICITY- INHALATION | 3 | DANGER | TOXIC IF INHALED | |
| SKIN CORROSION / IRRITATION | 1B | DANGER | CAUSES SEVERE SKIN BURNS AND EYE DAMAGE | |

| RISK | CATEGORY | SIGNAL WORD | RISK CLASSIFICATION | SYMBOL |
|--|----------|-------------|---|--|
| SERIOUS EYE DAMAGE / EYE IRRITATION | 1 | DANGER | CAUSES SEVERE SKIN BURNS AND EYE DAMAGE |  |
| GERM CELL MUTAGENICITY | 2 | WARNING | SUSPECTED OF CAUSING GENETIC DEFECTS |  |
| CARCINOGENICITY | 1B | DANGER | MAY CAUSE CANCER VIA INHALATION |  |
| SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE | 2 | WARNING | MAY CAUSE DAMAGE TO ORGANS |  |
| SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE | 2 | WARNING | MAY CAUSE DAMAGE TO ORGANS THROUGH PROLONGED OR REPEATED EXPOSURE |  |
| ACUTE AQUATIC TOXICITY | 3 | | HARMFUL TO AQUATIC LIFE | |

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

| Chemical Name | CAS # | Wt. % | Occupational Exposure Limits (OSHA) TWA | Occupational Exposure Limits (ACGIH) TLV | Occupational Exposure Limits (NIOSH) REL | Carcinogenicity | U.S. EPA 313 LIST Deminimus % limit |
|-------------------------|----------|-------|---|--|---|---|-------------------------------------|
| Water | | 83.5% | | ----- | | ----- | |
| Formaldehyde | 50-00-0 | 6.0% | 0.75 ppm 2.0 ppm Ceiling | 0.3 ppm Ceiling | 0.016 ppm 0.1 ppm Ceiling | EPA-B1 IARC-1 MAK-4 NIOSH-Ca NTP-R OSHA-Ca TLV-A2 | 0.1% |
| Hydroxybenzene (Phenol) | 108-95-2 | 4.0% | 5 ppm Skin designation | 5 ppm Skin Notation | 5 ppm 15.6 ppm Ceiling (15 minute) Skin Designation | EPA-I IARC-3 MAK-3B TLV-A4 | 1.0% |
| Propylene Glycol | 57-55-6 | 6.0% | None established | None established | None established | No data | Not listed |
| Sodium Citrate | 68-04-02 | 0.5% | None established | None established | None established | No data | Not listed |

Carcinogenicity Key:

EPA - U.S. Environmental Protection Agency

B1 = Limited evidence of carcinogenicity from epidemiologic studies

I = Data are Inadequate for an assessment of human carcinogenic protection

IARC - International Agency for Research on Cancer

1 = Carcinogenic to Humans

3 = Unclassifiable as to carcinogenicity in humans

MAK - German MAK Commission

3B = Substances for which in vitro tests or animal studies have yielded evidence of carcinogenic effects that is not sufficient for classification but cause concern

4 = Substances with carcinogenic potential for which genotoxicity plays no or at most a minor role. No significant contribution to human cancer risk is expected.

NIOSH - U.S. National Institute for Occupational Safety & Health

Ca = Potential occupational carcinogen

NTP - U.S. National Toxicology Program

R = Reasonably anticipated

OSHA - U.S. Occupational Safety & Health Administration

Ca = Carcinogen defined with no further categorization

TLV - American Conference of Governmental Industrial Hygienists (ACGIH)

A2 = Suspected Human Carcinogen

A4 = Not classifiable as a human carcinogen

SECTION 4: FIRST AID MEASURES

Eyes: Flush with water for 15 minutes, lifting eyelids. Consult a physician.

Skin: Take off contaminated clothing and shoes immediately. Flush with soap and water. If there are effects or symptoms, consult a physician. Wash contaminated clothing before re-use.

Inhalation: Remove to fresh air. If breathing has stopped, give artificial respiration, get medical attention. If the victim has difficulty breathing, seek medical attention immediately.

Ingestion: Do not induce vomiting. Seek medical attention immediately. Vomiting may occur spontaneously and should not be avoided; roll the patient on their side to prevent aspiration of residual vomit. Never give anything by mouth to an unconscious person. Do not provide mouth-to-mouth respiration to a patient who has ingested product. Instead, use intermediate manual resuscitation equipment to provide artificial respiration.

Notes for doctors: There is no specific antidote. In cases of ingestion, a gastric lavage may be performed if special measures are taken to avoid aspiration (tracheal tube with cuff inflated). Because formaldehyde is corrosive to gastric mucosa, special care should be taken when inserting the Nasogastric probe. Use of activated charcoal is controversial; efficacy in absorbing formaldehyde has not been established and use can interfere with subsequent endoscopy. Intravenous ethanol should be used in cases of elevated methanol blood level. Hemodialysis is a good therapeutic option in serious cases with severe metabolic acidosis.

Treat for shock with hydration and drugs if necessary. Treatment should also include support measures to correct electrolyte and metabolic disturbances, as well as respiratory assistance. Continuously monitor hepatic and renal function.

SECTION 5: FIRE-FIGHTING MEASURES

This product, because of the high volume of water included, is not considered flammable or combustible.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment & emergency procedures: Use impermeable suit and protective gloves, PVC boots and gloves. Respiratory protection should be used depending on the concentration present in the environment or the extensiveness of the spill / leak. Full face masks with a replaceable filter for organic vapors or supplied-air masks should be used for respiratory protection. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing vapors and mists.

Environmental precautions: Avoid contamination of water by preventing access to drainage systems. Prevent spilled product from reaching bodies of water. If water is contaminated with a formaldehyde concentration ≥ 10 ppm, add activated carbon to absorb product. Dike for recovery or disposal. Small amounts, flush to sewer.

Methods and materials for containment and cleaning up: Contain and recover spilled material using absorbent material. Place residues in a container for disposal according to local regulations. Remove residual material with detergent, neutral soap or alcohol. Add sodium bisulfate.

SECTION 7: HANDLING & STORAGE

Precautions for safe handling: Store in cool dry area with suitable ventilation. Avoid contact with skin and eyes. Avoid formation of aerosols. Wash hands after use.

Conditions for safe storage, including any incompatibilities: Keep container tightly closed in a dry and well-ventilated place. Recommended storage temperature = 2 - 8°C. It is recommended to not store near chlorides, acids, alkalis, oxidizing agents, isocyanides, or anhydrides. Obey all hazard warnings when containers are emptied.

SECTION 8: PRECAUTIONS TO CONTROL EXPOSURE / PERSONAL PROTECTION

Control parameters: See Section 3

Appropriate engineering controls: Maintain air concentrations below occupational exposure standards as shown in Section 3 using exhaust ventilation or other engineering controls.

Personal Protective Equipment:

Eye / Face Protection: Approved safety glasses or goggles. Face shield as needed.

Skin Protection: Chemical protective equipment selected according to the concentration and amount of dangerous components at the specific workplace. Handle with gloves to avoid skin contact.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate, use a full-face respirator with organic vapors filters or filter specifically made for formaldehyde. Use a NIOSH (US) or CEN (EU) approved respirator and filters.

Thermal hazards: None.

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

| | | | |
|------------------------------------|----------------------|------------------------|-----------------------|
| Appearance: | Colorless | Upper Explosive Limit: | 8.6% |
| Odor: | Formaldehyde | Lower Explosive Limit: | 1.7% |
| Odor Threshold: | No data | Vapor Pressure: | ≤ 110 kPa at 50 °C |
| pH: | acidic | Vapor Density: | Is heavier than air |
| Melting point / freezing point: | 0°C | Relative Density: | 8.4 lbs / gallon (US) |
| Initial Boiling Point: | 100°C | Solubility: | Complete |
| Boiling Range: | 100°C - 182°C | Partition coefficient: | No data |
| Flash point: | 85°C | Auto-ignition temp: | No data |
| Evaporation Rate: | Is slower than ether | Decomposition temp: | No data |
| Flammability: | N/A | Viscosity: | No data |

SECTION 10: STABILITY & REACTIVITY

Reactivity: Avoid using in the presence of strong oxidizing agents.

Chemical stability: This product is stable under normal storage conditions.

Possibility of hazardous reactions: Will not polymerize.

Conditions to avoid: Strong oxidizing agents.

Incompatible materials: It is recommended to not store near chlorides, acids, alkalis, oxidizing agents, isocyanides, or anhydrides.

Hazardous decomposition products: Normal decomposition to carbon dioxide, carbon monoxide, nitrous oxide and ammonia vapors. Carbon monoxide hazardous in enclosed high concentrations.

SECTION 11: TOXICOLOGICAL INFORMATION

| Chemical Name | CAS # | Wt. % | Acute Toxicity Oral LD ₅₀ | Acute Toxicity Dermal LD ₅₀ | Acute Toxicity Inhalation LC ₅₀ | Other |
|-------------------------|----------|-------|--------------------------------------|--|--|---|
| Water | | 83.5% | | | | |
| Formaldehyde | 50-00-0 | 6.0% | 100mg/kg (rats) | 270mg/kg (rabbits) | 0.578mg/L/4hrs (rats) | |
| Hydroxybenzene (Phenol) | 108-95-2 | 4.0% | 317.0 mg/kg (rats) | 630.0 mg/kg (rabbits) | 900 mg/L/8 hrs (rats) | Severe skin irritation - rabbit; Serious eye damage / eye irritation - rabbit |
| Propylene Glycol | 57-55-6 | 6.0% | 20mg/kg (rats) 22000mg/kg (mouse) | 20800mg/kg (rabbit) | No information | |
| Sodium Citrate | 68-04-02 | 0.5% | No data avail | No data avail | No data avail | |

See Section 3 for carcinogenicity information.

See Section 2 for mutagenicity information.

No known reproductive toxicity.

No known teratogenicity.

No data available for specific target organ toxicity - single exposure (GHS).

Specific target organ toxicity - repeated exposure: May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard: No data.

Information on the likely routes of exposure: Primary route(s) of entry: Dermal, inhalation, ingestion.

Symptoms related to the physical, chemical and toxicological characteristics:

Eyes: severe irritation.

Skin: Irritation.

Inhalation: Overexposure may cause dizziness, nausea.

Ingestion: May cause dizziness, nausea. Large amounts may have toxic effects.

Synergistic effects: No data available.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity:

| Chemical Name | CAS # | Wt. % | Toxicity to Fish | Toxicity to daphnia & other aquatic invertebrates | Toxicity to algae | Toxicity in birds |
|---------------|---------|-------|--|---|--|---|
| Water | | 83.5% | | | | |
| Formaldehyde | 50-00-0 | 6.0% | Brachidanio rerio LC ₅₀ =41mg/L/96 hrs; Pimpehales promelas LC ₅₀ = 24mg/L/96 hrs | | Pyllospora comosa NEOC < 100ug/L/96hrs | Anas platyrhynchos LC ₅₀ 5000ppm/8 days |

| Chemical Name | CAS # | Wt. % | Toxicity to Fish | Toxicity to daphnia & other aquatic invertebrates | Toxicity to algae | Toxicity in birds |
|-------------------------|----------|-------|---|---|---|-------------------|
| Hydroxybenzene (Phenol) | 108-95-2 | 4.0% | Leuciscus idus (Golden orfe) LC ₅₀ =14.0-25.0 mg/L/48 hrs; Carassius auratus (goldfish) LC ₅₀ =36.10-68.80 mg/L/96 hrs | Daphnia magna (water flea) EC ₅₀ =12mg/L/24 hrs; Daphnia magna (water flea) EC ₁₀₀ =100mg/L/24 hrs | Chlorella vulgaris (fresh water algae) EC ₅₀ =370mg/L/96 hrs | |
| Propylene Glycol | 57-55-6 | 6.0% | Goldfish LC ₅₀ >5000mg/L/24 hrs; Unspecified fish guppy LC ₅₀ >1000mg/L/48 hrs | Daphnia (water flea) EC ₅₀ >10000mg/L/48 hrs; Unspecified bacterium (phytobacterium) EC ₅₀ =710mg/L/30 min | No data avail | No data avail |
| Sodium Citrate | 68-04-02 | 0.5% | No data avail | No data avail | No data avail | No data avail |

Persistence & degradability: Product is rapidly biodegradable.

Bioaccumulative potential: Does not bioaccumulate.

Mobility in soil: No data available.

Other adverse effects: No data available.

SECTION 13: WASTE DISPOSAL CONSIDERATIONS

Disposal methods: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Deactivate product through incineration in a designated oven equipped with filter chambers for effluent gasses and approved by competent regulatory bodies.

SECTION 14: TRANSPORT INFORMATION

| Symbols | Hazardous materials descriptions and proper shipping names | Hazard class or Division | Identification Numbers | PG | Label Codes | Special provisions (§172.102) | (8) | | | (9) | | (10) Vessel stowage | |
|---------|--|--------------------------|------------------------|-----|-------------|-------------------------------|----------------------|----------|------|--|---------------------|---------------------|-------|
| | | | | | | | Packaging (§173.***) | | | Quantity limitations (see §§173.27 and 175.75) | | Location | Other |
| | | | | | | | Exceptions | Non-bulk | Bulk | Passenger aircraft/rail | Cargo aircraft only | | |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8A) | (8B) | (8C) | (9A) | (9B) | (10A) | (10B) |
| | Phenol solutions | 6.1 | UN2821 | III | 6.1 | IB3, T4, TP1 | 153 | 203 | 241 | 60 L | 220 L | A | |

Hazard Class: 6.1 Toxic Substances

PG: III (Dermal toxicity LD₅₀ >200 and ≤ 1000 mg/kg)

Special provisions:

IB3: Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1 and 31HA2, 31HB2, 31HN2, 31HD2 and 31HH2).
Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 °C (1.1 bar at 122 °F), or 130 kPa at 55 °C (1.3 bar at 131 °F) are authorized, except for UN2672 (also see Special Provision IP8 in Table 2 for UN2672).

T4:

| Portable tank instruction (1) | Minimum test Pressure (bar) (2) | Minimum shell thickness (in mm-reference steel) (See § 178.274(d)) (3) | Pressure-relief requirements (See § 178.275(g)) (4) | Bottom opening requirements (See § 178.275(d)) (5) |
|-------------------------------|---------------------------------|--|---|--|
| T4 | 2.65 | § 178.274(d)(2) | Normal | § 178.275(d)(3) |

TP1: The maximum degree of filling must not exceed the degree of filling determined by the following:

$$\left(\text{Degree of filling} = \frac{97}{1 + \alpha(t_r - t_f)} \right)$$

Where: t_r is the maximum mean bulk temperature during transport, and t_f is the temperature in degrees Celsius of the liquid during filling.

Packaging Exceptions:

(a) *General.* Exceptions for hazardous materials shipments in the following paragraphs are permitted only if this section is referenced for the specific hazardous material in the § 172.101 table of this subchapter.

(b) *Limited quantities.* The exceptions in this paragraph do not apply to poison-by-inhalation materials. Limited quantities of poisonous material (Division 6.1) in Packing Groups II and III are excepted from the labeling requirements, unless the material is offered for transportation or transported by aircraft, and are excepted from the specification packaging requirements of this subchapter when packaged in combination packagings according to this paragraph. For transportation by aircraft, the package must also conform to applicable requirements of § 173.27 of this part (e.g., authorized materials, inner packaging quantity limits and closure securement) and only hazardous material authorized aboard passenger-carrying aircraft may be transported as a limited quantity. A limited quantity package that conforms to the provisions of this section is not subject to the shipping paper requirements of subpart C of part 172 of this subchapter, unless the material meets the definition of a hazardous substance, hazardous waste, marine pollutant, or is offered for transportation and transported by aircraft or vessel, and is eligible for the exceptions provided in § 173.156 of this part. In addition, shipments of limited quantities are not subject to subpart F (Placarding) of part 172 of this subchapter.

Each package must conform to the packaging requirements of subpart B of this part and may not exceed 30 kg (66 pounds) gross weight. Except for transportation by aircraft, the following combination packagings are authorized:

- (1) For poisonous materials in Packing Group II, inner packagings not over 100 mL (3.38 ounces) each for liquids or 0.5 kg (1.1 pounds) each for solids, packed in a strong outer packaging. Inner packagings containing a liquid poisonous material which is also a drug or medicine in Packing Group II may be increased to not over 250 mL (8 ounces) each and packed in a strong outer packaging.
- (2) For poisonous materials in Packing Group III, inner packagings not over 5 L (1.3 gallons) each for liquids or 5.0 kg (11 pounds) each for solids, packed in a strong outer packaging.

(c) *Consumer commodities.* Until December 31, 2013, a limited quantity package of poisonous material in Packing Group III or a drug or medicine in Packing Group II and III that is also a “consumer commodity” as defined in § 171.8 of this subchapter, may be renamed “Consumer commodity” and reclassified as ORM–D or, until December 31, 2012, ORM–D–AIR material and offered for transportation and transported in accordance with the applicable provisions of this subchapter in effect on October 1, 2010.

Packaging, Non-bulk:

(a) When § 172.101 of this subchapter specifies that a liquid hazardous material be packaged under this section, only non-bulk packagings prescribed in this section may be used for its transportation.

Each packaging must conform to the general packaging requirements of subpart B of part 173, to the requirements of part 178 of this subchapter at the Packing Group I, II or III performance level, and to the requirements of the special provisions of column 7 of the § 172.101 table.

(b) The following combination packagings are authorized:

Outer packagings:

- Steel drum: 1A1 or 1A2
- Aluminum drum: 1B1 or 1B2
- Metal drum other than steel or aluminum: 1N1 or 1N2
- Plywood drum: 1D
- Fiber drum: 1G
- Plastic drum: 1H1 or 1H2

- Wooden barrel: 2C2
- Steel jerrican: 3A1 or 3A2
- Plastic jerrican: 3H1 or 3H2
- Aluminum jerrican: 3B1 or 3B2
- Steel box: 4A
- Aluminum box: 4B
- Natural wood box: 4C1 or 4C2

- Plywood box: 4D
- Reconstituted wood box: 4F
- Fiberboard box: 4G
- Expanded plastic box: 4H1
- Solid plastic box: 4H2

Inner packagings:

Glass or earthenware receptacles
Plastic receptacles
Metal receptacles
Glass ampoules

(c) The following single packagings are authorized:

| | | |
|----------------------------------|----------------------------------|-------------------------------------|
| Steel drum: 1A1 or 1A2 | Plastic receptacle in steel, | Glass, porcelain or stoneware in |
| Aluminum drum: 1B1 or 1B2 | aluminum, wooden, plywood or | solid or expanded plastic |
| Metal drum other than steel or | fiberboard box: 6HA2, 6HB2, 6HC, | packaging: 6PH1 or 6PH2 |
| aluminum: 1N1 | 6HD2 or 6HG2 | Plastic receptacle in plywood drum: |
| Plastic drum: 1H1 or 1H2 | Glass, porcelain or stoneware in | 6HD1 |
| Fiber drum: 1G (with liner) | steel, aluminum or fiber drum: | Glass, porcelain or stoneware in |
| Wooden barrel: 2C1 | 6PA1, 6PB1, or 6PG1 | plywood drum or wickerwork |
| Steel jerrican: 3A1 or 3A2 | Glass, porcelain or stoneware in | hamper: 6PD1 or 6PD2 |
| Plastic jerrican: 3H1 or 3H2 | steel, aluminum, wooden or | Cylinders, as prescribed for any |
| Aluminum jerrican: 3B1 or 3B2 | fiberboard box: 6PA2, 6PB2, 6PC | compressed gas, except for |
| Plastic receptacle in steel, | or 6PG2 | Specifications 8 and 3HT |
| aluminum, fiber or plastic drum: | | |
| 6HA1, 6HB1, 6HG1 or 6HH1 | | |

Packaging, Bulk:

When §172.101 of this subchapter specifies that a hazardous material be packaged under this section, only the following bulk packagings are authorized, subject to the requirements of subparts A and B of part 173 of this subchapter and the special provisions specified in column 7 of the § 172.101 table.

(a) *Rail cars*: Class DOT 103, 104, 105, 109, 111, 112, 114, 115, or 120 tank car tanks; Class 106 or 110 multi-unit tank car tanks and AAR Class 203W, 206W, and 211W tank car tanks.

(b) *Cargo tanks*: DOT specification MC 300, MC 301, MC 302, MC 303, MC 304, MC 305, MC 306, MC 307, MC 310, MC 311, MC 312, MC 330, MC 331, DOT 406, DOT 407, and DOT 412 cargo tank motor vehicles; and non-DOT specification cargo tank motor vehicles suitable for transport of liquids.

(c) *Portable tanks*. DOT Specification 51, 56, 57 and 60 portable tanks; IMO type 1, 2 and 5, and IM 101 and IM 102 portable tanks; UN portable tanks; marine portable tanks conforming to 46 CFR part 64; and non-DOT Specification portable tanks suitable for transport of liquids are authorized. For transportation by vessel, also see § 176.340 of this subchapter. For transportation of combustible liquids by vessel, additional requirements are specified in § 176.340 of this subchapter.

(d) *IBCs*. IBCs are authorized subject to the conditions and limitations of this section provided the IBC type is authorized according to the IBC packaging code specified for the specific hazardous material in Column (7) of the § 172.101 Table of this subchapter and the IBC conforms to the requirements in subpart O of part 178 of this subchapter at the Packing Group performance level as specified in Column (5) of the § 172.101 Table for the material being transported.

(1) IBCs may not be used for the following hazardous materials:

- (i) Packing Group I liquids; and
- (ii) Packing Group I solids that may become liquid during transportation.

(2) The following IBCs may not be used for Packing Group II and III solids that may become liquid during transportation:

- (i) Wooden: 11C, 11D and 11F;
- (ii) Fiberboard: 11G;
- (iii) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 and 13M2; and
- (iv) Composite: 11HZ2 and 21HZ2.

(e) *Large Packagings*. Large Packagings are authorized subject to the conditions and limitations of this section provided the Large Packaging type is authorized according to the IBC packaging code specified for the specific hazardous material in Column (7) of the § 172.101 Table of this subchapter and the Large Packaging conforms to the requirements in subpart Q of part 178 of this subchapter at the Packing Group performance level as specified in Column (5) of the § 172.101 Table for the material being transported.

Vessel stowage, location: material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.

DOT regulations may change from time to time. Please consult the most recent version of the relevant regulations. This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

SECTION 15: REGULATORY INFORMATION

US Federal TSCA

CAS# 50-00-0 is listed on the TSCA Inventory.

CAS#108-95-2 is listed on the TSCA inventory.

Health and Safety Reporting List

None of the components are on this list.

CAS# 108-95-2: Effective date: June 1, 1987; Sunset Date: June 1, 1997

Chemical Test Rules

None of the components are on this list.

TSCA Section 12b

None of the components are on this list.

TSCA Significant New Use Rule (SNUR)

None of the components are on this list.

CERCLA Hazardous Substances and corresponding RQs

CAS# 50-00-0: 100 lb final RQ; 45.4 kg final RQ

CAS#108-95-2: final RQ = 1000 pounds (454 kg)

SARA Section 302 Extremely Hazardous Substances

CAS# 50-00-0: 500 lb TPQ

CAS#108-95-2: TPQ = 500/10,000 pounds; RQ = 1000 pounds

SARA Hazard Categories

CAS# 50-00-0: immediate, delayed.

CAS #108-95-2: acute, chronic, flammable.

SARA Section 313

This material contains Formaldehyde (CAS# 50-00-0, 3.5-4%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

This material contains Phenol (CAS# 108-95-2, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Clean Air Act - Hazardous Air Pollutants (HAPs)

CAS# 50-00-0 is listed as a hazardous air pollutant (HAP).

CAS#108-95-2 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

Clean Air Act - Class 1 Ozone Depletors

None of the components are on this list.

Clean Air Act - Class 2 Ozone Depletors

None of the components are on this list.

Clean Water Act - Hazardous Substances

CAS# 50-00-0 is listed as a Hazardous Substance under the CWA.

CAS#108-95-2 is listed as a Hazardous Substance under the CWA.

Clean Water Act - Priority Pollutants

CAS#108-95-2 is listed as a Priority Pollutant under the Clean Water Act.

Clean Water Act - Toxic Pollutants

CAS#108-95-2 is listed as a Toxic Pollutant under the Clean Water Act.

OSHA - Highly Hazardous

CAS# 50-00-0 is considered highly hazardous by OSHA.

OSHA - Specifically Regulated Chemicals

CAS# 50-00-0 is a specifically regulated chemical by OSHA.

US State**State Right to Know**

Formaldehyde can be found on the following state Right-to-Know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 108-95-2 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California Prop 65

WARNING: This product contains Formaldehyde, a chemical known to the State of California to cause cancer.

California No Significant Risk Level

CAS# 50-00-0: 40 mg/day NSRL

European/International Regulations

European Labeling in Accordance with EC Directives:

Hazard Symbols: XN

Risk Phrases:

R 24/25 Toxic in contact with skin and if swallowed.

R 40 Limited evidence of a carcinogenic effect.

R 43 May cause sensitization by skin contact.

Safety Phrases:

S 53 Avoid exposure - obtain special instructions before use.

S 24 Avoid contact with skin.

S 28 After contact with skin, wash immediately with...

S 36 Wear suitable protective clothing.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)

CAS# 108-95-2: 2

United Kingdom Occupational Exposure Limits

CAS# 108-95-2: Skin OEL-UNITED KINGDOM:TWA 5 ppm (19 mg/m³);STEL 10 ppm

United Kingdom Maximum Exposure Limits

No information found

Canadian DSL/NDSL

CAS# 50-00-0 is listed on Canada's DSL List.

CAS# 108-95-2 is listed on Canada's DSL List.

CAS# 108-95-2 is listed on Canada's Ingredient Disclosure List.

Canadian WHMIS Classifications

CAS# 50-00-0: This product has a WHMIS classification of D2A, D2B. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

CAS# 108-95-2: This product has a WHMIS classification of E, D1A, B3, D2A.

Canadian Ingredient Disclosure List

CAS# 50-00-0 is listed on the Canadian Ingredient Disclosure List.

CAS#108-95-2 is listed on Canada's Ingredient Disclosure List.

SECTION 16: OTHER INFORMATION

The information above is believed to be accurate and represents the best 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. In no event shall Nebraska Scientific be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Nebraska Scientific has been advised of the possibility of such damages.

SAFETY DATA SHEET



www.ranaco.com

FORMALIN FIXED SPECIMENS IN PRESERVED HOLDING SOLUTION – EXCLUDING FETAL PIGS, CATS, GRASSFROGS, BULLFROGS, RABBITS, RATS, MINK

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Formalin Fixed Specimens In Preserved Holding Solution – Excluding Fetal Pigs, Cats, Grassfrogs, Bullfrogs, Rabbits, Rats, Mink
Recommended Use: Science education applications
Synonyms: None
Manufacturer/Supplier: Ranaco Corporation, 4345 E Irvington Road, Tucson, AZ 85714
General Information: 800-528-7023
Transportation Emergency Number: 800-424-9300 Chemtrec – 24 hours assistance

SECTION 2: HAZARD IDENTIFICATION

DANGER



Targeted organs:

Eyes, Skin, Central Nervous System, Respiratory Tract

GHS Classification:

Acute Toxicity, oral (Category 4)
Acute Toxicity, dermal (Category 4)
Skin Irritation (Category 2)
Eye irritation (Category 2A)
Skin sensitization (Category 1)
Acute toxicity, inhalation (Category 4)
Carcinogenicity (Category 2)

Hazard Statements:

Maybe harmful if swallowed.
Causes skin irritation.
Causes eye irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.
May cause cancer.

Ca Prop 65: This product contains a chemical known to the State of California to cause cancer or reproductive toxicity.

Precautionary Statements:

Obtain special instructions before use.
Wear protective gloves and eye protection.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF SWALLOWED: Immediately call a POISON CENTER or physician
IF exposed or concerned: Get medical advice/attention.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local/regional/national regulations.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS # | % |
|----------------------------------|-----------|-----------------|
| Formaldehyde | 50-00-0 | > 0.1% - < 0.6% |
| Methanol | 67-56-1 | < 0.03% |
| Propylene Glycol | 57-55-6 | < 9% |
| Ethylene Glycol Monophenyl Ether | 122-99-6 | < 1% |
| Water | 7732-18-5 | Balance |

SECTION 4: FIRST AID MEASURES

SKIN CONTACT: Wash affected area with soap and water. Seek medical attention if symptoms develop.

EYE CONTACT: Rinse cautiously for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. Seek medical attention if irritation persists.

INHALATION: Remove to fresh air. Get medical treatment if symptoms persist.

INGESTION: Immediately call a POISON CENTER or physician. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person.

SIGNS AND SYMPTOMS OF EXPOSURE: Irritation of skin, eyes, respiratory tract. Repeated exposure may cause dermatitis or other allergic reactions.

SECTION 5: FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use dry chemical, CO₂, water spray (fog) or alcohol foam.

FIRE FIGHTING METHODS AND PROTECTION: Firefighters should wear self-contained breathing apparatus and wear full protective equipment.

FIRE AND/OR EXPLOSION HAZARDS: During a fire, smoke generated can be irritating or toxic.

HAZARDOUS COMBUSTION PRODUCTS: Products of combustion include but are not limited to carbon monoxide and carbon dioxide.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Avoid breathing vapors. Use gloves and eye protection to clean up spills.

EMERGENCY PROCEDURES: Ventilate area of spill. Eliminate all sources of ignition. Remove non-essential personnel.

ENVIRONMENTAL PRECAUTIONS: No special hazards. Follow applicable federal, state, provincial and local regulations regarding releases.

METHODS FOR CONTAINMENT AND CLEAN-UP: Absorb with liquid binding material and place in a sealed container. Dispose of waste in accordance with federal, state, provincial and local regulations.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Do not eat, drink or smoke when using this product. Avoid breathing vapors. Avoid direct skin or eye contact with liquids. Do not ingest. Wash hands with soap and water after use or handling of product.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES: Store at room temperature in a dry well ventilated area. Keep specimen container tightly closed when not in use.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

| Chemical Name | ACGIH (TLV) | OSHA (PEL) | NIOSH (REL) |
|----------------------------------|--------------------------------------|------------------------------|--------------------------------|
| Formaldehyde | C 0.3 ppm / C 0.37 mg/m ³ | TWA: 0.75 ppm / STEL: 2ppm | TWA: 0.016 ppm / STEL: 0.1 ppm |
| Methanol | TWA: 200 ppm / STEL: 250 ppm | TWA: 200 ppm / STEL: 260 ppm | TWA: 200 ppm / STEL: 250 ppm |
| Ethylene Glycol Monophenyl Ether | Not available | Not available | Not available |
| | WEEL | | |
| Propylene Glycol | TWA 10 mg/m ³ Aerosol | Not available | Not available |

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility, a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles or face shield, apron and appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory Protection: None should be needed in normal handling and room temperatures. If use conditions generate fumes above the OSHA regulations, use of a NIOSH/MSHA approved respirator is required.

ACGIH: American Conference of Industrial Hygienists, OSHA: U.S. Occupational Safety and Health Administration, NIOSH: U.S. National Institute for Occupational Safety and Health, PEL: Permissible Exposure Limit, TWA: Time Weighted Average, STEL: Short Term Exposure Limit, REL: Recommended Exposure Limit, WEEL: Workplace Environmental Exposure Limit

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

Appearance: Specimen with/without clear colorless liquid

Odor: Mild pungent odor

Odor Threshold: Data not available

pH: Data not available

Melting/Freezing Point: Data not available

Boiling Point: Data not available

Flash Point: Data not available

Evaporation Rate (Water = 1) : >1

Flammability (solid/gas): Data not available

Explosion Limits: Lower/Upper: Data not available

Vapor Pressure (mmHg): Data not available

Vapor Density: Data not available

Relative Density (Specific Gravity): >1

Solubility(ies): Complete in water

Partition Coefficient: Data not available

Auto-ignition Temperature: Data not available

Decomposition Temperature: Data not available

Viscosity: Data not available

Molecular Formula: Mixture

Molecular Weight: Mixture

SECTION 10: STABILITY & REACTIVITY

Reactivity: None under normal conditions.

Chemical Stability: Stable

Conditions to Avoid: Excessive temperatures which cause evaporation.

Incompatible Materials: Strong acids, phenol, strong oxidizers, strong bases, hydrochloric acid, ammonia, iodine, alkalies, tannin, iron products, gelatin, bisulfate

Hazardous Polymerization: None under normal conditions.

Hazardous Decomposition Products: May include, but are not limited to carbon monoxide, carbon dioxide, gaseous formaldehyde, aldehydes, ketones, alcohols, ethers and organic acids

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: Formalin Fixed Specimens in Preserved Holding Solution have not been tested as a mixture. Information about individual components is supplied.

Formaldehyde – Oral-rat LD50: 100 mg/kg; Inhalation-rat LC50: 250 ppm/4 hours; Dermal-rat: 270 mg/kg

Methanol - Oral-rat LD50: 5,600 mg/kg; Inhalation-rat LC50: 6,400 ppm/4 hours, 145,000 ppm/ 1 hour; Dermal-rat: 15,800 mg/kg

Propylene Glycol – Ingestion-rat LD50: > 20,000 mg/kg; Skin absorption-rabbit LD50: > 20,000 mg/kg

Ethylene Glycol Monophenyl Ether- Oral-rat LD50: 1,840 mg/kg; Dermal-rabbit: >2,214 mg/kg

Chronic Effects: Data not available.

Skin Corrosion/Irritation:

Causes skin irritation. May cause an allergic skin reaction.

Serious Eye Damage/Irritation:

Causes eye irritation or damage.

Respiratory or Skin Sensitization:

May cause sensitization by skin contact

Germ Cell Mutagenicity:

Data not available.

Carcinogenicity: Data not available. Information about individual components is supplied.

Formaldehyde – Classified as a carcinogen by the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) and OSHA. Ca Prop 65: Formaldehyde is known to the State of California to cause cancer.

Reproductive Toxicity: Data not available. Information about individual components is supplied.

Formaldehyde - Ca Prop 65: Formaldehyde is known to the State of California to cause reproductive toxicity.

Specific Target Organ Toxicity – Single exposure: Data not available.

Specific Target Organ Toxicity– Repeated exposure: Data not available.

Aspiration Hazard: Data not available.

Potential Health Effects:

Inhalation: May cause respiratory irritation.

Ingestion: May be harmful if swallowed.

Skin: May cause skin irritation. May cause an allergic skin reaction.

Eyes: May cause eye irritation or damage.

Signs and Symptoms of Exposure:

The chemical, physical and toxicological properties have not been thoroughly investigated for this product/mixture. Specific data is not available. Exercise appropriate procedures to minimize hazards.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish: No data available.

Toxicity to daphnia and other aquatic invertebrates: No data available.

Toxicity to algae: No data available.

Persistence and degradability: No data available.

Bioaccumulative potential: No data available.

Mobility in soil: No data available.

PBT and vPvB assessment: No data available.

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of contents/container in accordance with local/regional/national regulations.

SECTION 14: TRANSPORTATION INFORMATION (US DOT /CANADA TDG)

UN/NA Number: Not applicable

Shipping Name: Not regulated

Hazard Class: Not applicable

Packing Group: Not applicable

Reportable Quantity: No

Marine Pollutant: No

Exceptions: Not applicable

2012 ERG Guide#: Not applicable

SECTION 15: REGULATORY INFORMATION

Toxic Substances Control Act (TSCA): All components of this product are included on the TSCA inventory.

| Component | TSCA | CERLCA (RQ) | RCRA CODE | DSL | NDSL | WHMIS CLASSIFICATION |
|----------------------------------|--------|----------------------|-----------|--------|------------|----------------------|
| Formaldehyde | Listed | 100 lbs (45.4 kg) | U122 | Listed | Not Listed | D1A; D2A; D2B |
| Methanol | Listed | 5,000 lbs (2,270 kg) | U154 | Listed | Not Listed | B2; D1B; D2A; D2B |
| Propylene Glycol | Listed | None | None | Listed | Not Listed | None |
| Ethylene Glycol Monophenyl Ether | Listed | None | None | Listed | Not Listed | B3 |

California Proposition 65: This product contains a chemical known to the State of California to cause cancer or reproductive toxicity.

SECTION 16: OTHER INFORMATION

Date Prepared: April 16, 2015

RANACO disclaims all expressed or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein. All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, **RANACO** makes no representations as to its accuracy or sufficiency. Conditions of use are beyond **RANACO**'s control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

SAFETY DATA SHEET



www.ranaco.com

FORMALIN FIXED SPECIMENS IN PRESERVED HOLDING SOLUTION – EXCLUDING FETAL PIGS, CATS, GRASSFROGS, BULLFROGS, RABBITS, RATS, MINK

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name: Formalin Fixed Specimens In Preserved Holding Solution – Excluding Fetal Pigs, Cats, Grassfrogs, Bullfrogs, Rabbits, Rats, Mink
Recommended Use: Science education applications
Synonyms: None
Manufacturer/Supplier: Ranaco Corporation, 4345 E Irvington Road, Tucson, AZ 85714
General Information: 800-528-7023
Transportation Emergency Number: 800-424-9300 Chemtrec – 24 hours assistance

SECTION 2: HAZARD IDENTIFICATION

DANGER



Targeted organs:

Eyes, Skin, Central Nervous System, Respiratory Tract

GHS Classification:

Acute Toxicity, oral (Category 4)
Acute Toxicity, dermal (Category 4)
Skin Irritation (Category 2)
Eye irritation (Category 2A)
Skin sensitization (Category 1)
Acute toxicity, inhalation (Category 4)
Carcinogenicity (Category 2)

Hazard Statements:

Maybe harmful if swallowed.
Causes skin irritation.
Causes eye irritation.
May cause an allergic skin reaction.
May cause respiratory irritation.
May cause cancer.

Precautionary Statements:

Obtain special instructions before use.
Wear protective gloves and eye protection.
Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
IF SWALLOWED: Immediately call a POISON CENTER or physician
IF exposed or concerned: Get medical advice/attention.
Store in a well- ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local/regional/national regulations.

Ca Prop 65: This product contains a chemical known to the State of California to cause cancer or reproductive toxicity.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS # | % |
|----------------------------------|-----------|-----------------|
| Formaldehyde | 50-00-0 | > 0.1% - < 0.6% |
| Methanol | 67-56-1 | ≤ 0.03% |
| Propylene Glycol | 57-55-6 | ≤ 9% |
| Ethylene Glycol Monophenyl Ether | 122-99-6 | ≤ 1% |
| Water | 7732-18-5 | Balance |

SECTION 4: FIRST AID MEASURES

SKIN CONTACT: Wash affected area with soap and water. Seek medical attention if symptoms develop.

EYE CONTACT: Rinse cautiously for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. Seek medical attention if irritation persists.

INHALATION: Remove to fresh air. Get medical treatment if symptoms persist.

INGESTION: Immediately call a POISON CENTER or physician. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person.

SIGNS AND SYMPTOMS OF EXPOSURE: Irritation of skin, eyes, respiratory tract. Repeated exposure may cause dermatitis or other allergic reactions.

SECTION 5: FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA: Use dry chemical, CO₂, water spray (fog) or alcohol foam.

FIRE FIGHTING METHODS AND PROTECTION: Firefighters should wear self-contained breathing apparatus and wear full protective equipment.

FIRE AND/OR EXPLOSION HAZARDS: During a fire, smoke generated can be irritating or toxic.

HAZARDOUS COMBUSTION PRODUCTS: Products of combustion include but are not limited to carbon monoxide and carbon dioxide.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Avoid breathing vapors. Use gloves and eye protection to clean up spills.

EMERGENCY PROCEDURES: Ventilate area of spill. Eliminate all sources of ignition. Remove non-essential personnel.

ENVIRONMENTAL PRECAUTIONS: No special hazards. Follow applicable federal, state, provincial and local regulations regarding releases.

METHODS FOR CONTAINMENT AND CLEAN-UP: Absorb with liquid binding material and place in a sealed container. Dispose of waste in accordance with federal, state, provincial and local regulations.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Do not eat, drink or smoke when using this product. Avoid breathing vapors. Avoid direct skin or eye contact with liquids. Do not ingest. Wash hands with soap and water after use or handling of product.

CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES: Store at room temperature in a dry well ventilated area.

Keep specimen container tightly closed when not in use.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:

| Chemical Name | ACGIH (TLV) | OSHA (PEL) | NIOSH (REL) |
|----------------------------------|--------------------------------------|------------------------------|--------------------------------|
| Formaldehyde | C 0.3 ppm / C 0.37 mg/m ³ | TWA: 0.75 ppm / STEL: 2ppm | TWA: 0.016 ppm / STEL: 0.1 ppm |
| Methanol | TWA: 200 ppm / STEL: 250 ppm | TWA: 200 ppm / STEL: 260 ppm | TWA: 200 ppm / STEL: 250 ppm |
| Ethylene Glycol Monophenyl Ether | Not available | Not available | Not available |
| | WEEL | | |
| Propylene Glycol | TWA 10 mg/m ³ Aerosol | Not available | Not available |

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility, a safety shower and fire extinguishing material. Personnel should wear safety glasses, goggles or face shield, apron and appropriate protective gloves. Use adequate ventilation to keep airborne concentrations low.

Respiratory Protection: None should be needed in normal handling and room temperatures. If use conditions generate fumes above the OSHA regulations, use of a NIOSH/MSHA approved respirator is required.

ACGIH: American Conference of Industrial Hygienists, OSHA: U.S. Occupational Safety and Health Administration, NIOSH: U.S. National Institute for Occupational Safety and Health, PEL: Permissible Exposure Limit, TWA: Time Weighted Average, STEL: Short Term Exposure Limit, REL: Recommended Exposure Limit, WEEL: Workplace Environmental Exposure Limit

SECTION 9: PHYSICAL & CHEMICAL PROPERTIES

Appearance: Specimen with/without clear colorless liquid
Odor: Mild pungent odor
Odor Threshold: Data not available
pH: Data not available
Melting/Freezing Point: Data not available
Boiling Point: Data not available
Flash Point: Data not available
Evaporation Rate (Water = 1) : >1
Flammability (solid/gas): Data not available
Explosion Limits: Lower/Upper: Data not available

Vapor Pressure (mmHg): Data not available
Vapor Density: Data not available
Relative Density (Specific Gravity): >1
Solubility(ies): Complete in water
Partition Coefficient: Data not available
Auto-ignition Temperature: Data not available
Decomposition Temperature: Data not available
Viscosity: Data not available
Molecular Formula: Mixture
Molecular Weight: Mixture

SECTION 10: STABILITY & REACTIVITY

Reactivity: None under normal conditions. **Chemical Stability:** Stable
Conditions to Avoid: Excessive temperatures which cause evaporation.
Incompatible Materials: Strong acids, phenol, strong oxidizers, strong bases, hydrochloric acid, ammonia, iodine, alkalies, tannin, iron products, gelatin, bisulfate **Hazardous Polymerization:** None under normal conditions.
Hazardous Decomposition Products: May include, but are not limited to carbon monoxide, carbon dioxide, gaseous formaldehyde, aldehydes, ketones, alcohols, ethers and organic acids

SECTION 11: TOXICOLOGICAL INFORMATION

Acute Toxicity: Formalin Fixed Specimens in Preserved Holding Solution have not been tested as a mixture. Information about individual components is supplied.

Formaldehyde – Oral-rat LD50: 100 mg/kg; Inhalation-rat LC50: 250 ppm/4 hours; Dermal-rat: 270 mg/kg

Methanol - Oral-rat LD50: 5,600 mg/kg; Inhalation-rat LC50: 6,400 ppm/4 hours, 145,000 ppm/ 1 hour; Dermal-rat: 15,800 mg/kg

Propylene Glycol – Ingestion-rat LD50: > 20,000 mg/kg; Skin absorption-rabbit LD50: > 20,000 mg/kg

Ethylene Glycol Monophenyl Ether- Oral-rat LD50: 1,840 mg/kg; Dermal-rabbit: >2,214 mg/kg

Chronic Effects: Data not available.

Skin Corrosion/Irritation:

Causes skin irritation. May cause an allergic skin reaction.

Serious Eye Damage/Irritation:

Causes eye irritation or damage.

Respiratory or Skin Sensitization:

May cause sensitization by skin contact

Germ Cell Mutagenicity:

Data not available.

Carcinogenicity: Data not available. Information about individual components is supplied.

Formaldehyde – Classified as a carcinogen by the International Agency for Research on Cancer (IARC) and the National Toxicology Program (NTP) and OSHA. Ca Prop 65: Formaldehyde is known to the State of California to cause cancer.

Reproductive Toxicity: Data not available. Information about individual components is supplied.

Formaldehyde - Ca Prop 65: Formaldehyde is known to the State of California to cause reproductive toxicity.

Specific Target Organ Toxicity – Single exposure: Data not available.

Specific Target Organ Toxicity– Repeated exposure: Data not available.

Aspiration Hazard: Data not available.

Potential Health Effects:

Inhalation: May cause respiratory irritation.

Ingestion: May be harmful if swallowed.

Skin: May cause skin irritation. May cause an allergic skin reaction.

Eyes: May cause eye irritation or damage.

Signs and Symptoms of Exposure:

The chemical, physical and toxicological properties have not been thoroughly investigated for this product/mixture. Specific data is not available. Exercise appropriate procedures to minimize hazards.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity to fish: No data available.

Toxicity to daphnia and other aquatic invertebrates: No data available.

Toxicity to algae: No data available.

Persistence and degradability: No data available.

Bioaccumulative potential: No data available.

Mobility in soil: No data available.

PBT and vPvB assessment: No data available.

Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: DISPOSAL CONSIDERATIONS

Dispose of contents/container in accordance with local/regional/national regulations.

SECTION 14: TRANSPORTATION INFORMATION (US DOT /CANADA TDG)

UN/NA Number: Not applicable

Shipping Name: Not regulated

Hazard Class: Not applicable

Packing Group: Not applicable

Reportable Quantity: No

Marine Pollutant: No

Exceptions: Not applicable

2012 ERG Guide#: Not applicable

SECTION 15: REGULATORY INFORMATION

Toxic Substances Control Act (TSCA): All components of this product are included on the TSCA inventory.

| Component | TSCA | CERLCA (RQ) | RCRA CODE | DSL | NDSL | WHMIS CLASSIFICATION |
|----------------------------------|--------|----------------------|-----------|--------|------------|----------------------|
| Formaldehyde | Listed | 100 lbs (45.4 kg) | U122 | Listed | Not Listed | D1A; D2A; D2B |
| Methanol | Listed | 5,000 lbs (2,270 kg) | U154 | Listed | Not Listed | B2; D1B; D2A; D2B |
| Propylene Glycol | Listed | None | None | Listed | Not Listed | None |
| Ethylene Glycol Monophenyl Ether | Listed | None | None | Listed | Not Listed | B3 |

California Proposition 65: This product contains a chemical known to the State of California to cause cancer or reproductive toxicity.

SECTION 16: OTHER INFORMATION

Date Prepared: April 16, 2015

RANACO disclaims all expressed or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein. All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, **RANACO** makes no representations as to its accuracy or sufficiency. Conditions of use are beyond **RANACO**'s control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling and disposal of the product or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.