1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Description:</th>
<th>Product Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 CN Substrate</td>
<td>50-73-03</td>
</tr>
<tr>
<td>4 CN Substrate</td>
<td>50-73-01</td>
</tr>
<tr>
<td>4 CN Substrate</td>
<td>50-73-02</td>
</tr>
</tbody>
</table>

Hazardous Reagent
4 CN Substrate

Hazardous Reagent Product code
Catalog No. listed above

Recommended Use
Reagent

Contact Manufacturer
KPL, Inc.
910 Clopper Road
Gaithersburg, Maryland 20878
USA

Phone #: 1-301-948-7755
Fax #: 1-301-948-0169
Web: www.kpl.com
Email: kplmsds@seracare.com

Emergency Telephone Numbers:
AUSTRALIA – POISONS INFORMATION CENTER
Telephone: 13 11 26
Hours: 24 hours

CANADIAN TRANSPORT EMERGENCY CENTER
Telephone: (1 ) 613 996 6666
Hours: 24 hours/day, 7 days/week

UK – THE NATIONAL FOCUS
Telephone: (44) 029 2041 6388
Hours: 09:00-17:00 GMT

USA- NATIONAL RESPONSE CENTER
Telephone: (1 ) 800 424 8802
Hours: 24 hours/day, 7 days/week

CHEMTREC:
CHEMTREC Customer Number:- CCN12505*
For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300 CCN12505 or
+1 703-527-3887 (collect calls accepted)

2. HAZARD IDENTIFICATION

Hazard Type
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Classification
Flammable liquids, Category 2; H225
Acute toxicity, Category 3, inhalation; H331
Acute toxicity, Category 3, dermal; H311
Acute toxicity, Category 3, oral; H301
Specific Target Organ Toxicity (single exposure), Category 2; H371

Hazard Statement
H225: Highly flammable liquid and vapour.
H331: Toxic if inhaled.
H311: Toxic in contact with skin.
H301: Toxic if swallowed.
H371: May cause damage to organs.

Precautionary Statement
P210: Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ ventilating/ lighting equipment.
P242: Use only non-sparking tools.
4 CN Peroxidase Substrate

MSDS #: 10329

P243: Take precautionary measures against static discharge.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.
P260: Do not breathe dust/ fume/ gas/mist/ vapours/ spray.
P271: Use only outdoors or in a well-ventilated area.
P284: Wear respiratory protection.
P264: Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.

Symbols of Danger
GHS02 GHS06 GHS08 Dgr: Danger

Data for 100% Hazardous Chemical

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Component                  | CHEMICAL | % Weight | CAS #:
|----------------------------|----------|----------|--------
| 4 CN Peroxidase Substrate | Methyl Alcohol | <20% | 67-56-1 |

Classification
- Flammable liquids, Category 2; H225
- Acute toxicity, Category 3, inhalation; H331
- Acute toxicity, Category 3, dermal; H311
- Acute toxicity, Category 3, oral; H301
- Specific Target Organ Toxicity (single exposure), Category 2; H371

4. FIRST AID MEASURES

Data for 100% Hazardous Chemical

Ingestion First Aid: Induce vomiting (ONLY IN CONSCIOUS PERSONS!). Refer for medical attention.
Inhalation First Aid: Fresh air, rest. Refer for medical attention.
Skin First Aid: Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention.
Eye First Aid: First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then take to a doctor.

5. FIRE FIGHTING MEASURES

Data For 100% Hazardous Chemical

The product is a Mixture. It May Cause the following symptoms.

Redness. Pain.
MAY BE ABSORBED! Dry skin. Redness.

Routes of Exposure: The substance can be absorbed into the body by inhalation and through the skin and by ingestion.

Inhalation Risk: A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

Short-Term Exposure: The substance is irritating to the eyes, the skin and the respiratory tract. The substance may cause effects on the central nervous system, resulting in loss of consciousness.

Long-Term Exposure: Repeated or prolonged contact with skin may cause dermatitis. The substance may have effects on the central nervous system, resulting in persistent or recurring headaches and impaired vision.
<table>
<thead>
<tr>
<th>Fire Acute Hazard:</th>
<th>Fire Prevention:</th>
<th>Fire Fighting:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highly flammable. See Notes.</td>
<td>NO open flames, NO sparks, and NO smoking. NO contact with oxidants.</td>
<td>Powder, alcohol-resistant foam, water in large amounts, carbon dioxide.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explosion Acute Hazard:</th>
<th>Vapour/air mixtures are explosive.</th>
<th>Fire Fighting:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Closed system, ventilation, explosion-proof electrical equipment and lighting. DO NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools.</td>
<td>In case of fire: keep drums, etc., cool by spraying with water.</td>
</tr>
</tbody>
</table>

**CHEMICAL DANGERS:** Reacts violently with oxidants causing fire and explosion hazard.

**PHYSICAL DANGERS:** The vapour mixes well with air, explosive mixtures are easily formed.

### 6. ACCIDENTAL RELEASE MEASURES

#### Personal Precautions
Data for 100% Methyl Alcohol (67-56-1): Precautionary Statement - P-phrases:
P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233: Keep container tightly closed.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P309+P310: IF exposed or if you feel unwell: Immediately call a POISON CENTER or doctor/physician. (Unofficial P-phrase combination)

#### Environmental Precautions
Data for 100% Methyl Alcohol (67-56-1): Endangerment of drinking water and environment:
Maybe a hazard to drinking water sources when very large quantities get into groundwater. Inform the responsible authorities.

#### Method of Containment
Collect leaking and spilled liquid in sealable containers as far as possible.

#### Methods of Clean-up
Clean up of spills requires no special equipment or procedures. Clean with copious amounts of water.

Other Information
Not Applicable

#### Data for 100% Hazardous Chemical

<table>
<thead>
<tr>
<th>SPILLAGE DISPOSAL</th>
</tr>
</thead>
</table>

### 7. HANDLING AND STORAGE

**Handling:**
Wear appropriate PPE. See section 8

**Storage:**
Keep tightly closed and store at 2 - 8°C.

#### Data for 100% Hazardous Chemical

<table>
<thead>
<tr>
<th>STORAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fireproof. Separated from strong oxidants, food and feedstuffs. Cool.</td>
</tr>
</tbody>
</table>

### 8. EXPOSURE CONTROL

#### Data for 100% Hazardous Chemical

- **INHALATION**
  Ventilation. Local exhaust or breathing protection.

- **EYES**
  Safety goggles or eye protection in combination with breathing protection.

- **SKIN**
  Protective gloves. Protective clothing.

- **INGESTION**
  Do not eat, drink, or smoke during work. Wash hands before eating.

**Engineering Controls**
Not Available

### 9. PHYSICAL AND CHEMICAL PROPERTIES
4 CN Peroxidase Substrate

Appearance
Viscous Colorless Solution - Precipitation may occur

Physical State
Liquid

pH:
5.4 - 5.8

Data for 100% Hazardous Chemical

| Boiling point: °C | Melting point: -98°C | Relative density (water = 1): 0.79 | Solubility in water: miscible | Relative vapour density (air = 1): 1.1 | Relative density of the vapour/air-mixture at 20°C (air = 1): 1.01 | Flash point: 12°C c.c. | Auto-ignition temperature: 464°C | Vapour pressure, kPa at 20°C: 12.3 | Explosive limits, vol% in air: 5.5-44 | Octanol/water partition coefficient as log Pow: -0.82/-0.66 |
|------------------|----------------------|----------------------------------|-------------------------------|--------------------------------|---------------------------------------------------------------------------------|----------------------|--------------------------------|

10. STABILITY AND REACTIVITY

Chemical Stability
Stable under normal conditions

Incompatibility Materials to Avoid
Strong oxidizing agents and reducing agents

Hazardous Decomposition Products
Carbon Monoxide, Carbon Dioxide

Hazardous Polymerization
Will not occur

Data for 100% Hazardous Chemical

CHEMICAL DANGERS: Reacts violently with oxidants causing fire and explosion hazard.

PHYSICAL DANGERS: The vapour mixes well with air, explosive mixtures are easily formed.

11. TOXICOLOGY MEASURES

Acute Toxicity
The toxicological risks are minor due to the low concentration of hazardous ingredients. The following toxicological information is for the hazardous ingredient in pure form.

LD50 Oral
Data for 100% Methyl Alcohol: LD50 oral rat: 5630 mg/kg


LD50 Dermal
Data for 100% Methyl Alcohol: LD50 dermal Rabbit: 15800 mg/kg


LC50 Inhalation
Data for 100% Methyl Alcohol: LC50 inhalation rat: 83.9 mg/l/4 h


Chronic Toxicity
Carcinogenicity
Not Applicable

Irritation
Data for 100% Methyl Alcohol: Main toxic effects:
Acute:
Irritation to the eyes, CNS depression, systemic damage to the eyes
Chronic:
Neurological symptoms, irritation to the nasal mucous membranes through exposure to higher vapor concentrations, damage to the skin due to repeated contact.

Corrosivity
Not applicable

Sensitization
Not applicable

Neurological Effects
Not applicable

Mutagenic Effects
Not applicable

Reproductive Effects
Not applicable
12. ECOLOGICAL MEASURES

Ecotoxicity

Data for 100% Methyl Alcohol: Acute Toxicity to Fish - LC50 Fish (96 hours)
Minimum: 15000 mg/l
Maximum: 29400 mg/l
Median: 24000 mg/l
Study number: 8

Persistence/Degradability: Not Available
Mobility in Environmental Media: Not Available
Bioaccumulation/Accumulation: Not Available

13. DISPOSAL MEASURES

Waste Disposal Method: Treatment, storage and transportation must comply with all Federal, State, and Local laws concerning health and pollution.
Contaminated Packaging: Avoid contact with skin and clothing. Place contaminated packaging in a break proof outer vessel and dispose on in compliance with national and local regulations.
US EPA Waste Number: Not Available

14. TRANSPORTATION MEASURES

DOT: Data for 100% Methyl Alcohol: UN Classification
UN Hazard Class: 3; UN Subsidiary Risks: 6.1; UN Pack Group: II
IATA: Not Available
ADR (road)/ RID (rail): Not Available
IMDG (sea): Not Available

General Transport Regulations: Data for 100% Methyl Alcohol: Transport Emergency Card: TEC (R)-30S1230.

15. REGULATORY MEASURES

This product is a mixture that may contain one or more hazardous chemicals. The hazardous ingredients listed are only those as required by 29 CFR 1910.1200 (OSHA HCS).
SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains no chemical or chemicals which are subject to the reporting requirements of the Act and and Title 40n of the Code of Federal Regulations, Part 372.
Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (See 40 CFR 61)

Not Listed

State Regulations

California Proposition 65:

This product contains the following Proposition 65 chemicals: Methanol  Type of Toxicity: developmental CAS No. 67-56-1 Date Listed: March 16, 2012

State Right to Know Act

Chemical Name Methyl Alcohol
Massachusetts Listed
New Jersey Listed
Pennsylvania Listed
New York Listed
Rhode Island Listed

International Inventories

Chemical Name Methyl Alcohol
TSCA Listed
DSL Listed
NDSL Not Listed
EINECS Listed
CHINA Listed
KECL Listed
JAPAN: Listed
AICS Listed

EU Regulations

Annex I Index# Data for 100% Methyl Alcohol:
Annex I Index# : 603-001-00-X
Classification
Flammable liquids, Category 2; H225
Acute toxicity, Category 3, inhalation; H331
Acute toxicity, Category 3, dermal; H311
Acute toxicity, Category 3, oral; H301
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P284: Wear respiratory protection.
P264 : Wash skin thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
Symbols and Indications of Danger
GHS02 GHS06 GHS08 Dgr: Danger
Specific Concentration Limits
STOT SE 1; H370: C >= 10 %
STOT SE 2; H371: 3 % <= C < 10 %
Export and Import
This substance is not listed in the Annex I of Regulation (EC) No 649/2012.
European Priority List
This substance is not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances.).

16. OTHER INFORMATION

The above information is believed to be correct, but does not purport to be all inclusive and shall be used only as a guide. KPL shall not be held liable for any damage resulting from handling or from contact with the above product. Users should make their own investigations to determine the suitability of the information for their particular purposes. This material is sold for research purposes and is intended as laboratory reagents only. It is not intended for food, drug, household, agricultural or cosmetic use. Its use must be supervised by a technically qualified individual experienced in handling potentially hazardous chemicals.

Revision Date: 8/1/2014