1. Product and Company Identification

Material name: ThinPrep® CytoLyt Solution

Version #: 002
Issue date: 09-August-2013
Revision date: -
Supersedes date: -
CAS #: Mixture
MSDS Number: 85092-001 Rev. 002
Product use: A methanol based, buffered preservative solution used to support cells during transport and slide preparation.

Manufacturer information
Manufacturer: Hologic Inc.
Address: 250 Campus Drive
Marlborough, Massachusetts, 01752 USA
Telephone: (800) 442-9892
Email: sds@hologic.com

2. Hazards Identification

Physical state: Liquid.
Appearance: Clear, colorless liquid.
Emergency overview: Flammable liquid and vapor. May be fatal if swallowed. Harmful if inhaled or absorbed through skin. Causes skin and eye irritation. May cause central nervous system effects.

Potential health effects
Routes of exposure: Ingestion. Inhalation. Skin contact. Eye contact.
Eyes: Causes eye irritation.
Skin: Causes skin irritation. Harmful if absorbed through skin.
Inhalation: Harmful if inhaled. May cause central nervous system effects.
Ingestion: May be fatal if swallowed. Even small amounts (30-250 ml methanol) may be fatal. Symptoms are stomach ache, nausea, vomiting, dullness, visual disorder and blindness.

Target organs: Central nervous system. Eyes. Respiratory system. Skin.
Chronic effects: Methanol: Human exposure to methanol may result in illness, systemic poisoning, blindness, optic nerve damage and perhaps death, after being ingested, absorbed through the skin or inhaled. Death due to cardiac or respiratory failure has been reported in some cases from consumption of as little as 30 mls.

Signs and symptoms: Prolonged and repeated exposure to high vapor concentrations, skin absorption or ingestion of methanol may result in visual disturbances, metabolic acidosis, headache, giddiness, nausea, insomnia, gastric disturbance, dizziness, and slow breathing. There have been severe cases reported of blindness, coma and death due to the ingestion of methanol.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>40 - 70</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>20 - 50</td>
</tr>
</tbody>
</table>

Composition comments: All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
4. First Aid Measures

First aid procedures

Eye contact
Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids wide apart. If irritation persists: Continue flushing during transport to hospital. Take along these instructions.

Skin contact
Take off immediately all contaminated clothing. Immediately flush thoroughly with water for at least 15 minutes. Get medical attention immediately. Wash contaminated clothing before reuse.

Inhalation
Remove victim to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Get medical attention immediately.

Ingestion
Do not induce vomiting without advice from medical personnel. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Notes to physician
Treat for CNS depression and possible renal failure. Provide general supportive measures and treat symptomatically. Symptoms may be delayed. Ethanol and fomepizole are effective antidotes for methanol poisoning, although fomepizole is preferred.

General advice
Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties
Flammable liquid and vapor. By heating and fire, toxic vapors/gases may be formed. Heat may cause the containers to explode.

Extinguishing media
Suitable extinguishing media
Dry chemical, foam, carbon dioxide. Water may be an ineffective extinguishing medium.

Unsuitable extinguishing media
Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters
Specific hazards arising from the chemical
Heating will generate vapors which may form explosive vapor/air mixtures.

Protective equipment and precautions for firefighters
Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Fire fighting equipment/instructions
Evacuate area. Move containers from fire area if you can do it without risk. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Use standard firefighting procedures and consider the hazards of other involved materials. Use water spray to cool unopened containers.

Specific methods
Keep unnecessary personnel away. Use standard firefighting procedures and consider the hazards of other involved materials.

Hazardous combustion products
Carbon monoxide. Carbon dioxide.

6. Accidental Release Measures

Personal precautions
Ensure adequate ventilation. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Wear suitable protective clothing, gloves and eye/face protection. Wear protective clothing as described in Section 8 of this safety data sheet. Follow standard emergency procedure.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Avoid discharge to the aquatic environment.

Methods for containment
ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Collect spillage. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up
Immediately contact emergency personnel. Remove sources of ignition. Beware of the explosion danger. Absorb spillage with non-combustible, absorbent material. Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use.

Other information
Clean up in accordance with all applicable regulations.
7. Handling and Storage

Handling
Use only with adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. Avoid contact with eyes, skin, and clothing. Avoid inhalation of vapors. The product is highly flammable, and explosive vapor/air mixtures may be formed even at normal room temperatures. Ground container and transfer equipment to eliminate static electric sparks. Use non-sparking hand tools and explosion-proof electrical equipment. Vapors are heavier than air and may travel along the floor and in the bottom of containers. Avoid release to the environment.

Storage

Storage temperature:
Without cytologic sample: 59-86ºF (15-30ºC)
With cytologic samples: 39-99ºF (4-37ºC)

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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. 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>

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td>STEL</td>
<td>328 mg/m3</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>250 ppm</td>
</tr>
</tbody>
</table>

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td>STEL</td>
<td>328 mg/m3</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>250 ppm</td>
</tr>
</tbody>
</table>

Mexico. Occupational Exposure Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol (CAS 67-56-1)</td>
<td>STEL</td>
<td>310 mg/m3</td>
</tr>
<tr>
<td></td>
<td>TWA</td>
<td>250 ppm</td>
</tr>
</tbody>
</table>
Exposure guidelines

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

Canada - British Columbia OELs: Skin designation
Methanol (CAS 67-56-1) Can be absorbed through the skin.

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

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

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

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

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

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

US - Tennesse 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.

US. OSHA Table Z-1-A (29 CFR 1910.1000)
Methanol (CAS 67-56-1) Can be absorbed through the skin.

Engineering controls
Observe occupational exposure limits and minimize the risk of exposure. Explosion-proof general and local exhaust ventilation. Use explosion-proof equipment.

Personal protective equipment
Eye / face protection
Wear approved safety goggles.

Skin protection
Wear protective gloves. Be aware that the liquid may penetrate the gloves. Frequent change is advisable. Suitable gloves can be recommended by the glove supplier. Wear appropriate clothing to prevent repeated or prolonged skin contact.

Respiratory protection
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. In case of inadequate ventilation or risk of inhalation of vapors, use suitable respiratory equipment.

General hygiene considerations
When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practices. Launder contaminated clothing before reuse. Observe any medical surveillance requirements.

9. Physical & Chemical Properties

Appearance
Clear, colorless liquid.

Physical state
Liquid.

Form
Liquid.

Color
Colorless.

Odor
Alcohol.

Odor threshold
Not available.

pH
7

Vapor pressure
127 mmHg

Vapor density
1.1 (Air = 1)

Boiling point
148 °F (64.44 °C)

Melting point/Freezing point
9.7 °F (-12.39 °C)

Solubility (water)
Miscible

Specific gravity
0.97

Flash point
109.0 °F (42.8 °C) Closed Cup
Flammability limits in air, upper, % by volume 36 %
Flammability limits in air, lower, % by volume 6.7 %
Auto-ignition temperature 725 °F (385 °C)
Evaporation rate > 1
Percent volatile > 99 %

10. Chemical Stability & Reactivity Information
Chemical stability Material is stable under normal conditions.
Conditions to avoid Heat, flames and sparks. Avoid temperatures exceeding the flash point. Contact with incompatible materials. Confined space.
Hazardous decomposition products Carbon oxides. Formaldehyde.
Possibility of hazardous reactions Hazardous polymerization does not occur.

11. Toxicological Information
Toxicological data
Components Species Test Results
Methanol (CAS 67-56-1)  
**Acute**  
_Dermal_  
LD50 Rabbit 15800 mg/kg
_Inhalation_  
LC50 Rat 87.5 mg/l, 6 Hours
Oral LD50 Rat 5628 mg/kg
Sensitization Not a skin sensitizer.
Acute effects May cause central nervous system effects. May be fatal if swallowed. Harmful if inhaled or absorbed through skin. Causes skin and eye irritation.
Chronic effects Methanol: Human exposure to methanol may result in illness, systemic poisoning, blindness, optic nerve damage and perhaps death, after being ingested, absorbed through the skin or inhaled. Death due to cardiac or respiratory failure has been reported in some cases from consumption of as little as 30 mls.
Carcinogenicity Not classified.
Epidemiology No data available.
Mutagenicity No data available.
Reproductive effects The information located does not suggest that methanol is a reproductive toxin.
Symptoms and target organs Prolonged and repeated exposure to high vapor concentrations, skin absorption or ingestion of methanol may result in visual disturbances, metabolic acidosis, headache, giddiness, nausea, insomnia, gastric disturbance, dizziness, and slow breathing. There have been severe cases reported of blindness, coma and death due to the ingestion of methanol.

12. Ecological Information
Ecotoxicological data
Components Species Test Results
Methanol (CAS 67-56-1)  
_Aquatic_  
Crustacea EC50 Water flea (Daphnia magna) > 10000 mg/l, 48 hours
Fish LC50 Fathead minnow (Pimephales promelas) > 100 mg/l, 96 hours
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.
Environmental effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Persistence and degradability
No data available.

Bioaccumulation / Accumulation
No data available.

Partition coefficient
Methanol (CAS 67-56-1) -0.77

Mobility in environmental media
The product is water soluble and may spread in water systems. The product is a volatile substance, which may spread in the atmosphere.

13. Disposal Considerations

Waste codes
U154: Waste Methyl alcohol

US RCRA Hazardous Waste U List: Reference
Methanol (CAS 67-56-1) U154

Disposal instructions
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not discharge into drains, water courses or onto the ground. Dispose in accordance with all applicable regulations.

Waste from residues / unused products
Do not discharge into rivers, lakes, mountains, etc. because the product may affect the environment.

Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information

DOT
Basic shipping requirements:
UN number UN1993
Proper shipping name Flammable liquids, n.o.s. (Methanol Solution)
Hazard class III
Packing group
Additional information:
Special provisions B1, B52, IB3, T4, TP1, TP29
Packaging exceptions 150
Packaging non bulk 203
Packaging bulk 242

IATA
UN number UN1993
UN proper shipping name Flammable liquid, n.o.s. (Methanol Solution)
Transport hazard class(es) 3
Packing group III
ERG code 3L

IMDG
UN number UN1993
UN proper shipping name FLAMMABLE LIQUID, N.O.S. (Methanol Solution)
Transport hazard class(es) 3
Packing group III
EmS F-E, S-E

TDG
UN number UN1993
Proper shipping name FLAMMABLE LIQUID, N.O.S. (Methanol Solution)
Hazard class 3
Packing group III
Marine pollutant D
Special provisions 16

15. Regulatory Information

US federal regulations
TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
Not regulated.
Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List
Methanol (CAS 67-56-1)
US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration
Methanol (CAS 67-56-1) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance
Methanol (CAS 67-56-1) Listed.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)
Methanol: 5000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

<table>
<thead>
<tr>
<th>Hazard categories</th>
<th>Immediate Hazard</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delayed Hazard</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pressure Hazard</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Reactivity Hazard</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Section 302 extremely hazardous substance (40 CFR 355, Appendix A)
No

SARA 311/312 Hazardous chemical
Yes

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)
Not controlled

Canadian regulations
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status
Controlled

WHMIS classification
B2 - Flammable Liquids
D1B - Immediate/Serious-TOXIC
D2A - Other Toxic Effects-VERY TOXIC

WHMIS labeling

Inventory status

<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>

*“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).

State regulations

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

US - California Hazardous Substances (Director's): Listed substance
Methanol (CAS 67-56-1) Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance
Methanol (CAS 67-56-1) Listed.
US - California Proposition 65 - CRT: Listed date/Developmental toxin

US - New Jersey RTK - Substances: Listed substance
Methanol (CAS 67-56-1) Listed.

US. Massachusetts RTK - Substance List
Methanol (CAS 67-56-1) Listed.

US. New Jersey Worker and Community Right-to-Know Act
Methanol (CAS 67-56-1) 500 lbs

US. Pennsylvania RTK - Hazardous Substances
Methanol (CAS 67-56-1) Listed.

Mexico regulations
This safety data sheet was prepared in accordance with the Official Mexican Standard (NOM-018-STPS-2000).

16. Other Information

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

NFPA Ratings

Disclaimer
THE INFORMATION CONTAINED IN THIS DOCUMENT RELATES TO THIS SPECIFIC MATERIAL AND MAY NOT BE VALID IF THE MATERIAL IF USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS. IT IS THE USER'S RESPONSIBILITY TO SATISFY ONESELF AS TO THE SUITABILITY AND COMPLETENESS OF THIS INFORMATION FOR HIS OR HER OWN PARTICULAR USE.