

## Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX2, ESL4-CY  
ECO-SOL MAX2, ESL4-4CY

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

#### Potential Health Effects:

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

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01- 2119969946 -13-0000	40-50	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	15-25	Not classified as hazardous

\*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: **Causes severe eye injury which may persist for several days.**
- 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 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.  
Flash Point: 71 deg.C**

##### 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

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:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	920 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

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

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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

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.

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## 16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

ECO-SOL MAX2, ESL4-MG  
ECO-SOL MAX2, ESL4-4MG

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

#### Potential Health Effects:

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

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01-2119969946-13-0000	40-50	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	15-25	Not classified as hazardous

\*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: **Causes severe eye injury which may persist for several days.**
- 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 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.**  
**Flash Point: 71 deg.C**

##### 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

##### 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, 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

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:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	920 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

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

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)

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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

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:<br>ADR/ADG/DOT, IMDG, or IATA :                   | Not regulated   |
| 14.2. UN proper shipping name:<br>ADR/ADG/DOT, IMDG, or IATA :              | Not regulated   |
| 14.3. Transport hazard class(es):<br>ADR/ADG/DOT, IMDG, or IATA :           | Not regulated   |
| 14.4. Packing group:<br>ADR/ADG/DOT, IMDG, or IATA :                        | Not regulated   |
| 14.5. Environmental hazards:<br>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.

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

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## 16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

ECO-SOL MAX2, ESL4-YE  
ECO-SOL MAX2, ESL4-4YE

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

#### Potential Health Effects:

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

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01-2119969946-13-0000	40-50	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	15-25	Not classified as hazardous

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

**Flash Point: 71 deg.C**

##### 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

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, 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

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:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	920 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

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

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:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

ECO-SOL MAX2, ESL4-BK  
ECO-SOL MAX2, ESL4-4BK

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

Potential Health Effects:

Eyes:	Causes severe eye injury which may persist for several days.
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 Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

### 3. Composition/information on ingredients

**Chemical nature:** mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Carbon black	1333-86-4	215-609-9	N/A for the moment	1-5	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01-2119969946-13-0000	40-50	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	15-25	Not classified as hazardous

\*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: **Causes severe eye injury which may persist for several days.**
- 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 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.  
Flash Point: 71 deg.C**

##### 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

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, 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

Australia: OELs

components	TWA	STEL
Carbon black	3mg/m <sup>3</sup>	-

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:	Black Liquid
Odour:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	920 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

Routes of Overexposure:	Eye, skin, inhalation, and oral	
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:	No data available	
	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 Group3(Not classifiable as to carcinogenicity to humans).	

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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

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:<br>ADR/ADG/DOT, IMDG, or IATA :                   | Not regulated   |
| 14.2. UN proper shipping name:<br>ADR/ADG/DOT, IMDG, or IATA :              | Not regulated   |
| 14.3. Transport hazard class(es):<br>ADR/ADG/DOT, IMDG, or IATA :           | Not regulated   |
| 14.4. Packing group:<br>ADR/ADG/DOT, IMDG, or IATA :                        | Not regulated   |
| 14.5. Environmental hazards:<br>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:  
The product contains Carbon black.  
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

---

## 16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

ECO-SOL MAX2, ESL4-4LC

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

#### Potential Health Effects:

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

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorant	C.B.I.	C.B.I.	N/A for the moment	<1	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01-2119969946-13-0000	40-50	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	15-25	Not classified as hazardous

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

**Flash Point: 71 deg.C**

##### 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

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, 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

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

Solubility:	Cyan Liquid
Odour:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	920 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

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

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

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:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

ECO-SOL MAX2, ESL4-4LM

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

#### Potential Health Effects:

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

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorant	C.B.I.	C.B.I.	N/A for the moment	<1	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	5-15	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01- 2119969946 -13-0000	40-50	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	15-25	Not classified as hazardous

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

**Flash Point: 71 deg.C**

##### 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

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, 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

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:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	920 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

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

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:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

ECO-SOL MAX2, ESL4-4LK

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

#### Potential Health Effects:

Eyes:	Causes severe eye injury which may persist for several days.
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 Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

### 3. Composition/information on ingredients

**Chemical nature:** mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Carbon black	1333-86-4	215-609-9	N/A for the moment	<1	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01-2119969946-13-0000	40-50	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	15-25	Not classified as hazardous

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

**Flash Point: 71 deg.C**

##### 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

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, 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

Australia: OELs

components	TWA	STEL
Carbon black	3mg/m <sup>3</sup>	-

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:	Black Liquid
Odour:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	920 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

Routes of Overexposure:	Eye, skin, inhalation, and oral
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:	No data available 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 Group3(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

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:  
 The product contains Carbon black.  
 IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).



**16. Other information**

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

ECO-SOL MAX2, ESL4-WH

#### 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: 30 August, 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

#### 2.2. 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.

## 2.3. Other hazards

## Potential Health Effects:

Eyes:	Contact with eye may be mildly 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 Titanium dioxide. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

## 3. Composition/information on ingredients

## Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Titanium dioxide	13463-67-7	236-675-5	N/A for the moment	10-20	Not classified as hazardous
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	5-15	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01- 2119969946 -13-0000	50-60	Skin Irrit. 2: H315
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	about 20	Not classified as hazardous

\*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: Causes severe eye injury which may persist for several days.
- 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 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.  
Flash Point: 71 deg.C

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**

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, 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:

Australia: OELs

components	TWA	STEL
Titanium dioxide	10mg/m <sup>3</sup>	-

### 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:	White Liquid
Odour:	Slightly
<b>Odour threshold:</b>	<b>No data available</b>
pH:	Not applicable
<b>Melting point/freezing point:</b>	<b>No data available</b>
<b>Initial boiling point and boiling range:</b>	<b>No data available</b>
Flash point:	71 deg.C
Evaporation rate:	No data available
Flammability(solid,gas):	Not applicable
<b>Upper/lower flammability or explosive limits:</b>	<b>No data available</b>
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	No data available
<b>Solubility(ies):</b>	<b>Water solubility: Soluble</b>
Partition coefficient: n-octanol/water:	No data available
<b>Auto-ignition temperature:</b>	<b>No data available</b>
<b>Decomposition temperature:</b>	<b>No data available</b>
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
<b>Volatile organic compounds (VOC) content:</b>	<b>800 gram/liter (maximum value)</b>

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

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

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

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

Carcinogenicity: The product contains Titanium dioxide.  
IARC evaluated printing ink as a Group3(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

- 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.

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.

#### International Information:

The product contains Titanium dioxide.

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.

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

ECO-SOL MAX2, ESL4-MT

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
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. 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.

### 2.3. Other hazards

#### Potential Health Effects:

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

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorants	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	01- 2119969946 -13-0000	70-80	Skin Irrit. 2: H315
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Repr. 1B: H360
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	about 10	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Proprietary organic materials	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous

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

**Flash Point: 71 deg.C**

##### 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

### 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, 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: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

### 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:	Sliver Liquid
Odour:	Slightly
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	71 deg.C
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:	No data available
Solubility(ies):	Water solubility: Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Volatile organic compounds (VOC) content:	930 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:	Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

Routes of Overexposure:	Eye, skin, inhalation, and oral						
Acute toxicity:	<table border="0"> <tr> <td>Oral LD50</td> <td>&gt;2500mg/kg(Rat)*</td> </tr> <tr> <td>Dermal LD50</td> <td>&gt;2000mg/kg(Rat)*</td> </tr> <tr> <td>Inhalant LC50</td> <td>No data available</td> </tr> </table>	Oral LD50	>2500mg/kg(Rat)*	Dermal LD50	>2000mg/kg(Rat)*	Inhalant LC50	No data available
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

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:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- 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

CLEANING LIQUID FOR ECO-SOL INK, ESL4-CL

#### 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: 30 August, 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
Acute toxicity - oral	Category 5
Eye damage/irritation	Category 1
Skin corrosion/irritation	Category 2

#### 2.2. 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.

## 2.3. Other hazards

## Potential Health Effects:

Eyes:

Causes severe eye injury which may persist for several days.

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

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Diethylene glycol diethyl ether	112-36-7	203-963-7	01-2119969946-13-0000	70-80	Skin Irrit. 2: H315
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	<20	Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336
Dialkylene glycol dialkyl ether	C.B.I.	C.B.I.	N/A for the moment	5-15	Not classified as hazardous

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

Flash Point: 71 deg.C

#### 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

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, 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

Dike spill. 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): **Cleaning liquid**

**8. Exposure controls/ personal protection**

8.1. Control parameters

Occupational Exposure Limits:

EU: DNEL

components	Long term exposure	Short term exposure
Diethylene glycol diethyl ether	50.05mg/m <sup>3</sup>	-
γ-butyrolactone	130mg/m <sup>3</sup>	958mg/m <sup>3</sup>

REACH Toxicological Information (Workers - Hazard via inhalation route)

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 cleaning liquid on the printer. However, in case of direct contact to the cleaning liquid, use protective gloves. Recommended impervious gloves is butyl rubber glove.

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

**Skin protection:** Not required under suitable use as setting the cleaning liquid on the printer. However, in case of direct contact to the cleaning liquid, 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

Solubility: Clear Liquid  
 Odour: Slightly  
**Odour threshold:** No data available  
 pH: Not applicable  
**Melting point/freezing point:** No data available  
**Initial boiling point and boiling range:** No data available  
 Flash point: 71 deg.C  
 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:	No data available
<b>Solubility(ies):</b>	<b>Water solubility: Soluble</b>
Partition coefficient: n-octanol/water:	No data available
<b>Auto-ignition temperature:</b>	<b>No data available</b>
<b>Decomposition temperature:</b>	<b>No data available</b>
Viscosity:	Less than 5 mPa·s at 20°C
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
<b>Volatile organic compounds (VOC) content:</b>	<b>940 gram/liter (maximum value)</b>

9.2. Other information: No information

## 10. Stability and reactivity

10.1. Reactivity:	<b>No reactivity under normal temperature</b>
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	<b>Not expected</b>
10.4. Conditions to avoid:	<b>Elevated temperatures/heat, UV light, when not in use.</b>
10.5. Incompatible materials:	<b>Avoid contact with acids, amines, free radical initiators, oxidizing agents.</b>
10.6. Hazardous decomposition products:	<b>Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.</b>

## 11. Toxicological information

\*Based on toxicology data of chemically similar material

### 11.1. Information on toxicological effects

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

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

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

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:

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### 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:

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H336 May cause drowsiness or dizziness.

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