Material Safety Data Sheet
Product No. 18508 Formaldehyde, 37% Microfiltered (Formalin)
Issue Date (02-28-10)
Review Date (05-04-12)

Section 1: Product and Company Identification
Product Name: Formaldehyde, 37% Microfiltered (Formalin)
Synonym: Formalin, Paraformaldehyde
Company Name
Ted Pella, Inc., P.O. Box 492477, Redding, CA 96049-2477
Domestic Phone (800) 237-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
International Phone (01) (530) 243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)
Chemtrec Emergency Number 1-800-424-9300 24 hrs a day.

Section 2: Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Principle Hazardous Component(s) (chemical and common name(s)) (Cas. No)</th>
<th>%</th>
<th>OSHA PEL PPM</th>
<th>ACGIH TLV/STEL PPM</th>
<th>NTP</th>
<th>IARC</th>
<th>OSHA regulated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (50-00-0)</td>
<td>37-40</td>
<td>0.75</td>
<td>0.3/2</td>
<td>Yes</td>
<td>Group 1</td>
<td>Yes*</td>
</tr>
<tr>
<td>Methanol (67-56-1)</td>
<td>12</td>
<td>200</td>
<td>200/250</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water (7732-18-5)</td>
<td>48-51</td>
<td>ND</td>
<td>ND</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

*See OSHA Standard 29 CFR 1910.1048

Section 3: Hazard Identification
Emergency overview
Appearance: Clear liquid.
Immediate effects: Flammable liquid and vapor. Cancer hazard. Poison, maybe fatal or cause blindness if swallowed. Can not be made non-poisonous. Toxic by inhalation, in contact with skin and if swallowed. Causes burns by all exposure routes. Vapor harmful. May cause an allergic skin reaction. May cause central nervous system effects. Target organs: Gastrointestinal tract (GI), Central nervous system (CNS), Eyes, Respiratory system, Skin, Optic nerve, Heart, Liver, Kidney, Spleen, Blood.

Potential health effects
Primary Routes of entry: Inhalation, ingestion, skin and eye contact.
Signs and Symptoms of Overexposure: ND
Eyes: Vapors cause irritation to the eyes with redness, pain, and blurred vision. Corrosive to eye. Causes eye burns.
Skin: Irritating to skin with redness, pain, and possibly burns. Toxic, skin absorption may occur with symptoms paralleling those from ingestions.

Ingestion: Toxic by ingestion. Can cause severe abdominal pain, violent vomiting, headache, and diarrhea. Larger doses may produce decreased body temperature, pain in the digestive tract, shallow respiration, weak irregular pulse, unconsciousness and death. Methanol affects the optic nerve and may cause blindness.

Inhalation: May cause sore throat, coughing, and shortness of breath. Causes irritation and sensitization of the respiratory tract. May be fatal in high concentrations.

Chronic Exposure: Extreme or prolonged exposure will induce tearing of eye tissue, coughing, difficulty in breathing, nausea, headache, or weakness.

Chemical Listed As Carcinogen Or Potential Carcinogen: Formaldehyde (50-00-0), NTP; Reasonably Anticipated. IARC; Group 1. OSHA; 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.

See Toxicological Information (Section 11)

**Potential environmental effects**

See Ecological Information (Section 12)

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**Section 4: First Aid Measures**

**If accidental overexposure is suspected**

Eye(s) Contact: Flush eyes with water for at least 15 minutes. Get medical attention.

Skin Contact: Wash affected area with copious amounts of water.

Inhalation: Remove to fresh air. Give oxygen or artificial respiration, as needed. Get medical attention.

Ingestion: If the victim is conscious, dilute, inactivate, or absorb the ingested formaldehyde by giving milk, activated charcoal, or water. Keep affected person warm and at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips. (Refer: OSHA Standard 29 CFR 1910.1048A)

Note to physician

Treatment: ND

Medical Conditions generally Aggravated by Exposure: Persons with pre-existing skin disorders or eye problems or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance. Previously exposed persons may have an allergic reaction to future exposures.

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**Section 5: Fire Fighting Measures**

Flash Point: 60 °C (140°F) Method: Closed cup

Flammable Limits: LEL: 7% UEL: 73% (In air by % volume)

Auto-ignition point: 300 °C (572°F).

Fire Extinguishing Media: Water, carbon dioxide, dry chemical powder, alcohol foam.

Special Fire Fighting Procedures: Firefighters must wear self-contained breathing apparatus and fully protective equipment. Use water spray to disperse vapors and dilute spills to non-flammable mixtures.

Unusual Fire and Explosion Hazards: Vapors may form explosive mixtures with air.
Hazardous combustion products: Carbon oxides.
DOT Class: Flammable, corrosive.

Section 6: Accidental Release Measures
Steps to be Taken in Case Material is Released or Spilled: Wear self-contained breathing apparatus, rubber boots and gloves. Absorb on sand, vermiculite, sawdust and put in a container for future disposal. Wash and ventilate spill site after pickup is complete. Dissolve or mix the material with a combustible. Dispose of insolvent and burn in an EPA licensed chemical incinerator equipped with an afterburner and scrubber. Waste Disposal Methods: Dispose of waste according to Federal, State and Local Regulations.

Section 7: Handling and Storage
Precautions to be Taken in Handling and Storage: Keep storage container tightly closed. Avoid contact with skin and eyes. Do not inhale. Wear protective gloves and goggles. Storage Temperature: Room temperature. Storage Pressure: ND

Section 8: Exposure Controls / Personal Protection
Engineering Controls
Ventilation required: Mechanical ventilation. Use chemical fume hood.

Personal Protection Equipment
Respiratory protection: OSHA/NIOSH approved respirator.
Protective gloves: Rubber.
Skin protection: Protective clothing.
Eye protection: Tightly fitting safety goggles.
Additional clothing and/or equipment: Safety shower and eye bath.

Exposure Guidelines
See Composition/Information on Ingredients (Section2)

Section 9 Physical and Chemical Properties
Appearance and Physical State: Water, clear liquid.
Odor (threshold): Characteristic odor.
Specific Gravity (H₂O=1): 1.08-1.13
Vapor Pressure (mm Hg): 17-20 mmHg @ 20 °C
Vapor Density (air=1): ~1
Percent Volatile by volume: 98%

Evaporation Rate (butyl acetate=1): >1
Boiling Point: >200 °F
Freezing point / melting point: ND
pH: 2.8-4
Solubility in Water: Complete
Molecular Weight: NA (Mixture)
Section 10: Stability and Reactivity
Stability: Stable under normal conditions.
Conditions to Avoid: High temperatures.
Materials to Avoid (Incompatibility): Strong oxidizing agents, strong bases, nitriles, acids, isocyanates, acid anhydrides, Metals, acid chlorides, phenol.
Hazardous Decomposition Products: Carbon monoxides, Carbon dioxides.
Hazardous Polymerization: Not under normal conditions

Section 11: Toxicological Information
Results of component toxicity test performed: Formaldehyde (50-0-0): Oral (Rat) LD50: 100 mg/kg, Inhalation (Rat) LC50: 203mg/M³. Irritation Data, Eye (Rabbit): 750ug, severe. Investigated as a tumorigenic, mutagen and reproductive effectors.
Human experience: For more information visit the websites formaldehyde.org or cancer.gov.
This product does contain compounds listed by NTP or IARC or regulated by OSHA as a carcinogen.

Section 12: Ecological Information
Ecological Information: Formaldehyde (50-0-0): Persistence and degradability:
Biodegradability Biotic/Aerobic (Formaldehyde) Result: 90 % - Readily biodegradable.
Bioaccumulative potential: Not expected to significantly bioaccumulate.
This material is expected to be Toxic to aquatic life. The LC50, 96 hr values for fish are between 10 to 100 mg/L (for formaldehyde and methanol).
Chemical Fate Information: NIF

Section 13 Disposal Considerations
Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with proper authorities before disposal.

Section 14: Transportation Information
US DOT Information: Proper shipping name: Formaldehyde solutions, flammable
Hazard Class: 3
Subsidiary Hazard Class: 8
Packaging group: III
UN Number: UN1198
IATA: Proper shipping name: Formaldehyde solutions, flammable
Hazard Class: 3
Subsidiary Hazard Class: 8
Packaging group: III
UN Number: UN1198
IMO: Proper shipping name: Formaldehyde solutions, flammable
Hazard Class: 3
Subsidiary Hazard Class: 8
UN Number: UN1198
Packaging group: III
Section 15: Regulatory Information
United States Federal Regulations
SARA: Acute Health Hazard; Yes. Chronic Health Hazard; Yes. Fire Hazard; Yes.
Sudden Release of Pressure; No. Reactive Hazard; No.
SARA Title III: This material contains Formaldehyde (50-00-0) and Methanol (67-56-1)
which is subject to the reporting requirements of Section 313. Section 302: Formaldehyde
(50-00-0) TPQ = 500 lbs.
RCRA: Formaldehyde (50-00-0) listed in U-series.
TSCA: Formaldehyde (50-00-0) and Methanol (67-56-1) is listed in the TSCA inventory.
Section 12b: None of components are listed.
CERCLA: Formaldehyde (50-00-0) RQ = 100 lbs (45.4 Kg). Methanol (67-56-1) RQ =
5000 lbs (2270 Kg).
State Regulations
California Proposition 65: Warning! This product is known by the state of California to
cause cancer. Contains Formaldehyde (50-00-0). Prop 65 NSRL: 40 µg/day.
International Regulations
Canada WHMIS: Materials in this product are listed in the CPR inventory list.
Europe EINECS Numbers: Formaldehyde (50-00-0) EC# 200-001-8. Methanol (67-56-1)
EC# 200-659-6.
Section 16: Other Information
Label Information: Flammable, Corrosive, Cancer Hazard
European Risk and Safety Phrases: Risk: R10, R23, R24, R25, R34, R43, R45. Safety:
S26, S36, S37, S38, S45, S51.
European symbols needed: TC,
Canadian WHMIS Symbols: B3, D1A, D2A, D2B, E
NFPA Hazard Rating: Health: 3; Flammability: 2; Reactivity: 0
(0=least, 1=Slight, 2=Moderate, 3=High, 4=Extreme)
Abbreviations used in this document
NE= Not established
NA= Not applicable
NIF= No Information Found
ND= No Data

Disclaimer
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herein. Users should independently determine the suitability and completeness of
information from all sources. While this data is presented in good faith and believed to be
accurate, it should be considered only as a supplement to other information gathered by
the user. It is the User's responsibility to assure the proper use and disposal of these
materials as well as the safety and health of all personnel who may work with or otherwise come in contact with these materials.

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