# 10% Neutral Buffered Formalin

## 1. Identification

**Product Name:** 10% Neutral Buffered Formalin
**Synonyms:** Formalin, 10% NBF
**Recommended Use:** Tissue Fixation
**Manufactured For:**
StatLab Medical Products, Inc.
2090 Commerce Drive
McKinney, TX 75069
1-800-442-3573
Fax: 972-436-1369

**Item #:**

**Restrictions on Use:** N/A
**In Case of Emergency:**
Chemtrec US 1-800-424-9300
Chemtrec International 703-527-3887

## 2. Hazards Identification

**OSHA Hazard Classification(s):**
Acute Toxicity - Inhalation - Category 4
Skin Irritation - Category 2
Eye Damage - Category 1
Sensitization - Respiratory - Category 1A
Sensitization - Skin - Category 1A
Germ Cell Mutagenicity - Category 1B
Carcinogenicity - Category 1A
Specific Target Organ Toxicity (single exposure) - Category 2
Specific Target Organ Toxicity (repeated exposure) - Category 2

**Signal Word:** Danger

**Hazard Statement(s):** Harmful if inhaled. Causes skin irritation. Causes serious eye damage. May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction. May cause genetic defects. May cause cancer. May cause damage to organs (lungs, nose). May cause damage to organs (lungs, nose) through prolonged or repeated exposure.

**Pictogram(s):**



**Precautionary Statement(s):** Prevention: Avoid breathing dust, vapors. Use only outdoors or in a well-ventilated area. Wash body thoroughly after handling. Wear protective gloves. Wear eye protection, face protection. Wear NIOSH approved respiratory protection. Contaminated work clothing must not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves, protective clothing, eye protection and face protection. Do not breathe dust, vapors. Do not eat, drink or smoke when using this product.

Response: If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a doctor if you feel unwell. If on skin: Wash with plenty of water. Specific treatment (see first aid section on this label). If skin irritation or rash occurs: Get medical attention. Take off all contaminated clothing and wash it before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing Immediately call a doctor. If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a doctor. If exposed or concerned: Get medical attention. If exposed or concerned: Call a doctor.

Storage: Store locked up.

Disposal: Dispose of contents/container in accordance with local regulations.

**Descriptions of Hazards not otherwise classified:** N/A
**Percent of mixture with unknown acute toxicity:** N/A

## 3. Composition and Information on Ingredients

| Chemical Name | Common Name | CAS # | Concentration % |
|---|---|---|---|

# 10% Neutral Buffered Formalin

| | | | |
|---|---|---|---|
| Water | | 7732-18-5 | Trade Secret |
| Formaldehyde 37% | | 50-00-0 | Trade Secret |
| Select Buffers | | Trade Secret | Trade Secret |

## 4. First Aid Measures

**Eye Contact:** Wash the eyes immediately with large amounts of water occasionally lifting lower and upper lids, until no evidence of chemical remains (at least 15 to 20 minutes). Immediately remove contact lenses if you are able to do so and it is safe. In case of burns, apply sterile bandages loosely without medication. Get medical attention immediately. If you have experienced appreciable eye irritation from a splash or excessive exposure, you should be referred promptly to an opthamologist for evaluation.

**Skin Contact:** Remove contaminated clothing (including shoes) immediately. Wash the affected area of your body with large amounts of water until no evidence of the chemical remains (at least 15 to 20 minutes). If there are chemical burns, get first aid to cover the area with sterile, dry dressing, and bandages. Get medical attention if you experience appreciable eye or respiratory irritation.

**Inhalation:** Remove the victim from the exposure area to fresh air immediately. Where the formaldehyde concentration may be very high, each rescuer must put on a self-contained breathing apparatus before attempting to remove the victim, and medical personnel should be informed of the formaldehyde exposure immediately. If breathing has stopped, give artificial respiration. Keep the affected person warm and at rest. Qualified first-aid or medical personnel should administer oxygen, if available, and maintain the patient's airways and blood pressure until the victim can be transported to a medical facility. If exposure results in a highly irritated upper respiratory tract and coughing continues for more than 10 minutes, the worker should be hospitalized for observation and treatment.

**Ingestion:** If the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Any organic material will inactivate formaldehyde. Keep affected person warm and at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips.

**Symptoms:** Irritation eyes, nose, throat; headache, dizziness. See section 11

**Recommendations for immediate medical care/special treatment:** Get medical advice/attention if you feel unwell or if you have any of the symptoms listed above.

## 5. Fire- Fighting Measures

**Extinguishing Media:** Dry chemical, carbon dioxide, alcohol foam, water.

**Fire Hazards (Chemical):** Not flammable.

**Special Protective Equipment:** Fire fighters should use self-contained breathing apparatus and protective clothing.

**Precautions for Firefighters:** Carbon monoxide and unidentified organic compounds may be formed during combustion.

## 6. Accidental Release Measures

**Emergency Procedures:** Evacuate the area of all unnecessary personnel. Wear suitable protective equipment. Eliminate all sources of ignition and provide ventilation.

**Protective Equipment:** See section 8

**Environmental Precautions:** Prevent release to the environment by using barriers.

**Containment and Clean-Up Procedures:** Use barriers to prevent spreading. Collect spill in container. Call waste authorities.

## 7. Handling and Storage

**Handling:** Do not breathe vapors. Do not eat, drink or smoke when using this product.

**Storage:** Store locked up. Store in a well-ventilated place. Keep container tightly closed when not in use.

## 8. Exposure Controls/Personal Protection

**OSHA Permissible Exposure Limits (PELs):**

| Reagent | CAS # | OSHA PEL TWA |
|---|---|---|
| Formaldehyde | 50-00-0 | 0.75ppm |

**ACGIH Threshold Limit Values (TLVs):**

| Reagent | CAS # | ACGIH PEL TLV | ACGIH STEL |
|---|---|---|---|
| Formaldehyde | 50-00-0 | 0.3ppm (0.37mg/m3) | |

| | | | |
|---|---|---|---|
| | | Ceiling | |

**Engineering Controls:** Use in a well ventilated area to prevent exposure. Maintain eyewash fountain and quick-drench facilities in work areas.
**Personal Protective Measures:** Wear gloves, lab coat, eye protection and impervious footwear. Contact lenses should not be worn when working with this material.
**Special PPE Requirements:** If ventilation hood not available wear respirator.

## 9. Physical and Chemical Properties Section

**Appearance:** Colorless, Liquid
**Molecular Weight:** Mixture
**Molecular Formula:** N/A
**pH:** 6.8-7.2
**Boiling Point and Boiling Range:** 100ºC (212°F )
**Melting Point/Freezing Point:** N/A
**Flash Point:** Greater than 100°C (212°F )(Closed Cup)
**Specific Gravity/Relative Density:** 1.02
**Odor:** Pungent
**Odor Threshold:** N/A
**Color:** Colorless
**Flammability (solid/gas):** N/A
**Vapor Density:** N/A
**Upper/Lower flammability or explosive limits:** N/A
**Vapor Pressure:** N/A
**Evaporation Rate:** N/A
**Partition Coefficient: n-octanol/water:** N/A
**Viscosity:** N/A
**Auto-ignition temperature:** N/A
**Solubility:** Miscible in water
**Decomposition Temperature:** N/A

## 10. Stability and Reactivity

**Reactivity:**
**Chemical Stability:** Stable
**Conditions of Stability/Instability:** N/A
**Stabilizers needed:** None
**Safety issue indicated by appearance change:** N/A
**Other:** N/A
**Hazardous Reactions:** N/A
**Hazardous Polymerization:** Does not occur
**Conditions to avoid:** N/A
**Classes of Incompatible Materials:** Oxidizers, Strong Acids, Strong Bases
**Hazardous Decomposition Products:** Thermal-oxidation degradation can produce oxides of carbon. Toxic gases and vapors (I.e. Carbon monoxide) may be released in a fire.

## 11. Toxicological Information

**Likely Routes of Exposure**

**Eyes:** Formaldehyde solutions splashed in the eye can cause injuries ranging from transient discomfort to severe, permanent corneal clouding and loss of vision. The severity of the effect depends on the concentration of formaldehyde in the solution and whether or not the eyes are flushed with water immediately after the accident.

**Skin:** Formalin is a severe skin irritant and a sensitizer. Contact with formalin causes white discoloration, smarting, drying, cracking, and scaling. Prolonged and repeated contact can cause numbness and a hardening or tanning of the skin. Previously exposed persons may react to future exposure with an allergic eczematous dermatitis or hives.

**Inhalation:** Formaldehyde is highly irritating to the upper respiratory tract and eyes. Concentrations of 0.5 to 2.0 ppm may irritate the eyes, nose, and throat of some individuals. Concentrations of 3 to 5 ppm also cause tearing of the eyes and are intolerable to some persons. A concentration of 100 ppm is immediately dangerous to life and health. Deaths from accidental exposure to high concentrations of formaldehyde have been reported.

**Ingestion:** Liquids containing 10 to 40 percent formaldehyde cause severe irritation and inflammation of the mouth, throat, and stomach. Severe stomach pains will follow ingestion with possible loss of consciousness and death. Ingestion of dilute formaldehyde solutions (0.03-0.04 percent) may cause discomfort in the stomach and pharynx.

**Signs or Symptoms of Exposure:** Chronic Effects of Exposure Carcinogenicity: Formaldehyde has the potential to cause cancer in humans. Repeated and prolonged exposure increases the risk. Various animal experiments have conclusively shown formaldehyde to be a carcinogen in rats. In humans, formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx, and nasal passages. Mutagenicity: Formaldehyde is genotoxic in several in vitro test systems showing properties of both an initiator and a promoter. Toxicity: Prolonged or repeated exposure to formaldehyde may result in respiratory impairment. Rats exposed to formaldehyde at 2 ppm developed benign nasal tumors and changes of the cell structure in the nose as well as inflamed mucous membranes of the nose. Structural changes in the epithelial cells in the human nose have also been observed. Some persons have developed asthma or bronchitis following exposure to formaldehyde, most often as the result of an accidental spill involving a single exposure to a high concentration of formaldehyde. Note.-The perception of formaldehyde by odor and eye irritation becomes less sensitive with time as one adapts to formaldehyde. This can lead to overexposure if a worker is relying on formaldehyde's warning properties to alert him or her to the potential for exposure.

**Effects from short term exposure (delayed, immediate, chronic):** Irritation to the eyes, nose, throat; headache, dizziness, nausea. May cause cancer, mutagenic and reproductive effects. May effect organs (lungs, nose) after single or repeat exposure.

**Acute Toxicity (Numerical Measures):** Formaldehyde CAS 50-00-0: LD50 385 mg/kg (oral, mouse); LD50 100mg/kg (oral, rat) LC50 203 mg/m3 (inh, rat); LC50 454 mg/m3/4H (inh, mouse)

**Carcinogenicity (NTP, IARC, OSHA):** Contains Formaldehyde IARC Group 1 Carcinogen associated with nasal sinus cancer, nasopharyngeal cancer, myeloid leukemia.

## 12. Ecological Information

**Ecotoxicity:** Formaldehyde is highly toxic to algae, protozoa and other unicellular organisms and slightly toxic to fish. In the atmosphere the material is rapidly degraded by photolysis and photooxidation. Formaldehyde is mobile in the soil. In water or soil, formaldehyde is biodegraded in a few days. Experiments performed on a variety of fish and shrimp show no bioconcentration of formaldehyde.

**Persistence and degradability:** N/A

**Bioaccumulation Potential (octanol-water partition coefficient, BCF):** N/A

**Mobility in the soil:** N/A

**Adverse Environmental Effects:** N/A

## 13. Disposal Considerations

**Recommended Disposal Containers:** Check with your local waste authorities*

**Recommended Disposal Methods:** Do not dispose of in drains, check with your local waste authorities.*

**Physical/Chemical Properties affecting Disposal:** See section 2 and section 9 applicable information.*

**Special Precautions for Landfill and Incineration Activities:** Check with your local waste authorities.*

**Waste Stream:** Consult your local or regional authorities.*

## 14. Transport Information

**UN Number:** Not regulated

**UN Proper Shipping Name:**

**Transport Hazard Class(es):**

**Packing Group Number:**

**Environmental Hazards (IMDG code):**

**Marine Pollutant:**
**Transport in Bulk (IBC Code):**
**Special Transport Precautions:**

## 15. Regulatory Information

**OSHA:**
**DOT:**
**EPA:**
**CPSC:**

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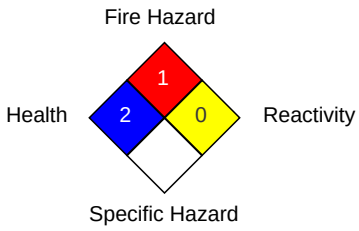
## 16. Other Information

**Revision Date:** 10/21/2014

**NFPA**

| | |
|---|---|
| Health | 2 |
| Fire Hazard | 1 |
| Reactivity | 0 |
| Specific Hazard | |

National Fire Protection Association (USA) NFPA




**HMIS**

| | |
|---|---|
| Health | 2 |
| Flammability | 1 |
| Physical Hazard | 0 |
| Personal Protection | |

Hazardous Material Information System HMIS

| | |
|---|---|
| Health | 2 |
| Flammability | 1 |
| Physical Hazard | 0 |
| Personal Protection | |

**Notice to Reader:**

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