SAFETY DATA SHEET
PHENOLPHTHALEIN INDICATOR SOLUTION

1. Product and Company Identification

Material name: PHENOLPHTHALEIN INDICATOR SOLUTION
Version #: 2.0
Revision date: Jan-05-2016
Supersedes date: Jan-23-2013
Prepared by: This SDS has been prepared by GE Water & Process Technologies Regulatory Department (1-215-355-3300).

CAS #: Mixture
L code: L212
Product application: Field test reagent.

Company/undertaking identification
GE Water & Process Technologies Canada
3239 Dundas Street West
Oakville, Ontario, L6M 4B2
T 905-465-3030

Emergency telephone
(800) 877-1940

2. Hazards Identification

Emergency overview: May cause slight irritation to the skin. May cause dermatitis. May cause moderate irritation to the eyes. Vapors, gases, mists or aerosols may cause irritation to the upper respiratory tract. Prolonged exposure may cause dizziness and headache.

Potential health effects

Eyes: May cause moderate irritation to the eyes.
Skin: Primary route of exposure May cause slight irritation to the skin. May cause dermatitis.
Inhalation: Primary route of exposure Vapors, gases, mists or aerosols may cause irritation to the upper respiratory tract. Prolonged exposure may cause dizziness and headache.
Ingestion: May cause gastrointestinal irritation with possible nausea, vomiting, headache, dizziness, unconsciousness, and injury to the kidneys and liver.

Target organs: Prolonged or repeated exposures may cause CNS depression and/or defatting-type dermatitis. Prolonged or repeated exposure may cause toxicity to the kidney and/or nervous system.

Signs and symptoms: Excessive dermal exposure causes defatting or drying of skin. Excessive inhalation of vapors causes dizziness, headache and nausea.

Medical conditions aggravated by exposure: None known.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent (wt/wt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol</td>
<td>64-17-5</td>
<td>40 - 70</td>
</tr>
<tr>
<td>phenolphthalein</td>
<td>77-09-8</td>
<td>0.1 - 1</td>
</tr>
</tbody>
</table>
Composition comments
Information for specific product ingredients as required by the WHMIS Regulations is listed. Refer to additional sections of this MSDS for our assessment of the potential hazards of this formulation.

4. First Aid Measures
First aid procedures
Inhalation
Move to fresh air. If breathing stops, provide artificial respiration. For breathing difficulties, oxygen may be necessary. Get medical attention immediately.

Skin contact
Wash off with soap and water. Take off contaminated clothing and wash before reuse. Get medical attention if irritation develops and persists.

Eye contact
Immediately flush eyes with plenty of low-pressure water for at least 30 minutes while removing contact lenses. Keep eyelids apart. Get medical attention immediately.

Ingestion
If swallowed, rinse mouth with water (only if the person is conscious). Never give anything by mouth to a victim who is unconscious or is having convulsions. Do not induce vomiting. Call a physician immediately. Dilute contents of stomach using 2-8 fluid ounces (60-240ml) of milk or water.

Notes to physician
No specific antidotes are recommended.

5. Fire Fighting Measures
Extinguishing media
Suitable extinguishing media
dry chemical, carbon dioxide or foam. Water spray should be used only to cool fire-exposed containers and disperse vapours.

Unsuitable extinguishing media
Not available.

Protection of firefighters
Protective equipment for firefighters
Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions
In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray. Fire fighters should wear positive pressure self-contained breathing apparatus (full face-piece type).

Explosion data
Sensitivity to static discharge
Not available.

Sensitivity to mechanical impact
Not available.

6. Accidental Release Measures
Personal precautions
Wear appropriate protective equipment and clothing during clean-up. Avoid contact with spilled material. See Section 8 of the MSDS for Personal Protective Equipment.

Environmental precautions
Avoid discharge into drains, water courses or onto the ground. Water contaminated with this product may be sent to a sanitary sewer treatment facility, or a permitted waste treatment facility, in accordance with any local agreements.

Methods for cleaning up
Ventilate area, use specified protective equipment. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Remove sources of ignition. Flush with plenty of water. Spread sand/grit.

7. Handling and Storage
Handling
Flammable. Store in explosive proof area where electrical equipment meets NFPA code.

Storage
Store containers closed when not in use. Keep away from heat, sparks and open flame. Earth containers during filling or discharge when performed at temperatures at or above product flash point.

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>Ethanol (CAS 64-17-5)</td>
<td>STEL</td>
<td>1000 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>Ethanol (CAS 64-17-5)</td>
<td>TWA</td>
<td>1880 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

Material name: PHENOLPHTHALEIN INDICATOR SOLUTION
Version number: 2.0
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>Ethanol (CAS 64-17-5)</td>
<td>STEL</td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethanol (CAS 64-17-5)</td>
<td>STEL</td>
<td>1000 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>Ethanol (CAS 64-17-5)</td>
<td>STEL</td>
<td>1000 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>Ethanol (CAS 64-17-5)</td>
<td>TWA</td>
<td>1880 mg/m3</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>Ethanol (CAS 64-17-5)</td>
<td>PEL</td>
<td>1900 mg/m3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1000 ppm</td>
</tr>
</tbody>
</table>

No biological exposure limits noted for the ingredient(s).

Biological limit values

Adequate ventilation to maintain air contaminants below exposure limits.

Engineering controls

Chemical goggles are recommended. Splash proof chemical goggles.

Personal protective equipment

Wear suitable protective clothing. Chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Chemical resistant apron. Glove selection must take into account any solvents and other hazards present. neoprene gloves Wash off after each use. Replace as necessary.

Respiratory protection

If air-purifying respirator use is appropriate, use a respirator with organic vapor cartridges.

9. Physical & Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Liquid</td>
</tr>
<tr>
<td>Physical state</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Alcohol</td>
</tr>
<tr>
<td>pH (concentrated product)</td>
<td>5.6</td>
</tr>
<tr>
<td>Vapor density</td>
<td>4.6 (Air = 1)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>399 °F (204 °C)</td>
</tr>
<tr>
<td>Melting point/Freezing point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Solubility (water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Specific gravity (70°F, 21°C)</td>
<td>0.93</td>
</tr>
<tr>
<td>Flash point</td>
<td>253 °F (123 °C) OPEN CUP</td>
</tr>
<tr>
<td>Flammability limits in air, upper, % by volume</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limits in air, lower, % by volume</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>&lt; 1 (Ether = 1)</td>
</tr>
<tr>
<td>Viscosity temperature</td>
<td>70 °F (21 °C)</td>
</tr>
</tbody>
</table>

10. Chemical Stability & Reactivity Information

Reactivity

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

Chemical stability

Material is stable under normal conditions.

Conditions to avoid

Not available.

Incompatible materials

Friction, heat or other sources of ignition may cause a violent reaction releasing heat and toxic fumes. Contact with oxidizers may cause fire or explosion.
Hazardous decomposition products
Oxides of carbon evolved in fire.

Possibility of hazardous reactions
Hazardous polymerization does not occur.

11. Toxicological Information

<table>
<thead>
<tr>
<th>Toxicological data</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHENOLPHTHALEIN INDICATOR SOLUTION (CAS Mixture)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td>Rabbit</td>
<td>&gt; 5000 mg/kg, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>Rat</td>
<td>&gt; 20 mg/l, 4 Hours, (Calculated according to GHS additivity formula)</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td>Rat</td>
<td>&gt; 5000 mg/kg, (Calculated according to GHS additivity formula)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ethanol (CAS 64-17-5)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dermal</strong></td>
<td>Rabbit</td>
<td>&gt; 5000 mg/kg</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td>Rat</td>
<td>124.7 mg/l/4h</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td>Rat</td>
<td>&gt; 5000 mg/kg</td>
</tr>
</tbody>
</table>

Carcinogenicity
IARC Monographs. Overall Evaluation of Carcinogenicity
phenolphthalein (CAS 77-09-8) 2B Possibly carcinogenic to humans.

Mutagenicity
Not available.

Reproductive effects
Not available.

Teratogenicity
Not available.

12. Ecological Information

Ecotoxicity
No ecotoxicity data noted for the ingredient(s).

Partition coefficient
<table>
<thead>
<tr>
<th>Ethanol</th>
<th>phenolphthalein</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.31</td>
<td>2.41</td>
</tr>
</tbody>
</table>

13. Disposal Considerations

Dispose of contents/container in accordance with local/regional/national/international regulations.

Waste from residues / unused products
Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner.

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

TDG
<table>
<thead>
<tr>
<th>UN number</th>
<th>UN proper shipping name</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN1987</td>
<td>ALCOHOLS, N.O.S. (ETHANOL, METHANOL)</td>
</tr>
</tbody>
</table>

Transport hazard class(es)
<table>
<thead>
<tr>
<th>Class</th>
<th>Subsidiary risk</th>
<th>Packing group</th>
<th>Environmental hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>-</td>
<td>III</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

Material name: PHENOLPHTHALEIN INDICATOR SOLUTION
Version number: 2.0
### DOT

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>ALCOHOLS, N.O.S. (ETHANOL RQ = 200 LBS, METHANOL)</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>3</td>
</tr>
<tr>
<td>Class</td>
<td>III</td>
</tr>
<tr>
<td>Packing group</td>
<td>128</td>
</tr>
</tbody>
</table>

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

### IMDG

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>ALCOHOLS, N.O.S. (ETHANOL, METHANOL)</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>3</td>
</tr>
<tr>
<td>Class</td>
<td>-</td>
</tr>
<tr>
<td>Subsidiary risk</td>
<td>III</td>
</tr>
<tr>
<td>Packing group</td>
<td>128</td>
</tr>
</tbody>
</table>

Environmental hazards
- Marine pollutant: No.
- EmS: Not available.
- Special precautions for user: Not available.

### IATA

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN1987</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>ALCOHOLS, N.O.S. (ETHANOL, METHANOL)</td>
</tr>
<tr>
<td>Transport hazard class(es)</td>
<td>3</td>
</tr>
<tr>
<td>Class</td>
<td>-</td>
</tr>
<tr>
<td>Subsidiary risk</td>
<td>III</td>
</tr>
<tr>
<td>Packing group</td>
<td>128</td>
</tr>
</tbody>
</table>

Environmental hazards
- Marine pollutant: No.
- EmS: Not available.
- Special precautions for user: Not available.

### 15. Regulatory Information

<table>
<thead>
<tr>
<th>WHMIS status</th>
<th>Controlled</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHMIS classification</td>
<td></td>
</tr>
<tr>
<td>B2 - Flammable Liquids</td>
<td></td>
</tr>
<tr>
<td>D2A - Other Toxic Effects-VERY TOXIC</td>
<td></td>
</tr>
<tr>
<td>D2B - Other Toxic Effects-TOXIC</td>
<td></td>
</tr>
</tbody>
</table>
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>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>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A “Yes” indicates that all components of this product comply 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

List of abbreviations

- CAS: Chemical Abstract Service Registration Number
- TSRN indicates a Trade Secret Registry Number is used in place of the CAS number.
- ACGIH: American Conference of Governmental Industrial Hygienists
- TWA: Time Weighted Average
- STEL: Short Term Exposure Limit
- LD50: Lethal Dose, 50%
- LC50: Lethal Concentration, 50%
- NOEL: No Observed Effect Level
- COD: Chemical Oxygen Demand
- BOD: Biochemical Oxygen Demand
- TOC: Total Organic Carbon
- IATA: International Air Transport Association
- IMDG: International Maritime Dangerous Goods Code

HMIS® ratings

- Health: 1
- Flammability: 3
- Physical hazard: 0
- Personal protection: B

NFPA ratings

- Health: 2
- Flammability: 3
- Instability: 0

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

This data sheet contains changes from the previous version in section(s):

- Product and Company Identification: Physical States
- Physical & Chemical Properties: Multiple Properties
- Toxicological Information: Toxicological Data
- HazReg Data: North America
- GHS: Classification