Material Safety Data Sheet

1. Article and Corporate Identification

1.1. Product:

EcoXtreme Ink, AI-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	3-6%
Pigment blue 15	147-14-8	1-2%
Polymer	Listed	3-7%
Dispersant	Listed	1-3%
Ethylene glycol monobutyl ether acetate	112-07-2	76-90%
N-methyl pyrrolidone	872-50-4	3-7%

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a black liquid that cause 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.

3.2 Potential Health Effects:

Eye:	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 inflammation 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 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 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: Close system or local ventilation is recommended.

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU: ELV	ACGIH: TLV	OSHA: PEL
Ethylene glycol mono- butyl ether acetate	Not listed	20ppm	Not listed
N-Methyl pyrrolidone	Not Listed	Not listed	Not listed

8.2.1.1 Respiratory protection: Not required 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: Solvent odor

9.2 Important health, safety and environmental information

pH: No data available
Boiling point: 191deg.C (Ethylene glycol mono butyl ether acetate)
Melting point: -64.6deg.C (Ethylene glycol mono butyl ether acetate)
Flash point: 83deg.C (Cleveland Open cup)
Autoflammability: No data available
Explosive properties: explosive limit -lower limits 0.8vol%(Ethylene glycol mono butyl ether acetate)
-upper limits 8.5vol%(Ethylene glycol mono butyl ether acetate)
Oxidizing properties: No data available
Vapor Pressure: 40Pa @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Vapor density: 3.4(N-Methyl pyrrolidone) (Air=1)
Specific gravity: 0.96 - 1.00g/cm^3 @ 25deg.C
Solubility in Water: 1.1wt% @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Easily soluble (N-Methyl pyrrolidone)
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 Conditions to avoid: Extremely high temperature

10.2 Materials to avoid: Acids and oxidizing agents

10.3 Hazardous decomposition products: Burning in insufficient air supply may produce toxic fume of carbon monoxide

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 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: No information available

Mugtagenicity: No information available

Carcinogenicity:

1) IARC (international cancer research organization) was listed as category 2B noting that carbon black might be based on the carcinogen to people by too much exposure.
However, in normal printing, carbon black is not emitted on the design of a cartridge into air. Moreover, it is reported that IARC cannot classify the ink for printing with the carcinogen to people.

2) Ethylene glycol mono- butyl ether acetate.
No information available.

3) N-Methyl pyrrolidone
Toxic influence and carcinogenic were not accepted as a result of inhalation (rat) 0 mg/l (0 ppm), 0.04 mg/l (10 ppm), 0.4 mg/l (99 ppm), 6 hr/day, 5 day/week, and the exposure test for two years.

Toxicity Data:

1) Ethylene glycol mono- butyl ether acetate

Oral LD_{50}	Dermal LD_{50}
>3000mg/kg (Rats: male)	>1500mg/kg (Rabbit)
>2400mg/kg (Rats: female)	

Inhalant LC_{50}

The rat and the rabbit were exposed to saturation concentration (about 4000 ppm) for 4 hours. The hemoglobin urine and bloody urine of transitory were observed only in the direction of a rabbit. However, the morbid externally caused injury of internal organs was not macroscopically observed by dissection two weeks after.

2) N-Methyl pyrrolidone

Oral LD_{50}	Dermal LD_{50}	Inhalant LC_{50}
>3914mg/kg (Rats)	>8000mg/kg (Rabbit)	No data available

Irritating:

1) Ethylene glycol mono- butyl ether acetate
Eye irritating : 500mg/24hrs (Rabbit OECD405) mild irritating.
Skin irritating : 500mg/24hrs (open@ Rabbit OECD404) mild irritating.

2) N-Methyl pyrrolidone
Eye irritating (Rabbit OECD405): mild irritating.
Skin irritating (open @Rabbit OECD404): mild irritating.

12. Ecological Information

12.1 Ecotoxicity:

1) Ethylene glycol mono- butyl ether acetate
No data available

2) N-Methyl pyrrolidone
bluegill LC_{50}:832mg/l (22deg.C), bull trout LC_{50}:3048mg/l (22deg.C)

12.2 Mobility: No data available on the adverse effects of this ink on the environment

12.3 Persistence and degradability: Good

12.4 Bioaccumulative potential: No data available on the adverse effects of this ink on the environment

12.5 Other adverse effects: Disclosure of ink and abandonment have a possibility of affecting environment. Then, cautions are required for handling. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

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	N-Mehtyl pyrrolidone
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Not regulated
TSCA Section 8(a) Inventory Update Rule	Ethylene glycol monobutyl ether acetate N-Mehtyl pyrrolidone
TSCA Section 12(b) One-Time Export Notification Regulated	N-Mehtyl pyrrolidone
California Proposition 65	Black Pigment N-Mehtyl pyrrolidone

EU Information

Symbols and indication according to 1999/45/EC:Xn

Harmful: Xn

Wording of Risk and Safety Phase:

R20/21 : Harmful by inhalation and in contact with skin.
R36/38 : Irritating to eyes and skin.
S24 : Avoid contact with skin.
S41 : In case of fire and/or explosion do not breathe fumes.

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:

EcoXtreme Ink, AI-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
Pigment	Listed	3-7%
Polymer	Listed	3-7%
Dispersant	Listed	1-3%
Ethylene glycol monobutyl ether acetate	112-07-2	76-90%
N-methyl pyrrolidone	872-50-4	3-7%

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a yellow liquid that cause 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.

3.2 Potential Health Effects:

Eye: 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 inflammation 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 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 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: Close system or local ventilation is recommended.

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU: ELV	ACGIH: TLV	OSHA: PEL
Ethylene glycol mono- butyl ether acetate	Not listed	20ppm	Not listed
N-Methyl pyrrolidone	Not Listed	Not Listed	Not listed

8.2.1.1 Respiratory protection: Not required 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: Yellow liquid
Odor: Solvent odor

9.2 Important health, safety and environmental information

pH: No data available
Boiling point: 191deg.C (Ethylene glycol mono butyl ether acetate)
Melting point: -64.6deg.C (Ethylene glycol mono butyl ether acetate)
Flash point: 83deg.C (Cleveland Open cup)
Autoflammability: No data available
Explosive properties: explosive limit -lower limits 0.8vol%(Ethylene glycol mono butyl ether acetate)
-upper limits 8.5vol%(Ethylene glycol mono butyl ether acetate)
Oxidizing properties: No data available
Vapor Pressure: 40Pa @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Vapor density: 3.4(N-Methyl pyrrolidone) (Air=1)
Specific gravity: 0.96 - 1.00g/cm^3 @ 25deg.C
Solubility in Water: 1.1wt% @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Easily soluble (N-Methyl pyrrolidone)
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 Conditions to avoid: Extremely high temperature

10.2 Materials to avoid: Acids and oxidizing agents

10.3 Hazardous decomposition products: Burning in insufficient air supply may produce toxic fume of carbon monoxide

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: No information available

Mugtagenicity: No information available.

Carcinogenicity:

1) This product contains Ni-compound. But this Ni-compound is not listed on the IARC carcinogenicity substances lists. Also, this Ni-compound shows the negative result on AMES test.

2) Ethylene glycol mono- butyl ether acetate.
No information available.

3) N-Methyl pyrrolidone
Toxic influence and carcinogenic were not accepted as a result of inhalation (rat) 0 mg/l (0 ppm), 0.04 mg/l (10 ppm), 0.4 mg/l (99 ppm), 6 hr/day, 5 day/week, and the exposure test for two years.

Toxicity Data:

1) Ethylene glycol mono- butyl ether acetate.

Oral LD_{50}	Dermal LD_{50}
>3000mg/kg (Rats:male) >2400mg/kg (Rats:femals)	>1500mg/kg (Rabbit)

Inhalant LC_{50}

The rat and the rabbit were exposed to saturation concentration (about 4000 ppm) for 4 hours. The hemoglobin urine and bloody urine of transitory were observed only in the direction of a rabbit. However, the morbid externally caused injury of internal organs was not macroscopically observed by dissection two weeks after.

2) N-Methyl pyrrolidone

Oral LD_{50}	Dermal LD_{50}	Inhalant LC_{50}
>3914mg/kg (Rats)	>8000mg/kg (Rabbit)	No data available

Irritating:

1) Ethylene glycol mono- butyl ether acetate.
Eye irritating : 500mg/24hrs (Rabbit OECD405) mild irritating.
Skin irritating : 500mg/24hrs (open@ Rabbit OECD404) mild irritating.

2) N-Methyl pyrrolidone
Eye irritating (Rabbit OECD405): mild irritating.
Skin irritating (open @Rabbit OECD404): mild irritating.

12. Ecological Information

12.1 Ecotoxicity:
1) Ethylene glycol mono- butyl ether acetate.
No data available
2) N-Methyl pyrrolidone
bluegill LC_{50}:832mg/l (22deg.C), bull trout LC_{50}:3048mg/l (22deg.C)

12.2 Mobility: No data available on the adverse effects of this ink on the environment

12.3 Persistence and degradability: Good

12.4 Bioaccumulative potential: No data available on the adverse effects of this ink on the environment

12.5 Other adverse effects: Disclosure of ink and abandonment have a possibility of affecting environment. Then, cautions are required for handling. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

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	N-Mehtyl pyrrolidone
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Not regulated
TSCA Section 8(a) Inventory Update Rule	Ethylene glycol monobutyl ether acetate N-Mehtyl pyrrolidone
TSCA Section 12(b) One-Time Export Notification Regulated	N-Mehtyl pyrrolidone
California Proposition 65	Yellow Pigment N-Mehtyl pyrrolidone

EU Information

Symbols and indication according to 1999/45/EC:Xn

Wording of Risk and Safety Phase:

R20/21	: Harmful by inhalation and in contact with skin.
R36/38	: Irritating to eyes and skin.
S24	: Avoid contact with skin.
S41	: In case of fire and/or explosion do not breathe fumes.

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:

EcoXtreme Ink, AI-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
Pigment blue 15	147-14-8	3-7%
Polymer	Listed	3-7%
Dispersant	Listed	1-3%
Ethylene glycol monobutyl ether acetate	112-07-2	76-90%
N-methyl pyrrolidone	872-50-4	3-7%

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a cyan liquid that cause 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.

3.2 Potential Health Effects:

Eye:	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 inflammation 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 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 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: Close system or local ventilation is recommended.

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU: ELV	ACGIH: TLV	OSHA: PEL
Ethylene glycol mono- butyl ether acetate	Not listed	20ppm	Not listed
N-Methyl pyrrolidone	Not Listed	Not listed	Not listed

8.2.1.1 Respiratory protection: Not required 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: Solvent odor

9.2 Important health, safety and environmental information

pH: No data available
Boiling point: 191deg.C (Ethylene glycol mono butyl ether acetate)
Melting point: -64.6deg.C (Ethylene glycol mono butyl ether acetate)
Flash point: 83deg.C (Cleveland Open cup)
Autoflammability: No data available
Explosive properties: explosive limit -lower limits 0.8vol%(Ethylene glycol mono butyl ether acetate)
-upper limits 8.5vol%(Ethylene glycol mono butyl ether acetate)
Oxidizing properties: No data available
Vapor Pressure: 40Pa @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Vapor density: 3.4(N-Methyl pyrrolidone) (Air=1)
Specific gravity: 0.96 - 1.00g/cm^3 @ 25deg.C
Solubility in Water: 1.1wt% @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Easily soluble (N-Methyl pyrrolidone)
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 Conditions to avoid: Extremely high temperature

10.2 Materials to avoid: Acids and oxidizing agents

10.3 Hazardous decomposition products: Burning in insufficient air supply may produce toxic fume of carbon monoxide

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
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- 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: No information available

Mugtagenicity: No information available

Carcinogenicity:

1) Ethylene glycol mono- butyl ether acetate.
No information available.

2) N-Methyl pyrrolidone
Toxic influence and carcinogenic were not accepted as a result of inhalation (rat) 0 mg/l (0 ppm), 0.04 mg/l (10 ppm), 0.4 mg/l (99 ppm), 6 hr/day, 5 day/week, and the exposure test for two years.

Toxicity Data:

1) Ethylene glycol mono- butyl ether acetate.

Oral LD_{50}	Dermal LD_{50}
>3000mg/kg (Rats:male) >2400mg/kg (Rats:femals)	>1500mg/kg (Rabbit)

Inhalant LC_{50}

The rat and the rabbit were exposed to saturation concentration (about 4000 ppm) for 4 hours. The hemoglobin urine and bloody urine of transitory were observed only in the direction of a rabbit. However, the morbid externally caused injury of internal organs was not macroscopically observed by dissection two weeks after.

2) N-Methyl pyrrolidone

Oral LD_{50}	Dermal LD_{50}	Inhalant LC_{50}
>3914mg/kg (Rats)	>8000mg/kg (Rabbit)	No data available

Irritating:

1) Ethylene glycol mono- butyl ether acetate.
Eye irritating : 500mg/24hrs (Rabbit OECD405) mild irritating.
Skin irritating : 500mg/24hrs (open@ Rabbit OECD404) mild irritating.

2) N-Methyl pyrrolidone
Eye irritating (Rabbit OECD405): mild irritating.
Skin irritating (open @Rabbit OECD404): mild irritating.

12. Ecological Information

12.1 Ecotoxicity:

1) Ethylene glycol mono- butyl ether acetate.
No data available

2) N-Methyl pyrrolidone
bluegill LC_{50}:832mg/l (22deg.C), bull trout LC_{50}:3048mg/l (22deg.C)

12.2 Mobility: No data available on the adverse effects of this ink on the environment

12.3 Persistence and degradability: Good

12.4 Bioaccumulative potential: No data available on the adverse effects of this ink on the environment

12.5 Other adverse effects: Disclosure of ink and abandonment have a possibility of affecting environment. Then, cautions are required for handling. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

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	N-Mehtyl pyrrolidone
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Not regulated
TSCA Section 8(a) Inventory Update Rule	Ethylene glycol monobutyl ether acetate N-Mehtyl pyrrolidone Cyan Pigment
TSCA Section 12(b) One-Time Export Notification Regulated	N-Mehtyl pyrrolidone
California Proposition 65	N-Mehtyl pyrrolidone

EU Information

Symbols and indication according to 1999/45/EC:Xn

Wording of Risk and Safety Phase:

R20/21 : Harmful by inhalation and in contact with skin.
R36/38 : Irritating to eyes and skin.
S24 : Avoid contact with skin.
S41 : In case of fire and/or explosion do not breathe fumes.

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:

EcoXtreme Ink, AI-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
Pigment	Listed	3-7%
Polymer	Listed	3-7%
Dispersant	Listed	1-3%
Ethylene glycol monobutyl ether acetate	112-07-2	76-90%

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a magenta liquid that cause 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.

3.2 Potential Health Effects:

Eye:	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 inflammation 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 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 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: Close system or local ventilation is recommended.

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU: ELV	ACGIH: TLV	OSHA: PEL
Ethylene glycol mono- butyl ether acetate	Not listed	20ppm	Not listed

8.2.1.1 Respiratory protection: Not required 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: Solvent odor

9.2 Important health, safety and environmental information

pH: No data available
Boiling point: 191deg.C (Ethylene glycol mono butyl ether acetate)
Melting point: -64.6deg.C (Ethylene glycol mono butyl ether acetate)
Flash point: 83deg.C (Cleveland Open cup)
Autoflammability: No data available
Explosive properties: explosive limit -lower limits 0.8vol%(Ethylene glycol mono butyl ether acetate)
-upper limits 8.5vol%(Ethylene glycol mono butyl ether acetate)
Oxidizing properties: No data available
Vapor Pressure: 40Pa @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Vapor density: No data available
Specific gravity: 0.96 - 1.00g/cm^3 @ 25deg.C
Solubility in Water: 1.1wt% @ 20deg.C (Ethylene glycol mono butyl ether acetate)
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 Conditions to avoid:	Extremely high temperature
10.2 Materials to avoid:	Acids and oxidizing agents
10.3 Hazardous decomposition products:	Burning in insufficient air supply may produce toxic fume of carbon monoxide

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: No information available.

Mugtagenicity: No information available.

Carcinogenicity: No information available.(Ethylene glycol mono- butyl ether acetate.)

Toxicity Data: Ethylene glycol mono- butyl ether acetate

Oral LD_{50}	Dermal LD_{50}
>3000mg/kg (Rats:male)	>1500mg/kg (Rabbit)
>2400mg/kg (Rats:femals)	

Inhalant LC_{50}

The rat and the rabbit were exposed to saturation concentration (about 4000 ppm) for 4 hours. The hemoglobin urine and bloody urine of transitory were observed only in the direction of a rabbit. However, the morbid externally caused injury of internal organs was not macroscopically observed by dissection two weeks after.

Irritating:
Eye irritating : 500mg/24hrs (Rabbit OECD405) mild irritating.
Skin irritating : 500mg/24hrs (open@ Rabbit OECD404) mild irritating.

12. Ecological Information

12.1 Ecotoxicity:	No data available(Ethylene glycol mono- butyl ether acetate)
12.2 Mobility:	No data available on the adverse effects of this ink on the environment
12.3 Persistence and degradability:	Good
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Other adverse effects:	Disclosure of ink and abandonment have a possibility of affecting environment. Then, cautions are required for handling. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

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	Not regulated
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Not regulated
TSCA Section 8(a) Inventory Update Rule	Ethylene glycol monobutyl ether acetate Magenta Pigment
TSCA Section 12(b) One-Time Export Notification Regulated	Not regulated
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC:Xn

Wording of Risk and Safety Phase:

R20/21 : Harmful by inhalation and in contact with skin.
R36/38 : Irritating to eyes and skin.
S24 : Avoid contact with skin.
S41 : In case of fire and/or explosion do not breathe fumes.

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:

EcoXtreme Ink, AI-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
Pigment blue 15	147-14-8	0.3-1%
Polymer	Listed	3-7%
Dispersant	Listed	0.5-2%
Ethylene glycol monobutyl ether acetate	112-07-2	83-93%
N-methyl pyrrolidone	872-50-4	3-7%

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a cyan liquid that cause 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.

3.2 Potential Health Effects:

Eye:	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 inflammation 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 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 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: Close system or local ventilation is recommended.

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU: ELV	ACGIH: TLV	OSHA: PEL
Ethylene glycol mono- butyl ether acetate	Not listed	20ppm	Not listed
N-Methyl pyrrolidone	Not Listed	Not Listed	Not listed

8.2.1.1 Respiratory protection: Not required 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: Solvent odor

9.2 Important health, safety and environmental information

pH: No data available
Boiling point: 191deg.C (Ethylene glycol mono butyl ether acetate)
Melting point: -64.6deg.C (Ethylene glycol mono butyl ether acetate)
Flash point: 83deg.C (Cleveland Open cup)
Autoflammability: No data available
Explosive properties: explosive limit -lower limits 0.8vol%(Ethylene glycol mono butyl ether acetate)
-upper limits 8.5vol%(Ethylene glycol mono butyl ether acetate)
Oxidizing properties: No data available
Vapor Pressure: 40Pa @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Vapor density: 3.4(N-Methyl pyrrolidone) (Air=1)
Specific gravity: 0.96 - 1.00g/cm^3 @ 25deg.C
Solubility in Water: 1.1wt% @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Easily soluble (N-Methyl pyrrolidone)
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 Conditions to avoid: Extremely high temperature

10.2 Materials to avoid: Acids and oxidizing agents

10.3 Hazardous decomposition products: Burning in insufficient air supply may produce toxic fume of carbon monoxide

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: No information available

Mugtagenicity: No information available.

Carcinogenicity:

1) Ethylene glycol mono- butyl ether acetate.
No information available.

2) N-Methyl pyrrolidone
Toxic influence and carcinogenic were not accepted as a result of inhalation (rat) 0 mg/l (0 ppm), 0.04 mg/l (10 ppm), 0.4 mg/l (99 ppm), 6 hr/day, 5 day/week, and the exposure test for two years.

Toxicity Data:

1) Ethylene glycol mono- butyl ether acetate.

Oral LD_{50}	Dermal LD_{50}
>3000mg/kg(Rats:male)	>1500mg/kg(Rabbit)
>2400mg/kg(Rats:femals)	

Inhalant LC_{50}

The rat and the rabbit were exposed to saturation concentration (about 4000 ppm) for 4 hours. The hemoglobin urine and bloody urine of transitory were observed only in the direction of a rabbit. However, the morbid externally caused injury of internal organs was not macroscopically observed by dissection two weeks after.

2) N-Methyl pyrrolidone

Oral LD_{50}	Dermal LD_{50}	Inhalant LC_{50}
>3914mg/kg (Rats)	>8000mg/kg (Rabbit)	No data available

Irritating:

1) Ethylene glycol mono- butyl ether acetate.
Eye irritating : 500mg/24hrs (Rabbit OECD405) mild irritating.
Skin irritating : 500mg/24hrs (open@ Rabbit OECD404) mild irritating.

2) N-Methyl pyrrolidone
Eye irritating (Rabbit OECD405): mild irritating.
Skin irritating (open @Rabbit OECD404): mild irritating.

12. Ecological Information

12.1 Ecotoxicity:

1) Ethylene glycol mono- butyl ether acetate.
No data available

2) N-Methyl pyrrolidone
bluegill LC_{50}:832mg/l (22deg.C), bull trout LC_{50}:3048mg/l (22deg.C)

12.2 Mobility: No data available on the adverse effects of this ink on the environment

12.3 Persistence and degradability: Good

12.4 Bioaccumulative potential: No data available on the adverse effects of this ink on the environment

12.5 Other adverse effects: Disclosure of ink and abandonment have a possibility of affecting environment. Then, cautions are required for handling. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

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	N-Mehtyl pyrrolidone
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Not regulated
TSCA Section 8(a) Inventory Update Rule	Ethylene glycol monobutyl ether acetate N-Mehtyl pyrrolidone Cyan Pigment
TSCA Section 12(b) One-Time Export Notification Regulated	N-Mehtyl pyrrolidone
California Proposition 65	N-Mehtyl pyrrolidone

EU Information

Symbols and indication according to 1999/45/EC:Xn

Harmful: Xn

Wording of Risk and Safety Phase:

R20/21 : Harmful by inhalation and in contact with skin.
R36/38 : Irritating to eyes and skin.
S24 : Avoid contact with skin.
S41 : In case of fire and/or explosion do not breathe fumes.

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:

EcoXtreme Ink, AI-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
Pigment	Listed	0.5-2%
Polymer	Listed	3-7%
Dispersant	Listed	0.5-2%
Ethylene glycol monobutyl ether acetate	112-07-2	89-96%

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a magenta liquid that cause 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.

3.2 Potential Health Effects:

Eye: 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 inflammation 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 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 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: Close system or local ventilation is recommended.

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU: ELV	ACGIH: TLV	OSHA: PEL
Ethylene glycol mono- butyl ether acetate	Not listed	20ppm	Not listed

8.2.1.1 Respiratory protection: Not required 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: Solvent odor

9.2 Important health, safety and environmental information

pH: No data available
Boiling point: 191deg.C (Ethylene glycol mono butyl ether acetate)
Melting point: -64.6deg.C (Ethylene glycol mono butyl ether acetate)
Flash point: 83deg.C (Cleveland Open cup)
Autoflammability: No data available
Explosive properties: explosive limit -lower limits 0.8vol%(Ethylene glycol mono butyl ether acetate)
-upper limits 8.5vol%(Ethylene glycol mono butyl ether acetate)
Oxidizing properties: No data available
Vapor Pressure: 40Pa @ 20deg.C (Ethylene glycol mono butyl ether acetate)
Vapor density: No data available
Specific gravity: 0.96 - 1.00g/cm^3 @ 25deg.C
Solubility in Water: 1.1wt% @ 20deg.C (Ethylene glycol mono butyl ether acetate)
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 Conditions to avoid: Extremely high temperature

10.2 Materials to avoid: Acids and oxidizing agents

10.3 Hazardous decomposition products: Burning in insufficient air supply may produce toxic fume of carbon monoxide

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: No information available.

Mugtagenicity: No information available.

Carcinogenicity: No information available.(Ethylene glycol mono- butyl ether acetate.)

Toxicity Data: Ethylene glycol mono- butyl ether acetate

Oral LD_{50}	Dermal LD_{50}
>3000mg/kg(Rats:male)	>1500mg/kg(Rabbit)
>2400mg/kg(Rats:femals)	

Inhalant LC_{50}

The rat and the rabbit were exposed to saturation concentration (about 4000 ppm) for 4 hours. The hemoglobin urine and bloody urine of transitory were observed only in the direction of a rabbit. However, the morbid externally caused injury of internal organs was not macroscopically observed by dissection two weeks after.

Irritating: Eye irritating : 500mg/24hrs (Rabbit OECD405) mild irritating.
Skin irritating : 500mg/24hrs (open@ Rabbit OECD404) mild irritating.

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:	Good
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Other adverse effects:	Disclosure of ink and abandonment have a possibility of affecting environment. Then, cautions are required for handling. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

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	Not regulated
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Not regulated
TSCA Section 8(a) Inventory Update Rule	Ethylene glycol monobutyl ether acetate Magenta Pigment
TSCA Section 12(b) One-Time Export Notification Regulated	Not regulated
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC:Xn

Harmful: Xn

Wording of Risk and Safety Phase:

R20/21	: Harmful by inhalation and in contact with skin.
R36/38	: Irritating to eyes and skin.
S24	: Avoid contact with skin.
S41	: In case of fire and/or explosion do not breathe fumes.

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:
EcoXtreme Ink, AI-ML&AI-CL

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
Diethylene glycol mono butyl ether acetate	124-17-4	>98%

3. Hazard Identification

3.1 Emergency Overview:

Ink component is a colorless liquid that cause 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.

3.2 Potential Health Effects:

Eye:	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 inflammation 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 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 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: Close system or local ventilation is recommended.

8.2 Exposure controls:

8.2.1 Occupational exposure controls:

Substance(s)	EU: ELV	ACGIH: TLV	OSHA: PEL
Diethylene glycol mono- butyl ether acetate	Not listed	Not listed	Not listed

8.2.1.1 Respiratory protection: Not required 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	transparent and colorless liquid
Odor:	Slightly solvent odor

9.2 Important health, safety and environmental information

pH:	No data available
Boiling point:	246.7deg.C
Melting point:	-32deg.C
Flash point:	114deg.C (Cleveland Open cup)
Autoflammability:	No data available
Explosive properties:	explosive limit -lower limits 0.7vol% -upper limits 10.7vol%
Oxidizing properties:	No data available
Vapor Pressure:	1.3Pa @ 20deg.C
Vapor density:	7.1(Air=1)
Specific gravity:	0.981g/cm^3 @ 20deg.C
Solubility in Water:	6.5wt% @ 20deg.C
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

10.1 Conditions to avoid: Extremely high temperature

10.2 Materials to avoid: Acids and oxidizing agents

10.3 Hazardous decomposition products: Burning in insufficient air supply may produce toxic fume of carbon monoxide

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: No information available.

Mugtagenicity: No information available.

Carcinogenicity: No information available.

Toxicity Data: Diethylene glycol mono- butyl ether acetate

Oral LD_{50}	Dermal LD_{50}	Inhalant LC50
>6500mg/kg (Rats) >2260mg/kg (Rabbits)	>1450mg/kg (Rabbits)	>7250mg/m^3 (4hr@Rabbits)

Irritating: Eye irritating : 500mg/24hrs (Rabbit OECD405) mild irritating.
Skin irritating : 500mg/24hrs (open@ Rabbit OECD404) mild irritating.

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:	Good
12.4 Bioaccumulative potential:	No data available on the adverse effects of this ink on the environment
12.5 Other adverse effects:	Disclosure of ink and abandonment have a possibility of affecting environment. Then, cautions are required for handling. It is necessary to cope with it so that especially a product or washing water may not flow to the ground, a river, and a drain.

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	Diethylene glycol monobutyl ether acetate
TSCA Section 8(a) Preliminary Assessment Information Rule (PAIR)	Diethylene glycol monobutyl ether acetate
TSCA Section 8(a) Inventory Update Rule	Diethylene glycol monobutyl ether acetate
TSCA Section 12(b) One-Time Export Notification Regulated	Diethylene glycol monobutyl ether acetate
California Proposition 65	Not regulated

EU Information

Symbols and indication according to 1999/45/EC: Not applicable

Wording of Risk and Safety Phase: Not Applicable

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.