1. Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
EcoXtreme LT Ink, AI4-CY

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacturer's name: 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

E-mail address:
Revised date: 29 September, 2017

1.4. Emergency telephone:

2. Hazard identification
2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.
Flammable liquids Category 4
Skin corrosion/irritation Category 2
Toxic to reproduction Category 1B

2.2. GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger
Hazard statement(s) Combustible liquid.
Causes skin irritation.
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 exposed or concerned: Get medical advice/attention.
Storage
Store in a well-ventilated place. Keep cool.

2.3. Other hazards
Potential Health Effects:
Eyes: Contact with eye will be irritating.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

3. Composition/information on ingredients
Chemical nature: mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-10</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Copper compounds</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</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>203-963-7</td>
<td>N/A for the moment</td>
<td>40-60</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>20-40</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>34590-94-8</td>
<td>252-104-2</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>205-594-7</td>
<td>N/A for the moment</td>
<td>5-10</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>Additive</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5 - 10</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information
*For the full text of the H-Statements mentioned in this Section, see Section 16.
4. First aid measures

4.1. Description of first aid measures

**Eyes:**
In case of contact, immediately flush eyes with plenty of water for several 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. Most important symptoms and effects, both acute and delayed

**Eyes:** Contact with eye will be irritating.

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

**Inhalation:** Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

**Ingestion:** May cause injury of mouth, throat, and stomach.

4.3. Indication of any immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

**Suitable extinguishing media:**
Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

**Unsuitable extinguishing media:**
Water, High-pressure water jet

5.2. Special hazards arising from the substance or mixture

**Hazardous decomposition products:** Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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 and material for containment and cleaning up
   Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections
   Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage
7.1. Precautions for safe handling
   Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2. Conditions for safe storage, including any incompatibilities
   Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3. Specific end use(s):
   Inkjet printing

8. Exposure controls/ personal protection
8.1. Control parameters

   Occupational Exposure Limits:
   EU:

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

   DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>50.05mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

   REACH Toxicological Information (Workers - Hazard via inhalation route)

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

8.2. Exposure controls:
   Appropriate engineering controls: Provide general and/or local exhaust ventilation.

   Respiratory protection: In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Hand protection: Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

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

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

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties
9.1. Information on basic physical and chemical properties

Appearance: Cyan Liquid
Odour: Slight odor
Odour threshold: No data available
pH: Not applicable
Melting point/freezing point: approx. 176 °C or higher
Initial boiling point and boiling range: No data available
Flash point: approx. 70 °C or higher
Evaporation rate: No data available
Flammability(solid, gas): Not applicable
Upper/lower flammability or explosive limits: No data available
Vapor pressure: No data available
Vapor density: No data available
Relative density: 0.945±0.01 (25 °C)
Solubility(ies): Water solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature: not below 220 °C
Decomposition Temperature: No data available
Viscosity: 9.5±0.5 mPa·s
Explosive properties: Lower limits: 0.6 vol% Upper limits: 13.0 vol%
(Diethylene glycol diethyl ether)
Lower limits: 2.5 vol% Upper limits: 33.0 vol%
(Dialkylene glycol dialkyl ether)
Oxidizing properties: No data available
Volatile organic compounds (VOC) content: 780 gram/liter (maximum value)

9.2. Other information: No information

10. Stability and reactivity
10.1. Reactivity: No reactivity under normal temperature.
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: Elevated temperatures/heat, UV light, when not in use.
10.5. Incompatible materials: Avoid contact with acids, amines, free radical initiators, oxidizing agents.
10.6. Hazardous decomposition products: None under normal temperature
11. Toxicological information

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) Diethylene glycol diethyl ether
   - Oral LD$_{50}$: 4970 mg/kg (Rat)
   - Dermal LD$_{50}$: 6097 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

2) Dialkylene glycol dialkyl ether
   - Oral LD$_{50}$: 6000 mg/kg (Rats)
   - Dermal LD$_{50}$: 6526 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

3) Dipropylene glycol monomethyl ether
   - Oral LD$_{50}$: 5130 mg/kg (Rat)
   - Dermal LD$_{50}$: 9500 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

4) Tetraethylene glycol dimethyl ether
   - Oral LD$_{50}$: 5140 mg/kg (Rat)
   - Dermal LD$_{50}$: No data available
   - Inhalation LC$_{50}$: No data available

Skin corrosion/irritation: No data available

Reference data: Moderate irritant (Diethylene glycol diethyl ether)

Serious eye damage/eye irritation: No data available

Respiratory or skin sensitisation: No data available

Germ cell mutagenicity: No data available

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 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

12.1. Toxicity: No data available

12.2. Persistence and degradability: No data available

12.3. Bioaccumulative potential: No data available

12.4. Mobility in soil: No data available

12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.

12.6. Other adverse effects: No data available
13. Disposal considerations
13.1. Waste treatment methods:
   This product is considered as a hazardous waste according to Directive 2008/98/EC.
   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: Not regulated
14.2. UN proper shipping name: Not regulated
14.3. Transport hazard class(es): Not regulated
14.4. Packing group: Not regulated
14.5. Environmental hazards: 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.

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

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

16. Other information
   List of relevant H-Statements:
   H315 Causes skin irritation.
   H360 Maydamage fertility or the unborn child.

   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. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
   EcoXtreme LT Ink, AI4-MG

1.2. Relevant identified uses of the substance or mixture and uses advised against
   Inkjet Printing

1.3. Details of the supplier of the safety data sheet
   Manufacturer's name: 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
   E-mail address:
   Revised date: 29 September, 2017

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
   This product is classified as dangerous according to GHS.
   Flammable liquids Category 4
   Skin corrosion/irritation Category 2
   Toxic to reproduction Category 1B

2.2. GHS label elements, including precautionary statements
   Pictogram
   !
   Signal word(s)  Danger
   Hazard statement(s)  Combustible liquid.
                        Causes skin irritation.
                        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 exposed or concerned: Get medical advice/attention.

Storage
Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Contact with eye will be irritating.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.

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

3. Composition/information on ingredients

Chemical nature: mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-10</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Magenta pigment</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</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>203-963-7</td>
<td>N/A for the moment</td>
<td>40-60</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>20-40</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>34590-94-8</td>
<td>252-104-2</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>205-594-7</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>Additive</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5 - 10</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements mentioned in this Section, see Section 16.
4. First aid measures
4.1. Description of first aid measures
   Eyes: In case of contact, immediately flush eyes with plenty of water for several 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. Most important symptoms and effects, both acute and delayed
   Eyes: Contact with eye will be irritating.
   Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
   Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
   Ingestion: May cause injury of mouth, throat, and stomach.

4.3. Indication of any immediate medical attention and special treatment needed
   No information

5. Firefighting measures
5.1. Extinguishing media
   Suitable extinguishing media:
   - Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.
   Unsuitable extinguishing media:
   - Water, High-pressure water jet

5.2. Special hazards arising from the substance or mixture
   Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

5.3. Advice for firefighters
   Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
   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 and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3. Specific end use(s):

Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>50.05mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

8.2. Exposure controls:

**Appropriate engineering controls:** Provide general and/or local exhaust ventilation.

**Respiratory protection:** In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Hand protection:** Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.
Eye protection: Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, wear safety glasses or chemical splash goggles.

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

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties
9.1. Information on basic physical and chemical properties
- Appearance: Magenta Liquid
- Odour: Slight odor
- Odour threshold: No data available
- pH: Not applicable
- Melting point/freezing point: approx. 176 °C or higher
- Initial boiling point and boiling range: No data available
- Flash point: approx. 70 °C or higher
- Evaporation rate: No data available
- Flammability(solid, gas): Not applicable
- Upper/lower flammability or explosive limits: No data available
- Vapor pressure: No data available
- Vapor density: No data available
- Relative density: 0.948±0.01 (25 °C)
- Solubility(ies): Water solubility: Soluble
- Partition coefficient: n-octanol/water: No data available
- Auto-ignition temperature: not below 220 °C
- Decomposition Temperature: No data available
- Viscosity: 9.5±0.5 mPa·s
- Explosive properties: Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether)
  Lower limits: 2.5 vol% Upper limits: 33.0 vol% (Dialkylene glycol dialkyl ether)
- Oxidizing properties: No data available
- Volatile organic compounds (VOC) content: 780 gram/liter (maximum value)

9.2. Other information: No information

10. Stability and reactivity
10.1. Reactivity: No reactivity under normal temperature.
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: Elevated temperatures/heat, UV light, when not in use.
10.5. Incompatible materials: Avoid contact with acids, amines, free radical initiators, oxidizing agents.
10.6. Hazardous decomposition products: None under normal temperature
11. Toxicological information
11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) Diethylene glycol diethyl ether
   - Oral LD$_{50}$: 4970 mg/kg (Rat)
   - Dermal LD$_{50}$: 6097 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

2) Dialkylene glycol dialkyl ether
   - Oral LD$_{50}$: 6000 mg/kg (Rats)
   - Dermal LD$_{50}$: 6526 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

3) Dipropylene glycol monomethyl ether
   - Oral LD$_{50}$: 5130 mg/kg (Rat)
   - Dermal LD$_{50}$: 9500 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

4) Tetraethylene glycol dimethyl ether
   - Oral LD$_{50}$: 5140 mg/kg (Rat)
   - Dermal LD$_{50}$: No data available
   - Inhalation LC$_{50}$: No data available

Skin corrosion/irritation: No data available

Reference data: Moderate irritant (Diethylene glycol diethyl ether)

Serious eye damage/eye irritation: No data available

Respiratory or skin sensitisation: No data available

Germ cell mutagenicity: No data available

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.

STOT-single exposure: Overexposure of eye may be 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
12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available
13. Disposal considerations
13.1. Waste treatment methods:
   This product is considered as a hazardous waste according to Directive 2008/98/EC.
   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.

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

   International Information:
   None of the ingredients in this ink is listed by IARC as a carcinogen.

16. Other information
   List of relevant H-Statements:
   H315 Causes skin irritation.
   H360 May damage fertility or the unborn child.

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. Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
EcoXtreme LT Ink, AI4-YE

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacture's name: 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

E-mail address:
Revised date: 29 September, 2017

1.4. Emergency telephone:

2. Hazard identification
2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.
- Flammable liquids Category 4
- Skin corrosion/irritation Category 2
- Toxic to reproduction Category 1B

2.2. GHS label elements, including precautionary statements
Pictogram

Signal word(s)  Danger
Hazard statement(s)  Combustible liquid.
                     Causes skin irritation.
                     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 exposed or concerned: Get medical advice/attention.
Storage
Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Contact with eye will be irritating.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.

Carcinogenicity: The product contains Nickel compounds.
IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

3. Composition/information on ingredients

Chemical nature: mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification</th>
<th>EC No. 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-10</td>
<td>Not classified as hazardous</td>
<td></td>
</tr>
<tr>
<td>Yellow pigment (Nickel Compounds)</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
<td></td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>203-963-7</td>
<td>N/A for the moment</td>
<td>40-60</td>
<td>Skin Irrit. 2: H315</td>
<td></td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>20-40</td>
<td>Not classified as hazardous</td>
<td></td>
</tr>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>34590-94-8</td>
<td>252-104-2</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
<td></td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>205-594-7</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Repr. 1B: H360</td>
<td></td>
</tr>
<tr>
<td>Additive</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5 - 10</td>
<td>Not classified as hazardous</td>
<td></td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information
*For the full text of the H-Statements mentioned in this Section, see Section 16.
4. First aid measures
4.1. Description of first aid measures
   Eyes: In case of contact, immediately flush eyes with plenty of water for several 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. Most important symptoms and effects, both acute and delayed
   Eyes: Contact with eye will be irritating.
   Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
   Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
   Ingestion: May cause injury of mouth, throat, and stomach.

4.3. Indication of any immediate medical attention and special treatment needed
   No information

5. Firefighting measures
5.1. Extinguishing media
   Suitable extinguishing media:
   - Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.
   Unsuitable extinguishing media:
   - Water, High-pressure water jet

5.2. Special hazards arising from the substance or mixture
   Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
   Flash Point: approx. 70 °C or higher

5.3. Advice for firefighters
   Wear special chemical protective clothing and positive pressure self-contained breathing apparatus(SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
   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 and material for containment and cleaning up
Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections
Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage
7.1. Precautions for safe handling
Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2. Conditions for safe storage, including any incompatibilities
Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection
8.1. Control parameters
Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>EU</th>
<th>DNEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>components</td>
<td>Long term exposure</td>
</tr>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>50.05mg/m³</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

| Australia: OELs |
| components | TWA |
| Dipropylene glycol monomethyl ether | 308mg/m³, 50ppm |

8.2. Exposure controls:
Appropriate engineering controls: Provide general and/or local exhaust ventilation.

Respiratory protection: In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection: Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.
Eye protection: Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, wear safety glasses or chemical splash goggles.

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

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Yellow Liquid
Odour: Slight odor
Odour threshold: No data available
pH: Not applicable
Melting point/freezing point: approx. 176 °C or higher
Initial boiling point and boiling range: No data available
Flash point: approx. 70 °C or higher
Evaporation rate: No data available
Flammability (solid, gas): Not applicable
Upper/lower flammability or explosive limits: No data available
Vapor pressure: No data available
Vapor density: No data available
Relative density: 0.954±0.01 (25 °C)
Solubility(ies): Water solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature: not below 220 °C
Decomposition Temperature: No data available
Viscosity: 9.5±0.5 mPa·s
Explosive properties: Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether)
Lower limits: 2.5 vol% Upper limits: 33.0 vol% (Dialkylene glycol dialkyl ether)
Oxidizing properties: No data available
Volatile organic compounds (VOC) content: 780 gram/liter (maximum value)

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity: No reactivity under normal temperature.
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: Elevated temperatures/heat, UV light, when not in use.
10.5. Incompatible materials: Avoid contact with acids, amines, free radical initiators, oxidizing agents.
10.6. Hazardous decomposition products: None under normal temperature
11. Toxicological information

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) Diethylene glycol diethyl ether
   - Oral LD$_{50}$: 4970 mg/kg (Rat)
   - Dermal LD$_{50}$: 6097 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

2) Dialkylene glycol dialkyl ether
   - Oral LD$_{50}$: 6000 mg/kg (Rats)
   - Dermal LD$_{50}$: 6526 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

3) Dipropylene glycol monomethyl ether
   - Oral LD$_{50}$: 5130 mg/kg (Rat)
   - Dermal LD$_{50}$: 9500 mg/kg (Rabbit)
   - Inhalation LC$_{50}$: No data available

4) Tetraethylene glycol dimethyl ether
   - Oral LD$_{50}$: 5140 mg/kg (Rat)
   - Dermal LD$_{50}$: No data available
   - Inhalation LC$_{50}$: No data available

Skin corrosion/irritation: No data available

Reference data: Moderate irritant (Diethylene glycol diethyl ether)

Serious eye damage/eye irritation: No data available

Respiratory or skin sensitisation: No data available

Germ cell mutagenicity: No data available

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

Carcinogenicity: The product contains Nickel compounds. IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

STOT-single exposure:
Overexposure of eye may be 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
12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available

13. Disposal considerations
13.1. Waste treatment methods: This product is considered as a hazardous waste according to Directive 2008/98/EC. 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: Not regulated
14.2. UN proper shipping name: Not regulated
14.3. Transport hazard class(es): Not regulated
14.4. Packing group: Not regulated
14.5. Environmental hazards: 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.

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

International Information:
The product contains Nickel compounds.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).
16. Other information

List of relevant H-Statements:

   H315 Causes skin irritation.
   H360 May damage fertility or the unborn child.

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. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier
EcoXtreme LT Ink, AI4-BK

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacture's name: 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

E-mail address:
Revised date: 29 September, 2017

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.
Flammable liquids Category 4
Skin corrosion/irritation Category 2
Toxic to reproduction Category 1B

2.2. GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger
Hazard statement(s) Combustible liquid.
Causes skin irritation.
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 exposed or concerned: Get medical advice/attention.

Storage
Store in a well-ventilated place. Keep cool.

2.3. Other hazards
Potential Health Effects:

Eyes: Contact with eye will be irritating.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.

Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen.

3. Composition/information on ingredients

Chemical nature: mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-10</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Black pigment</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</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>203-963-7</td>
<td>N/A for the moment</td>
<td>40-60</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>Dialkyylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>20-40</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>34590-94-8</td>
<td>252-104-2</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>205-594-7</td>
<td>N/A for the moment</td>
<td>5-10</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>Additive</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5 - 10</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements mentioned in this Section, see Section 16.
4. First aid measures
4.1. Description of first aid measures
   Eyes: In case of contact, immediately flush eyes with plenty of water for several 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. Most important symptoms and effects, both acute and delayed
   Eyes: Contact with eye will be irritating.
   Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
   Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
   Ingestion: May cause injury of mouth, throat, and stomach.

4.3. Indication of any immediate medical attention and special treatment needed
   No information

5. Firefighting measures
5.1. Extinguishing media
   Suitable extinguishing media:
   - Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.
   Unsuitable extinguishing media:
   - Water, High-pressure water jet

5.2. Special hazards arising from the substance or mixture
   Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
   Flash Point: approx. 70 °C or higher

5.3. Advice for firefighters
   Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
   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 and material for containment and cleaning up  
    Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections  
    Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage  
7.1. Precautions for safe handling  
    Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2. Conditions for safe storage, including any incompatibilities  
    Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3. Specific end use(s):  
    Inkjet printing

8. Exposure controls/ personal protection  
8.1. Control parameters  
Occupational Exposure Limits:  
EU:

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethyleneglycol diethyl ether</td>
<td>50.05mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Tetraethyleneglycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>
8.2. Exposure controls:

**Appropriate engineering controls:** Provide general and/or local exhaust ventilation.

**Respiratory protection:** In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Hand protection:** Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

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

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

**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.

**Environmental exposure control:** Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Black Liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Slight odor</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>approx. 176 °C or higher</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>approx. 70 °C or higher</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability(solid, gas)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.964±0.01 (25 °C)</td>
</tr>
<tr>
<td>Solubility(ies)</td>
<td>Water solubility: Soluble</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>not below 220 °C</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>9.5±0.5 mPa·s</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether)</td>
</tr>
<tr>
<td></td>
<td>Lower limits: 2.5 vol% Upper limits: 33.0 vol% (Diakylene glycol dialkyl ether)</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Volatile organic compounds (VOC) content</td>
<td>780 gram/liter (maximum value)</td>
</tr>
</tbody>
</table>
9.2. Other information: No information

10. Stability and reactivity
10.1. Reactivity: No reactivity under normal temperature.
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: Elevated temperatures/heat, UV light, when not in use.
10.5. Incompatible materials: Avoid contact with acids, amines, free radical initiators, oxidizing agents.
10.6. Hazardous decomposition products: None under normal temperature

11. Toxicological information
11.1. Information on toxicological effects
   Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

   Acute toxicity:
   1) Diethylene glycol diethyl ether
      Oral LD$_{50}$ 4970 mg/kg (Rat)
      Dermal LD$_{50}$ 6097 mg/kg (Rabbit)
      Inhalation LC$_{50}$ No data available

   2) Dialkylene glycol dialkyl ether
      Oral LD$_{50}$ 6000 mg/kg (Rats)
      Dermal LD$_{50}$ 6526 mg/kg (Rabbit)
      Inhalation LC$_{50}$ No data available

   3) Dipropylene glycol monomethyl ether
      Oral LD$_{50}$ 5130 mg/kg (Rat)
      Dermal LD$_{50}$ 9500 mg/kg (Rabbit)
      Inhalation LC$_{50}$ No data available

   4) Tetraethylene glycol dimethyl ether
      Oral LD$_{50}$ 5140 mg/kg (Rat)
      Dermal LD$_{50}$ No data available
      Inhalation LC$_{50}$ No data available

   Skin corrosion/irritation: No data available
   Reference data: Moderate irritant (Diethylene glycol diethyl ether)

   Serious eye damage/eye irritation: No data available
   Respiratory or skin sensitisation: No data available
   Germ cell mutagenicity: No data available
   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.
   STOT-single exposure: Overexposure of eye may be 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

12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available

13. Disposal considerations

13.1. Waste treatment methods:
This product is considered as a hazardous waste according to Directive 2008/98/EC. 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.

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

International Information:
None of the ingredients in this ink is listed by IARC as a carcinogen.

16. Other information

List of relevant H-Statements:
H315 Causes skin irritation.
H360 May damage fertility or the unborn child.

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. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier
EcoXtreme LT Ink, AI4-LC

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacture's name: 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

E-mail address:

Revised date: 29 September, 2017

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.
- Flammable liquids Category 4
- Skin corrosion/irritation Category 2
- Toxic to reproduction Category 1B

2.2. GHS label elements, including precautionary statements
Pictogram

<table>
<thead>
<tr>
<th>Signal word(s)</th>
<th>Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard statement(s)</td>
<td>Combustible liquid. Causes skin irritation. May damage fertility or the unborn child</td>
</tr>
</tbody>
</table>
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 exposed or concerned: Get medical advice/attention.

Storage
Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Contact with eye will be irritating.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.

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

3. Composition/information on ingredients

Chemical nature: mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-10</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Copper compounds</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>0.1-1</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>203-963-7</td>
<td>N/A for the moment</td>
<td>30-50</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>20-40</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>34590-94-8</td>
<td>252-104-2</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>205-594-7</td>
<td>N/A for the moment</td>
<td>5-10</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>Additive</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5 - 10</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements mentioned in this Section, see Section 16.
4. First aid measures
4.1. Description of first aid measures

Eyes: In case of contact, immediately flush eyes with plenty of water for several 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. Most important symptoms and effects, both acute and delayed

Eyes: Contact with eye will be irritating.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

4.3. Indication of any immediate medical attention and special treatment needed

No information

5. Firefighting measures
5.1. Extinguishing media

Suitable extinguishing media:
Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:
Water, High-pressure water jet

5.2. Special hazards arising from the substance or mixture

Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
Flash Point: approx. 70 °C or higher

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures

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 and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3. Specific end use(s):

Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>EU: Occupational Exposure Limits:</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

DNEL

<table>
<thead>
<tr>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>50.05mg/m³</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

| Dipropylene glycol monomethyl ether | 308mg/m³, 50ppm |

8.2. Exposure controls:

Appropriate engineering controls: Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.
Eye protection: Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, wear safety glasses or chemical splash goggles.

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

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Appearance: Cyan Liquid
- Odour: Slight odor
- Odour threshold: No data available
- pH: Not applicable
- Melting point/freezing point: approx. 176 °C or higher
- Initial boiling point and boiling range: No data available
- Flash point: approx. 70 °C or higher
- Evaporation rate: No data available
- Flammability(solid, gas): Not applicable
- Upper/lower flammability or explosive limits: No data available
- Vapor pressure: No data available
- Vapor density: No data available
- Relative density: 0.964±0.01 (25 °C)
- Solubility(ies): Water solubility: Soluble
- Partition coefficient: n-octanol/water: No data available
- Auto-ignition temperature: not below 220 °C
- Decomposition Temperature: No data available
- Viscosity: 0.941±0.01 (25 °C)
- Explosive properties: Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether)
- Lower limits: 2.5 vol% Upper limits: 33.0 vol% (Dialkylene glycol dialkyl ether)
- Oxidizing properties: No data available
- Volatile organic compounds (VOC) content: 780 gram/liter (maximum value)

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity: No reactivity under normal temperature.

10.2. Chemical stability: Stable under normal temperature

10.3. Possibility of hazardous reactions: Not expected

10.4. Conditions to avoid: Elevated temperatures/heat, UV light, when not in use.

10.5. Incompatible materials: Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6. Hazardous decomposition products: None under normal temperature
11. Toxicological information

11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) Diethylene glycol diethyl ether
   Oral LD$_{50}$ 4970 mg/kg (Rat)
   Dermal LD$_{50}$ 6097 mg/kg (Rabbit)
   Inhalation LC$_{50}$ No data available

2) Dialkylene glycol dialkyl ether
   Oral LD$_{50}$ 6000 mg/kg (Rats)
   Dermal LD$_{50}$ 6526 mg/kg (Rabbit)
   Inhalation LC$_{50}$ No data available

3) Dipropylene glycol monomethyl ether
   Oral LD$_{50}$ 5130 mg/kg (Rat)
   Dermal LD$_{50}$ 9500 mg/kg (Rabbit)
   Inhalation LC$_{50}$ No data available

4) Tetraethylene glycol dimethyl ether
   Oral LD$_{50}$ 5140 mg/kg (Rat)
   Dermal LD$_{50}$ No data available
   Inhalation LC$_{50}$ No data available

Skin corrosion/irritation: No data available
Reference data: Moderate irritant (Diethylene glycol diethyl ether)

Serious eye damage/eye irritation: No data available

Respiratory or skin sensitisation: No data available
Germ cell mutagenicity: No data available
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 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

12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available
13. Disposal considerations

13.1. Waste treatment methods:
This product is considered as a hazardous waste according to Directive 2008/98/EC. 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.

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

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

16. Other information

List of relevant H-Statements:
H315 Causes skin irritation.
H360 Maydamage fertility or the unborn child.

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. Identification of the substance/mixture and of the company/ undertaking

1.1. Product identifier
   EcoXtreme LT Ink, AI4-LM

1.2. Relevant identified uses of the substance or mixture and uses advised against
   Inkjet Printing

1.3. Details of the supplier of the safety data sheet
   Manufacturer's name: 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

   E-mail address:  
   Revised date: 29 September, 2017

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
   This product is classified as dangerous according to GHS.
   Flammable liquids Category 4
   Skin corrosion/irritation Category 2
   Toxic to reproduction Category 1B

2.2. GHS label elements, including precautionary statements
   Pictogram

   Signal word(s)  Danger
   Hazard statement(s)  Combustible liquid.
                        Causes skin irritation.
                        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 exposed or concerned: Get medical advice/attention.

Storage
Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

 Eyes: Contact with eye will be irritating.
 Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
 Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
 Ingestion: May cause injury of mouth, throat, and stomach.
 Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
 Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

3. Composition/information on ingredients

Chemical nature: mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-10</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Magenta pigment</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>0.1-1</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>112-36-7</td>
<td>203-963-7</td>
<td>N/A for the moment</td>
<td>30-50</td>
<td>Skin Irrit. 2: H315</td>
</tr>
<tr>
<td>Dialkylene glycol dialkyl ether</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>20-40</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>34590-94-8</td>
<td>252-104-2</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>143-24-8</td>
<td>205-594-7</td>
<td>N/A for the moment</td>
<td>5-10</td>
<td>Repr. 1B: H360</td>
</tr>
<tr>
<td>Additive</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5 - 10</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information
*For the full text of the H-Statements mentioned in this Section, see Section 16.
4. First aid measures
4.1. Description of first aid measures
   Eyes: In case of contact, immediately flush eyes with plenty of water for several 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. Most important symptoms and effects, both acute and delayed
   Eyes: Contact with eye will be irritating.
   Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization. May cause injury of mouth, throat, and stomach.
   Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
   Ingestion: May cause injury of mouth, throat, and stomach.

4.3. Indication of any immediate medical attention and special treatment needed
   No information

5. Firefighting measures
5.1. Extinguishing media
   Suitable extinguishing media: Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.
   Unsuitable extinguishing media: Water, High-pressure water jet

5.2. Special hazards arising from the substance or mixture
   Hazardous gases/vapors produced in fire are carbon monoxide, carbon dioxide, oxides of nitrogen.
   Flash Point: approx. 70 °C or higher

5.3. Advice for firefighters
   Wear special chemical protective clothing and positive pressure self-contained breathing apparatus(SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures
6.1. Personal precautions, protective equipment and emergency procedures
   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 and material for containment and cleaning up
Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections
Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage
7.1. Precautions for safe handling
Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2. Conditions for safe storage, including any incompatibilities
Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection
8.1. Control parameters

Occupational Exposure Limits:
EU:

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

DNEL

<table>
<thead>
<tr>
<th>components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol diethyl ether</td>
<td>50.05mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Tetraethylene glycol dimethyl ether</td>
<td>22mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>308mg/m³, 50ppm</td>
</tr>
</tbody>
</table>

US:

<table>
<thead>
<tr>
<th>components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene glycol monomethyl ether</td>
<td>TWA: 600mg/m³, 100ppm</td>
<td>TWA: 100ppm, 606mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL: 150ppm, 909mg/m³</td>
</tr>
</tbody>
</table>

8.2. Exposure controls:
Appropriate engineering controls: Provide general and/or local exhaust ventilation.

Respiratory protection: In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Hand protection: Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

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

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

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties
9.1. Information on basic physical and chemical properties
Appearance: Magenta Liquid
Odor: Slight odor
Odour threshold: No data available
pH: Not applicable
Melting point/freezing point: approx. 176 °C or higher
Initial boiling point and boiling range: No data available
Flash point: approx. 70 °C or higher
Evaporation rate: No data available
Flammability(solid, gas): Not applicable
Upper/lower flammability or explosive limits:
Vapor pressure: No data available
Vapor density: No data available
Relative density: 0.942±0.01 (25 °C)
Solubility(ies): Water solubility: Soluble
Partition coefficient: n-octanol/water: No data available
Auto-ignition temperature: not below 220 °C
Decomposition Temperature: No data available
Viscosity: 9.5±0.5 mPa·s
Explosive properties: Lower limits: 0.6 vol% Upper limits: 13.0 vol% (Diethylene glycol diethyl ether)
Lower limits: 2.5 vol% Upper limits: 33.0 vol% (Dialkylene glycol dialkyl ether)
Oxidizing properties: No data available
Volatile organic compounds (VOC) content: 780 gram/liter (maximum value)

9.2. Other information: No information

10. Stability and reactivity
10.1. Reactivity: No data available
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: High and freezing temperatures.
10.5. Incompatible materials: Oxidizers and explosives.
10.6. Hazardous decomposition products: Thermal decomposition will produce oxides of carbon, copper and nitrogen.
11. Toxicological information
11.1. Information on toxicological effects

Routes of Overexposure: Eye, skin, inhalation, and oral ingestion

Acute toxicity:

1) Diethylene glycol diethyl ether
   Oral LD$_{50}$: 4970 mg/kg (Rat)
   Dermal LD$_{50}$: 6097 mg/kg (Rabbit)
   Inhalation LC$_{50}$: No data available

2) Dialkyline glycol dialkyl ether
   Oral LD$_{50}$: 6000 mg/kg (Rats)
   Dermal LD$_{50}$: 6526 mg/kg (Rabbit)
   Inhalation LC$_{50}$: No data available

3) Dipropylene glycol monomethyl ether
   Oral LD$_{50}$: 5130 mg/kg (Rat)
   Dermal LD$_{50}$: 9500 mg/kg (Rabbit)
   Inhalation LC$_{50}$: No data available

4) Tetraethylene glycol dimethyl ether
   Oral LD$_{50}$: 5140 mg/kg (Rat)
   Dermal LD$_{50}$: No data available
   Inhalation LC$_{50}$: No data available

Skin corrosion/irritation: No data available

Reference data: Moderate irritant (Diethylene glycol diethyl ether)

Serious eye damage/eye irritation: No data available

Respiratory or skin sensitisation: No data available

Germ cell mutagenicity: No data available

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 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

12.1. Toxicity: No data available

12.2. Persistence and degradability: No data available

12.3. Bioaccumulative potential: No data available

12.4. Mobility in soil: No data available

12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.

12.6. Other adverse effects: Disclosure of ink and abandonment has a possibility of affecting environment. Then, cautions are required for handing. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.
13. Disposal considerations

13.1. Waste treatment methods:
This product is considered as a hazardous waste according to Directive 2008/98/EC. 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.

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

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

16. Other information

List of relevant H-Statements:
H315 Causes skin irritation.
H360 May damage fertility or the unborn child.

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.