

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: 17 December, 2014

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.

T R61-62
Xi R38, R41

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

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

2.3. Other hazards

Potential Health Effects:

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

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 | 01-2119969946-13-0000 | 55-65 | Skin Irrit. 2: H315 | Xi: R38 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | <20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Repr. 1B: H360 | T: R61-62 |
| 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 |
| Proprietary organic materials | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous | Not classified as hazardous |

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility.
- 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Cyan Liquid
 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 γ-Butyrolactone

| | |
|---|------------------------|
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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

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

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

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

STOT-repeated exposure: No data available

Aspiration hazard: No data available

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

14.1. UN Class/UN Number:

ADR/ADG/DOT, IMDG, or IATA : Not 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 SDS.

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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- H360 May damage fertility or the unborn child.

List of relevant R-phrases:

- R22 Harmful if swallowed.
- R38 Irritating to skin.
- R41 Risk of serious damage to eyes.
- R61 May cause harm to the unborn child.
- R62 Possible risk of impaired fertility.
- R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

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

1.1. Product identifier

ECO-SOL 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: 17 December, 2014

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.

| | |
|----|----------|
| T | R61-62 |
| Xi | R38, R41 |

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

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

2.3. Other hazards

Potential Health Effects:

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

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 | 01-2119969946-13-0000 | 55-65 | Skin Irrit. 2: H315 | Xi: R38 |
| γ-butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | <20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Repr. 1B: H360 | T: R61-62 |
| 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 |
| Proprietary organic materials | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous | Not classified as hazardous |

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility.
- 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Appearance: | Magenta Liquid |
| Odor: | 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 γ -Butyrolactone |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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 | |
| | Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical) | |
| Carcinogenicity: | None of the ingredients in this product is listed by IARC as a carcinogen. (1,2A and 2B) | |
| STOT-single exposure: | Overexposure of eye may be mildly irritating. | |
| | Overexposure of skin may cause irritation and in some people swelling and redness. | |
| | Inhalation may result in respiratory irritation and anesthesia. | |
| | Ingestion may cause an upset stomach. | |
| STOT-repeated exposure: | No data available | |
| Aspiration hazard: | No data available | |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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 SDS. |
| 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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- H360 May damage fertility or the unborn child.

List of relevant R-phrases:

- R22 Harmful if swallowed.
- R38 Irritating to skin.
- R41 Risk of serious damage to eyes.
- R61 May cause harm to the unborn child.
- R62 Possible risk of impaired fertility.
- R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

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

1.1. Product identifier

ECO-SOL 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: 17 December, 2014

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.

T R61-62
Xi R38, R41

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

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

2.3. Other hazards

Potential Health Effects:

| | |
|-------------------------|--|
| Eyes: | Causes severe eye injury which may persist for several days. |
| Skin: | Contact with skin may cause irritation, swelling or redness. |
| Inhalation: | Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | The product contains 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 |
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | 01-2119969946-13-0000 | 55-65 | Skin Irrit. 2: H315 | Xi: R38 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | <20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Repr. 1B: H360 | T: R61-62 |
| 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 |
| Proprietary organic materials | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous | Not classified as hazardous |

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility.
- 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ -butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---|--------------------|-----------|
| Nickel, metal and insoluble compounds (as Ni) | 1mg/m ³ | - |

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Appearance: | Yellow Liquid |
| 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 γ -Butyrolactone |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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: | 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 | |
| | Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical) | |
| Carcinogenicity: | The product contains Nickel compounds. | |
| | IARC evaluated printing ink as a 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 SDS. |
| 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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: 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.

International Information:

The product contains Nickel compounds.

IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- H360 May damage fertility or the unborn child.

List of relevant R-phrases:

- R22 Harmful if swallowed.
- R38 Irritating to skin.
- R41 Risk of serious damage to eyes.
- R61 May cause harm to the unborn child.
- R62 Possible risk of impaired fertility.
- R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

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

1.1. Product identifier

ECO-SOL 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: 17 December, 2014

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.

T R61-62
Xi R38, R41

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

Hazard statement(s)

Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May damage fertility or the unborn child

Precautionary statement(s)

Prevention

Do not handle until all safety precautions have been read and understood.
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

Response

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

2.3. Other hazards

Potential Health Effects:

Eyes:

Causes severe eye injury which may persist for several days.

Skin:

Contact with skin may cause irritation, swelling or redness.

Inhalation:

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

Ingestion:

May cause upset stomach.

Chronic Health Hazards:

None Known.

Carcinogenicity:

The product contains Carbon black.

IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

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 |
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | 01-2119969946-13-0000 | 55-65 | Skin Irrit. 2: H315 | Xi: R38 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | <20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Repr. 1B: H360 | T: R61-62 |
| 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 |
| Proprietary organic materials | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous | Not classified as hazardous |

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility.
- 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Carbon black | 2mg/m ³ | - |
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|--------------|----------------------|----------------------|
| Carbon black | 3.5mg/m ³ | 3.5mg/m ³ |

Australia: OELs

| components | TWA | STEL |
|--------------|--------------------|------|
| Carbon black | 3mg/m ³ | - |

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Appearance: | Black Liquid |
| 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 γ -Butyrolactone |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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>>2500mg/kg(Rat)</td> </tr> <tr> <td>Dermal LD50</td> <td>>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 Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical) | | | | | | |
| Carcinogenicity: | The product contains Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans). | | | | | | |
| STOT-single exposure: | Overexposure of eye may be mildly irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach. | | | | | | |
| STOT-repeated exposure: | No data available | | | | | | |
| Aspiration hazard: | No data available | | | | | | |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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 SDS. |
| 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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

The product contains Carbon black.

IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- H360 May damage fertility or the unborn child.

List of relevant R-phrases:

- R22 Harmful if swallowed.
- R38 Irritating to skin.
- R41 Risk of serious damage to eyes.
- R61 May cause harm to the unborn child.
- R62 Possible risk of impaired fertility.
- R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

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

1.1. Product identifier

ECO-SOL 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: 17 December, 2014

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.

T R61-62
Xi R38, R41

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

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

2.3. Other hazards

Potential Health Effects:

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

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 | Not classified as hazardous | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | 01-2119969946-13-0000 | 55-65 | Skin Irrit. 2: H315 | Xi: R38 |
| γ-butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | <20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Repr. 1B: H360 | T: R61-62 |
| 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 |
| Proprietary organic materials | 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

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility.
- 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Solubility: | Cyan Liquid |
| 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 γ -Butyrolactone |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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 Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical) | |
| Carcinogenicity: | None of the ingredients in this product is listed by IARC as a carcinogen. (1,2A and 2B) | |
| STOT-single exposure: | Overexposure of eye may be mildly irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach. | |
| STOT-repeated exposure: | No data available | |
| Aspiration hazard: | No data available | |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: ADR/ADG/DOT, IMDG, or IATA : | Not 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 SDS. |
| 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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H318 Causes serious eye damage.
- H336 May cause drowsiness or dizziness.
- H360 May damage fertility or the unborn child.

List of relevant R-phrases:

- R22 Harmful if swallowed.
- R38 Irritating to skin.
- R41 Risk of serious damage to eyes.
- R61 May cause harm to the unborn child.
- R62 Possible risk of impaired fertility.
- R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

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

1.1. Product identifier

ECO-SOL 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: 17 December, 2014

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.

T R61-62
Xi R38, R41

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

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

2.3. Other hazards

Potential Health Effects:

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

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 | 01-2119969946-13-0000 | 55-65 | Skin Irrit. 2: H315 | Xi: R38 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | <20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Repr. 1B: H360 | T: R61-62 |
| 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 |
| Proprietary organic materials | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous | Not classified as hazardous |

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility.
- 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Appearance: | Magenta Liquid |
| Odor: | 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 γ -Butyrolactone |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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

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

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

| | |
|-------------------------|---|
| STOT-single exposure: | Overexposure of eye may be mildly irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach. |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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 SDS. |
| 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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H336 May cause drowsiness or dizziness.

H360 May damage fertility or the unborn child.

List of relevant R-phrases:

R22 Harmful if swallowed.

R38 Irritating to skin.

R41 Risk of serious damage to eyes.

R61 May cause harm to the unborn child.

R62 Possible risk of impaired fertility.

R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

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

1.1. Product identifier

ECO-SOL 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: 17 December, 2014

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.

T R61-62
Xi R38, R41

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

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

2.3. Other hazards

Potential Health Effects:

| | |
|-------------------------|--|
| Eyes: | Causes severe eye injury which may persist for several days. |
| Skin: | Contact with skin may cause irritation, swelling or redness. |
| Inhalation: | Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | The product contains 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 | 10 – 20 | Not classified as hazardous | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | 01-2119969946-13-0000 | 45-55 | Skin Irrit. 2: H315 | Xi: R38 |
| γ-butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | <20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Repr. 1B: H360 | T: R61-62 |
| 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 |
| Proprietary organic materials | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous | Not classified as hazardous |

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

| | |
|-------------|--|
| Eyes: | Non-corrosive but causes irreversible eye effects. |
| Skin: | Contact with skin may cause irritation, swelling or redness. |
| Inhalation: | Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility. |
| 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Titanium dioxide | 10mg/m ³ | - |
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|------------------|--|---------------------|
| Titanium dioxide | 15mg/m ³ * *for total dust | 10mg/m ³ |

Australia: OELs

| components | TWA | STEL |
|------------------|---------------------|------|
| Titanium dioxide | 10mg/m ³ | - |

8.2 Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Appearance: | White Liquid |
| 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 γ -Butyrolactone |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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 | |
| | Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical) | |
| Carcinogenicity: | The product contains Titanium dioxide. | |
| | IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans). | |

| | |
|-------------------------|---|
| STOT-single exposure: | Overexposure of eye may be mildly irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach. |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: ADR/ADG/DOT, IMDG, or IATA : | Not 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 SDS. |
| 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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

The product contains Titanium dioxide.

IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H336 May cause drowsiness or dizziness.

H360 May damage fertility or the unborn child.

List of relevant R-phrases:

R22 Harmful if swallowed.

R38 Irritating to skin.

R41 Risk of serious damage to eyes.

R61 May cause harm to the unborn child.

R62 Possible risk of impaired fertility.

R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

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

1.1. Product identifier

ECO-SOL 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: 17 December, 2014

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.

T R61-62
Xi R38, R41

This product is classified as dangerous according to GHS.

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

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

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

2.3. Other hazards

Potential Health Effects:

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

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 | 01-2119969946-13-0000 | 65-75 | Skin Irrit. 2: H315 | Xi: R38 |
| Tetraethylene glycol dimethyl ether | 143-24-8 | 205-594-7 | N/A for the moment | 10-20 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 | Xn: R22 Xi: R41 R67 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Repr. 1B: H360 | T: R61-62 |
| 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 |

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

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

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Vapors or mist, especially as generated from heating the material or as from exposure in poorly ventilated areas or confined spaces, may be harmful to the unborn child and at the risk of impaired fertility.
- 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, CO₂ 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:

EU: DNEL

| components | Long term exposure | Short term exposure |
|-------------------------------------|----------------------|----------------------|
| Tetraethylene glycol dimethyl ether | 22mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

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

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

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

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|---|
| Appearance: | Sliver Liquid |
| 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 γ -Butyrolactone |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Relative density: | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | 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 | |
| | Suspected of damaging fertility or the unborn child.(Tetraethylene glycol dimethyl ether and a similar chemical) | |
| Carcinogenicity: | None of the ingredients in this product is listed by IARC as a carcinogen. (1,2A and 2B) | |

| | |
|-------------------------|---|
| STOT-single exposure: | Overexposure of eye may be mildly irritating. Overexposure of skin may cause irritation and in some people swelling and redness. Inhalation may result in respiratory irritation and anesthesia. Ingestion may cause an upset stomach. |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

- 13.1. Waste treatment methods:
This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

- | | |
|---|---|
| 14.1. UN Class/UN Number: ADR/ADG/DOT, IMDG, or IATA : | Not 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 SDS. |
| 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 that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H336 May cause drowsiness or dizziness.

H360 May damage fertility or the unborn child.

List of relevant R-phrases:

R22 Harmful if swallowed.

R38 Irritating to skin.

R41 Risk of serious damage to eyes.

R61 May cause harm to the unborn child.

R62 Possible risk of impaired fertility.

R67 Vapours may cause drowsiness and dizziness.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. Roland DG does not warrant the completeness or accuracy of the information contained herein.