

Material Safety Data Sheet

1. Identification of The Substance/**Mixture** and of The Company/Undertaking

1.1. Identification of the **mixture**: ECO-SOL MAX, ESL3-BK/ESL3-4BK

1.2. Use of the substance/**mixture**: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Revision: **15 October 2009**
E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink does not meet the criteria for dangerous classification according to EU Directive 1999/45/EC. Ink component is a black liquid that may cause eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye may be mildly irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach

Chronic Health Hazards: None Known

Carcinogenicity: With excessive exposure, carbon black has been listed as a possible human carcinogen. However, as engineered within this ink cartridge, emissions to air of carbon black during normal printing use have not been found. IARC, the International Agency for Research on Cancer, has found printing inks to be not classifiable as human carcinogens.

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EEC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrases	EU OELs	Remarks
Carbon black	1333-86-4	215-609-9	Not available for the moment	1-5	-	-	-	-
Synthetic polymer	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	55-65	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1-5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8. Exposure Controls and Personal Protection

8.1. Exposure limit values:

US:

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

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

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

- 8.2 Exposure controls:
- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance	Black Liquid
Odor:	Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point:	No data available
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10. Stability and Reactivity

Stability:	Stable under normal temperature
Hazardous polymerization:	No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

- Overexposure of eye surface to ink may be mildly irritating
- Overexposure of skin to ink contact may cause irritation and in some people swelling and redness
- Intentional inhalation overexposure to ink vapors may result in respiratory tract irritation and anesthesia
- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Negative (by Ames Test)

Carcinogenicity: With excessive exposure, carbon black has been listed as a possible human carcinogen. However, as engineered within this ink cartridge, emissions to air of carbon black during normal printing use have not been found. IARC, the International Agency for Research on Cancer, has found printing inks to be not classifiable as human carcinogens.

Toxicity Data:	Oral LD ₅₀	Dermal LD ₅₀	Inhalant LC ₅₀
	>2500mg/kg(Rat)	>2000mg/kg(Rat)	No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)

Skin irritating: Mild irritant (Rabbit, OECD404)

Skin sensitizing: Non-sensitizer (LLNA, OECD429)

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
12.6 Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transportation Information

UN Class/UN Number:	Not applicable
DOT, IMO, or IATA :	Not hazardous classification

15. Regulatory Considerations

EU Information:

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

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

Symbols and indication according to 1999/45/EC:

This ink does not meet the criteria for classification as dangerous.

US Information:

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Canada Information:

WHMIS Controlled Product: Not applicable (Manufactured article)

Australia Information:

Statement of Hazardous Nature: Not classified as hazardous according to criteria of NOHSC

16. Other Information

List of relevant R-phrases: Nothing

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of **mixture**, but should only be used as a guide. It is subject to revision from time to time. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of The Substance/**Mixture** and of The Company/Undertaking

1.1. Identification of the **mixture**: ECO-SOL MAX, ESL3-CY/ESL3-4CY

1.2. Use of the substance/**mixture**: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Revision: **15 October 2009**
E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink does not meet the criteria for dangerous classification according to EU Directive 1999/45/EC. Ink component is a cyan liquid that may cause eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye may be mildly irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach
Chronic Health Hazards: None Known
Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EEC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrase	EU OELs	Remarks
Colorant	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Synthetic polymer	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	55-65	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1-5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8. Exposure Controls and Personal Protection

8.1. Exposure limit values:

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

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

8.2 Exposure controls:

- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance: Cyan Liquid
Odor: Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point: No data available

10. Stability and Reactivity

Stability: Stable under normal temperature
Hazardous polymerization: No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

- Overexposure of eye surface to ink may be mildly irritating
- Overexposure of skin to ink contact may cause irritation and in some people swelling and redness
- Intentional inhalation overexposure to ink vapors may result in respiratory tract irritation and anesthesia
- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Negative (by Ames Test)

Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

Toxicity Data:	Oral LD ₅₀	Dermal LD ₅₀	Inhalant LC ₅₀
	>2500mg/kg(Rat)	>2000mg/kg(Rat)	No data available

Eye irritating: Mild irritant (Rabbit, OECD405)

Skin irritating: Mild irritant (Rabbit, OECD404)

Skin sensitizing: Non-sensitizer (LLNA, OECD429)

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
12.6 Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transportation Information

UN Class/UN Number:	Not applicable
DOT, IMO, or IATA :	Not hazardous classification

15. Regulatory Considerations

EU Information:

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

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

Symbols and indication according to 1999/45/EC:

This ink does not meet the criteria for classification as dangerous.

US Information:

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Canada Information:

WHMIS Controlled Product: Not applicable (Manufactured article)

Australia Information:

Statement of Hazardous Nature: Not classified as hazardous according to criteria of NOHSC

16. Other Information

List of relevant R-phrases: Nothing

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of **mixture**, but should only be used as a guide. It is subject to revision from time to time. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of The Substance/**Mixture** and of The Company/Undertaking

1.1. Identification of the **mixture**: ECO-SOL MAX, ESL3-MG/ESL3-4MG

1.2. Use of the substance/**mixture**: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Revision: **15 October 2009**
E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink does not meet the criteria for dangerous classification according to EU Directive 1999/45/EC. Ink component is a magenta liquid that may cause eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye may be mildly irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach
Chronic Health Hazards: None Known
Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EEC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrase	EU OELs	Remarks
Colorant	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Synthetic polymer	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	55-65	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1-5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8. Exposure Controls and Personal Protection

8.1. Exposure limit values:

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

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

8.2 Exposure controls:

- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance	Magenta Liquid
Odor:	Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point:	No data available
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10. Stability and Reactivity

Stability:	Stable under normal temperature
Hazardous polymerization:	No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

- Overexposure of eye surface to ink may be mildly irritating
- Overexposure of skin to ink contact may cause irritation and in some people swelling and redness
- Intentional inhalation overexposure to ink vapors may result in respiratory tract irritation and anesthesia
- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Negative (by Ames Test)

Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

Toxicity Data:	Oral LD ₅₀	Dermal LD ₅₀	Inhalant LC ₅₀
	>2500mg/kg(Rat)	>2000mg/kg(Rat)	No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)

Skin irritating: Mild irritant (Rabbit, OECD404)

Skin sensitizing: Non-sensitizer (LLNA, OECD429)

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
12.6 Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transportation Information

UN Class/UN Number:	Not applicable
DOT, IMO, or IATA :	Not hazardous classification

15. Regulatory Considerations

EU Information:

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

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

Symbols and indication according to 1999/45/EC:

This ink does not meet the criteria for classification as dangerous.

US Information:

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Canada Information:

WHMIS Controlled Product: Not applicable (Manufactured article)

Australia Information:

Statement of Hazardous Nature: Not classified as hazardous according to criteria of NOHSC

16. Other Information

List of relevant R-phrases: Nothing

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of **mixture**, but should only be used as a guide. It is subject to revision from time to time. Roland DG does not warrant the completeness or accuracy of the information contained herein.

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1.1. Identification of the **mixture**: ECO-SOL MAX, ESL3-YE/ESL3-4YE

1.2. Use of the substance/**mixture**: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Revision: **15 October 2009**
E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink meets the criteria as "risk of serious damage to eyes" according to EU Directive 1999/45/EC. Ink component is a yellow liquid that causes eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye is irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach
Chronic Health Hazards: **None Known**
Carcinogenicity: **Contains Nickel compounds**
IARC: **Group 1**
NTP: **Known to be human carcinogen**
Proposition 65: **Known to cause cancer**

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EEC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrase	EU OELs	Remarks
Colorant	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Synthetic polymer	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	55-65	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1-5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8. Exposure Controls and Personal Protection

8.1. Exposure limit values:

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

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

8.2 Exposure controls:

- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance	Yellow Liquid
Odor:	Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point:	No data available
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10. Stability and Reactivity

Stability:	Stable under normal temperature
Hazardous polymerization:	No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

- Overexposure of eye surface to ink is irritating
- Overexposure of skin to ink contact may cause irritation and in some people swelling and redness
- Intentional inhalation overexposure to ink vapors may result in respiratory tract irritation and anesthesia
- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Negative (by Ames Test)

Carcinogenicity: Contains Nickel compounds

IARC: Group 1

NTP: Known to be human carcinogen

Proposition 65: Known to cause cancer

Toxicity Data:	Oral LD ₅₀	Dermal LD ₅₀	Inhalant LC ₅₀
	>2500mg/kg(Rat)*	>2000mg/kg(Rat)*	No data available

Eye irritating: Corrosive effects (Rabbit, OECD405)

Skin irritating: Mild irritant (Rabbit, OECD404)

Skin sensitizing: Non-sensitizer (LLNA, OECD429)

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
12.6 Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transportation Information

UN Class/UN Number:	Not applicable
DOT, IMO, or IATA :	Not hazardous classification

15. Regulatory Considerations

EU Information:

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

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

Symbols and indication according to 1999/45/EC:

Symbols and indication according to 1999/45/EC:



Xi

Irritant

Wording of Risk and Safety Phrase:

R41: Risks of serious damage to eyes.

S25: Avoid contact with eyes.

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

S39: Wear eye/face protection.

US Information:

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

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)

Canada Information:

WHMIS Controlled Product:

Not applicable (Manufactured article)

Australia Information:

Statement of Hazardous Nature:

Classified as R41 Risk of serious damage to eyes according to criteria of NOHSC

16. Other Information

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

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of **mixture**, but should only be used as a guide. It is subject to revision from time to time. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of The Substance/**Mixture** and of The Company/Undertaking

1.1. Identification of the **mixture**: ECO-SOL MAX, ESL3-LC/ESL3-4LC

1.2. Use of the substance/**mixture**: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Revision: 15 October 2009
E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink does not meet the criteria for dangerous classification according to EU Directive 1999/45/EC. Ink component is a cyan liquid that may cause eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye may be mildly irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach
Chronic Health Hazards: None Known
Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EEC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrase	EU OELs	Remarks
Colorant	Trade secret	Trade secret	Not available for the moment	<1	-	-	-	-
Synthetic polymer	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	55-70	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1-5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	<1	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8. Exposure Controls and Personal Protection

8.1. Exposure limit values:

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

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

8.2 Exposure controls:

- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance	Cyan Liquid
Odor:	Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point:	No data available
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10. Stability and Reactivity

Stability:	Stable under normal temperature
Hazardous polymerization:	No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

- Overexposure of eye surface to ink may be mildly irritating
- Overexposure of skin to ink contact may cause irritation and in some people swelling and redness
- Intentional inhalation overexposure to ink vapors may result in respiratory tract irritation and anesthesia
- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Negative (by Ames Test)

Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

Toxicity Data:	Oral LD ₅₀	Dermal LD ₅₀	Inhalant LC ₅₀
	>2500mg/kg(Rat)	>2000mg/kg(Rat)	No data available

Eye irritating: Mild irritant (Rabbit, OECD405)

Skin irritating: Mild irritant (Rabbit, OECD404)

Skin sensitizing: Non-sensitizer (LLNA, OECD429)

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
12.6 Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transportation Information

UN Class/UN Number:	Not applicable
DOT, IMO, or IATA :	Not hazardous classification

15. Regulatory Considerations

EU Information:

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

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

Symbols and indication according to 1999/45/EC:

This ink does not meet the criteria for classification as dangerous.

US Information:

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Canada Information:

WHMIS Controlled Product: Not applicable (Manufactured article)

Australia Information:

Statement of Hazardous Nature: Not classified as hazardous according to criteria of NOHSC

16. Other Information

List of relevant R-phrases: Nothing

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of **mixture**, but should only be used as a guide. It is subject to revision from time to time. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of The Substance/**Mixture** and of The Company/Undertaking

1.1. Identification of the **mixture**: ECO-SOL MAX, ESL3-LM/ESL3-4LM

1.2. Use of the substance/**mixture**: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Revision: **15 October 2009**
E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink does not meet the criteria for dangerous classification according to EU Directive 1999/45/EC. Ink component is a magenta liquid that may cause eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye may be mildly irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach
Chronic Health Hazards: None Known
Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EEC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrase	EU OELs	Remarks
Colorant	Trade secret	Trade secret	Not available for the moment	<1	-	-	-	-
Synthetic polymer	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	55-70	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1-5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	<1	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8. Exposure Controls and Personal Protection

8.1. Exposure limit values:

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

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

8.2 Exposure controls:

- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance	Magenta Liquid
Odor:	Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point:	No data available
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10. Stability and Reactivity

Stability:	Stable under normal temperature
Hazardous polymerization:	No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

- Overexposure of eye surface to ink may be mildly irritating
- Overexposure of skin to ink contact may cause irritation and in some people swelling and redness
- Intentional inhalation overexposure to ink vapors may result in respiratory tract irritation and anesthesia
- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Negative (by Ames Test)

Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

Toxicity Data:	Oral LD ₅₀	Dermal LD ₅₀	Inhalant LC ₅₀
	>2500mg/kg(Rat)	>2000mg/kg(Rat)	No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)

Skin irritating: Mild irritant (Rabbit, OECD404)

Skin sensitizing: Non-sensitizer (LLNA, OECD429)

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
12.6 Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transportation Information

UN Class/UN Number:	Not applicable
DOT, IMO, or IATA :	Not hazardous classification

15. Regulatory Considerations

EU Information:

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

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

Symbols and indication according to 1999/45/EC:

This ink does not meet the criteria for classification as dangerous.

US Information:

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Canada Information:

WHMIS Controlled Product: Not applicable (Manufactured article)

Australia Information:

Statement of Hazardous Nature: Not classified as hazardous according to criteria of NOHSC

16. Other Information

List of relevant R-phrases: Nothing

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of **mixture**, but should only be used as a guide. It is subject to revision from time to time. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of The Substance/**Mixture** and of The Company/**Undertaking**

1.1. Identification of the **mixture**: ECO-SOL MAX, ESL3-WH

1.2. Use of the substance/**mixture**: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Revision: **15 October 2009**

E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink does not meet the criteria for dangerous classification according to EU Directive 1999/45/EC. Ink component is a white liquid that may cause eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye may be mildly irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach
Chronic Health Hazards: **None Known**
Carcinogenicity: **No data available**

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EEC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrase	EU OELs	Remarks
Titanium dioxide	13463-67-7	236-675-5	Not available for the moment	5 – 15	-	-	-	-
Synthetic polymer	Trade secret	Trade secret	Not available for the moment	1-10	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	50-60	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	10-20	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1-5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	<5	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or, alcohol foam
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8.1. Exposure limit values:

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

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

8.2 Exposure controls:

- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance:	White Liquid
Odor:	Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point:	No data available
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10. Stability and Reactivity

Stability:	Stable under normal temperature
Hazardous polymerization:	No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

- Overexposure of eye surface to ink may be mildly irritating
- Overexposure of skin to ink contact may cause irritation and in some people swelling and redness
- Intentional inhalation overexposure to ink vapors may result in respiratory tract irritation and anesthesia
- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Not meet the criteria for classification according to EU Directive 1999/45/EC

Carcinogenicity: No data available

Toxicity Data:	Oral LD ₅₀	Not meet the criteria for classification according to EU Directive 1999/45/EC
	Dermal LD ₅₀	Not meet the criteria for classification according to EU Directive 1999/45/EC
	Inhalant LC ₅₀	No data available

Eye irritating: Not meet the criteria for classification according to EU Directive 1999/45/EC

Skin irritating: Not meet the criteria for classification according to EU Directive 1999/45/EC

Skin sensitizing: Not meet the criteria for classification according to EU Directive 1999/45/EC

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
12.6 Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transportation Information

UN Class/UN Number:	Not applicable
DOT, IMO, or IATA :	Not hazardous classification

15. Regulatory Considerations

EU Information:

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

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

Symbols and indication according to 1999/45/EC:

This ink does not meet the criteria for classification as dangerous.

US Information:

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Canada Information:

WHMIS Controlled Product: Not applicable (Manufactured article)

Australia Information:

Statement of Hazardous Nature: Not classified as hazardous according to criteria of NOHSC

16. Other Information

List of relevant R-phrases: Nothing

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of **mixture**, but should only be used as a guide. It is subject to revision from time to time. Roland DG does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Identification of The Substance/Mixture and of The Company/Undertaking

1.1. Identification of the mixture: ECO-SOL MAX, ESL3-MT

1.2. Use of the substance/mixture: Inkjet Printing

1.3. Company/undertaking identification

Manufacturer/Distributor: 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
Date Prepared: 15 October 2009
E-mail address:

1.4. Emergency telephone:

2. Hazard Identification

2.1 Emergency Overview:

This ink does not meet the criteria for dangerous classification according to EU Directive 1999/45/EC. Ink component is a silver liquid that may cause eye irritation.

2.2 Potential Health Effects:

Eyes: Ink contact with eye may be mildly irritating.
Skin: Ink contact with skin may cause irritation, swelling or redness.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation.
Ingestion: May cause upset stomach
Chronic Health Hazards: None Known
Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

3. Composition/Information on Ingredients

This is a solvent ink formulation

Ink Composition	CAS No.	EC No.	EU registration No.	% By Weight	EU Symbols	EU R-phrases	EU OELs	Remarks
Colorant	Trade secret	Trade secret	Not available for the moment	1-5	-	-	-	-
Diethylene glycol diethyl ether	112-36-7	203-963-7	Not available for the moment	70 – 75	-	-	-	-
Tetraethylene glycol, dimethyl ether	143-24-8	205-594-7	Not available for the moment	About 15	-	-	-	-
γ -Butyrolactone	96-48-0	202-509-5	Not available for the moment	About 10	-	-	-	-
Tetraethylene glycol, monobutyl ether	1559-34-8	216-322-1	Not available for the moment	1 – 5	-	-	-	-
Additives	Trade secret	Trade secret	Not available for the moment	< 1	-	-	-	-

4. First Aid Measures

- 4.1 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.
- 4.2 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- 4.3 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- 4.4 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
Flash Point: about 71 deg.C (closed cup)
- 5.2 Extinguishing Media: Dry chemical, carbon dioxide or, alcohol foam
Do not use water as extinguishing media.
- 5.3 Special Fire Fighting Procedures: Wear self-contained breathing apparatus (SCBA) and full protective equipment.
- 5.4 Unusual Fire and Explosion Hazards: None.

6. Accidental Release Measures

- General: Notify the appropriate authorities immediately. Take all additional action necessary to prevent and remedy the adverse effects of the spill. Absorb spill with sand or earth then place in a chemical waste container.
- 6.1 Personal precautions: Evacuate personnel, thoroughly ventilate area, and use self-contained breathing apparatus.
- 6.2 Environmental precautions: Dike spill. Prevent liquid from entering sewers, waterways or low areas.
- 6.3 Methods for cleaning up: Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

7. Handling And Storage

- 7.1 Handling: Avoid contact with eyes or clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink ink. Do not dismantle cartridge. Make sure cartridge is dry before insertion into printer housing.
- 7.2 Storage: Do not store the cartridge in high or freezing temperatures. Keep cartridge out of direct sunlight. Do not store cartridges with oxidizing agents or explosives.
- 7.3 Specific use(s): Not specified

8. Exposure Controls and Personal Protection

8.1. Exposure limit values:

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

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

8.2 Exposure controls:

- 8.2.1 Occupational exposure control Application of collective protection measures at source: Proper ventilation
- 8.2.1.1 Respiratory protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.2 Hand protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.3 Eye protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.1.4 Skin protection Not required under suitable use as setting the cartridge on the printer.
- 8.2.2 Environmental exposure control Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance	Sliver Liquid
Odor:	Slightly

9.2 Important health, safety and environmental information

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: 1.4-6.9v/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

9.3 Other information

Melting point:	No data available
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10. Stability and Reactivity

Stability:	Stable under normal temperature
Hazardous polymerization:	No data available

10.1 Conditions to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicological Information

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

Acute Health Hazards:

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- Intentional or accidental oral ingestion may cause an upset stomach

Chronic Health Hazards: None Known

Mutagenicity: Not meet the criteria for classification according to EU Directive 1999/45/EC

Carcinogenicity: Not contain any substances listed in IARC Monographs(1,2A and 2B)

Toxicity Data:	Oral LD ₅₀	Not meet the criteria for classification according to EU Directive 1999/45/EC
	Dermal LD ₅₀	Not meet the criteria for classification according to EU Directive 1999/45/EC
	Inhalant LC ₅₀	No data available

Eye irritating: Not meet the criteria for classification according to EU Directive 1999/45/EC

Skin irritating: Not meet the criteria for classification according to EU Directive 1999/45/EC

Skin sensitizing: Not meet the criteria for classification according to EU Directive 1999/45/EC

12. Ecological Information

12.1 Ecotoxicity:	No data available on the adverse effects of this ink on the environment
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	No data available on the adverse effects of this ink on the environment
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Result of PBT assessment	Has not carried out PBT assessment
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California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Canada Information:

WHMIS Controlled Product: Not applicable (Manufactured item)

Australia Information:

Statement of Hazardous Nature: Not classified as hazardous according to criteria of NOHSC

16. Other Information

List of relevant R-phrases: Nothing

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