

# Safety Data Sheet

## Modified Karnovsky's Fixative

### Section 1 - Chemical Product and Company Identification

**SDS Name:** Modified Karnovsky's Fixative

**Catalog Numbers:** SO-1051

**Company Identification:** Transene Company, Inc., DBA ROWLEY BIOCHEMICAL, Inc.  
10 ELECTRONICS AVENUE  
DANVERS, MA 0192

**For information, call:** 978-739-4883

**Emergency Number:** 800-424-9300

**For CHEMTREC assistance, call:** 800-424-9300

### Section 2 - Hazards Identification

#### GHS Classifications

H302-Acute toxicity, oral: 4

H313-Acute toxicity, dermal: 5

H314-Skin corrosion/irritation: 1B

H317-Sensitisation, skin: 1

H318-Serious eye damage/eye irritation: 1

H331-Acute toxicity, inhalation: 3

H334-Sensitisation, respiratory: 1

H341-Germ cell mutagenicity: 2

H350-Carcinogenicity: 1A

H371-Specific target organ toxicity, single exposure: 2

H373-Specific target organ toxicity, repeated exposure: 2

#### Pictograms or Hazard symbols and Hazard statement(s):



Signal word: Danger

#### Hazard Statements:

H302-Harmful if swallowed

H313-May be harmful in contact with skin

H314-Causes severe skin burns and eye damage

H317-May cause an allergic skin reaction

H318-Causes serious eye damage  
H331-Toxic if inhaled  
H334-May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H341-Suspected of causing genetic defects  
H350-May cause cancer  
H371-May cause damage to organs (target organs: respiratory system, central nervous system, and optic nerve)  
H373-May cause damage to organs through prolonged or repeated exposure (target organs: kidney, liver, heart, spleen, and blood)

## **Precautionary Statements:**

P201-Obtain special instructions before use.  
P202-Do not handle until all safety precautions have been read and understood.  
P260-Do not breathe dust/fume/gas/mist/vapours/spray.  
P261-Avoid breathing dust/fume/gas/mist/vapours/spray.  
P264-Wash thoroughly after handling.  
P270-Do not eat, drink, or smoke when using this product.  
P271-Use only outdoors or in a well-ventilated area.  
P272-Contaminated work clothing should not be allowed out of the workplace.  
P280-Wear protective gloves/protective clothing/eye protection/face protection.  
P284-In case of inadequate ventilation wear respiratory protection.  
P301+P312-If swallowed: Call a Poison Center/doctor if you feel unwell.  
P301+P330+P331-If swallowed: Rinse mouth. Do NOT induce vomiting.  
P302+P312-If on skin: Call a Poison Center/doctor if you feel unwell.  
P302+P352-If on skin: Wash with plenty of soap and water.  
P303+P361+P353-If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P304+P340-If inhaled: Remove person to fresh air and keep comfortable for breathing.  
P305+P351+P338-If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308+P313-If exposed or concerned: Get medical advice/attention.  
P308+P311-If exposed or concerned: Call a Poison Center/doctor.  
P310-Immediately call a Poison Center/doctor.  
P311-Call a Poison Center/doctor.  
P314-Get medical advice/attention if you feel unwell.  
P330-Rinse mouth.  
P333+P313-If skin irritation or rash occurs: Get medical advice/attention.  
P342+P311-If experiencing respiratory systems: Call a Poison Center/doctor.  
P362+P364-Take off contaminated clothing and wash it before reuse.  
P363-Wash contaminated clothing before reuse.  
P403+P233-Store in a well-ventilated place. Keep container tightly closed.  
P405-Store locked up.  
P501-Dispose of contents/container in accordance with local/regional/national/international regulations.

### Section 3 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent
7758-80-7	Sodium Phosphate, monobasic	1.4 w/v
7558-79-4	Sodium Phosphate, dibasic	1.4 w/v
111-30-8	Glutaraldehyde	5 v/v
50-00-0	Formaldehyde, 37-40%	6.5 v/v
67-56-1	Methyl Alcohol	<1 v/v
7732-18-5	Water	balance

### Section 4 - First Aid Measures

**Eye Exposure:** In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Seek medical attention.

**Dermal Exposure:** In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Seek medical attention.

**Oral Exposure:** If swallowed, seek immediate medical advice. Do NOT induce vomiting.

**Inhalation Exposure:** If inhaled, remove to fresh air. Seek medical attention.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use dry chemical, carbon dioxide, dry sand, water spray, or alcohol-resistant foam.

**Hazardous Combustion Products:** Carbon oxides, sodium oxides, phosphorus oxides, hydrogen, formaldehyde, irritating and toxic fumes and gases.

**Flash Point:** Not available

**Autoignition Temperature:** Not available

**Explosion Limits, Lower:** Not available

**Upper:** Not available

**NFPA Rating:** (estimated) Health: 3; Flammability: 0; Instability: 0

## Section 6 - Accidental Release Measures

### **Procedure(s) of Personal Precaution(s):**

Wear personal protective equipment. Do not ingest or inhale. Do not get on skin or clothing. Do not get in eyes. Ensure adequate ventilation.

**Methods for Cleaning up:** Absorb with sand, earth, or vermiculite. Carefully sweep up and containerize for proper disposal. Do not release to the environment. Do not release to drains.

## Section 7 - Handling and Storage

Use care when handling. Wear personal protective equipment. Wash thoroughly after handling. Ensure adequate ventilation. Do not ingest or inhale. Do not get on skin or clothing. Do not get in eyes. Protect from moisture. Keep in a tightly closed container. **Store in the refrigerator (4 °C).** Keep away from incompatible materials.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### **Personal Protective Equipment**

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

**Exposure Limits:**

Chemical Name	ACGIH - TLV	NIOSH - IDLH	OSHA - Final PELs
Sodium Phosphate, monobasic CAS#7558-80-7	Not listed	Not listed	Not listed
Sodium Phosphate, dibasic CAS#7558-79-4	Not listed	Not listed	Not listed
Glutaraldehyde CAS#111-30-8	0.05 ppm Ceiling	0.2 ppm Ceiling 0.8 mg/m <sup>3</sup> Ceiling	0.2 ppm Ceiling (vacated) 0.8 mg/m <sup>3</sup> Ceiling (vacated)
Formaldehyde, 37-40% CAS#50-00-0	0.1 ppm TWA 0.3 ppm STEL	0.1 ppm Ceiling 0.016 ppm TWA 20 ppm IDLH	0.75 ppm TWA 2 ppm STEL
Methyl Alcohol CAS#67-56-1	200 ppm TWA 250 ppm Skin STEL	200 ppm TWA 260 mg/m <sup>3</sup> TWA 250 ppm STEL 325 mg/m <sup>3</sup> STEL 6000 ppm IDLH	200 ppm TWA 260 mg/m <sup>3</sup> TWA

**OSHA Vacated PELs:** Glutaraldehyde: 0.2 ppm Ceiling; 0.8 mg/m<sup>3</sup> Ceiling  
 Formaldehyde, 37-40%: 5 ppm Ceiling; 3 ppm TWA; 10 ppm STEL  
 Methyl Alcohol: 200 ppm TWA; 260 mg/m<sup>3</sup> TWA; 250 ppm STEL;  
 325 mg/m<sup>3</sup> Skin STEL

Section 9 - Physical and Chemical Properties
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**Physical State:** Liquid  
**Appearance:** Clear, colorless  
**Odor:** Pungent  
**Vapor Pressure:** Not available  
**Odor Threshold:** Not available  
**Vapor Density:** Not available  
**pH:** Approx. 6.5  
**Relative Density:** Not available  
**Melting point/freezing point:** Not available  
**Solubility:** Soluble in water  
**Boiling Point:** Not available  
**Flash Point:** Not available  
**Evaporation Rate:** Not available  
**Flammability (solid, gas):** Not available  
**Partition coefficient: n-octanol/water:** Not available  
**Autoignition Temperature:** Not available  
**Decomposition Temperature:** Not available  
**Viscosity:** Not available  
**Specific Gravity/Density:** Not available

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under ordinary conditions of use and storage. Heat and sunlight can contribute to instability. **Keep refrigerated (4° C).**

**Conditions to Avoid:** Incompatible materials, ignition sources, and excess heat. Avoid contact with metals.

**Incompatibilities with Other Materials:** Strong oxidizing agents, acids, strong bases, alcohols, amines, ammonia, ketones, nitriles, isocyanates, acid anhydrides, metals, chloroform, chlorates, nitrates, perchlorates, acid halides, peroxides, alkaline earth metals, reducing agents, sodium hypochlorite, calcium hypochlorite, oxyhalogenic acid salts, chromium(VI) oxide, halogen oxides, nitrogen oxides, hydrides, halogens, tetrachloromethane, phosphorous oxides, various plastics, rubber, various coatings, and acid chlorides.

**Hazardous Decomposition Products:** Carbon oxides, sodium oxides, phosphorus oxides, hydrogen, formaldehyde, irritating and toxic fumes and gases.

## Section 11 - Toxicological Information

### **CAS#7758-80-7 Sodium phosphate, monobasic:**

LD50 Oral: 8290 mg/kg (rat)

LD50 Dermal: >7940 mg/kg (rabbit)

LC50 Inhalation: >0.83 mg/L 4h (rat)

**Carcinogenicity:** Sodium phosphate, monobasic CAS#7758-80-7 is not listed by IARC, NTP, ACGIH, OSHA, or California Prop. 65.

### **CAS#7558-79-4 Sodium phosphate, dibasic: RTECS#: WC450000**

LD50 Oral: >2000 mg/kg (rat)

LD50 Dermal: >2000 mg/kg (rat)

LC50 Inhalation: >0.83 mg/L 4h dust/mist (rat)

**Carcinogenicity:** Sodium phosphate, dibasic CAS#7558-79-4 is not listed by IARC, NTP, ACGIH, OSHA, or California Prop. 65.

### **CAS#111-30-8 Glutaraldehyde: RTECS#: MA2450000**

LD50 Oral: 77 mg/kg (rat)

LD50 Dermal: >2500 mg/kg (rat)

LC50 Inhalation: 0.28-0.39 mg/L 4h (rat)

**Tumorigen, mutagen, and reproductive effecter.**

**Carcinogenicity:** Glutaraldehyde CAS#111-30-8 is not listed by IARC, NTP, ACGIH, OSHA, or California Prop. 65.

**Germ cell mutagenicity:** Cytogenetic analysis, hamster ovary. Sister chromatid exchange, hamster ovary. Chromosome aberration, Chinese hamster lung cells.

### **CAS#50-00-0 Formaldehyde:**

LD50 Oral: 500 mg/kg (rat)

LD50 Dermal: 270 mg/kg (rabbit)

LC50 Inhalation: 0.578 mg/L 4h (rat)

**Carcinogenicity:** Formaldehyde CAS#50-00-0 is not listed by OSHA. Formaldehyde is listed by IARC (Group 1, Carcinogenic to Humans), NTP (Known Carcinogen), ACGIH (A1, Known Human Carcinogen), and California Prop. 65 as a carcinogen.

**CAS#67-56-1 Methyl Alcohol: RTECS#: PC1400000**

LD50 Oral: 100.1 mg/kg (expert judgement)

LD50 Dermal: 300.1 mg/kg (expert judgement)

LC50 Inhalation: 3.1 mg/L 4h vapor (expert judgement)

**Investigated as a mutagen, reproductive effector.**

Draize test, rabbit, eye: 100 mg/24h Moderate Irritant.

Draize test, rabbit, skin: 20 mg/24h Moderate Irritant.

**Carcinogenicity:** Methyl Alcohol CAS#67-56-1 is not listed by IARC, NTP, ACGIH, or OSHA. Methyl Alcohol is listed by California Prop. 65 as a developmental carcinogen.

**Information on the likely routes of exposure:** Routes of entry anticipated: oral, dermal, inhalation, and eye.

**Epidemiology:** Not available.

**Teratogenicity:** Not available.

**Reproductive Effects:** May cause reproductive effects based on animal data (Glutaraldehyde).

**Developmental Effects:** Not available.

**Neurotoxicity:** Not available.

**Mutagenicity:** Experiments have shown mutagenic effects (Glutaraldehyde).

**Specific Target Organ Toxicity, Single Exposure:** Respiratory system, central nervous system, and optic nerve.

**Specific Target Organ Toxicity, Repeated Exposure:** Kidney, liver, heart, spleen, and blood.

**Symptoms associated with exposure:** Toxic if inhaled. Ingestion causes severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and stomach. Causes severe eye damage. Causes severe skin burns. May cause sensitization by inhalation and/or skin contact. Glutaraldehyde may be absorbed through the skin. Skin contact may cause an allergic reaction including contact dermatitis, rash, itching, swelling. Inhalation may cause asthma-like attacks including shortness of breath, trouble breathing, wheezing, coughing, chest tightness, dizziness, lightheadedness. Exposure may cause headache, nausea, vomiting, liver irregularities, kidney irregularities, abdominal pain, diarrhea, digestive tract irritation.

**The toxicological properties of this material have not been thoroughly investigated.**

## Section 12 - Ecological Information

**Ecotoxicity:** Do not release to the environment. Do not release to drains. Very toxic to aquatic life. May cause long-term adverse effects in the aquatic environment.

**CAS#7558-79-4 Sodium Phosphate Dibasic Anhydrous:**

LC50, freshwater fish: >100 mg/L 96h semi-static (*oncorhynchus mykiss*)(rainbow trout)

EC50, water flea: >100 mg/L 48h static (*daphnia magna*)

EC50, bacteria: >1000 mg/L 3h static (activated sludge)

EC50, algae: >100 mg/L 72h static (*desmodesmus subspicatus*)(green algae)

**CAS#111-30-8 Glutaraldehyde:**

LC50, freshwater fish: 5.4 mg/L 96h static (*pimephales promelas*)(fathead minnow)

LC50, freshwater fish: 0.8 mg/L 96h static (*oncorhynchus mykiss*)(rainbow trout)

EC50, freshwater algae: 0.6 mg/L 72h static (*desmodesmus subspicatus*)(green algae)

EC50, water flea: 0.56-1.0 mg/L 48h static (*daphnia magna*)

**CAS#50-00-0 Formaldehyde:**

LC50, freshwater fish: 15 mg/L 96h (*leuciscus idus*)(golden orfe)

EC50, water flea: 20 mg/L 96h

EC50, water flea: 2 mg/L 48h

**CAS# 67-56-1 Methyl Alcohol:**

LC50, freshwater fish: 15400 mg/L 96h flow-through (*lepomis macrochirus*)(bluegill)

LC50, freshwater fish: 19000 mg/L 96h (*oncorhynchus mykiss*)(rainbow trout)

EC50, water flea: 18260 mg/L 96h semi-static (*daphnia magna*)

EC50, algae: 22000 mg/L 96h (*pseudokirchneriella subcapitata*)(green algae)

IC50, bacteria: >1000 mg/L 3h (activated sludge)

**Persistence and degradability:** Not available.

**Bio-accumulative potential:** Not available.

**Solubility:** Will likely be mobile in the environment due to its water solubility.

## Section 13 - Disposal Considerations

**DISPOSAL:** Dispose of in accordance with all federal, state, and local regulations.

## Section 14 - Transport Information

**DOT**

Non-Regulated



## Section 15 - Regulatory Information

### **Canada Regulatory Information**

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the SDS contains all the information required by the CPR.

## Section 16 - Additional Information

**SDS Creation Date:** 6-8-22

**Revision #1:** 6-4-24

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