1. Product and Company Identification

Product name:
ECO-SOL MAX2, ESL4-CY
ECO-SOL MAX2, ESL4-4CY

Manufacture:
Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103
JAPAN
Phone: +81-53-484-1224
Fax: +81-53-484-1226

Importer/Supplier:
Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201
U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112

Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: Cyan liquid and slight odor

This product is classified as dangerous according to GHS.
- Flammable liquids Category 4
- Acute toxicity - oral Category 5
- Eye damage/irritation Category 1
- Skin corrosion/irritation Category 2
- Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger

Hazard statement(s)
Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)

**Prevention**
Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection.

**Response**
IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

**Likely route of exposure:** Eye, skin, inhalation or oral.

**Eye:** Causes severe eye injury which may persist for several days.

**Skin:** Contact with skin may cause irritation, swelling or redness.

**Inhalation:** Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.

**Ingestion:** May cause upset stomach.

**Chronic Health Hazards:** None Known.

**Carcinogenicity:** None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>% By Weight</th>
<th>Classification HCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>40-50</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>(\gamma)-butyrolactone</td>
<td>96-48-0</td>
<td>&lt;20</td>
<td>Acute Tox. 4: H302</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1: H318</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3: H336</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>10-20</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>15-25</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information*
4. First Aid Measures

4.1. First aid procedures

**Eyes:**
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

**Skin:**
In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

**Inhalation:**
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**
If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians
May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:
- Flash Point: 71 deg.C

5.2. Extinguishing media
- Suitable extinguishing media:
  - Water spray, dry chemical, CO₂ or foam.
- Unsuitable extinguishing media:
  - No information

5.3. Protection of fire fighters
- Special hazards arising from the substance or mixture
  - Toxic and irritating fume and/or gases may generate by combustion.
- Protective equipment and precautions for firefighters
  - Wear self-contained breathing apparatus (SCBA) and full protective equipment.
  - Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures

General:
Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
- Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
- Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
- Dike spilled product.

6.4. Methods for Clean-up
- Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.5. Other information
- No information
6.6. Spill or leak statements by type of chemical
   Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage
7.1. Handling
   Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Storage
   Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection
8.1. Exposure Guidelines
   Occupational Exposure Limits:
   EU: DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>130mg/m³</td>
<td>958mg/m³</td>
</tr>
</tbody>
</table>

   REACH Toxicological Information (Workers - Hazard via inhalation route)

   US:
   California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>PEL</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

8.2. Engineering controls
   Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)
   Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

   Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

   Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

   Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with gollges) or full face-piece respirator (without goggles) filtered with organic vapor cartridge.

   General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.
9. Physical and Chemical Properties

Appearance: Cyan Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 71 deg.C
Flammability(solid, gas): Not applicable
Explosive properties: Explosive limits: 0.3-16.0/v/v% as γ-Butyrolactone
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 920 gram/liter (maximum value)

9.2. Other information: No information

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological Information

*Based on toxicology data of chemically similar material

Acute toxicity:
Oral LD50 >2500mg/kg (Rat)*
Dermal LD50 >2000mg/kg (Rat)*
Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
Serious eye damage/eye irritation: Non-irritant (Rabbit, OECD405)*
Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
Germ cell mutagenicity: Negative (by Ames Test)*
Reproductive toxicity: No data available
Suspected of damaging fertility or the unborn child (Tetraethylene glycol dimethyl ether and a similar chemical)

Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

STOT-single exposure: Overexposure of eye may be mildly irritating.
Overexposure of skin may cause irritation and in some people swelling and redness.
Inhalation may result in respiratory irritation and anesthetization.
Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available
Aspiration hazard: No data available
12. Ecological Information

Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations

Treatment, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.6. Special precautions for user:
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not regulated

15. Regulatory Information

EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.
16. Other Information

NFPA 704: Hazard Rating System
- Health - 3, Flammable - 2, Reactivity - 0
  0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Product and Company Identification

Product name:
ECO-SOL MAX2, ESL4-MG
ECO-SOL MAX2, ESL4-4MG

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
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Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: Magenta liquid and slight odor

This product is classified as dangerous according to GHS.
Flammable liquids Category 4
Acute toxicity - oral Category 5
Eye damage/irritation Category 1
Skin corrosion/irritation Category 2
Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)

**Prevention**
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

**Response**
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

- **Likely route of exposure:** Eye, skin, inhalation or oral.
- **Eye:** Causes severe eye injury which may persist for several days.
- **Skin:** Contact with skin may cause irritation, swelling or redness.
- **Inhalation:** Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
- **Ingestion:** May cause upset stomach.
- **Chronic Health Hazards:** None Known.
- **Carcinogenicity:** None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

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<td>15-25</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information*
4. First Aid Measures
4.1. First aid procedures
   - Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
   - Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
   - Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
   - Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians
   May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures
5.1. Flammable properties:
   Flash Point: 71 deg.C

5.2. Extinguishing media
   Suitable extinguishing media:
   Water spray, dry chemical, CO₂ or foam.
   Unsuitable extinguishing media:
   No information

5.3. Protection of fire fighters
   Special hazards arising from the substance or mixture
   Toxic and irritating fume and/or gases may generate by combustion.
   Protective equipment and precautions for firefighters
   Wear self-contained breathing apparatus (SCBA) and full protective equipment.
   Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures
   General:
   Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
   Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
   Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
   Dike spilled product.

6.4. Methods for Clean-up
   Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.5. Other information
   No information
6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling
Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage
Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines
Occupational Exposure Limits:
EU: DNEL

<table>
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<tr>
<th>components</th>
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<th>Short term exposure</th>
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REACH Toxicological Information (Workers - Hazard via inhalation route)

US: California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
</tr>
</tbody>
</table>

8.2. Engineering controls
Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge.

General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.
9. Physical and Chemical Properties

Appearance: Magenta Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 71 deg.C
Flammability(solid, gas): Not applicable
Explosive properties: Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 920 gram/liter (maximum value)

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological Information

*Based on toxicology data of chemically similar material

Acute toxicity:

Oral LD50 >2500mg/kg(Rat)*
Dermal LD50 >2000mg/kg(Rat)*
Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
Serious eye damage/eye irritation: Non-irritant (Rabbit, OECD405)*
Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
Germ cell mutagenicity: Negative (by Ames Test)*
Reproductive toxicity: Suspected of damaging fertility or the unborn child. (Tetraethylene glycol dimethyl ether and a similar chemical)

Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

STOT-single exposure: Overexposure of eye may be mildly irritating.
Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available

Aspiration hazard: No data available
12. Ecological Information

Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations

Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory Information

EU Information:
Chemical Safety Assessment according to (EC)1907/2006: This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.
16. Other Information

NFPA 704: Hazard Rating System

Health - 3, Flammable - 2, Reactivity - 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Product and Company Identification

Product name:
ECO-SOL MAX2, ESL4-YE
ECO-SOL MAX2, ESL4-4YE

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103
        JAPAN
Phone: +81-53-484-1224
Fax: +81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201
         U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112

Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: Yellow liquid and slight odor

This product is classified as dangerous according to GHS.
Flammable liquids Category 4
Acute toxicity - oral Category 5
Eye damage/irritation Category 1
Skin corrosion/irritation Category 2
Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)

Prevention
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Response
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure: Eye, skin, inhalation or oral.
Eye: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
Ingestion: May cause upset stomach.
Chronic Health Hazards: None Known.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>% By Weight</th>
<th>Classification HCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>40-50</td>
<td>Skin Irrit: 2: H315</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>96-48-0</td>
<td>&lt;20</td>
<td>Acute Tox: 4: H302</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam: 1: H318</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3: H336</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>10-20</td>
<td>Repr: 1B: H360</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>15-25</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information
4. First Aid Measures

4.1. First aid procedures

- **Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

- **Skin:** In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

- **Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

- **Ingestion:** If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

- May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:
- Flash Point: 71 deg.C

5.2. Extinguishing media

- Suitable extinguishing media:
  - Water spray, dry chemical, CO₂ or foam.

- Unsuitable extinguishing media:
  - No information

5.3. Protection of fire fighters

- Special hazards arising from the substance or mixture:
  - Toxic and irritating fume and/or gases may generate by combustion.

- Protective equipment and precautions for firefighters:
  - Wear self-contained breathing apparatus (SCBA) and full protective equipment.
  - Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures

General:

- Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions

- Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

- Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment

- Dike spilled product.

6.4. Methods for Clean-up

- Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.5. Other information

- No information
6.6. Spill or leak statements by type of chemical
Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage
7.1. Handling
Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage
Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection
8.1. Exposure Guidelines
Occupational Exposure Limits:
EU: DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>130mg/m³</td>
<td>958mg/m³</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:
California OELs (California Code of Regulations, Title 8, Section 5155, Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
</tr>
</tbody>
</table>

8.2. Engineering controls
Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)
Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with gollgtes) or full face-piece respirator (without googles) filtered with organic vapor cartridge.

General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.
9. Physical and Chemical Properties

Appearance: Yellow Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 71 deg.C
Flammability(solid,gas): Not applicable
Explosive properties: Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 920 gram/liter (maximum value)

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological information

*Based on toxicology data of chemically similar material
Acute toxicity:
Oral LD50 >2500mg/kg(Rat)*
Dermal LD50 >2000mg/kg(Rat)*
Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
Serious eye damage/eye irritation: Non-irritant (Rabbit, OECD405)*
Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
Germ cell mutagenicity: Negative (by Ames Test)*
Reproductive toxicity: Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical)

Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

STOT-single exposure: Overexposure of eye may be mildly irritating.
Overexposure of skin may cause irritation and in some people swelling and redness.
Inhalation may result in respiratory irritation and anesthesia.
Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available
Aspiration hazard: No data available
12. Ecological Information

Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations

Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user:
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not regulated

15. Regulatory Information

EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65:
Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.
16. Other Information

NFPA 704: Hazard Rating System

Health - 3, Flammable - 2, Reactivity - 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Product and Company Identification

Product name:
ECO-SOL MAX2, ESL4-BK
ECO-SOL MAX2, ESL4-4BK

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201 U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112
Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: Black liquid and slight odor

This product is classified as dangerous according to GHS.
Flammable liquids Category 4
Acute toxicity - oral Category 5
Eye damage/irritation Category 1
Skin corrosion/irritation Category 2
Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)

Prevention
Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection.

Response
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure: Eye, skin, inhalation or oral.
Eye: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
Ingestion: May cause upset stomach.
Chronic Health Hazards: None Known.
Carcinogenicity: IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>% By Weight</th>
<th>Classification HCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon black</td>
<td>1333-86-4</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>40-50</td>
<td>Skin Irr. 2: H315</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>96-48-0</td>
<td>&lt;20</td>
<td>Acute Tox. 4: H302</td>
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<td></td>
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<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>15-25</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information
4. First Aid Measures

4.1. First aid procedures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

Flash Point: 71 deg.C

5.2. Extinguishing media

Suitable extinguishing media:
Water spray, dry chemical, CO₂ or foam.

Unsuitable extinguishing media:
No information

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture
Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions for firefighters
Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures

General:
Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
Dike spilled product.

6.4. Methods for Clean-up
Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.5. Other information
No information
6.6. Spill or leak statements by type of chemical
   Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain
   spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and
dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or
waterways.

7. Handling And Storage

7.1. Handling
   Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of
   children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage
   Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the
   product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines
   Occupational Exposure Limits:
   EU: DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>130mg/m³</td>
<td>958mg/m³</td>
</tr>
</tbody>
</table>

   REACH Toxicological Information (Workers - Hazard via inhalation route)

   US:

<table>
<thead>
<tr>
<th>components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon black</td>
<td>3.5mg/m³</td>
<td>3.5mg/m³</td>
</tr>
</tbody>
</table>

   California OELs (California Code of Regulations, Title 8, Section 5155, Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>PEL</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon black</td>
<td>3.5mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

   Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon black</td>
<td>3mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

8.2. Engineering controls
   Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)
   Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in
case of direct contact to ink, wear safety glasses or chemical splash goggles.

   Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in
case of direct contact to ink, use protective gloves.

   Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in
case of direct contact to ink, wear protective clothing.
Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with gollges) or full face-piece respirator (without goggles) filtered with organic vapor cartridge.

General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

9. Physical and Chemical Properties

Appearance: Black Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 71 deg.C
Flammability(solid,gas): Not applicable
Explosive properties: Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: No data available
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 920 gram/liter (maximum value)

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological information

*Based on toxicology data of chemically similar material

Acute toxicity:

Oral LD50 >2500mg/kg(Rat)*
Dermal LD50 >2000mg/kg(Rat)*
Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
Serious eye damage/eye irritation: Moderate irritant (Rabbit, OECD405)*
Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
Germ cell mutagenicity: Negative (by Ames Test)*
Reproductive toxicity: Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical)
Carcinogenicity: The product contains Carbon black. IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

STOT-single exposure: Overexposure of eye may be mildly irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available
Aspiration hazard: No data available

12. Ecological Information
   Ecotoxicity: No data available
   Persistence/Degradability: No data available
   Bioaccumulation/Accumulation: No data available
   Mobility in environment media: No data available
   Other adverse effects: No data available

13. Disposal Considerations
   Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information
14.1. UN Class/UN Number:
   ADR/ADG/DOT, IMDG, or IATA: Not regulated
14.2. UN proper shipping name:
   ADR/ADG/DOT, IMDG, or IATA: Not regulated
14.3. Transport hazard class(es):
   ADR/ADG/DOT, IMDG, or IATA: Not regulated
14.4. Packing group:
   ADR/ADG/DOT, IMDG, or IATA: Not regulated
14.5. Environmental hazards:
   ADR/ADG/DOT, IMDG, or IATA: Not regulated
14.6. Special precautions for user:
   Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
   Not regulated
15. Regulatory Information

EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information

NFPA 704: Hazard Rating System
Health - 3 , Flammable - 2 , Reactivity - 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
1. Product and Company Identification

Product name: ECO-SOL MAX2, ESL4-4LC

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: +81-53-484-1224
Fax: +81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201 U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112

Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: Cyan liquid and slight odor

This product is classified as dangerous according to GHS.
Flammable liquids: Category 4
Acute toxicity - oral: Category 5
Eye damage/irritation: Category 1
Skin corrosion/irritation: Category 2
Toxic to reproduction: Category 1B

GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger

Hazard statement(s)
Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)
Prevention
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.
Response
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure:
Eye: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
Ingestion: May cause upset stomach.
Chronic Health Hazards: None Known.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>% By Weight</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>40-50</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>96-48-0</td>
<td>&lt;20</td>
<td>Acute Tox. 4: H302</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Eye Dam. 1: H318</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3: H336</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>10-20</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>15-25</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information*
4. First Aid Measures
4.1. First aid procedures
   Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
   Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
   Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
   Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians
   May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures
5.1. Flammable properties:
   Flash Point: 71 deg.C

5.2. Extinguishing media
   Suitable extinguishing media:
   Water spray, dry chemical, CO₂ or foam.
   Unsuitable extinguishing media:
   No information

5.3. Protection of fire fighters
   Special hazards arising from the substance or mixture
   Toxic and irritating fume and/or gases may generate by combustion.
   Protective equipment and precautions for firefighters
   Wear self-contained breathing apparatus (SCBA) and full protective equipment.
   Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures
General:
   Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
   Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
   Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
   Dike spilled product.

6.4. Methods for Clean-up
   Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.5. Other information
   No information
6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>130mg/m³</td>
<td>958mg/m³</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

California OELs (California Code of Regulations, Title 8, Section 5155, Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
</tr>
</tbody>
</table>

8.2. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with gollges) or full face-piece respirator (without googles) filtered with organic vapor cartridge.

General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.
9. Physical and Chemical Properties

Solubility: Cyan Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 71 deg.C
Flammability(solid,gas): Not applicable
Explosive properties: Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 920 gram/liter (maximum value)

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological Information

*Based on toxicology data of chemically similar material

Acute toxicity:

Oral LD50 >2500mg/kg(Rat)*
Dermal LD50 >2000mg/kg(Rat)*
Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
Serious eye damage/eye irritation: Non-irritant (Rabbit, OECD405)*
Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
Germ cell mutagenicity: Negative (by Ames Test)*
Reproductive toxicity: No data available
Suspected of damaging fertility or the unborn child. (Tetraethylene glycol dimethyl ether and a similar chemical)

Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

STOT-single exposure: Overexposure of eye may be mildly irritating.
Overexposure of skin may cause irritation and in some people swelling and redness.
Inhalation may result in respiratory irritation and anesthesia.
Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available
Aspiration hazard: No data available
12. Ecological Information

Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations

13.1. Waste treatment methods:
Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory Information

EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.
16. Other Information

NFPA 704: Hazard Rating System

- Health - 3
- Flammable - 2
- Reactivity - 0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
1. Product and Company Identification

Product name: ECO-SOL MAX2, ESL4-4LM

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: +81-53-484-1224
Fax: +81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201 U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: Magenta liquid and slight odor

This product is classified as dangerous according to GHS.
Flammable liquids Category 4
Acute toxicity - oral Category 5
Eye damage/irritation Category 1
Skin corrosion/irritation Category 2
Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger

Hazard statement(s)
Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)

Prevention
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Response
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure: Eye, skin, inhalation or oral.
Eye: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
Ingestion: May cause upset stomach.
Chronic Health Hazards: None Known.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

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*C.B.I.: Confidential Business Information
4. First Aid Measures

4.1. First aid procedures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

Flash Point: 71 deg.C

5.2. Extinguishing media

Suitable extinguishing media:
Water spray, dry chemical, CO2 or foam.

Unsuitable extinguishing media:
No information

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture
Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures

General:
Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
Dike spilled product.

6.4. Methods for Clean-up
Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.5. Other information
No information
6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

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<td>γ-butyrolactone</td>
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REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

California OELs (California Code of Regulations, Title 8, Section 5155, Airborne Contaminants)

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<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
</tr>
</tbody>
</table>

8.2. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge.

General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse.

Do not eat, drink or smoke in handling or storage area.
9. Physical and Chemical Properties

- **Appearance:** Magenta Liquid
- **Odor:** Slightly
- **pH:** Not applicable
- **Boiling point:** No data available
- **Flash point:** 71 deg.C
- **Flammability(solid, gas):** Not applicable
- **Explosive properties:** Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
- **Oxidizing properties:** None
- **Vapor pressure:** No data available
- **Relative density:** No data available
- **Water Solubility:** Soluble
- **Partition coefficient: n-octanol/water:** No data available
- **Viscosity:** Less than 5 mPa·s at 20°C
- **Vapor density:** No data available
- **Evaporation rate:** No data available
- **Melting point:** No data available
- **Volatile organic compounds (VOC) content:** 920 gram/liter (maximum value)

9.2. Other information: No information

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature

10.2. Possibility of hazardous reactions: None

10.3. Chemical stability: Stable under normal temperature

10.4. Conditions to avoid: High and freezing temperatures

10.5. Incompatible materials: Oxidizers and explosives

10.6. Hazardous decomposition products: No data available

11. Toxicological Information

*Based on toxicology data of chemically similar material

**Acute toxicity:**
- Oral LD50: >2500mg/kg(Rat)*
- Dermal LD50: >2000mg/kg(Rat)*
- Inhalant LC50: No data available

**Skin corrosion/irritation:** Non-irritant (Rabbit, OECD404)*

**Serious eye damage/eye irritation:** Non-irritant (Rabbit, OECD405)*

**Respiratory or skin sensitisation:** Non-sensitizer (LLNA, OECD429)*

**Germ cell mutagenicity:** Negative (by Ames Test)*

**Reproductive toxicity:** No data available

Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical)

**Carcinogenicity:** None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

**STOT-single exposure:** Overexposure of eye may be mildly irritating.
Overexposure of skin may cause irritation and in some people swelling and redness.
Inhalation may result in respiratory irritation and anesthesia.
Ingestion may cause an upset stomach.

**STOT-repeated exposure:** No data available

**Aspiration hazard:** No data available
12. Ecological Information

Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations

Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information

14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.6. Special precautions for user:
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

15. Regulatory Information

EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.
16. Other Information

NFPA 704: Hazard Rating System
- Health - 3, Flammable - 2, Reactivity - 0
- 0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
1. Product and Company Identification

Product name: ECO-SOL MAX2, ESL4-4LK

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201 U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112

Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor: Black liquid and slight odor

This product is classified as dangerous according to GHS.

- Flammable liquids: Category 4
- Acute toxicity - oral: Category 5
- Eye damage/irritation: Category 1
- Skin corrosion/irritation: Category 2
- Toxic to reproduction: Category 1B

GHS label elements, including precautionary statements

Pictogram

Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)

Prevention
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Response
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure: Eye, skin, inhalation or oral.
Eye: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
Ingestion: May cause upset stomach.
Chronic Health Hazards: None Known.
Carcinogenicity: The product contains Carbon black.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

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<tr>
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<td></td>
<td></td>
<td></td>
<td>HCS</td>
</tr>
<tr>
<td>Carbon black</td>
<td>1333-86-4</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
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4. First Aid Measures
4.1. First aid procedures
   Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
   Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
   Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
   Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians
   May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures
5.1. Flammable properties:
   Flash Point: 71 deg.C

5.2. Extinguishing media
   Suitable extinguishing media:
   Water spray, dry chemical, CO₂ or foam.
   Unsuitable extinguishing media:
   No information

5.3. Protection of fire fighters
   Special hazards arising from the substance or mixture
   Toxic and irritating fume and/or gases may generate by combustion.
   Protective equipment and precautions for firefighters
   Wear self-contained breathing apparatus (SCBA) and full protective equipment.
   Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures
General:
   Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
   Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
   Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
   Dike spilled product.

6.4. Methods for Clean-up
   Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.5. Other information
   No information
6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage
7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection
8.1. Exposure Guidelines

Occupational Exposure Limits:
EU: DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>130mg/m³</td>
<td>958mg/m³</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

<table>
<thead>
<tr>
<th>components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon black</td>
<td>3.5mg/m³</td>
<td>3.5mg/m³</td>
</tr>
</tbody>
</table>

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>PEL</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon black</td>
<td>3.5mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon black</td>
<td>3mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

8.2. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge.
General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

9. Physical and Chemical Properties

Appearance: Black Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 71 deg.C
Flammability(solid, gas): Not applicable
Explosive properties: Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: No data available
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 920 gram/liter (maximum value)

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological Information

*Based on toxicology data of chemically similar material

Acute toxicity:
- Oral LD50 >2500mg/kg(Rat)*
- Dermal LD50 >2000mg/kg(Rat)*
- Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
Serious eye damage/eye irritation: Moderate irritant (Rabbit, OECD405)*
Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
Germ cell mutagenicity: Negative (by Ames Test)*
Reproductive toxicity: Suspected of damaging fertility or the unborn child. (Tetraethylene glycol dimethyl ether and a similar chemical)

Carcinogenicity: The product contains Carbon black.
IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).
STOT-single exposure: Overexposure of eye may be mildly irritating.
Overexposure of skin may cause irritation and in some people swelling and redness.
Inhalation may result in respiratory irritation and anesthesia.
Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available
Aspiration hazard: No data available

12. Ecological Information
Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations
Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information
14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA: Not regulated

14.6. Special precautions for user:
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not regulated

15. Regulatory Information
EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)
Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information
NFPA 704: Hazard Rating System
  Health - 3, Flammable - 2, Reactivity - 0
  0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
1. Product and Company Identification

Product name: ECO-SOL MAX2, ESL4-WH

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201 U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112

Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: White liquid and slight odor

This product is classified as dangerous according to GHS.
Flammable liquids Category 4
Skin corrosion/irritation Category 2

GHS label elements, including precautionary statements
Pictogram

Signal word(s) Warning
Hazard statement(s) Combustible liquid.
Causes skin irritation.

Precautionary statement(s)
Prevention Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Response IF ON SKIN: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing.

Storage Store in a well-ventilated place. Keep cool.
2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure: Eye, skin, inhalation or oral.
Eye: Contact with eye may be mildly irritating.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause upset stomach.
Chronic Health Hazards: None Known.
Carcinogenicity: The product contains Titanium dioxide.
IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>% By Weight</th>
<th>Classification HCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>13463-67-7</td>
<td>about 15</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>50-60</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>about 20</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

4. First Aid Measures
4.1. First aid procedures
Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians
May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures
5.1. Flammable properties:
Flash Point: 73.7 deg.C
5.2. Extinguishing media
   Suitable extinguishing media:
   Water spray, dry chemical, CO₂ or foam.
   Unsuitable extinguishing media:
   No information

5.3. Protection of fire fighters
   Special hazards arising from the substance or mixture
   Toxic and irritating fume and/or gases may generate by combustion.

   Protective equipment and precautions for firefighters
   Wear self-contained breathing apparatus (SCBA) and full protective equipment.
   Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures
   General:
   Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the
   adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

   6.1. Personal precautions
   Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate
   personal protective equipment.

   6.2. Environmental precautions
   Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

   6.3. Methods for containment
   Dike spilled product.

   6.4. Methods for Clean-up
   Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and
   water.

   6.5. Other information
   No information

   6.6. Spill or leak statements by type of chemical
   Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill
   with inert sand, then place in suitable container. For large spills, use water spray to disperse vapors and dilute spill
   to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage
   7.1. Handling
   Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children
   and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

   7.2. Storage
   Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product
   with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection
   8.1. Exposure Guidelines
   Occupational Exposure Limits:
US:

<table>
<thead>
<tr>
<th>components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>15mg/m³</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>

California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
</tr>
</tbody>
</table>

Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Titanium dioxide</td>
<td>10mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

8.2. Engineering controls
Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves if necessary.

Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing if necessary.

Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge.

General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

9. Physical and Chemical Properties

Appearance: White Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 73.7 deg.C
Flammability(solid, gas): Not applicable
Explosive properties: No data available
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 800 gram/liter (maximum value)
10. Stability and Reactivity
10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological Information
*Based on toxicology data of chemically similar material

   Acute toxicity:
      Oral LD50 >2500mg/kg(Rat)*
      Dermal LD50 >2000mg/kg(Rat)*
      Inhalaant LC50 No data available

   Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
   Serious eye damage/eye irritation: Non-irritant (Rabbit, OECD405)*
   Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
   Germ cell mutagenicity: Negative (by Ames Test)*
   Reproductive toxicity: No data available
   Carcinogenicity: The product contains Titanium dioxide.
   STOT-single exposure: Overexposure of eye may be mildly irritating.
   Overexposure of skin may cause irritation and in some people swelling and redness.
   Inhalation may result in respiratory irritation and anesthesia.
   Ingestion may cause an upset stomach.
   STOT-repeated exposure: No data available
   Aspiration hazard: No data available

12. Ecological Information
   Ecotoxicity: No data available
   Persistence/Degradability: No data available
   Bioaccumulation/Accumulation: No data available
   Mobility in environment media: No data available
   Other adverse effects: No data available

13. Disposal Considerations
   Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.
14. Transport Information
14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.6. Special precautions for user:
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not regulated

15. Regulatory Information
EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.
One of the substance in this product is being introduced under a Low Volume Chemical Permit granted under section 21U(2) of the Industrial Chemicals (Notification and Assessment) Act 1989.

16. Other Information
NFPA 704: Hazard Rating System
Health - 1 , Flammable - 2 , Reactivity - 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
1. Product and Company Identification

Product name: ECO-SOL MAX2, ESL4-MT

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201 U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112
Emergency telephone: 949-727-2100

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification

2.1 Emergency Overview:
Appearance and odor: Silver liquid and slight odor

This product is classified as dangerous according to GHS.
- Flammable liquids Category 4
- Acute toxicity - oral Category 5
- Eye damage/irritation Category 1
- Skin corrosion/irritation Category 2
- Toxic to reproduction Category 1B

GHS label elements, including precautionary statements

Pictogram

Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child
Precautionary statement(s)

Prevention
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Response
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure: Eye, skin, inhalation or oral.
Eye: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
Ingestion: May cause upset stomach.
Chronic Health Hazards: None Known.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>% By Weight</th>
<th>Classification HCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>70-80</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>10-20</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>96-48-0</td>
<td>about 10</td>
<td>Acute Tox. 4: H302</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1: H318</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3: H336</td>
</tr>
</tbody>
</table>
4. First Aid Measures
4.1. First aid procedures

Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians
May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures
5.1. Flammable properties:
Flash Point: 78.7 deg.C

5.2. Extinguishing media
Suitable extinguishing media:
Water spray, dry chemical, CO₂ or foam.

Unsuitable extinguishing media:
No information

5.3. Protection of fire fighters
Special hazards arising from the substance or mixture
Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions for firefighters
Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures
General:
Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
Dike spilled product.

6.4. Methods for Clean-up
Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.
6.5. Other information
   No information

6.6. Spill or leak statements by type of chemical
   Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill
   with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute
   spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling
   Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of
   children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage
   Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the
   product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

   Occupational Exposure Limits:
   EU: DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>130mg/m³</td>
<td>958mg/m³</td>
</tr>
</tbody>
</table>

   REACH Toxicological Information (Workers - Hazard via inhalation route)

   US:
   California OELs (California Code of Regulations, Title 8, Section 5155. Airborne Contaminants)

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>5ppm, 33mg/m³</td>
</tr>
</tbody>
</table>

8.2. Engineering controls
   Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

   Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

   Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.

   Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

   Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with gollges) or full face-piece respirator (without googles) filtered with organic vapor cartridge.

   General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.
9. Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

- **Appearance:** Sliver Liquid
- **Odor:** Slightly
- **pH:** Not applicable
- **Boiling point:** No data available
- **Flash point:** 78.7 deg.C
- **Flammability (solid, gas):** Not applicable
- **Explosive properties:** Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
- **Oxidizing properties:** None
- **Vapor pressure:** No data available
- **Relative density:** No data available
- **Water Solubility:** Soluble
- **Partition coefficient: n-octanol/water:** No data available
- **Viscosity:** Less than 5 mPa·s at 20°C
- **Vapor density:** No data available
- **Evaporation rate:** No data available
- **Melting point:** No data available
- **Volatile organic compounds (VOC) content:** 930 gram/liter (maximum value)

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological Information

*Based on toxicology data of chemically similar material

**Acute toxicity:**
- Oral LD50: >2500mg/kg(Rat)*
- Dermal LD50: >2000mg/kg(Rat)*
- Inhalant LC50: No data available

**Skin corrosion/irritation:** Non-irritant (Rabbit, OECD404)*

**Serious eye damage/eye irritation:** Non-irritant (Rabbit, OECD405)*

**Respiratory or skin sensitisation:** Non-sensitizer (LLNA, OECD429)*

**Germ cell mutagenicity:** Negative (by Ames Test)*

**Reproductive toxicity:**
- Suspected of damaging fertility or the unborn child. (Tetraethylene glycol dimethyl ether and a similar chemical)

**Carcinogenicity:** None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

**STOT-single exposure:**
- Overexposure of eye may be mildly irritating.
- Overexposure of skin may cause irritation and in some people swelling and redness.
- Inhalation may result in respiratory irritation and anesthesia.
- Ingestion may cause an upset stomach.

**STOT-repeated exposure:** No data available

**Aspiration hazard:** No data available
12. Ecological Information
Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations
Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information
14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user:
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not regulated

15. Regulatory Information
EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.
Product contains Tetraethylene glycol dimethyl ether that is subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65:
Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.
16. Other Information

NFPA 704: Hazard Rating System

Health - 3, Flammable - 2, Reactivity - 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be 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. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Product and Company Identification
Product name: CLEANING LIQUID FOR ECO-SOL INK, ESL4-CL

Manufacture: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

Importer/Supplier: Roland DGA Corporation
Address: 15363 Barranca Parkway Irvine, CA 92618-2201 U.S.A.
Phone: 949-727-2100
Fax: 949-727-2112

Use of the product: Inkjet Printing
Date of issue: March 20, 2019

2. Hazard Identification
2.1 Emergency Overview:
Appearance and odor: Clear liquid and slightly odor

This product is classified as dangerous according to GHS.
- Flammable liquids Category 4
- Acute toxicity - oral Category 5
- Eye damage/irritation Category 1
- Skin corrosion/irritation Category 2

GHS label elements, including precautionary statements
- Pictogram
- Signal word(s) Danger
- Hazard statement(s) Combustible liquid.
  May be harmful if swallowed.
  Causes skin irritation.
  Causes serious eye damage.
Precautionary statement(s)

Prevention  Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Response    IF ON SKIN: Wash with plenty of soap and water.
If IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
Take off contaminated clothing.

2.2. OSHA regulatory status
This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects
Likely route of exposure: Eye, skin, inhalation or oral.
Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause upset stomach.
Chronic Health Hazards: No information available.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
See section 11 for more information.

2.4. Potential environmental effects
See section 12 for Ecological information.

3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>% By Weight</th>
<th>Classification HCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>70-80</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>γ-butyrolactone</td>
<td>96-48-0</td>
<td>about 15</td>
<td>Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>5-15</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information
4. First Aid Measures
4.1. First aid procedures
   Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
   Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
   Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
   Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians
   May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures
5.1. Flammable properties:
   Flash Point: 71 deg.C

5.2. Extinguishing media
   Suitable extinguishing media:
   - Water spray, dry chemical, CO₂ or foam.
   Unsuitable extinguishing media:
   - No information

5.3. Protection of fire fighters
   Special hazards arising from the substance or mixture
   - Toxic and irritating fume and/or gases may generate by combustion.

   Protective equipment and precautions for firefighters
   - Wear self-contained breathing apparatus (SCBA) and full protective equipment.
   - Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures
   General:
   Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.

6.1. Personal precautions
   - Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions
   - Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment
   - Dike spilled product.

6.4. Methods for Clean-up
   - Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.
6.5. Other information
No information

6.6. Spill or leak statements by type of chemical
Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapers and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage
7.1. Handling
Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage
Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with oxidizing agents or explosives.

8. Exposure Controls/Personal Protection
8.1. Exposure Guidelines
Occupational Exposure Limits:
EU: DNEL

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<td>γ-butyrolactone</td>
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REACH Toxicological Information (Workers - Hazard via inhalation route)

US:
California OELs (California Code of Regulations, Title 8, Section 5155, Airborne Contaminants)

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8.2. Engineering controls
Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)
Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.

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Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with gollges) or full face-piece respirator (without gogles) filtered with organic vapor cartridge.

General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.
9. Physical and Chemical Properties

Solubility: Clear Liquid
Odor: Slightly
pH: Not applicable
Boiling point: No data available
Flash point: 71 deg.C
Flammability(solid,gas): Not applicable
Explosive properties: Explosive limits: 0.3-16.0v/v% as γ-Butyrolactone
Oxidizing properties: None
Vapor pressure: No data available
Relative density: No data available
Solubility: No data available
Water Solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C
Vapor density: No data available
Evaporation rate: No data available
Melting point: No data available
Volatile organic compounds (VOC) content: 940 gram/liter (maximum value)

10. Stability and Reactivity

10.1. Reactivity: Stable under normal temperature
10.2. Possibility of hazardous reactions: None
10.3. Chemical stability: Stable under normal temperature
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: No data available

11. Toxicological Information

*Based on toxicology data of chemically similar material

Acute toxicity:
- Oral LD50: >2500mg/kg(Rat)*
- Dermal LD50: >2000mg/kg(Rat)*
- Inhalant LC50: No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)*
Serious eye damage/eye irritation: Non-irritant (Rabbit, OECD405)*
Respiratory or skin sensitisation: Non-sensitizer (LLNA, OECD429)*
Germ cell mutagenicity: Negative (by Ames Test)*
Reproductive toxicity: No data available
- Suspected of damaging fertility or the unborn child. (Tetraethylene glycol dimethyl ether and a similar chemical)

Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
STOT-single exposure: Overexposure of eye may be mildly irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach.

STOT-repeated exposure: No data available
Aspiration hazard: No data available

12. Ecological Information
Ecotoxicity: No data available
Persistence/Degradability: No data available
Bioaccumulation/Accumulation: No data available
Mobility in environment media: No data available
Other adverse effects: No data available

13. Disposal Considerations
Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information
14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated
14.6. Special precautions for user:
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:
Not regulated

15. Regulatory Information
EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

SARA TITLE III:
Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Dialkylene glycol dialkyl ether (Chemical Category N230)
Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information
NFPA 704: Hazard Rating System
Health - 3, Flammable - 2, Reactivity - 0
0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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