1. Identification

Product identifier Tissue-Tek VIP® Fixative
Other means of identification
Product code 5989, 5990, and 5991
Recommended use Formalin Fixative
Recommended restrictions None known.

Manufacturer/Importer/Supplier/Distributor information
Manufacturer/Supplier Sakura Finetek USA Inc.
Address 1750 West 214th St.
Torrance, CA 90501
Telephone 1-310-972-7800
Emergency phone number CHEMTREC: 1-800-424-9300
Email SDSsupport@sakuraus.com

2. Hazard(s) identification

Physical hazards Flammable liquids Category 4
Health hazards Acute toxicity, oral Category 4
Sensitization, skin Category 1
Germ cell mutagenicity Category 2
Carcinogenicity Category 1A
Specific target organ toxicity, single exposure Category 2 (optic nerve, CNS)

OSHA defined hazards Not classified.

Label elements

Signal word Danger
Hazard statement Combustible liquid. Harmful if swallowed. May cause an allergic skin reaction. Suspected of causing genetic defects. May cause cancer. May cause damage to organs (optic nerve, CNS).

Precautionary statement
Prevention Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from flames and hot surfaces. - No smoking. Do not breathe mist or vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves/protective clothing/eye protection/face protection.
Response If swallowed: Call a poison center/doctor if you feel unwell. If on skin: Wash with plenty of water. If exposed or concerned: Get medical advice/attention. Rinse mouth. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse. In case of fire: Use appropriate media to extinguish.
Storage Store in a well-ventilated place. Keep cool. Store locked up.
Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Hazard(s) not otherwise classified (HNOC) None known.

3. Composition/information on ingredients

Mixtures
### 4. First-aid measures

#### Inhalation
Move to fresh air. Call a physician if symptoms develop or persist.

#### Skin contact
Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders: Seek medical attention and take along these instructions.

#### Eye contact
Rinse with water. Get medical attention if irritation develops and persists.

#### Ingestion
Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn’t get into the lungs. Get medical advice/attention if you feel unwell.

#### Most important symptoms/effects, acute and delayed
Visual disturbances including blurred vision. May cause an allergic skin reaction. Dermatitis. Rash.

#### Indication of immediate medical attention and special treatment needed
Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

#### General information
If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before reuse.

### 5. Fire-fighting measures

#### Suitable extinguishing media
Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

#### Unsuitable extinguishing media
None known.

#### Specific hazards arising from the chemical
During fire, gases hazardous to health may be formed. The product is combustible, and heating may generate vapors which may form explosive vapor/air mixtures. Vapors may travel considerable distance to a source of ignition and flash back.

#### Special protective equipment and precautions for firefighters
Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

#### Fire fighting equipment/instructions
Move containers from fire area if you can do so without risk.

#### Specific methods
Use standard firefighting procedures and consider the hazards of other involved materials.

#### General fire hazards
Combustible liquid.

### 6. Accidental release measures

#### Personal precautions, protective equipment and emergency procedures
Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

#### Methods and materials for containment and cleaning up
Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

#### Environmental precautions
Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

### 7. Handling and storage

#### Precautions for safe handling
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from open flames, hot surfaces and sources of ignition. Provide adequate ventilation. Do not breathe mist or vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Do not taste or swallow. When using, do not eat, drink or smoke. Should be handled in closed systems, if possible. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Observe good industrial hygiene practices.
Keep away from heat, sparks and open flame. Store in a cool, dry place out of direct sunlight. Store in original tightly closed container. Store in a well-ventilated place. Keep in an area equipped with sprinklers. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS 50-00-0)</td>
<td>STEL</td>
<td>2 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>0.75 ppm</td>
</tr>
</tbody>
</table>

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td>PEL</td>
<td>260 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>200 ppm</td>
</tr>
</tbody>
</table>

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS 50-00-0)</td>
<td>Ceiling</td>
<td>0.3 ppm</td>
</tr>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td>STEL</td>
<td>250 ppm</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>200 ppm</td>
</tr>
</tbody>
</table>

US. NIOSH: Pocket Guide to Chemical Hazards

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS 50-00-0)</td>
<td>Ceiling</td>
<td>0.1 ppm</td>
</tr>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td>STEL</td>
<td>325 mg/m3</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>250 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>260 mg/m3</td>
</tr>
</tbody>
</table>

|                 |       | 200 ppm |

Biological limit values

ACGIH Biological Exposure Indices

<table>
<thead>
<tr>
<th>Components</th>
<th>Value</th>
<th>Determinant</th>
<th>Specimen</th>
<th>Sampling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td>15 mg/l</td>
<td>Methanol</td>
<td>Urine</td>
<td>*</td>
</tr>
</tbody>
</table>

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation
Methanol (CAS 67-56-1) Can be absorbed through the skin.

US - Minnesota Haz Subs: Skin designation applies
Methanol (CAS 67-56-1) Skin designation applies.

US - Tennessee OELs: Skin designation
Methanol (CAS 67-56-1) Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation
Methanol (CAS 67-56-1) Can be absorbed through the skin.

US. NIOSH: Pocket Guide to Chemical Hazards
Methanol (CAS 67-56-1) Can be absorbed through the skin.

Appropriate engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

Eye/face protection
Wear safety glasses with side shields (or goggles). Risk of splashes: Face shield is recommended.
Skin protection
Wear appropriate chemical resistant gloves. Suitable gloves can be recommended by the glove supplier.

Hand protection
Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Other
Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.

Respiratory protection
Chemical respirator with organic vapor cartridge and full facepiece.

Thermal hazards
Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations
When using do not smoke. Keep away from food and drink. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance

Physical state
Liquid.

Form
Clear liquid.

Color
Clear and colorless.

Odor
Not available.

Odor threshold
Not available.

pH
6.8 - 7.4

Melting point/freezing point
32 °F (0 °C)

Initial boiling point and boiling range
212 °F (100 °C)

Flash point
185.0 °F (85.0 °C) TAG Closed Cup

Evaporation rate
Essentially same as water

Flammability (solid, gas)
Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)
Not available.

Flammability limit - upper (%)
Not available.

Explosive limit - lower (%)
Not available.

Explosive limit - upper (%)
Not available.

Vapor pressure
Essentially same as water

Vapor density
Not available.

Relative density
1.09

Solubility(ies)

Solubility (water)
Complete

Partition coefficient (n-octanol/water)
Not available.

Auto-ignition temperature
Not available.

Decomposition temperature
Not available.

Viscosity
Not available.

Other information

Explosive properties
Not explosive.

Oxidizing properties
Not oxidizing.

10. Stability and reactivity

Reactivity
The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability
Material is stable under normal conditions.

Possibility of hazardous reactions
No dangerous reaction known under conditions of normal use.

Conditions to avoid
Contact with incompatible materials. Avoid heat, sparks, open flames and other ignition sources. Avoid temperatures exceeding the flash point.
Incompatible materials
Avoid oxidizing agents and alkalis. Reaction with hydrochloric acid may form bis-chloromethyl ether, an OSHA regulated carcinogen.

Hazardous decomposition products
May form carbon dioxide, carbon monoxide, and formaldehyde when heated to decomposition.

11. Toxicological information

Information on likely routes of exposure
- **Inhalation**: May cause damage to organs by inhalation. Prolonged inhalation may be harmful.
- **Skin contact**: May cause an allergic skin reaction.
- **Eye contact**: Direct contact with eyes may cause temporary irritation.
- **Ingestion**: Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics
- **Inhalation**: Visual disturbances including blurred vision. May cause an allergic skin reaction. Dermatitis. Rash.
- **Skin contact**: Prolonged skin contact may cause temporary irritation.
- **Eye contact**: Direct contact with eyes may cause temporary irritation.
- **Serious eye damage/eye irritation**: Not classified.

Information on toxicological effects

Acute toxicity
Harmful if swallowed. May cause an allergic skin reaction.

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS 50-00-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>0.82 mg/l, 0.5 Hours</td>
</tr>
<tr>
<td>Oral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>100 mg/kg</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation
Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation
Direct contact with eyes may cause temporary irritation.

Respiratory or skin sensitization
- **ACGIH sensitization**: Formaldehyde (CAS 50-00-0) - Sensitizer.
- **Respiratory sensitization**: Not a respiratory sensitizer.
- **Skin sensitization**: May cause an allergic skin reaction.
- **Germ cell mutagenicity**: Suspected of causing genetic defects.
- **Carcinogenicity**: May cause cancer.

IARC Monographs. Overall Evaluation of Carcinogenicity
- Formaldehyde (CAS 50-00-0) - 1 Carcinogenic to humans.

NTP Report on Carcinogens
- Formaldehyde (CAS 50-00-0) - Known To Be Human Carcinogen.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)
- Formaldehyde (CAS 50-00-0) - Cancer

Reproductive toxicity
Due to inconclusive data the classification is not possible. Methanol has produced fetotoxicity in rats and teratogenicity in mice exposed by inhalation to high concentrations that did not produce significant maternal toxicity. Methanol (CAS 67-56-1) is in the California Proposition 65 list of chemicals as a developmental toxin.

Specific target organ toxicity - single exposure
May cause damage to organs (optic nerve).

Specific target organ toxicity - repeated exposure
Not classified.

Aspiration hazard
Not an aspiration hazard.

Chronic effects
Prolonged inhalation may be harmful. Prolonged exposure may cause chronic effects.

12. Ecological information

Ecotoxicity
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS 50-00-0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia pulex) 4.3 - 7.8 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Striped bass (Morone saxatilis) 10.302 - 16.743 mg/l, 96 hours</td>
</tr>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crustacea</td>
<td>EC50</td>
<td>Daphnia magna &gt; 10000 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Bluegill (Lepomis macrochirus) 15400 mg/l, 96 hours</td>
</tr>
</tbody>
</table>

**Persistence and degradability**
No data is available on the degradability of this product.

**Bioaccumulative potential**

<table>
<thead>
<tr>
<th>Partition coefficient n-octanol / water (log Kow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde (CAS 50-00-0)</td>
</tr>
<tr>
<td>Methanol (CAS 67-56-1)</td>
</tr>
</tbody>
</table>

**Mobility in soil**
This product is water soluble and may disperse in soil.

**Other adverse effects**
No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

### 13. Disposal considerations

**Disposal instructions**
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Local disposal regulations**
Dispose in accordance with all applicable regulations.

**Hazardous waste code**
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products**
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging**
Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. Transport information

**DOT**
- **UN number**: n/a
- **UN proper shipping name**: Formalin solutions with less than 25% formaldehyde are not regulated by DOT
- **Transport hazard class(es)**
  - **Class**: n/a
  - **Subsidiary risk**: -
  - **Label(s)**: n/a
- **Packing group**: n/a
- **Environmental hazards**: No
- **Marine pollutant**: No
- **Special precautions for user**
  - Read safety instructions, SDS and emergency procedures before handling. This material is not regulated under 49 CFR if in a container of 119 gallon capacity or less.
  - **Special provisions**: IB3, T1, T4, TP1
  - **Packaging exceptions**: 150
  - **Packaging non bulk**: 203
  - **Packaging bulk**: 241

**IATA**
Not regulated as dangerous goods.

**IMDG**
Not regulated as dangerous goods.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not applicable.
15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Formaldehyde (CAS 50-00-0)
- Cancer
- Skin sensitization
- Respiratory sensitization
- Eye irritation
- Skin irritation
- Respiratory tract irritation
- Acute toxicity
- Flammability

CERCLA Hazardous Substance List (40 CFR 302.4)

Formaldehyde (CAS 50-00-0) LISTED
Methanol (CAS 67-56-1) LISTED

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories
- Immediate Hazard - Yes
- Delayed Hazard - Yes
- Fire Hazard - Yes
- Pressure Hazard - No
- Reactivity Hazard - No

SARA 302 Extremely hazardous substance

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>Reportable quantity (pounds)</th>
<th>Threshold planning quantity (pounds)</th>
<th>Threshold planning quantity, lower value (pounds)</th>
<th>Threshold planning quantity, upper value (pounds)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>100</td>
<td>500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SARA 311/312 Hazardous chemical

Yes

SARA 313 (TRI reporting)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS number</th>
<th>% by wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>4</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>1</td>
</tr>
</tbody>
</table>

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Formaldehyde (CAS 50-00-0)
Methanol (CAS 67-56-1)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Formaldehyde (CAS 50-00-0)

Safe Drinking Water Act (SDWA)

Not regulated.

US state regulations

US. Massachusetts RTK - Substance List

Formaldehyde (CAS 50-00-0)
Methanol (CAS 67-56-1)

US. New Jersey Worker and Community Right-to-Know Act

Formaldehyde (CAS 50-00-0)
Methanol (CAS 67-56-1)

US. Pennsylvania Worker and Community Right-to-Know Law

Formaldehyde (CAS 50-00-0)
Methanol (CAS 67-56-1)

US. Rhode Island RTK

Formaldehyde (CAS 50-00-0)
Methanol (CAS 67-56-1)
US. California Proposition 65
WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Formaldehyde (CAS 50-00-0)
Methanol (CAS 67-56-1)

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date 1-DEC-2008
Revision date 27-MAY-2016
Version # G

Further information HMIS® is a registered trade and service mark of the American Coatings Association (ACA).

HMIS® ratings Health: 2*
Flammability: 1
Physical hazard: 0

NFPA ratings

Disclaimer Sakura Finetek USA Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user’s responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.