

Material Safety Data Sheet

1. Article and Corporate Identification

1.1. Product:

ECO-SOL INK, ESL-BK

1.2. Manufacturer/Distributor:

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: + 81-53-484-1221

1.3. Medical Emergency Number

Not Available

2. Composition Information

This is a solvent ink formulation

Ink Composition	CAS No.	% By Weight
Carbon black	1333-86-4	1-5
Synthetic polymer	-	1-5
Dipropylene glycol monomethyl ether	34590-94-8	15-25
Diethylene glycol diethyl ether	112-36-7	45-55
Tetraethylene glycol monomethyl ether	1559-34-8	5-15
Gamma-butyrolactone	96-48-0	10-20
Additives	-	1-5

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a black liquid that causes eye, nose or throat irritation, and that effects anesthesia, if inhales. Ink may flash, when under high temperature. Avoid contact with eyes or clothing. In the case of skin contact, wash with soap and water. Keep out of reach of children.

3.2 Potential Health Effects:

Eyes: Ink contact with eye will be irritating. See Section 11 for Toxicology.
 Skin: Ink contact with skin may cause minimally irritation. See Section 11 for Toxicology.
 Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation and anesthesia. See Section 11 for Toxicology.
 Ingestion: May cause upset stomach. See Section 11 for Toxicology.

4. First Aid Measures

4.1 Eyes: Immediately flush with room temperature, low pressure, clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
 4.2 Skin: Wash surface areas with soap and water. Wash soiled clothing before rewearing. Consult a physician if irritation continues.
 4.3 Inhalation: Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.
 4.4 Ingestion: Seek medical advice; and attention if stomach continues to be upset.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
See Section 9 for Flash Point.
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Fire Fighting Instructions: Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

6. Accidental Release Measures

- 6.1 Personal protections: Remove the person of the leeward. Keep away the person from periphery of the place of the leakage. Ventilate sufficiently during clean-up in case of inside of a house.
- 6.2 Methods for cleaning up: If a spill occurs, use sponges to wipe-up ink, then rinse area with damp cloth. Place waste in closed container for disposal. Do not dispose of waste to the sewer. Wash hands with soap and water.

7. Precautions for Safe Handling and Use

- 7.1 Handling: 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 cartridges 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 Engineering controls: Closed system or local ventilation is recommended
- 8.2 Exposure controls:
- 8.2.1 Occupational exposure controls:

Substance(s)	EU:	ACGIH: TLV	OSHA: PEL
Dipropylene glycol monomethyl ether	308mg/m ³ , 50ppm	100ppm	600mg/m ³ , 100ppm TWA:600mg/m ³ , 100ppm STEL:900mg/m ³ , 150ppm

- 8.2.1.1 Respiratory protection: Not required under suitable use as setting the cartridge on the printer; however, self-contained breathing apparatus or organic canister mask is sufficient when used for work.
- 8.2.1.2. Hand protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.1.3 Eye protection: Not required under suitable use as setting the cartridge on the printer; however, wearing safety goggle is sufficient.
- 8.2.1.4 Skin protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 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
Melting point:	No data available
Flash point:	about 71 deg.C (closed cup)
Autoflammability:	None
Explosive properties:	1.1-1.4v/v% as Dipropylene glycol mono methyl ether 1.4-6.9v/v% as Gamma-butyrolactone
Oxidizing properties:	None
Vapor density:	Greater than 1 (air=1)
Relative density:	No data available
Solubility in water:	Soluble
Solubility in fat:	No data available
Partition coefficient:	No data available
Viscosity:	No data available

9.3 Other information

Not specified

10. Stability and Reactivity

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

10.1 Condition to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicology and Health Hazards

*Based on toxicology data of chemically similar material

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 (Ames assay)*

Carcinogenicity: With excessive exposure, carbon black has been listed as a possible human carcinogen. However, as engineered within this ink cartridges, 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 as group 3.

Toxicity Data: Oral LD₅₀ Dermal LD₅₀ Inhalant LC₅₀
>2500mg/kg(Rats)* >2000mg/kg(Rats)* No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)*

Skin irritating: Mild irritant (Rabbit, OECD404)*

Skin sensitizing: Non-sensitiser (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 Other adverse effects:	No data available

13. Disposal Considerations

Disposal should be in accordance with federal, state, and local requirement.

14. Transportation Information


UN Class/UN Number: Not applicable

15. Regulatory Considerations

US Regulation:

TSCA Section 4(a) Final Test Rules Regulated	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Inventory Update Rule	Dipropylene glycol monomethyl ether
TSCA Section 12(b) One-Time Export Notification Regulated	Dipropylene glycol monomethyl ether
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: Xi  Irritant

Wording of Risk and Safety Phrase:

R36: Irritating to eyes.

S25: Avoid contact with eyes.

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

16. Other Information

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 precaution, 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. Article and Corporate Identification

1.1. Product:

ECO-SOL INK, ESL-YE

1.2. Manufacturer/Distributor:

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: + 81-53-484-1221

1.3. Medical Emergency Number

Not Available

2. Composition Information

This is a solvent ink formulation

Ink Composition	CAS No.	% By Weight
Proprietary pigment	-	1-5
Synthetic polymer	-	1-5
Dipropylene glycol monomethyl ether	34590-94-8	15-25
Diethylene glycol diethyl ether	112-36-7	45-55
Tetraethylene glycol monomethyl ether	1559-34-8	5-15
Gamma-butyrolactone	96-48-0	10-20
Additives	-	1-5

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a yellow liquid that causes eye, nose or throat irritation, and that effects anesthesia, if inhales. Ink may flash, when under high temperature. Avoid contact with eyes or clothing. In the case of skin contact, wash with soap and water. Keep out of reach of children.

3.2 Potential Health Effects:

Eyes: Ink contact with eye will be irritating. See Section 11 for Toxicology.
Skin: Ink contact with skin may cause minimally irritation. See Section 11 for Toxicology.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation and anesthesia. See Section 11 for Toxicology.
Ingestion: May cause upset stomach. See Section 11 for Toxicology.

4. First Aid Measures

4.1 Eyes: Immediately flush with room temperature, low pressure, clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
4.2 Skin: Wash surface areas with soap and water. Wash soiled clothing before rewearing. Consult a physician if irritation continues.
4.3 Inhalation: Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.
4.4 Ingestion: Seek medical advice; and attention if stomach continues to be upset.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
See Section 9 for Flash Point.
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Fire Fighting Instructions: Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

6. Accidental Release Measures

- 6.1 Personal protections: Remove the person of the leeward. Keep away the person from periphery of the place of the leakage. Ventilate sufficiently during clean-up in case of inside of a house.
- 6.2 Methods for cleaning up: If a spill occurs, use sponges to wipe-up ink, then rinse area with damp cloth. Place waste in closed container for disposal. Do not dispose of waste to the sewer. Wash hands with soap and water.

7. Precautions for Safe Handling and Use

- 7.1 Handling: 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 cartridges 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 Engineering controls: Closed system or local ventilation is recommended

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU:	ACGIH: TLV	OSHA: PEL
Dipropylene glycol monomethyl ether	308mg/m ³ , 50ppm	100ppm	600mg/m ³ , 100ppm TWA:600mg/m ³ , 100ppm STEL:900mg/m ³ , 150ppm

- 8.2.1.1 Respiratory protection: Not required under suitable use as setting the cartridge on the printer; however, self-contained breathing apparatus or organic canister mask is sufficient when used for work.
- 8.2.1.2. Hand protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.1.3 Eye protection: Not required under suitable use as setting the cartridge on the printer; however, wearing safety goggle is sufficient.
- 8.2.1.4 Skin protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 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
Melting point:	No data available
Flash point:	about 76 deg.C (closed cup)
Autoflammability:	None
Explosive properties:	1.1-1.4v/v% as Dipropylene glycol mono methyl ether 1.4-6.9v/v% as Gamma-butyrolactone
Oxidizing properties:	None
Vapor density:	Greater than 1 (air=1)
Relative density:	No data available
Solubility in water:	Soluble
Solubility in fat:	No data available
Partition coefficient:	No data available
Viscosity:	No data available

9.3 Other information

Not specified

10. Stability and Reactivity

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

10.1 Condition to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicology and Health Hazards

*Based on toxicology data of chemically similar material

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 (Ames assay)*

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(Rats)*	>2000mg/kg(Rats)*	No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)*

Skin irritating: None irritant (Rabbit, OECD404)*

Skin sensitizing: Non-sensitiser (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 Other adverse effects:	No data available

13. Disposal Considerations

Disposal should be in accordance with federal, state, and local requirement.

14. Transportation Information


UN Class/UN Number: Not applicable

15. Regulatory Considerations

US Regulation:

TSCA Section 4(a) Final Test Rules Regulated	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Inventory Update Rule	Dipropylene glycol monomethyl ether
TSCA Section 12(b) One-Time Export Notification Regulated	Dipropylene glycol monomethyl ether
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: Xi  Irritant

Wording of Risk and Safety Phrase:

R36: Irritating to eyes.

S25: Avoid contact with eyes.

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

16. Other Information

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 precaution, 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. Article and Corporate Identification

1.1. Product:

ECO-SOL INK, ESL-CY

1.2. Manufacturer/Distributor:

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: + 81-53-484-1221

1.3. Medical Emergency Number

Not Available

2. Composition Information

This is a solvent ink formulation

Ink Composition	CAS No.	% By Weight
Proprietary pigment	-	1-5
Synthetic polymer	-	1-5
Dipropylene glycol monomethyl ether	34590-94-8	15-25
Diethylene glycol diethyl ether	112-36-7	45-55
Tetraethylene glycol monomethyl ether	1559-34-8	5-15
Gamma-butyrolactone	96-48-0	10-20
Additives	-	1-5

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a cyan liquid that causes eye, nose or throat irritation, and that effects anesthesia, if inhales. Ink may flash, when under high temperature. Avoid contact with eyes or clothing. In the case of skin contact, wash with soap and water. Keep out of reach of children.

3.2 Potential Health Effects:

Eyes: Ink contact with eye will be irritating. See Section 11 for Toxicology.
Skin: Ink contact with skin may cause minimally irritation. See Section 11 for Toxicology.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation and anesthesia. See Section 11 for Toxicology.
Ingestion: May cause upset stomach. See Section 11 for Toxicology.

4. First Aid Measures

4.1 Eyes: Immediately flush with room temperature, low pressure, clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
4.2 Skin: Wash surface areas with soap and water. Wash soiled clothing before rewearing. Consult a physician if irritation continues.
4.3 Inhalation: Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.
4.4 Ingestion: Seek medical advice; and attention if stomach continues to be upset.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
See Section 9 for Flash Point.
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Fire Fighting Instructions: Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

6. Accidental Release Measures

- 6.1 Personal protections: Remove the person of the leeward. Keep away the person from periphery of the place of the leakage. Ventilate sufficiently during clean-up in case of inside of a house.
- 6.2 Methods for cleaning up: If a spill occurs, use sponges to wipe-up ink, then rinse area with damp cloth. Place waste in closed container for disposal. Do not dispose of waste to the sewer. Wash hands with soap and water.

7. Precautions for Safe Handling and Use

- 7.1 Handling: 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 cartridges 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 Engineering controls: Closed system or local ventilation is recommended
- 8.2 Exposure controls:
- 8.2.1 Occupational exposure controls:

Substance(s)	EU:	ACGIH: TLV	OSHA: PEL
Dipropylene glycol monomethyl ether	308mg/m ³ , 50ppm	100ppm	600mg/m ³ , 100ppm TWA:600mg/m ³ , 100ppm STEL:900mg/m ³ , 150ppm

- 8.2.1.1 Respiratory protection: Not required under suitable use as setting the cartridge on the printer; however, self-contained breathing apparatus or organic canister mask is sufficient when used for work.
- 8.2.1.2. Hand protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.1.3 Eye protection: Not required under suitable use as setting the cartridge on the printer; however, wearing safety goggle is sufficient.
- 8.2.1.4 Skin protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.2 Environmental exposure control: Not established

9. Physical and Chemical Properties of Ink Formulation

9.1 General information

Appearance CyanLiquid
Odor: Slightly

9.2 Important health, safety and environmental information

pH: Not applicable
Boiling point: No data available
Melting point: No data available
Flash point: about 76 deg.C (closed cup)
Autoflammability: None
Explosive properties: 1.1-1.4v/v% as Dipropylene glycol mono methyl ether
1.4-6.9v/v% as Gamma-butyrolactone
Oxidizing properties: None
Vapor density: Greater than 1 (air=1)
Relative density: No data available
Solubility in water: Soluble
Solubility in fat: No data available
Partition coefficient: No data available
Viscosity: No data available

9.3 Other information Not specified

10. Stability and Reactivity

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

10.1 Condition to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicology and Health Hazards

*Based on toxicology data of chemically similar material

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 (Ames assay)*

Carcinogenicity: None Known

Toxicity Data: Oral LD₅₀ Dermal LD₅₀ Inhalant LC₅₀
>2500mg/kg(Rats)* >2000mg/kg(Rats)* No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)*

Skin irritating: Mild irritant (Rabbit, OECD404)*

Skin sensitizing: Non-sensitiser (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 Other adverse effects:	No data available

13. Disposal Considerations

Disposal should be in accordance with federal, state, and local requirement.

14. Transportation Information


UN Class/UN Number: Not applicable

15. Regulatory Considerations

US Regulation:

TSCA Section 4(a) Final Test Rules Regulated	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Inventory Update Rule	Dipropylene glycol monomethyl ether
TSCA Section 12(b) One-Time Export Notification Regulated	Dipropylene glycol monomethyl ether
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: Xi  Irritant

Wording of Risk and Safety Phrase:

R36: Irritating to eyes.

S25: Avoid contact with eyes.

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

16. Other Information

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 precaution, 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. Article and Corporate Identification

1.1. Product:

ECO-SOL INK, ESL-MG

1.2. Manufacturer/Distributor:

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: + 81-53-484-1221

1.3. Medical Emergency Number

Not Available

2. Composition Information

This is a solvent ink formulation

Ink Composition	CAS No.	% By Weight
Proprietary pigment	-	1-5
Synthetic polymer	-	1-5
Dipropylene glycol monomethyl ether	34590-94-8	15-25
Diethylene glycol diethyl ether	112-36-7	45-55
Tetraethylene glycol monomethyl ether	1559-34-8	5-15
Gamma-butyrolactone	96-48-0	10-20
Additives	-	1-5

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a magenta liquid that causes eye, nose or throat irritation, and that effects anesthesia, if inhales. Ink may flash, when under high temperature. Avoid contact with eyes or clothing. In the case of skin contact, wash with soap and water. Keep out of reach of children.

3.2 Potential Health Effects:

Eyes: Ink contact with eye will be irritating. See Section 11 for Toxicology.
Skin: Ink contact with skin may cause minimally irritation. See Section 11 for Toxicology.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation and anesthesia. See Section 11 for Toxicology.
Ingestion: May cause upset stomach. See Section 11 for Toxicology.

4. First Aid Measures

4.1 Eyes: Immediately flush with room temperature, low pressure, clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
4.2 Skin: Wash surface areas with soap and water. Wash soiled clothing before rewearing. Consult a physician if irritation continues.
4.3 Inhalation: Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.
4.4 Ingestion: Seek medical advice; and attention if stomach continues to be upset.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
See Section 9 for Flash Point.
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Fire Fighting Instructions: Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

6. Accidental Release Measures

- 6.1 Personal protections: Remove the person of the leeward. Keep away the person from periphery of the place of the leakage. Ventilate sufficiently during clean-up in case of inside of a house.
- 6.2 Methods for cleaning up: If a spill occurs, use sponges to wipe-up ink, then rinse area with damp cloth. Place waste in closed container for disposal. Do not dispose of waste to the sewer. Wash hands with soap and water.

7. Precautions for Safe Handling and Use

- 7.1 Handling: 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 cartridges 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 Engineering controls: Closed system or local ventilation is recommended
- 8.2 Exposure controls:
- 8.2.1 Occupational exposure controls:

Substance(s)	EU:	ACGIH: TLV	OSHA: PEL
Dipropylene glycol monomethyl ether	308mg/m ³ , 50ppm	100ppm	600mg/m ³ , 100ppm TWA:600mg/m ³ , 100ppm STEL:900mg/m ³ , 150ppm

- 8.2.1.1 Respiratory protection: Not required under suitable use as setting the cartridge on the printer; however, self-contained breathing apparatus or organic canister mask is sufficient when used for work.
- 8.2.1.2. Hand protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.1.3 Eye protection: Not required under suitable use as setting the cartridge on the printer; however, wearing safety goggle is sufficient.
- 8.2.1.4 Skin protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 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
Melting point:	No data available
Flash point:	about 76 deg.C (closed cup)
Autoflammability:	None
Explosive properties:	1.1-1.4v/v% as Dipropylene glycol mono methyl ether 1.4-6.9v/v% as Gamma-butyrolactone
Oxidizing properties:	None
Vapor density:	Greater than 1 (air=1)
Relative density:	No data available
Solubility in water:	Soluble
Solubility in fat:	No data available
Partition coefficient:	No data available
Viscosity:	No data available

9.3 Other information

Not specified

10. Stability and Reactivity

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

10.1 Condition to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicology and Health Hazards

*Based on toxicology data of chemically similar material

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 (Ames assay)*

Carcinogenicity: None Known

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

Eye irritating: Moderate irritant (Rabbit, OECD405)*

Skin irritating: None irritant (Rabbit, OECD404)*

Skin sensitizing: Non-sensitiser (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 Other adverse effects:	No data available

13. Disposal Considerations

Disposal should be in accordance with federal, state, and local requirement.

14. Transportation Information


UN Class/UN Number: Not applicable

15. Regulatory Considerations

US Regulation:

TSCA Section 4(a) Final Test Rules Regulated	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Inventory Update Rule	Dipropylene glycol monomethyl ether
TSCA Section 12(b) One-Time Export Notification Regulated	Dipropylene glycol monomethyl ether
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: Xi  Irritant

Wording of Risk and Safety Phrase:

R36: Irritating to eyes.

S25: Avoid contact with eyes.

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

16. Other Information

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 precaution, 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. Article and Corporate Identification

1.1. Product:

ECO-SOL INK, ESL-LC

1.2. Manufacturer/Distributor:

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: + 81-53-484-1221

1.3. Medical Emergency Number

Not Available

2. Composition Information

This is a solvent ink formulation

Ink Composition	CAS No.	% By Weight
Proprietary pigment	-	<1
Synthetic polymer	-	1-5
Dipropylene glycol monomethyl ether	34590-94-8	15-25
Diethylene glycol diethyl ether	112-36-7	45-55
Tetraethylene glycol monomethyl ether	1559-34-8	5-15
Gamma-butyrolactone	96-48-0	10-20
Additives	-	<1

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a light cyan liquid that causes eye, nose or throat irritation, and that effects anesthesia, if inhales. Ink may flash, when under high temperature. Avoid contact with eyes or clothing. In the case of skin contact, wash with soap and water. Keep out of reach of children.

3.2 Potential Health Effects:

Eyes: Ink contact with eye will be irritating. See Section 11 for Toxicology.
Skin: Ink contact with skin may cause minimally irritation. See Section 11 for Toxicology.
Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation and anesthesia. See Section 11 for Toxicology.
Ingestion: May cause upset stomach. See Section 11 for Toxicology.

4. First Aid Measures

4.1 Eyes: Immediately flush with room temperature, low pressure, clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
4.2 Skin: Wash surface areas with soap and water. Wash soiled clothing before rewearing. Consult a physician if irritation continues.
4.3 Inhalation: Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.
4.4 Ingestion: Seek medical advice; and attention if stomach continues to be upset.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
See Section 9 for Flash Point.
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Fire Fighting Instructions: Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

6. Accidental Release Measures

- 6.1 Personal protections: Remove the person of the leeward. Keep away the person from periphery of the place of the leakage. Ventilate sufficiently during clean-up in case of inside of a house.
- 6.2 Methods for cleaning up: If a spill occurs, use sponges to wipe-up ink, then rinse area with damp cloth. Place waste in closed container for disposal. Do not dispose of waste to the sewer. Wash hands with soap and water.

7. Precautions for Safe Handling and Use

- 7.1 Handling: 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 cartridges 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 Engineering controls: Closed system or local ventilation is recommended
- 8.2 Exposure controls:
- 8.2.1 Occupational exposure controls:

Substance(s)	EU:	ACGIH: TLV	OSHA: PEL
Dipropylene glycol monomethyl ether	308mg/m ³ , 50ppm	100ppm	600mg/m ³ , 100ppm TWA:600mg/m ³ , 100ppm STEL:900mg/m ³ , 150ppm

- 8.2.1.1 Respiratory protection: Not required under suitable use as setting the cartridge on the printer; however, self-contained breathing apparatus or organic canister mask is sufficient when used for work.
- 8.2.1.2. Hand protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.1.3 Eye protection: Not required under suitable use as setting the cartridge on the printer; however, wearing safety goggle is sufficient.
- 8.2.1.4 Skin protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 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
 Melting point: No data available
 Flash point: about 71 deg.C (closed cup)
 Autoflammability: None
 Explosive properties: 1.1-1.4v/v% as Dipropylene glycol mono methyl ether
 1.4-6.9v/v% as Gamma-butyrolactone
 Oxidizing properties: None
 Vapor density: Greater than 1 (air=1)
 Relative density: No data available
 Solubility in water: Soluble
 Solubility in fat: No data available
 Partition coefficient: No data available
 Viscosity: No data available

9.3 Other information: Not specified

10. Stability and Reactivity

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

10.1 Condition to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicology and Health Hazards

*Based on toxicology data of chemically similar material

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 (Ames assay)*

Carcinogenicity: None Known

Toxicity Data: Oral LD₅₀ >2500mg/kg(Rats)* Dermal LD₅₀ >2000mg/kg(Rats)* Inhalant LC₅₀ No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)*

Skin irritating: Mild irritant (Rabbit, OECD404)*

Skin sensitizing: Non-sensitiser (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 Other adverse effects:	No data available

13. Disposal Considerations

Disposal should be in accordance with federal, state, and local requirement.

14. Transportation Information

UN Class/UN Number: Not applicable

15. Regulatory Considerations

US Regulation:

TSCA Section 4(a) Final Test Rules Regulated	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Inventory Update Rule	Dipropylene glycol monomethyl ether
TSCA Section 12(b) One-Time Export Notification Regulated	Dipropylene glycol monomethyl ether
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: This ink does not meet the criteria for classification as dangerous.

16. Other Information

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 precaution, 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. Article and Corporate Identification

1.1. Product:

ECO-SOL INK, ESL-LM

1.2. Manufacturer/Distributor:

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: + 81-53-484-1221

1.3. Medical Emergency Number

Not Available

2. Composition Information

This is a solvent ink formulation

Ink Composition	CAS No.	% By Weight
Proprietary pigment	-	<1
Synthetic polymer	-	1-5
Dipropylene glycol monomethyl ether	34590-94-8	15-25
Diethylene glycol diethyl ether	112-36-7	45-55
Tetraethylene glycol monomethyl ether	1559-34-8	5-15
Gamma-butyrolactone	96-48-0	10-20
Additives	-	<1

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a light magenta liquid that causes eye, nose or throat irritation, and that effects anesthesia, if inhales. Ink may flash, when under high temperature. Avoid contact with eyes or clothing. In the case of skin contact, wash with soap and water. Keep out of reach of children.

3.2 Potential Health Effects:

Eyes: Ink contact with eye will be irritating. See Section 11 for Toxicology.
 Skin: Ink contact with skin may cause minimally irritation. See Section 11 for Toxicology.
 Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation and anesthesia. See Section 11 for Toxicology.
 Ingestion: May cause upset stomach. See Section 11 for Toxicology.

4. First Aid Measures

4.1 Eyes: Immediately flush with room temperature, low pressure, clean water for at least 15 minutes. Seek medical attention if eye irritation continues.
 4.2 Skin: Wash surface areas with soap and water. Wash soiled clothing before rewearing. Consult a physician if irritation continues.
 4.3 Inhalation: Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.
 4.4 Ingestion: Seek medical advice; and attention if stomach continues to be upset.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
See Section 9 for Flash Point.
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Fire Fighting Instructions: Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

6. Accidental Release Measures

- 6.1 Personal protections: Remove the person of the leeward. Keep away the person from periphery of the place of the leakage. Ventilate sufficiently during clean-up in case of inside of a house.
- 6.2 Methods for cleaning up: If a spill occurs, use sponges to wipe-up ink, then rinse area with damp cloth. Place waste in closed container for disposal. Do not dispose of waste to the sewer. Wash hands with soap and water.

7. Precautions for Safe Handling and Use

- 7.1 Handling: 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 cartridges 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 Engineering controls: Closed system or local ventilation is recommended
- 8.2 Exposure controls:
- 8.2.1 Occupational exposure controls:

Substance(s)	EU:	ACGIH: TLV	OSHA: PEL
Dipropylene glycol monomethyl ether	308mg/m ³ , 50ppm	100ppm	600mg/m ³ , 100ppm TWA:600mg/m ³ , 100ppm STEL:900mg/m ³ , 150ppm

- 8.2.1.1 Respiratory protection: Not required under suitable use as setting the cartridge on the printer; however, self-contained breathing apparatus or organic canister mask is sufficient when used for work.
- 8.2.1.2. Hand protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.1.3 Eye protection: Not required under suitable use as setting the cartridge on the printer; however, wearing safety goggle is sufficient.
- 8.2.1.4 Skin protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 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
 Melting point: No data available
 Flash point: about 76 deg.C (closed cup)
 Autoflammability: None
 Explosive properties: 1.1-1.4v/v% as Dipropylene glycol mono methyl ether
 1.4-6.9v/v% as Gamma-butyrolactone
 Oxidizing properties: None
 Vapor density: Greater than 1 (air=1)
 Relative density: No data available
 Solubility in water: Soluble
 Solubility in fat: No data available
 Partition coefficient: No data available
 Viscosity: No data available

9.3 Other information

Not specified

10. Stability and Reactivity

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

10.1 Condition to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicology and Health Hazards

*Based on toxicology data of chemically similar material

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 (Ames assay)*

Carcinogenicity: None Known

Toxicity Data: Oral LD₅₀ >2500mg/kg(Rats)* Dermal LD₅₀ >2000mg/kg(Rats)* Inhalant LC₅₀ No data available

Eye irritating: Moderate irritant (Rabbit, OECD405)*

Skin irritating: Mild irritant (Rabbit, OECD404)*

Skin sensitizing: Non-sensitiser (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 Other adverse effects:	No data available

13. Disposal Considerations

Disposal should be in accordance with federal, state, and local requirement.

14. Transportation Information

UN Class/UN Number: Not applicable

15. Regulatory Considerations

US Regulation:

TSCA Section 4(a) Final Test Rules Regulated	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Inventory Update Rule	Dipropylene glycol monomethyl ether
TSCA Section 12(b) One-Time Export Notification Regulated	Dipropylene glycol monomethyl ether
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: This ink does not meet the criteria for classification as dangerous.

16. Other Information

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 precaution, 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. Article and Corporate Identification

1.1. Product:

ECO-SOL INK, ESL-WH

1.2. Manufacturer/Distributor:

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:

+ 81-53-484-1221

1.3. Medical Emergency Number

Not Available

2. Composition Information

This is a solvent ink formulation

Ink Composition	CAS No.	% By Weight
Titan (IV)-oxide	13463-67-7	1-10
Synthetic polymer	-	1-5
Dipropylene glycol monomethyl ether	34590-94-8	15-25
Diethylene glycol diethyl ether	112-36-7	45-55
Tetraethylene glycol monomethyl ether	1559-34-8	5-15
Gamma-butyrolactone	96-48-0	10-20
Additives	-	1-5

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a white liquid that causes eye, nose or throat irritation, and that effects anesthesia, if inhales. Ink may flash, when under high temperature. Avoid contact with eyes or clothing. In the case of skin contact, wash with soap and water. Keep out of reach of children.

3.2 Potential Health Effects:

Eyes: Ink contact with eye will be irritating. See Section 11 for Toxicology.

Skin: Ink contact with skin may cause minimally irritation. See Section 11 for Toxicology.

Inhalation: Intentional exposure to ink vapors (mist) will cause respiratory irritation and anesthesia. See Section 11 for Toxicology.

Ingestion: May cause upset stomach. See Section 11 for Toxicology.

4. First Aid Measures

4.1 Eyes: Immediately flush with room temperature, low pressure, clean water for at least 15 minutes. Seek medical attention if eye irritation continues.

4.2 Skin: Wash surface areas with soap and water. Wash soiled clothing before rewearing. Consult a physician if irritation continues.

4.3 Inhalation: Remove subject to ventilated fresh air. If not breathing, give artificial respiration right away. If breathing is difficult, give oxygen. Seek immediate medical attention.

4.4 Ingestion: Seek medical advice; and attention if stomach continues to be upset.

5. Fire Fighting Measures

- 5.1 Flammability: Combustible liquid under Hazard Communication Standard (HCS, U.S.A)
See Section 9 for Flash Point.
- 5.2 Extinguishing Media: Water spray, dry chemical, carbon dioxide or alcohol foam
- 5.3 Fire Fighting Instructions: Extinguish to use fire fighting media or plentiful fog water. Put protection wear without fail in case of fire fighting work; do not work in the leeward.

6. Accidental Release Measures

- 6.1 Personal protections: Remove the person of the leeward. Keep away the person from periphery of the place of the leakage. Ventilate sufficiently during clean-up in case of inside of a house.
- 6.2 Methods for cleaning up: If a spill occurs, use sponges to wipe-up ink, then rinse area with damp cloth. Place waste in closed container for disposal. Do not dispose of waste to the sewer. Wash hands with soap and water.

7. Precautions for Safe Handling and Use

- 7.1 Handling: 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 cartridges 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 Engineering controls: Closed system or local ventilation is recommended
- 8.2 Exposure controls:
- 8.2.1 Occupational exposure controls:

Substance(s)	EU:	ACGIH: TLV	OSHA: PEL
Dipropylene glycol monomethyl ether	308mg/m ³ , 50ppm	100ppm	600mg/m ³ , 100ppm TWA:600mg/m ³ , 100ppm STEL:900mg/m ³ , 150ppm

- 8.2.1.1 Respiratory protection: Not required under suitable use as setting the cartridge on the printer; however, self-contained breathing apparatus or organic canister mask is sufficient when used for work.
- 8.2.1.2. Hand protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 8.2.1.3 Eye protection: Not required under suitable use as setting the cartridge on the printer; however, wearing safety goggle is sufficient.
- 8.2.1.4 Skin protection: Not required under suitable use as setting the cartridge on the printer; however, wearing gloves is sufficient.
- 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
Melting point:	No data available
Flash point:	about 76 deg.C (closed cup)
Autoflammability:	None
Explosive properties:	1.1-1.4v/v% as Dipropylene glycol mono methyl ether 1.4-6.9v/v% as Gamma-butyrolactone
Oxidizing properties:	None
Vapor density:	Greater than 1 (air=1)
Relative density:	No data available
Solubility in water:	Soluble
Solubility in fat:	No data available
Partition coefficient:	No data available
Viscosity:	No data available

9.3 Other information

Not specified

10. Stability and Reactivity

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

10.1 Condition to avoid: High and freezing temperatures

10.2 Materials to avoid: Oxidizers and explosives

10.3 Hazardous decomposition products: No data available

11. Toxicology and Health Hazards

*Based on toxicology data of chemically similar material

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 (Ames assay)*

Carcinogenicity: None Known

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

Eye irritating: Mild irritant (Rabbit, OECD405)*

Skin irritating: Mild irritant (Rabbit, OECD404)*

Skin sensitizing: Non-sensitiser (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 Other adverse effects:	No data available

13. Disposal Considerations

Disposal should be in accordance with federal, state, and local requirement.

14. Transportation Information

UN Class/UN Number: Not applicable

15. Regulatory Considerations

US Regulation:

TSCA Section 4(a) Final Test Rules Regulated	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Dipropylene glycol monomethyl ether
TSCA Section 8(a) Inventory Update Rule	Dipropylene glycol monomethyl ether
TSCA Section 12(b) One-Time Export Notification Regulated	Dipropylene glycol monomethyl ether
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: This ink does not meet the criteria for classification as dangerous.

16. Other Information

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 precaution, 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.