

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-BK/ESL3-4BK

#### 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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is not classified as hazardous according to Directive 1999/45/EC.

#### 2.2. Label elements

The product does not need to be labelled in accordance with Directive 1999/45/EC.

#### 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.  
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.  
Ingestion: May cause upset stomach.  
Chronic Health Hazards: None Known.  
Carcinogenicity: The product contains 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	Classification 67/548/EEC
Carbon black	1333-86-4	215-609-9	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Synthetic polymer	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	55-65	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

Eyes:	Contact with eye may be mildly irritating.
Skin:	Contact with skin may cause irritation, swelling or redness.
Inhalation:	Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion:	May cause upset stomach.

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

No information

## 5. Firefighting measures

### 5.1. Extinguishing media

**Suitable extinguishing media:**

Water spray, dry chemical, CO<sub>2</sub> or foam.

**Unsuitable extinguishing media:**

No information

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

## 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

**Occupational Exposure Limits:**

**US:**

components	OSHA:PEL	ACGIH:TLV
Carbon black	3.5mg/m <sup>3</sup>	3.5mg/m <sup>3</sup>

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

components	PEL	STEL
Carbon black	3.5mg/m <sup>3</sup>	-
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>	-

**Australia: OELs**

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

## 8.2. Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance:	Black Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: <b>0.3-16.0</b> v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: **No information**

## 10. Stability and reactivity

10.1. Reactivity:	<b>No data available</b>
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	<b>Not expected</b>
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

## 11. Toxicological information

### 11.1. Information on toxicological effects

Routes of Overexposure:	Eye, skin, inhalation, and oral						
Acute toxicity:	<table> <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:	Moderate 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 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:

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

## 15. Regulatory information

EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This **product** has not carried out any Chemical Safety Assessment yet.

US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

**Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.**

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: **Not classified as hazardous according to NOHSC criteria.**

## 16. Other information

List of relevant H-Statements in section 3: **Nothing**

List of relevant R-phrases: **Nothing**

The information in this Material Safety Data Sheet (MSDS) 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.

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-CY/ESL3-4CY

#### 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

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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is not classified as hazardous according to Directive 1999/45/EC.

#### 2.2. Label elements

The product does not need to be labelled in accordance with Directive 1999/45/EC.

#### 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.  
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.  
Ingestion: May cause upset stomach.  
Chronic Health Hazards: None Known.  
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen.

### 3. Composition/information on ingredients

**Chemical nature:** mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Synthetic polymer	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	55-65	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

Eyes:	Contact with eye may be mildly irritating.
Skin:	Contact with skin may cause irritation, swelling or redness.
Inhalation:	Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion:	May cause upset stomach.

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

No information

## 5. Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media:

Water spray, dry chemical, CO<sub>2</sub> or foam.

#### Unsuitable extinguishing media:

No information

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

### 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits:

US:

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

components	TWA
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>

### 8.2. Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance:	Cyan Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: <b>0.3-16.0v/v%</b> as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: **No information**

## 10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

## 11. Toxicological information

### 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.

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:

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

#### 15. Regulatory information

##### EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This product has not carried out any Chemical Safety Assessment yet.

##### US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

##### SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

##### Australia Information:

Hazardous statement: Not classified as hazardous according to NOHSC criteria.

#### 16. Other information

List of relevant H-Statements in section 3: Nothing

List of relevant R-phrases: Nothing

The information in this Material Safety Data Sheet (MSDS) 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.

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-MG/ESL3-4MG

#### 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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is not classified as hazardous according to Directive 1999/45/EC.

#### 2.2. Label elements

The product does not need to be labelled in accordance with Directive 1999/45/EC.

#### 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.  
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.  
Ingestion: May cause upset stomach.  
Chronic Health Hazards: None Known.  
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen.

### 3. Composition/information on ingredients

**Chemical nature:** mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Synthetic polymer	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	55-65	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

Eyes:	Contact with eye may be mildly irritating.
Skin:	Contact with skin may cause irritation, swelling or redness.
Inhalation:	Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion:	May cause upset stomach.

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

No information

## 5. Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media:

Water spray, dry chemical, CO<sub>2</sub> or foam.

#### Unsuitable extinguishing media:

No information

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

### 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits:

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

components	TWA
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>

### 8.2. Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance:	Magenta Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: <b>0.3-16.0</b> v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: **No information**

## 10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

## 11. Toxicological information

### 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.

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:

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

## 15. Regulatory information

### EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This product has not carried out any Chemical Safety Assessment yet.

### US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65: Not regulated

### SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

### Australia Information:

Hazardous statement: Not classified as hazardous according to NOHSC criteria.

## 16. Other information

List of relevant H-Statements in section 3: Nothing

List of relevant R-phrases: Nothing

The information in this Material Safety Data Sheet (MSDS) 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.

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-YE/ESL3-4YE

#### 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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is classified as dangerous according to EU Directive 1999/45/EC.

Xi R41

#### 2.2. Label elements

In accordance with 1999/45/EC:



Xi Irritant

#### Wording of Risk and Safety Phrases:

R41: Risks of serious damage to eyes.

S25: Avoid contact with eyes.

S26: In case of contact with eyes, rinse immediately with plenty water and seek medical advice.

S39: Wear eye/face protection.

#### 2.3. Other hazards

##### Potential Health Effects:

Eyes: Contact with eye is irritating.  
Skin: Contact with skin may cause irritation, swelling or redness.  
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.  
Ingestion: May cause upset stomach.  
Chronic Health Hazards: None Known.  
Carcinogenicity: The product contains Nickel compounds.  
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	Classification 67/548/EEC
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Synthetic polymer	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	55-65	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

Eyes:	Contact with eye is irritating.
Skin:	Contact with skin may cause irritation, swelling or redness.
Inhalation:	Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion:	May cause upset stomach.

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

No information

## 5. Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media:

Water spray, dry chemical, CO<sub>2</sub> or foam.

#### Unsuitable extinguishing media:

No information

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

### 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits:

US:

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

components	TWA
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>

### 8.2. Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance:	Yellow Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: No information

## 10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

## 11. Toxicological information

### 11.1. Information on toxicological effects

Routes of Overexposure:	Eye, skin, inhalation, and oral						
Acute toxicity:	<table> <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:	Mild irritant (Rabbit, OECD404)						
Serious eye damage/eye irritation:	Corrosive effects (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 Nickel compounds. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).						
STOT-single exposure:	Overexposure of eye is 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 applicable
- 14.2. UN proper shipping name:  
ADR/ADG/DOT, IMDG, or IATA : Not applicable
- 14.3. Transport hazard class(es):  
ADR/ADG/DOT, IMDG, or IATA : Not applicable
- 14.4. Packing group:  
ADR/ADG/DOT, IMDG, or IATA : Not applicable
- 14.5. Environmental hazards:  
ADR/ADG/DOT, IMDG, or IATA : Not applicable
- 14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not applicable

## 15. Regulatory information

### EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This **product** has not carried out any Chemical Safety Assessment yet.

### US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

**Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.**

### California Proposition 65: Nickel compounds

Wording of Risk and Safety Phrase: "WARNING: This product contains a chemical known to the State of California to cause cancer"

### SARA TITLE III:

#### Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)  
Nickel compounds (Category Code N495)

### Australia Information:

**Hazardous statement: Classified as hazardous according to NOHSC criteria.**

## 16. Other information

List of relevant H-Statements in section 3: Nothing

List of relevant R-phrases: R41 Risk of serious damage to eyes

The information in this Material Safety Data Sheet (MSDS) 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.

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-LC/ESL3-4LC

#### 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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is not classified as hazardous according to Directive 1999/45/EC.

#### 2.2. Label elements

The product does not need to be labelled in accordance with Directive 1999/45/EC.

#### 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.  
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and **anesthesia**.  
Ingestion: May cause upset stomach.  
Chronic Health Hazards: None Known.  
Carcinogenicity: **None of the ingredients in this ink is listed by IARC as a carcinogen.**

### 3. Composition/information on ingredients

**Chemical nature:** mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Colorant	C.B.I.	C.B.I.	N/A for the moment	<5	Not classified as hazardous	Not classified as hazardous
Synthetic polymer	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	55-70	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	<1	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

- Eyes: Contact with eye may be mildly irritating.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

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

No information

## 5. Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media:

Water spray, dry chemical, CO<sub>2</sub> or foam.

#### Unsuitable extinguishing media:

No information

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

### 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits:

US:

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

components	TWA
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>

### 8.2. Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Solubility:	Cyan Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: No information

## 10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

## 11. Toxicological information

### 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.

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:

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

## 15. Regulatory information

### EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This **product** has not carried out any Chemical Safety Assessment yet.

### US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

**Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.**

California Proposition 65: Not regulated

### SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

### Australia Information:

Hazardous statement: **Not classified as hazardous according to NOHSC criteria.**

## 16. Other information

List of relevant H-Statements in section 3: Nothing

List of relevant R-phrases: Nothing

The information in this Material Safety Data Sheet (MSDS) 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.

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-LM/ESL3-4LM

#### 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

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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is not classified as hazardous according to Directive 1999/45/EC.

#### 2.2. Label elements

The product does not need to be labelled in accordance with Directive 1999/45/EC.

#### 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.  
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.  
Ingestion: May cause upset stomach.  
Chronic Health Hazards: None Known.  
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen.

### 3. Composition/information on ingredients

#### Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Colorant	C.B.I.	C.B.I.	N/A for the moment	<5	Not classified as hazardous	Not classified as hazardous
Synthetic polymer	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	55-70	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	<1	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

Eyes:	Contact with eye may be mildly irritating.
Skin:	Contact with skin may cause irritation, swelling or redness.
Inhalation:	Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion:	May cause upset stomach.

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

No information

## 5. Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media:

Water spray, dry chemical, CO<sub>2</sub> or foam.

#### Unsuitable extinguishing media:

No information

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

### 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits:

US:

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

components	TWA
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>

### 8.2. Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance:	Magenta Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: No information

## 10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

## 11. Toxicological information

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

### 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.

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:

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

#### 15. Regulatory information

##### EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This **product** has not carried out any Chemical Safety Assessment yet.

##### US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

**Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.**

California Proposition 65: Not regulated

##### SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

##### Australia Information:

Hazardous statement: **Not classified as hazardous according to NOHSC criteria.**

#### 16. Other information

List of relevant H-Statements in section 3: Nothing

List of relevant R-phrases: Nothing

The information in this Material Safety Data Sheet (MSDS) 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.

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is not classified as hazardous according to Directive 1999/45/EC.

#### 2.2. Label elements

The product does not need to be labelled in accordance with Directive 1999/45/EC.

#### 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.  
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.  
Ingestion: May cause upset stomach.  
Chronic Health Hazards: None Known.  
Carcinogenicity: The product contains Titanium dioxide.  
IARC evaluated printing ink as a 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	Classification 67/548/EEC
Titanium dioxide	13463-67-7	236-675-5	N/A for the moment	5 – 15	Not classified as hazardous	Not classified as hazardous
Synthetic polymer	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	50-60	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	<5	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

Eyes	Contact with eye may be mildly irritating.
Skin	Contact with skin may cause irritation, swelling or redness.
Inhalation:	Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion:	May cause upset stomach.

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

No information

## 5. Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media:

Water spray, dry chemical, CO<sub>2</sub> or foam.

#### Unsuitable extinguishing media:

No information

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

### 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits:

US:

components	OSHA:PEL	ACGIH:TLV
Titanium dioxide	15mg/m <sup>3</sup> * *for total dust	10mg/m <sup>3</sup>

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

components	TWA
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>

#### Australia: OELs

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

### 8.2 Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance:	White Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: 0.3-16.0v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: No information

## 10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

## 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:

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

#### 15. Regulatory information

##### EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This **product** has not carried out any Chemical Safety Assessment yet.

##### US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

**Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.**

California Proposition 65: Not regulated

##### SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

##### Australia Information:

Hazardous statement: **Not classified as hazardous according to NOHSC criteria.**

#### 16. Other information

List of relevant H-Statements in section 3: Nothing

List of relevant R-phrases: Nothing

The information in this Material Safety Data Sheet (MSDS) 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.

## Material Safety Data Sheet

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

#### 1.1. Product identifier

ECO-SOL MAX, ESL3-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:

Revision: 11 August, 2011

#### 1.4. Emergency telephone:

### 2. Hazard identification

#### 2.1. Classification of the substance or mixture

This product is not classified as hazardous according to Directive 1999/45/EC.

#### 2.2. Label elements

The product does not need to be labelled in accordance with Directive 1999/45/EC.

#### 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.
Inhalation:	Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion:	May cause upset stomach.
Chronic Health Hazards:	None Known.
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen.

### 3. Composition/information on ingredients

**Chemical nature:** mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008	Classification 67/548/EEC
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	203-963-7	N/A for the moment	65-75	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol dimethyl ether	143-24-8	205-594-7	N/A for the moment	10-20	Not classified as hazardous	Not classified as hazardous
$\gamma$ -butyrolactone	96-48-0	202-509-5	N/A for the moment	5-15	Not classified as hazardous	Not classified as hazardous
Tetraethylene glycol monobutyl ether	1559-34-8	216-322-1	N/A for the moment	1-5	Not classified as hazardous	Not classified as hazardous
Additives	C.B.I.	C.B.I.	N/A for the moment	< 1	Not classified as hazardous	Not classified as hazardous

\*C.B.I.: Confidential Business Information

### 4. First aid measures

#### 4.1. Description of first aid measures

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

#### 4.2. Most important symptoms and effects, both acute and delayed

- Eyes: Contact with eye may be mildly irritating.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

#### 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, CO<sub>2</sub> or foam.

#### Unsuitable extinguishing media:

Do NOT use water.

### 5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).

Flash Point: about 71 deg.C (closed cup)

### 5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.

Applying direct water may be dangerous because fire may expand to surroundings.

## 6. Accidental release measures

### General:

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

### 6.1. Personal precautions, 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

### 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. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

### 7.2. Conditions for safe storage, including any incompatibilities

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

### 7.3. Specific end use(s):

Inkjet printing

## 8. Exposure controls/ personal protection

### 8.1. Control parameters

#### Occupational Exposure Limits:

US:

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

components	TWA
Diethylene glycol diethyl ether	5ppm, 33mg/m <sup>3</sup>

### 8.2. Exposure controls:

Occupational exposure control:	Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
Personal protective equipment:	
Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case ventilation is not sufficient, wear respiratory protection.</b>
Hand protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, use protective gloves.</b>
Eye protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.</b>
Skin protection:	Not required under suitable use as setting the cartridge on the printer. <b>However, in case of direct contact to ink, wear protective clothing.</b>
Hygiene measures:	<b>Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.</b>
Environmental exposure control:	<b>Avoid release to the environment.</b>

## 9. Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance:	Sliver Liquid
Odor:	Slightly
pH:	Not applicable
Boiling point:	No data available
Flash point:	About 71 deg.C (closed cup)
Flammability(solid,gas):	Not applicable
Explosive properties:	Explosive limits: <b>0.3-16.0</b> v/v% as $\gamma$ -Butyrolactone
Oxidizing properties:	None
Vapor pressure:	No data available
Relative density:	No data available
Solubility:	No data available
Water Solubility:	Soluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Vapor density:	Greater than 1 (air=1)
Evaporation rate:	No data available
Melting point:	No data available

### 9.2. Other information: **No information**

## 10. Stability and reactivity

10.1. Reactivity:	No data available
10.2. Chemical stability:	Stable under normal temperature
10.3. Possibility of hazardous reactions:	Not expected
10.4. Conditions to avoid:	High and freezing temperatures
10.5. Incompatible materials:	Oxidizers and explosives
10.6. Hazardous decomposition products:	No data available

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

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 applicable

14.2. UN proper shipping name:

ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.3. Transport hazard class(es):

ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.4. Packing group:

ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.5. Environmental hazards:

ADR/ADG/DOT, IMDG, or IATA : Not applicable

14.6. Special precautions for user:

Transport and storage of the product in accordance with general precautions and instructions mentioned in this MSDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:

Not applicable

#### 15. Regulatory information

EU Information:

Chemical Safety Assessment according to (EC)1907/2006:

This product has not carried out any Chemical Safety Assessment yet.

US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.

Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.

California Proposition 65:

Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Not classified as hazardous according to NOHSC criteria.

#### 16. Other information

List of relevant H-Statements in section 3: Nothing

List of relevant R-phrases: Nothing

The information in this Material Safety Data Sheet (MSDS) 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.