

Safety Data Sheet

1. Substance/mixture and Company Identification

Product name:

ECOSOLVENT INK, IR-ES1 Yellow

Manufacture: REDGIANT, Inc.

Address: 37, MTV 27-ro, 58 Beon-gil, Gyeonggi-do, 15118, Korea

Phone: + 82-2-837-0329

Fax: + 82-2-837-0130

Intended use: Inkjet Printing

Date of issue: 01 March, 2017

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor: Yellow liquid and slightly odor

This product is classified as dangerous according to GHS.

Flammable liquids Category 4

Acute toxicity - oral Category 5

Eye damage/irritation Category 2

Skin corrosion/irritation Category 2

Toxic to reproduction Category 1B

GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

Hazard statement(s)

Combustible liquid.

Causes skin irritation.

Causes serious eye irritation.

May damage fertility or the unborn child

Precautionary statement(s)

Prevention

Do not handle until all safety precautions have been read and understood.

Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

Wear protective gloves/protective clothing/eye protection/face protection.

Response

IF ON SKIN: Wash with plenty of soap and water.

IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed or concerned: Get medical advice/attention.

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure: Eye, skin, inhalation or oral.

Eyes: Causes severe irritation or redness which may persist for several days.

Skin: Contact with skin may cause irritation, swelling or redness.

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

Ingestion: May cause upset stomach.

Chronic Health Hazards: No information available.
 Carcinogenicity: The product contains Nickel compounds.
 IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).
 See section 11 for more information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Colorant (Nickel Compound)	C.B.I.*	1-5	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	55-65	Skin Irrit. 2: H315 Eye Irrit. 2A: H319
Propylene carbonate	108-32-7	10-14	Eye Irrit. 2: H319
Tetraethylene glycol dimethyl ether	143-24-8	10-20	Repr. 1B: H360

*C.B.I.: Confidential Business Information

4. First Aid Measures

4.1. First aid procedures

Eye In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Seek medical advice.
 Skin In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
 Inhalation Remove to fresh air. If breathing is irregular, seek medical advice.
 Ingestion If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
 Flash Point: about 71 °C (closed cup)

5.2. Extinguishing media

Suitable extinguishing media: Water spray, dry chemical, CO₂ or foam.
 Unsuitable extinguishing media: No information.

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture
 Toxic and irritating fume and/or gases may generate by combustion.
 Protective equipment and precautions for firefighters
 Wear self-contained breathing apparatus (SCBA) and full protective equipment.
 Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures

General:

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

6.1. Personal precautions

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment and Clean-up

Use mechanical tools to collect spilled product and eliminated the remainder using jets of water.

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

6.4. Other information

No information

6.5. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Storage

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

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m ³	-
Propylene carbonate	70mg/m ³	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

components	OSHA:PEL	ACGIH:TLV
Nickel compounds	1mg/m ³	-

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

components	PEL	STEL
Nickel, insoluble compounds, as Ni	0.1mg/m ³	
Diethylene glycol diethyl ether	5ppm, 33mg/m ³ -	-

8.2. Engineering controls

Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

8.3. Personal protective equipment (PPE)

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

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

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

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

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

9. Physical and Chemical Properties

Appearance:	Yellow liquid
Odor:	Slightly
pH:	Not applicable
Melting or freezing point:	No data available
Boiling point:	No data available
Flash point:	71 °C
Flammability(solid,gas):	Not applicable
Explosive properties:	No data available
Oxidizing properties:	None
Vapor pressure:	No data available
Density:	No data available
Water Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Viscosity:	Approx. 2-6 cp (at 25 °C)
Vapor density:	No data available
Evaporation rate:	No data available

10. Stability and Reactivity

10.1. Reactivity:	Stable under normal temperature
10.2. Possibility of hazardous reactions:	None
10.3. Chemical stability:	Stable under normal temperature
10.4. Conditions to avoid:	Taking the product type into account, it is advisable to leave the product in its original packaging thus avoiding transferring it.
10.5. Incompatible materials:	Keep away from oxidising agents and explosives
10.6. Hazardous decomposition products:	No data available

11. Toxicological information

*Based on toxicology data of chemically similar material

Acute toxicity:	
Oral LD50	>2500mg/kg(rat)*
Dermal LD50	>2000mg/kg(rat)*
Inhalant LC50	No data available
Skin corrosion/irritation:	Mild irritant.(rabbit OECD 404)*
Eye damage/eye irritation:	Mild irritant.(rabbit OECD 405)*
Respiratory or skin sensitisation:	None sensitizer(LLNA,OECD 429)*
Germ cell mutagenicity:	Negative(by Ames test)*
Reproductive toxicity:	Tetraethylene glycol dimethyl ether : Category 1B(GHS Classification)
Carcinogenicity:	Contains Nickel compounds (IARC: group 1, NTP: Known to be human carcinogen, Proposition65: known to cause cancer)
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological Information

Ecotoxicity:	No data available
Persistence/Degradability:	No data available
Bioaccumulation/Accumulation:	No data available
Mobility in environment media:	No data available
Other adverse effects:	No data available

13. Disposal Considerations

Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and

local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport Information

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

15. Regulatory Information

US Information:

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

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

California Proposition 65: Nickel Compounds

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

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Nickel compounds (Category Code N495)

EU Information:

Chemical Safety Assessment according to EC Regulation 1907/2006:

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information

NFPA 704: Hazard Rating System

Health - 3 , Flammable - 2 , Reactivity - 0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge on the date of the last version. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. REDGIANT does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

1. Substance/mixture and Company Identification

Product name: ECOSOLVENT INK, IR-ES1 Magenta
 Manufacture: REDGIANT, Inc.
 Address: 37, MTV 27-ro, 58 Beon-gil, Gyeonggi-do, 15118, Korea
 Phone: + 82-2-837-0329
 Fax: + 82-2-837-0130
 Intended use: Inkjet Printing
 Date of issue: 01 March, 2017

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor: Magenta liquid and slightly odor
 This product is classified as dangerous according to GHS.
 Flammable liquids: Category 4
 Acute toxicity - oral: Category 5
 Eye damage/irritation: Category 2
 Skin corrosion/irritation: Category 2
 Toxic to reproduction: Category 1B

GHS label elements, including precautionary statements
 Pictogram



Signal word(s): **Danger**

Hazard statement(s):
 Combustible liquid.
 Causes skin irritation.
 Causes serious eye irritation.
 May damage fertility or the unborn child

Precautionary statement(s)
 Prevention
 Do not handle until all safety precautions have been read and understood.
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
 Wear protective gloves/protective clothing/eye protection/face protection.

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

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure: Eye, skin, inhalation or oral.
 Eyes: Causes severe eye injury which may persist for several days.
 Skin: Contact with skin may cause irritation, swelling or redness.
 Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
 Ingestion: May cause upset stomach.

Chronic Health Hazards: No information available.
 Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
 See section 11 for more information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Diethylene glycol diethyl ether	112-36-7	55-65	Skin Irrit. 2: H315 Eye Irrit. 2A: H319
Propylene carbonate	108-32-7	10-14	Eye Irrit.2: H319
Tetraethylene glycol dimethyl ether	143-24-8	10-20	Repr. 1B: H360

4. First Aid Measures

4.1. First aid procedures

Eye In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Seek medical advice.
 Skin In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
 Inhalation Remove to fresh air. If breathing is irregular, seek medical advice.
 Ingestion If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: about 71 °C (closed cup)

5.2. Extinguishing media

Suitable extinguishing media: Water spray, dry chemical, CO₂ or foam.

Unsuitable extinguishing media: No information.

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions for firefighters

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

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

6. Accidental Release Measures

General:

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

6.1. Personal precautions

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment and Clean-up

Use mechanical tools to collect spilled product and eliminated the remainder using jets of water.

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

6.4. Other information

No information

6.5. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Storage

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

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m ³	-
Propylene carbonate	70mg/m ³	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

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

components	PEL	STEL
Diethylene glycol diethyl ether	5ppm, 33mg/m ³ -	-

8.2. Engineering controls

Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

8.3. Personal protective equipment (PPE)

- Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.
- Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.
- Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.
- Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.
- General hygiene measures: Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

9. Physical and Chemical Properties

- Appearance: Magenta liquid
- Odor: Slightly
- pH: Not applicable
- Melting or freezing point: No data available
- Boiling point: No data available
- Flash point: 71 °C
- Flammability(solid,gas): Not applicable
- Explosive properties: No data available
- Oxidizing properties: None

Vapor pressure:	No data available
Density:	No data available
Water Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Viscosity:	Approx. 2-6 cp (at 25 °C)
Vapor density:	No data available
Evaporation rate:	No data available

10. Stability and Reactivity

10.1. Reactivity:	Stable under normal temperature
10.2. Possibility of hazardous reactions:	None
10.3. Chemical stability:	Stable under normal temperature
10.4. Conditions to avoid:	Taking the product type into account, it is advisable to leave the product in its original packaging thus avoiding transferring it.
10.5. Incompatible materials:	Keep away from oxidising agents and explosives
10.6. Hazardous decomposition products:	No data available

11. Toxicological information

*Based on toxicology data of chemically similar material

Acute toxicity:	
Oral LD50	>2500mg/kg(Rat)*
Dermal LD50	>2000mg/kg(Rat)*
Inhalant LC50	No data available
Skin corrosion/irritation:	Mild irritant.(rabbit OECD 404)*
Eye damage/eye irritation:	Mild irritant.(rabbit OECD 405)*
Respiratory or skin sensitisation:	None sensitizer(LLNA,OECD 429)*
Germ cell mutagenicity:	Negative(by Ames test)*
Reproductive toxicity:	Tetraethylene glycol dimethyl ether : Category 1B(GHS Classification)
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological Information

Ecotoxicity:	No data available
Persistence/Degradability:	No data available
Bioaccumulation/Accumulation:	No data available
Mobility in environment media:	No data available
Other adverse effects:	No data available

13. Disposal Considerations

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

14. Transport Information

14.1. UN Class/UN Number	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.2. UN proper shipping name	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.3. Transport hazard class(es)	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.4. Packing group	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable

- 14.5. Environmental hazards
DOT/ADR/ADG, IMDG, or IATA : Not applicable
- 14.6. Special precautions for user
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code
Not applicable

15. Regulatory Information

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

EU Information:

Chemical Safety Assessment according to EC Regulation 1907/2006:

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information

NFPA 704: Hazard Rating System

Health - 3 , Flammable - 2 , Reactivity - 0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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

GHS label elements, including precautionary statements
 Pictogram



Signal word(s) **Danger**
 Hazard statement(s)
 Combustible liquid.
 Causes skin irritation.
 Causes serious eye irritation.
 May damage fertility or the unborn child

Precautionary statement(s)

Prevention

Do not handle until all safety precautions have been read and understood.
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
 Wear protective gloves/protective clothing/eye protection/face protection.

Response

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

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure: Eye, skin, inhalation or oral.
 Eyes: Causes severe eye injury which may persist for several days.
 Skin: Contact with skin may cause irritation, swelling or redness.
 Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
 Ingestion: May cause upset stomach.

Chronic Health Hazards: No information available.
 Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
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Composition	CAS No.	% By Weight	Classification HCS
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 Inhalation Remove to fresh air. If breathing is irregular, seek medical advice.
 Ingestion If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: about 71 °C (closed cup)

5.2. Extinguishing media

Suitable extinguishing media: Water spray, dry chemical, CO₂ or foam.

Unsuitable extinguishing media: No information.

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions for firefighters

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

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

6. Accidental Release Measures

General:

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

6.1. Personal precautions

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment and Clean-up

Use mechanical tools to collect spilled product and eliminated the remainder using jets of water.

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

6.4. Other information

No information

6.5. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Storage

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

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m ³	-
Propylene carbonate	70mg/m ³	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

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

components	PEL	STEL
Diethylene glycol diethyl ether	5ppm, 33mg/m ³ -	-

8.2. Engineering controls

Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

8.3. Personal protective equipment (PPE)

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

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

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

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

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

9. Physical and Chemical Properties

Appearance: Cyan liquid

Odor: Slightly

pH: Not applicable

Melting or freezing point: No data available

Boiling point: No data available

Flash point: 71 °C

Flammability(solid,gas): Not applicable

Explosive properties: No data available

Oxidizing properties: None

Vapor pressure:	No data available
Density:	No data available
Water Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Viscosity:	Approx. 2-6 cp (at 25 °C)
Vapor density:	No data available
Evaporation rate:	No data available

10. Stability and Reactivity

10.1. Reactivity:	Stable under normal temperature
10.2. Possibility of hazardous reactions:	None
10.3. Chemical stability:	Stable under normal temperature
10.4. Conditions to avoid:	Taking the product type into account, it is advisable to leave the product in its original packaging thus avoiding transferring it.
10.5. Incompatible materials:	Keep away from oxidising agents and explosives
10.6. Hazardous decomposition products:	No data available

11. Toxicological information

*Based on toxicology data of chemically similar material

Acute toxicity:	
Oral LD50	>2500mg/kg(Rat)*
Dermal LD50	>2000mg/kg(Rat)*
Inhalant LC50	No data available
Skin corrosion/irritation:	Mild irritant.(rabbit OECD 404)*
Eye damage/eye irritation:	Mild irritant.(rabbit OECD 405)*
Respiratory or skin sensitisation:	None sensitizer(LLNA,OECD 429)*
Germ cell mutagenicity:	Negative(by Ames test)*
Reproductive toxicity:	Tetraethylene glycol dimethyl ether : Category 1B(GHS Classification)
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological Information

Ecotoxicity:	No data available
Persistence/Degradability:	No data available
Bioaccumulation/Accumulation:	No data available
Mobility in environment media:	No data available
Other adverse effects:	No data available

13. Disposal Considerations

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

14. Transport Information

14.1. UN Class/UN Number	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.2. UN proper shipping name	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.3. Transport hazard class(es)	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.4. Packing group	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable

14.5. Environmental hazards

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

14.6. Special precautions for user

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

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

Not applicable

15. Regulatory Information**US Information:**

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

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

California Proposition 65: Not regulated

SARA TITLE III:**Section 313:**

Diethylene glycol diethyl ether (Chemical Category N230)

EU Information:

Chemical Safety Assessment according to EC Regulation 1907/2006:

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information**NFPA 704: Hazard Rating System**

Health - 3 , Flammable - 2 , Reactivity - 0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge on the date of the last version. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. REDGIANT does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

1. Substance/mixture and Company Identification

Product name: ECOSOLVENT INK, IR-ES1 Black
 Manufacture: REDGIANT, Inc.
 Address: 37, MTV 27-ro, 58 Beon-gil, Gyeonggi-do, 15118, Korea
 Phone: + 82-2-837-0329
 Fax: + 82-2-837-0130
 Intended use: Inkjet Printing
 Date of issue: 01 March, 2017

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor: Black liquid and slightly odor
 This product is classified as dangerous according to GHS.
 Flammable liquids Category 4
 Acute toxicity - oral Category 5
 Eye damage/irritation Category 2
 Skin corrosion/irritation Category 2
 Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
 Pictogram



Signal word(s) Danger
 Hazard statement(s)
 Combustible liquid.
 Causes skin irritation.
 Causes serious eye irritation.
 May damage fertility or the unborn child

Precautionary statement(s)

Prevention

Do not handle until all safety precautions have been read and understood.
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
 Wear protective gloves/protective clothing/eye protection/face protection.

Response

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

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure: Eye, skin, inhalation or oral.
 Eyes: Causes severe eye injury which may persist for several days.
 Skin: Contact with skin may cause irritation, swelling or redness.
 Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
 Ingestion: May cause upset stomach.

Chronic Health Hazards: No information available.
 Carcinogenicity: The product contains Carbon black.
 IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

See section 11 for more information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Carbon black	1333-86-4	2-5	Not classified as hazardous
Diethylene glycol diethyl ether	112-36-7	55-65	Skin Irrit. 2: H315 Eye Irrit. 2A: H319
Propylene carbonate	108-32-7	10-14	Eye Irrit.2: H319
Tetraethylene glycol dimethyl ether	143-24-8	10-20	Repr. 1B: H360

4. First Aid Measures

4.1. First aid procedures

Eye In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Seek medical advice.
 Skin In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
 Inhalation Remove to fresh air. If breathing is irregular, seek medical advice.
 Ingestion If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: about 71 °C (closed cup)

5.2. Extinguishing media

Suitable extinguishing media: Water spray, dry chemical, CO₂ or foam.

Unsuitable extinguishing media: No information.

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions for firefighters

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

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

6. Accidental Release Measures

General:

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

6.1. Personal precautions

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment and Clean-up

Use mechanical tools to collect spilled product and eliminated the remainder using jets of water.

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

6.4. Other information

No information

6.5. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Storage

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

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

components	Long term exposure	Short term exposure
Carbon black	2mg/m ³	
Tetraethylene glycol dimethyl ether	22mg/m ³	-
Propylene carbonate	70mg/m ³	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

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

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

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

Australia: OELs

components	TWA	STEL
Carbon black	3mg/m ³	-

8.2. Engineering controls

Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

8.3. Personal protective equipment (PPE)

- Eye/face protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles.
- Hand protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, use protective gloves.
- Skin protection: Not required under suitable use as setting the cartridge on the printer. However, in case of direct contact to ink, wear protective clothing.

Respiratory protection:	Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.
General hygiene measures:	Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area.

9. Physical and Chemical Properties

Appearance:	Black liquid
Odor:	Slightly
pH:	Not applicable
Melting or freezing point:	No data available
Boiling point:	No data available
Flash point:	71 °C
Flammability(solid,gas):	Not applicable
Explosive properties:	No data available
Oxidizing properties:	None
Vapor pressure:	No data available
Density:	No data available
Water Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Viscosity:	Approx. 2-6 cp (at 25 °C)
Vapor density:	No data available
Evaporation rate:	No data available

10. Stability and Reactivity

10.1. Reactivity:	Stable under normal temperature
10.2. Possibility of hazardous reactions:	None
10.3. Chemical stability:	Stable under normal temperature
10.4. Conditions to avoid:	Taking the product type into account, it is advisable to leave the product in its original packaging thus avoiding transferring it.
10.5. Incompatible materials:	Keep away from oxidising agents and explosives
10.6. Hazardous decomposition products:	No data available

11. Toxicological information

*Based on toxicology data of chemically similar material

Acute toxicity:	
Oral LD50	>2500mg/kg(Rat)*
Dermal LD50	>2000mg/kg(Rat)*
Inhalant LC50	No data available
Skin corrosion/irritation:	Mild irritant.(rabbit OECD 404)*
Eye damage/eye irritation:	Mild irritant.(rabbit OECD 405)*
Respiratory or skin sensitisation:	None sensitizer(LLNA,OECD 429)*
Germ cell mutagenicity:	Negative(by Ames test)*
Reproductive toxicity:	Tetraethylene glycol dimethyl ether : Category 1B(GHS Classification)
Carcinogenicity:	The product contains Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to Humans)
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological Information

Ecotoxicity:	No data available
Persistence/Degradability:	No data available

Bioaccumulation/Accumulation: No data available
 Mobility in environment media: No data available
 Other adverse effects: No data available

13. Disposal Considerations

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

14. Transport Information

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

15. Regulatory Information

US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
 Product contains Diethylene glycol diethyl ether and Tetraethylene glycol dimethyl ether that are subject to TSCA Section 5 proposed SNUR and to TSCA Section 12(b) export notification requirements.
 California Proposition 65: Not regulated
 SARA TITLE III:
 Section 313:
 Diethylene glycol diethyl ether (Chemical Category N230)

EU Information:

Chemical Safety Assessment according to EC Regulation 1907/2006:
 This product has not carried out any Chemical Safety Assessment yet.

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information

NFPA 704: Hazard Rating System

Health - 3 , Flammable - 2 , Reactivity - 0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge on the date of the last version. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. REDGIANT does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

1. Substance/mixture and Company Identification

Product name: ECOSOLVENT INK, IR-ES1 Light Magenta
 Manufacture: REDGIANT, Inc.
 Address: 37, MTV 27-ro, 58 Beon-gil, Gyeonggi-do, 15118, Korea
 Phone: + 82-2-837-0329
 Fax: + 82-2-837-0130
 Intended use: Inkjet Printing
 Date of issue: 01 March, 2017

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor: Magenta liquid and slightly odor
 This product is classified as dangerous according to GHS.
 Flammable liquids Category 4
 Acute toxicity - oral Category 5
 Eye damage/irritation Category 2
 Skin corrosion/irritation Category 2
 Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
 Pictogram



Signal word(s) Danger
 Hazard statement(s)
 Combustible liquid.
 Causes skin irritation.
 Causes serious eye irritation.
 May damage fertility or the unborn child

Precautionary statement(s)
 Prevention
 Do not handle until all safety precautions have been read and understood.
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
 Wear protective gloves/protective clothing/eye protection/face protection.

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

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure: Eye, skin, inhalation or oral.
 Eyes: Causes severe eye injury which may persist for several days.
 Skin: Contact with skin may cause irritation, swelling or redness.
 Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
 Ingestion: May cause upset stomach.

Chronic Health Hazards: No information available.
 Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
 See section 11 for more information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Diethylene glycol diethyl ether	112-36-7	55-65	Skin Irrit. 2: H315 Eye Irrit. 2A: H319
Propylene carbonate	108-32-7	10-14	Eye Irrit.2: H319
Tetraethylene glycol dimethyl ether	143-24-8	10-20	Repr. 1B: H360

4. First Aid Measures

4.1. First aid procedures

Eye In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Seek medical advice.
 Skin In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
 Inhalation Remove to fresh air. If breathing is irregular, seek medical advice.
 Ingestion If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: about 71 °C (closed cup)

5.2. Extinguishing media

Suitable extinguishing media: Water spray, dry chemical, CO₂ or foam.

Unsuitable extinguishing media: No information.

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions for firefighters

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

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

6. Accidental Release Measures

General:

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

6.1. Personal precautions

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment and Clean-up

Use mechanical tools to collect spilled product and eliminated the remainder using jets of water.

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

6.4. Other information

No information

6.5. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Storage

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

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m ³	-
Propylene carbonate	70mg/m ³	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

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

components	PEL	STEL
Diethylene glycol diethyl ether	5ppm, 33mg/m ³ -	-

8.2. Engineering controls

Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

8.3. Personal protective equipment (PPE)

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

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

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

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

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

9. Physical and Chemical Properties

Appearance: Magenta liquid
 Odor: Slightly
 pH: Not applicable
 Melting or freezing point: No data available
 Boiling point: No data available
 Flash point: 71 °C
 Flammability(solid,gas): Not applicable
 Explosive properties: No data available
 Oxidizing properties: None

Vapor pressure:	No data available
Density:	No data available
Water Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Viscosity:	Approx. 2-6 cp (at 25 °C)
Vapor density:	No data available
Evaporation rate:	No data available

10. Stability and Reactivity

10.1. Reactivity:	Stable under normal temperature
10.2. Possibility of hazardous reactions:	None
10.3. Chemical stability:	Stable under normal temperature
10.4. Conditions to avoid:	Taking the product type into account, it is advisable to leave the product in its original packaging thus avoiding transferring it.
10.5. Incompatible materials:	Keep away from oxidising agents and explosives
10.6. Hazardous decomposition products:	No data available

11. Toxicological information

*Based on toxicology data of chemically similar material

Acute toxicity:	
Oral LD50	>2500mg/kg(Rat)*
Dermal LD50	>2000mg/kg(Rat)*
Inhalant LC50	No data available
Skin corrosion/irritation:	Mild irritant.(rabbit OECD 404)*
Eye damage/eye irritation:	Mild irritant.(rabbit OECD 405)*
Respiratory or skin sensitisation:	None sensitizer(LLNA,OECD 429)*
Germ cell mutagenicity:	Negative(by Ames test)*
Reproductive toxicity:	Tetraethylene glycol dimethyl ether : Category 1B(GHS Classification)
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological Information

Ecotoxicity:	No data available
Persistence/Degradability:	No data available
Bioaccumulation/Accumulation:	No data available
Mobility in environment media:	No data available
Other adverse effects:	No data available

13. Disposal Considerations

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

14. Transport Information

14.1. UN Class/UN Number	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.2. UN proper shipping name	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.3. Transport hazard class(es)	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.4. Packing group	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable

-
- 14.5. Environmental hazards
DOT/ADR/ADG, IMDG, or IATA : Not applicable
- 14.6. Special precautions for user
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code
Not applicable

15. Regulatory Information

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

EU Information:

Chemical Safety Assessment according to EC Regulation 1907/2006:

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information

NFPA 704: Hazard Rating System

Health - 3 , Flammable - 2 , Reactivity - 0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge on the date of the last version. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is subject to revision as additional knowledge and experience is gained. REDGIANT does not warrant the completeness or accuracy of the information contained herein.

Safety Data Sheet

1. Substance/mixture and Company Identification

Product name: ECOSOLVENT INK, IR-ES1 Light Cyan
 Manufacture: REDGIANT, Inc.
 Address: 37, MTV 27-ro, 58 Beon-gil, Gyeonggi-do, 15118, Korea
 Phone: + 82-2-837-0329
 Fax: + 82-2-837-0130
 Intended use: Inkjet Printing
 Date of issue: 01 March, 2017

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor: Cyan liquid and slightly odor
 This product is classified as dangerous according to GHS.
 Flammable liquids Category 4
 Acute toxicity - oral Category 5
 Eye damage/irritation Category 2
 Skin corrosion/irritation Category 2
 Toxic to reproduction Category 1B

GHS label elements, including precautionary statements
 Pictogram



Signal word(s) Danger
 Hazard statement(s)
 Combustible liquid.
 Causes skin irritation.
 Causes serious eye irritation.
 May damage fertility or the unborn child

Precautionary statement(s)
 Prevention
 Do not handle until all safety precautions have been read and understood.
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
 Wear protective gloves/protective clothing/eye protection/face protection.

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

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure: Eye, skin, inhalation or oral.
 Eyes: Causes severe eye injury which may persist for several days.
 Skin: Contact with skin may cause irritation, swelling or redness.
 Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility.
 Ingestion: May cause upset stomach.

Chronic Health Hazards: No information available.
 Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
 See section 11 for more information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Diethylene glycol diethyl ether	112-36-7	55-65	Skin Irrit. 2: H315 Eye Irrit. 2A: H319
Propylene carbonate	108-32-7	10-14	Eye Irrit.2: H319
Tetraethylene glycol dimethyl ether	143-24-8	10-20	Repr. 1B: H360

4. First Aid Measures

4.1. First aid procedures

Eye In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Seek medical advice.
 Skin In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
 Inhalation Remove to fresh air. If breathing is irregular, seek medical advice.
 Ingestion If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
 Flash Point: about 71 °C (closed cup)

5.2. Extinguishing media

Suitable extinguishing media: Water spray, dry chemical, CO₂ or foam.
 Unsuitable extinguishing media: No information.

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture
 Toxic and irritating fume and/or gases may generate by combustion.
 Protective equipment and precautions for firefighters
 Wear self-contained breathing apparatus (SCBA) and full protective equipment.
 Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental Release Measures

General:

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

6.1. Personal precautions

Evacuate personnel, thoroughly ventilate area, use self-contained breathing apparatus and wear appropriate personal protective equipment.

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment and Clean-up

Use mechanical tools to collect spilled product and eliminated the remainder using jets of water.
 Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Other information

No information

6.5. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Storage

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

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

components	Long term exposure	Short term exposure
Tetraethylene glycol dimethyl ether	22mg/m ³	-
Propylene carbonate	70mg/m ³	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

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

components	PEL	STEL
Diethylene glycol diethyl ether	5ppm, 33mg/m ³ -	-

8.2. Engineering controls

Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.

8.3. Personal protective equipment (PPE)

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

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

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

Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.

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

9. Physical and Chemical Properties

Appearance: Cyan liquid

Odor: Slightly

pH: Not applicable

Melting or freezing point: No data available

Boiling point: No data available

Flash point: 71 °C

Flammability(solid,gas): Not applicable

Explosive properties: No data available

Oxidizing properties:	None
Vapor pressure:	No data available
Density:	No data available
Water Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Viscosity:	Approx. 2-6 cp (at 25 °C)
Vapor density:	No data available
Evaporation rate:	No data available

10. Stability and Reactivity

10.1. Reactivity:	Stable under normal temperature
10.2. Possibility of hazardous reactions:	None
10.3. Chemical stability:	Stable under normal temperature
10.4. Conditions to avoid:	Taking the product type into account, it is advisable to leave the product in its original packaging thus avoiding transferring it.
10.5. Incompatible materials:	Keep away from oxidising agents and explosives
10.6. Hazardous decomposition products:	No data available

11. Toxicological information

*Based on toxicology data of chemically similar material

Acute toxicity:	
Oral LD50	>2500mg/kg(Rat)*
Dermal LD50	>2000mg/kg(Rat)*
Inhalant LC50	No data available
Skin corrosion/irritation:	Mild irritant.(rabbit OECD 404)*
Eye damage/eye irritation:	Mild irritant.(rabbit OECD 405)*
Respiratory or skin sensitisation:	None sensitizer(LLNA,OECD 429)*
Germ cell mutagenicity:	Negative(by Ames test)*
Reproductive toxicity:	Tetraethylene glycol dimethyl ether : Category 1B(GHS Classification)
Carcinogenicity:	None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
STOT-single exposure:	No data available
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological Information

Ecotoxicity:	No data available
Persistence/Degradability:	No data available
Bioaccumulation/Accumulation:	No data available
Mobility in environment media:	No data available
Other adverse effects:	No data available

13. Disposal Considerations

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

14. Transport Information

14.1. UN Class/UN Number	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.2. UN proper shipping name	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.3. Transport hazard class(es)	
DOT/ADR/ADG, IMDG, or IATA :	Not applicable
14.4. Packing group	

- DOT/ADR/ADG, IMDG, or IATA : Not applicable
- 14.5. Environmental hazards
DOT/ADR/ADG, IMDG, or IATA : Not applicable
- 14.6. Special precautions for user
Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.
- 14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code
Not applicable

15. Regulatory Information

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

EU Information:

Chemical Safety Assessment according to EC Regulation 1907/2006:

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

16. Other Information

NFPA 704: Hazard Rating System

Health - 3 , Flammable - 2 , Reactivity - 0

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge on the date of the last version. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

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