SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Formalin, 10% Neutral Buffered
SYNONYMS: Formalin, Buffered Formaldehyde
SUPPLIER: AVANTIK BIOGROUP
ADDRESS: 32 Commerce St., Springfield, NJ 07081

CHEMTREC PHONE: 800-424-9300
SUPPORT: 888-392-8411
FAX: 973-232-0077

SECTION 1 NOTES:

SECTION 2: HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>GHS CLASSIFICATION:</th>
<th>Physical</th>
<th>Health</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Hazardous</td>
<td></td>
<td>Eye Damage Category 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skin Irritation Category 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skin Sensitization Category 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Carcinogenicity Category 1A</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Specific Target Organ Toxicity – Single</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exposure Category 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not Hazardous</td>
<td></td>
</tr>
</tbody>
</table>

Hazard Phrases
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H350 May cause cancer.
- H370 Causes damage to nervous system and eyes

Precautionary Phrases
- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P260 Do not breath fumes/mist/vapors/spray.
- P264 Wash thoroughly after handling.
- P270 Do not eat, drink, or smoke when using this product.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 Immediately call a POISON CENTER or doctor/physician.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.
- P308 + P313 If exposed or concerned: Get medical advice/attention.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local and national regulations.

SECTION 2 NOTES:
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>CAS NO.</th>
<th>% WT</th>
<th>SARA 313 REPORTABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>&lt;4%</td>
<td></td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>&lt;1%</td>
<td></td>
</tr>
<tr>
<td>Monosodium Phosphate</td>
<td>7558-80-7</td>
<td>&lt;1%</td>
<td></td>
</tr>
<tr>
<td>Disodium Phosphate</td>
<td>7558-79-4</td>
<td>&lt;1%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INGREDIENT</th>
<th>OSHA PEL-TWA</th>
<th>ACGIH TLV TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>.75 ppm, 0.5 action</td>
<td>0.3 ppm Ceil</td>
<td>2 ppm</td>
</tr>
<tr>
<td>Methanol</td>
<td>260 ppm</td>
<td>200 ppm</td>
<td>250 ppm</td>
</tr>
<tr>
<td>Monosodium Phosphate</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Disodium Phosphate</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

SECTION 3 NOTES:

SECTION 4: FIRST AID MEASURES

EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation persists.

SKIN: Remove contaminated clothing immediately. Wash the affected areas with soap or mild detergent and large amounts of water for at least 15 minutes.

INGESTION: Never give anything by mouth to an unconscious person. Get medical attention immediately.

INHALATION: Move individual to fresh air immediately. If breathing is difficult, give oxygen. If breathing has stopped, administer artificial respiration. Get medical attention.

SECTION 4 NOTES: Immediate medical treatment is required for eye contact and ingestion.

SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS IN AIR, UPPER: 6.0% (methanol) (% BY VOLUME) LOWER: 73% (formaldehyde)

FLASH POINT:
- F: >200° F
- C: 93.3° C

METHOD USED: closed cup

AUTOIGNITION TEMPERATURE:
- F: 795° F
- C: 423° C

NFPA HAZARD CLASSIFICATION
- HEALTH: 2
- FLAMMABILITY: 1
- REACTIVITY: 0
- OTHER:

HMIS HAZARD CLASSIFICATION
- FLAMMABILITY:
- REACTIVITY:
- PROTECTION:

EXTINGUISHING MEDIA: Small fire – use DRY chemical powder. Large fire – use alcohol foam, water spray or fog

SPECIAL FIRE FIGHTING PROCEDURES: None known

UNUSUAL FIRE AND EXPLOSION HAZARDS: None known

HAZARDOUS DECOMPOSITION PRODUCTS: Strong vapors and irritants, carbon monoxide, carbon dioxide

SECTION 5 NOTES:

SECTION 6: ACCIDENTAL RELEASE MEASURES
ACCIDENTAL RELEASE MEASURES:
Small spill and leak: Dilute with water and mop, or absorb with an inert dry material and place in appropriate waste disposal container.
Large spill and leak: Keep away from heat and ignition sources. Stop leak if without risk. Absorb with DRY earth, sand, or other non-combustible material. Avoid skin and eye contact. Prevent entry into sewers, basements or confined areas; dike if needed. Ensure airborne concentrations of formaldehyde do not exceed published exposure limits. Additional protective equipment such as full-face respirator, full body suit and boots may be required. If airport concentrations of formaldehyde exceed 7.5 ppm, only use SCBA or supplied air respirators.

SECTION 6
NOTES:

SECTION 7: HANDLING AND STORAGE
HANDLING AND STORAGE: Avoid contact with eyes and skin. Do not breathe vapor or mist. Avoid prolonged or repeated contact with skin. If potential for splashing exists, protect skin by using sleeve protectors, aprons and face-shield. Immediately remove contaminated clothing. Wash thoroughly after handling. Keep containers closed and out of reach of children. Ground all equipment containing material. Store at room temperature.
OTHER PRECAUTIONS: In the United States, refer to OSHA 1910.1048 for requirements for handling/use of formaldehyde solutions.

SECTION 7 NOTES:

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION
ENGINEERING CONTROLS: Use exhaust ventilation or laboratory hood. Ensure that eyewash stations and quick drench showers are proximal to the workstation or tissue processor.
VENTILATION: Use exhaust ventilation or laboratory hood
RESPIRATORY PROTECTION: Approved/certified respirator if airborne concentrations exceed exposure limits
EYE PROTECTION: Goggles
SKIN PROTECTION: Latex or nitrile gloves
OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Laboratory coat
WORK HYGIENIC PRACTICES: Wash thoroughly after handling

EXPOSURE GUIDELINES:

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>US OEL</th>
<th>EU IOEL</th>
<th>UK OEL</th>
<th>Germany OEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>0.75 ppm TWA, 2 ppm STEL 0.3 ppm Ceiling ACGIH TLV</td>
<td>None Established</td>
<td>2 ppm TWA 2 ppm Ceiling</td>
<td>0.3 ppm TWA 0.6 ppm Ceiling</td>
</tr>
<tr>
<td>Methyl Alcohol</td>
<td>200 ppm TWA OSHA PEL 200 ppm TWA, 250 ppm STEL skin ACGIH TLV</td>
<td>200 ppm TWA skin</td>
<td>200 ppm TWA 250 ppm STEL</td>
<td>200 ppm TWA 800 ppm STEL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Biological Limit Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>None established.</td>
</tr>
<tr>
<td>Methyl Alcohol</td>
<td>Methanol in urine 15 mg/L, end of shift (ACGIH)</td>
</tr>
</tbody>
</table>

SECTION 8 NOTES:
SECTION 9: PHYSICAL AND CHEMICAL

PROPERTIES APPEARANCE: Colorless
ODOR: Pungent odor
PHYSICAL STATE: Liquid
pH AS SUPPLIED: Neutral
BOILING POINT:
   F: 212° F
   C: 100° C
MELTING POINT:
   F: N/A
   C: N/A
FREEZING POINT:
   F: -133° F
   C: -92° C
VAPOR PRESSURE (mmHg): 2.7 mmHg @
   F: 68° F
   C: 20° C
VAPOR DENSITY (AIR = 1): 1.04
SPECIFIC GRAVITY (H2O = 1): 1.022
EVAPORATION RATE: >1
SOLUBILITY IN WATER: Soluble in water
MOLECULAR WEIGHT: Mixture
VISCOSITY: Not established

SECTION 9 NOTES:

SECTION 10: STABILITY AND REACTIVITY

STABILITY: Product is stable under normal conditions of use.
CONDITIONS TO AVOID (STABILITY): N/A
INCOMPATIBILITY (MATERIAL TO AVOID): Reactive with oxidizing materials, acids and alkalis
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Strong vapors and irritants, carbon monoxide, carbon dioxide
HAZARDOUS POLYMERIZATION: No hazardous polymerization
CONDITIONS TO AVOID (POLYMERIZATION): N/A

SECTION 10 NOTES:
SECTION 11: TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION:
Reproductive Toxicity: Animal embryotoxin
Teratogenic and Mutagenic Effects: N/A

EMERGENCY OVERVIEW: DANGER! CONTAINS FORMALDEHYDE – POTENTIAL CANCER HAZARD. REPEATED OR PROLONGED EXPOSURE INCREASES RISK. HIGHLY TOXIC BY INHALATION AND IF SWALLOWED. IRRITATING TO EYES, RESPIRATORY SYSTEM AND SKIN. MAY CAUSE SENSITIZATION BY INHALATION OR SKIN CONTACT. RISK OF SERIOUS DAMAGE TO EYES. CORROSIVE; MAY CAUSE BURNS. KEEP CONTAINER CLOSED, USE WITH ADEQUATE VENTILATION. TARGET ORGANS: SKIN, EYES, RESPIRATORY TRACT. FOR LABORATORY USE ONLY.

ROUTES OF ENTRY: Skin/eye contact, inhalation, and ingestion.

POTENTIAL HEALTH EFFECTS
EYES: Hazardous in case of eye contact (irritant). May cause burns. May cause chemical conjunctivitis or corneal damage.
SKIN: Hazardous in case of skin contact (irritant, corrosive, sensitizer). Skin contact may produce burns. May cause skin sensitization which becomes evident upon re-exposure. Skin inflammation is characterized by itching, scaling, reddening or occasionally blistering.
INGESTION: May be fatal if swallowed. May cause burns to mouth, throat and stomach.
INHALATION: Hazardous in case of inhalation (lung irritant and sensitizer). Inhalation of spray mist may produce severe irritation of respiratory tract characterized by coughing, choking or shortness of breath. May cause asthmatic attacks due to allergic sensitization.

ACUTE HEALTH HAZARDS: See above, potential health effects.

CHRONIC HEALTH HAZARDS: Effects may be delayed. Formaldehyde has been associated with nasopharyngeal cancers. Repeated exposure may cause skin discoloration and nail decay. Inhalation may worsen conditions such as emphysema or bronchitis. Repeated skin exposure may cause defatting of the skin.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
Dermatitis, emphysema, bronchitis and conjunctivitis.

CARCINOGENICITY

Formaldehyde
NIOSH: Classified proven
ACGIH: Classified A2(suspected for human)
IARC: Classified A2(Probable for human)
NTP: Classified 2(Reasonably anticipated)
Methanol
Not classified as a human carcinogen.

SECTION 11 NOTES:

SECTION 12: ECOLOGICAL

INFORMATION ECOLOGICAL

INFORMATION:
TOXICITY:
Formaldehyde: LC50 Pimephales promelas (Fathead minnow) 24.1 mg/L/96 hr
Methanol: LC50 fathead minnows 29,400 mg/L/96hr; EC50 daphnia magna >10,000 mg/L/24 hr

SECTION 12 NOTES:

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Unused product: dispose as a regulated hazardous waste. Spent product or spill clean up-follow all provincial, local, state, and federal regulations.

RCRA HAZARD CLASS: U122

SECTION 13 NOTES:
SECTION 14: TRANSPORT

INFORMATION U.S. DEPARTMENT OF

TRANSPORTATION

PROPER SHIPPING NAME: NOT REGULATED FOR GROUND TRANSPORTATION
HAZARD
CLASS: ID
NUMBER:
Packing
GROUP: LABEL
STATEMENT:
ENVIRONMENTAL HAZARDS: No

AIR TRANSPORTATION

PROPER SHIPPING NAME: Aviation Regulated Liquid, n.o.s. (<4% Formaldehyde)
HAZARD CLASS: 9
ID NUMBER: UN3334
PACKING GROUP: III
LABEL STATEMENTS:

OTHER AGENCIES:
Canadian TDG: Not regulated / Environmental
Hazards: No EU ADR/RID: Not regulated /
Environmental Hazards: No IATA/ICAO: Not regulated /
Environmental Hazards: No

SECTION 14 NOTES:

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS
TSCA (TOXIC SUBSTANCE CONTROL ACT): All of the components are listed on the TSCA inventory.

CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT): The RQ for the product (based on the RQ for Formaldehyde (6% maximum)) of 100 lbs, is 1,666 lbs. Report spills required under federal, state, and local regulations.

SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): This product contains the following chemicals regulated under SARA Section 302: Formaldehyde <4%

311/312 HAZARD CATEGORIES: Acute Health, Chronic Health

313 REPORTABLE INGREDIENTS: Listed (Methanol, Formaldehyde)

CALIFORNIA PROPOSITION 65: This product contains the following chemicals which are known to the State of California to cause cancer, reproductive toxicity or birth defects (developmental toxicity): Formaldehyde <4% (cancer)

INTERNATIONAL REGULATIONS:
WHMIS CLASSIFICATION: Class D1, D-2-A

SECTION 15 NOTES:
SECTION 16: OTHER INFORMATION

PREPARATION INFORMATION: Prepared 12/2012, Rev. 1.

DISCLAIMER: This Safety Data Sheet has been prepared in accordance with the Globally Harmonized System for the Classification and Labelling of Chemicals (GHS). To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries makes any warranty of merchantability or any other warranty, expressed or implied, which respect to such information, and we assume no liability resulting from its use. In no event shall Avantik Biogroup 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 resulting from use of or reliance upon this information.