1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

<table>
<thead>
<tr>
<th>Ashland</th>
<th>Regulatory Information Number</th>
<th>1-800-325-3751</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.O. Box 2219</td>
<td>Telephone</td>
<td>614-790-3333</td>
</tr>
<tr>
<td>Columbus, OH 43216</td>
<td>Emergency telephone number</td>
<td>1-800-ASHLAND (1-800-274-5263)</td>
</tr>
</tbody>
</table>

Product name: Liquid Germall™ PLUS preservative
Product code: 828441
Product Use Description: Preservative

2. HAZARDS IDENTIFICATION

Emergency Overview
Appearance: liquid, colourless

CAUTION! MAY CAUSE EYE IRRITATION.

Potential Health Effects

Exposure routes
- Inhalation, Skin absorption, Skin contact, Eye Contact, Ingestion

Eye contact
- Can cause eye irritation. Symptoms include stinging, tearing, redness, and swelling of eyes.

Skin contact
- Unlikely to cause skin irritation or injury.

Ingestion
- Swallowing small amounts of this material during normal handling is not likely to cause harmful effects. Swallowing large amounts may be harmful.

Inhalation
- It is possible to breathe this material under certain conditions of handling and use (for example, during heating, spraying, or stirring). Breathing small amounts of this material during normal handling is not likely to cause harmful effects. Breathing large amounts may be harmful. Symptoms are not expected at air concentrations below the recommended exposure limits, if applicable (see Section 8.).

Aggravated Medical Condition
- Preexisting disorders of the following organs (or organ systems) may be aggravated by exposure to this material: lung (for example, asthma-like conditions), Kidney

Symptoms
Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include: irritation (nose, throat, airways)

Target Organs
Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: kidney damage

Carcinogenicity
This material is not listed as a carcinogen by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or the Occupational Safety and Health Administration (OSHA).

Reproductive hazard
Propylene glycol was not harmful to the fetus in laboratory animal studies.

Other information
Propylene glycol may be absorbed in potentially harmful amounts when applied in large quantities to severe burns (second or third degree) over large areas of the body as part of a cream or other topical application. Absorption under such circumstances can elevate serum osmolality and may result in osmotic shock.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Hazardous Components</th>
<th>CAS-No. / Trade Secret No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROPYLENE GLYCOL</td>
<td>57-55-6</td>
<td>&gt;=60-%&lt;70%</td>
</tr>
<tr>
<td>DIAZOLIDINYL UREA</td>
<td>78491-02-8</td>
<td>&gt;=40-%&lt;50%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eyes
If symptoms develop, immediately move individual away from exposure and into fresh air. Flush eyes gently with water for at least 15 minutes while holding eyelids apart; seek immediate medical attention.

Skin
First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.

Ingestion
Seek medical attention. If individual is drowsy or unconscious, do not give anything by mouth; place individual on the left side with the head down. Contact a physician, medical facility, or poison control center for advice about whether to induce vomiting. If possible, do not leave individual unattended.

Inhalation
If symptoms develop, move individual away from exposure and into fresh air. If symptoms persist, seek medical attention. If breathing is difficult, administer oxygen. Keep person warm and quiet; seek immediate medical attention.

Notes to physician

Hazards:  No information available.
Treatment: No information available.

5. FIREFIGHTING MEASURES

Suitable extinguishing media
Dry chemical, Carbon dioxide (CO2), Water spray

Hazardous combustion products
Carbon dioxide (CO2), carbon dioxide and carbon monoxide, organic compounds

Precautions for fire-fighting
Wear full firefighting turn-out gear (full Bunker gear), and respiratory protection (SCBA). Use water spray to cool fire exposed containers and structures until fire is out if it can be done with minimal risk. Avoid spreading burning material with water used for cooling purposes.

NFPA Flammable and Combustible Liquids Classification
Combustible Liquid Class IIIB

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
For personal protection see section 8. Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.

Environmental precautions
Prevent spreading over a wide area (e.g. by containment or oil barriers). Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up
Keep in suitable, closed containers for disposal. Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

Other information
Comply with all applicable federal, state, and local regulations.

7. HANDLING AND STORAGE

Handling
Containers of this material may be hazardous when emptied. Since emptied containers retain product residues (vapor, liquid, and/or solid), all hazard precautions given in the data sheet must be observed.

Storage
Store in a cool, dry, ventilated area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines
Contains no substances with occupational exposure limit values.

General advice
These recommendations provide general guidance for handling this product. Personal protective equipment should be selected for individual applications and should consider factors which affect exposure potential, such as handling practices, chemical concentrations and ventilation. It is ultimately the responsibility of the employer to follow regulatory guidelines established by local authorities.

Exposure controls
Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Eye protection
Wear chemical splash goggles when there is the potential for exposure of the eyes to liquid, vapor or mist.

Skin and body protection
Wear normal work clothing including long pants, long-sleeved shirts and foot covering to prevent direct contact of the product with the skin. Launder clothing before reuse. If skin irritation develops, contact your facility health and safety professional or your local safety equipment supplier to determine the proper personal protective equipment for your use.
Wear resistant gloves (consult your safety equipment supplier).

Respiratory protection
A NIOSH-approved air-purifying respirator with an appropriate cartridge and/or filter may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits (if applicable) or if overexposure has otherwise been determined. Protection provided by air-purifying respirators is limited. Use a positive pressure, air-supplied respirator if there is any potential for uncontrolled release, exposure levels are not known or any other circumstances where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Physical state</th>
<th>liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>characteristic</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>378.00 °F / 192.22 °C</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>-83.00 °F / -63.89 °C</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Liquid Germall™ PLUS preservative
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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point</td>
<td>210.00 °F / 98.89 °C</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>0.095 hPa @ 68 °F / 20 °C</td>
</tr>
<tr>
<td>Density</td>
<td>1.15 - 1.25 g/cm³ @ 68 °F / 20 °C</td>
</tr>
<tr>
<td>Water solubility</td>
<td>soluble</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Stability
Stable.

Conditions to avoid
Exposure to sunlight., Exposure to moisture., Heating in air.

Incompatible products
isocyanates, Strong acids, strong bases, Strong oxidizing agents, UV light.

Hazardous decomposition products
Alcohols, Aldehydes, carbon dioxide and carbon monoxide, dioxolanes, ethers, Organic acids

Hazardous reactions
Product will not undergo hazardous polymerization.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td></td>
</tr>
<tr>
<td>Skin absorption</td>
<td></td>
</tr>
<tr>
<td>Skin contact</td>
<td></td>
</tr>
<tr>
<td>Eye Contact</td>
<td></td>
</tr>
<tr>
<td>Ingestion</td>
<td></td>
</tr>
</tbody>
</table>

Product

<table>
<thead>
<tr>
<th>Toxicity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>no data available</td>
</tr>
<tr>
<td>Acute inhalation toxicity</td>
<td>no data available</td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>no data available</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>no data available</td>
</tr>
</tbody>
</table>
Serious eye damage/eye irritation: no data available
Respiratory or skin sensitisation: no data available

Target Organ Systemic Toxicant - Repeated exposure:
Target Organs: Overexposure to this material (or its components) has been suggested as a cause of the following effects in laboratory animals: kidney damage

Components:

**PROPYLENE GLYCOL:**
Acute oral toxicity: LD 50 Rat: 21.0 - 33.7 g/kg
Acute dermal toxicity: LD 50 Rabbit: 28 g/kg

**DIAZOLIDINYL UREA:**
Acute oral toxicity: LD 50 Rat: > 2,000 mg/kg
Acute inhalation toxicity: LC 50 Rat: 1.3 mg/l
    Exposure time: 4 h
    Test atmosphere: dust/mist
Acute dermal toxicity: LD 50 Rabbit: > 2,000 mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity
Product:
no data available

Components:

**PROPYLENE GLYCOL:**
Toxicity to fish: LC 50 (Fathead minnow (Pimephales promelas)): 29,485 - 39,339 mg/l
    Exposure time: 96 h
    Test Method: semi-static test

Toxicity to daphnia and other aquatic invertebrates: EC 50 (Water flea (Daphnia magna)): > 10,000 mg/l
    Exposure time: 48 h
Test Method: static test

DIAZOLIDINYL UREA:

Toxicity to fish: LC 50 (Bluegill (Lepomis macrochirus)): > 100 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC 50 (Water flea (Daphnia magna)): 34.9 mg/l
Exposure time: 48 h

Persistence and degradability

Product:
no data available

Components:

PROPYLENE GLYCOL:

Biodegradability: Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

DIAZOLIDINYL UREA:

Biodegradability: Biodegradation: 24 %
Exposure time: 28 d
Not readily biodegradable.

Bioaccumulative potential

Product:
no data available

Components:

PROPYLENE GLYCOL:

Partition coefficient: n-octanol/water: log Pow: -0.92

Mobility in soil

Product:
no data available
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Components:

PROPYLENE GLYCOL:
   Surface tension : 40.1 mN/m

13. DISPOSAL CONSIDERATIONS
Waste disposal methods
   Dispose of in accordance with all applicable local, state and federal regulations.

14. TRANSPORT INFORMATION

REGULATION

<table>
<thead>
<tr>
<th>ID NUMBER</th>
<th>PROPER SHIPPING NAME</th>
<th>*HAZARD CLASS</th>
<th>SUBSIDIARY HAZARDS</th>
<th>PACKING GROUP</th>
<th>MARINE POLLUTANT / LTD. QTY.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEXICAN REGULATION FOR THE LAND TRANSPORT OF HAZARDOUS MATERIALS AND WASTES</td>
<td>Not dangerous goods</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER</td>
<td>Not dangerous goods</td>
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<tr>
<td></td>
<td>INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO</td>
<td>Not dangerous goods</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>INTERNATIONAL MARITIME DANGEROUS GOODS</td>
<td>Not dangerous goods</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>TRANSPORT CANADA - INLAND WATERWAYS</td>
<td>Not dangerous goods</td>
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</tr>
<tr>
<td></td>
<td>TRANSPORT CANADA - RAIL</td>
<td>Not dangerous goods</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>TRANSPORT CANADA - ROAD</td>
<td>Not dangerous goods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>U.S. DOT - INLAND WATERWAYS</td>
<td>Not dangerous goods</td>
<td></td>
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</tr>
</tbody>
</table>
SAFETY DATA SHEET

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™ Trademark, Ashland or its subsidiaries, registered in various countries#828441

U.S. DOT - RAIL
Not dangerous goods

U.S. DOT - ROAD
Not dangerous goods

*ORM = ORM-D, CBL = COMBUSTIBLE LIQUID

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.

15. REGULATORY INFORMATION

California Prop. 65
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SARA Hazard Classification
SARA 311/312 Classification
Acute Health Hazard

SARA 313 Component(s)
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Notification status

<table>
<thead>
<tr>
<th></th>
<th>HMIS</th>
<th>NFPA</th>
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</thead>
<tbody>
<tr>
<td>Health</td>
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</tr>
</tbody>
</table>
16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by Ashland's Environmental Health and Safety Department (1-800-325-3751).

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet:

ACGIH: American Conference of Industrial Hygienists
BEI: Biological Exposure Index
CAS: Chemical Abstracts Service (Division of the American Chemical Society)
CMR: Carcinogenic, Mutagenic or Toxic for Reproduction
FG: Food grade
GHS: Globally Harmonized System of Classification and Labeling of Chemicals
H-statement: Hazard Statement
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulation by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI (ICAO): Technical Instructions by the "International Civil Aviation Organization"
IMDG: International Maritime Code for Dangerous Goods
ISO: International Organization for Standardization
logPow: octanol-water partition coefficient
LCxx: Lethal Concentration, for xx percent of test population
LDxx: Lethal Dose, for xx percent of test population
ICxx: Inhibitory Concentration for xx of a substance
Ecxx: Effective Concentration of xx
N.O.S.: Not Otherwise Specified
OECD: Organization for Economic Co-operation and Development
OEL: Occupational Exposure Limit
P-Statement: Precautionary Statement
PBT: Persistent, Bioaccumulative and Toxic
PPE: Personal Protective Equipment
STEL: Short-term exposure limit
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TWA: Time-weighted average
vPvB: Very Persistent and Very Bioaccumulative
WEL: Workplace Exposure Level

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
DOT: Department of Transportation
FIFRA: Federal Insecticide, Fungicide, and Rodenticide Act
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HMIRC : Hazardous Materials Information Review Commission
HMIS : Hazardous Materials Identification System
NFPA : National Fire Protection Association
NIOSH : National Institute for Occupational Safety and Health
OSHA : Occupational Safety and Health Administration
PMRA : Health Canada Pest Management Regulatory Agency
RTK : Right to Know
WHMIS : Workplace Hazardous Materials Information System