

## Safety Data Sheet

### 1. Substance/mixture and Company Identification

Product name:

SUBLIMATION INK, IR-DSF Yellow

Manufacture: REDGIANT, Inc.

Address: 37, MTV 27-ro, 58 beon-gil, Siheung-si, Gyeonggi-do, 15118 KOREA

Phone: + 82-2-837-0329

Fax: + 82-31-311-0130

Intended use: Inkjet Printing

Date of issue: 01 December, 2014

### 2. Hazard Identification

#### 2.1 Emergency Overview:

Appearance and odor: Yellow liquid and slightly odor

This product is not classified as dangerous according to GHS.

GHS label elements, including precautionary statements

The product does not need to be labeled in accordance with GHS criteria.

#### 2.2. OSHA regulatory status

This product is not 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: Contact with eye may be mildly irritating.

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

Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.

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<br>HCS       |
|-----------------|-----------|-------------|-----------------------------|
| Glycerol        | 56-81-5   | 10-20       | Not classified as hazardous |
| Water           | 7732-18-5 | 80-90       | Not classified as hazardous |
| Triethanolamine | 102-71-6  | 0.5-2       | Not classified as hazardous |

### 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:

Not Flammable, Flash Point: >100 °C

As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion. Exposure to decomposition products may be a hazard to health. Cool closed containers exposed to fire with water spray. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

### 5.2. Extinguishing media

Suitable extinguishing media: Carbon dioxide, alcohol-resistant foam, dry chemical or water spray.

Unsuitable extinguishing media: Do NOT use water jet.

### 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 |
|-----------------|-----------------------|---------------------|
| Glycerol        | 56mg/m <sup>3</sup> - | -                   |
| Triethanolamine | 5mg/m <sup>3</sup>    | -                   |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components      | OSHA:PEL              | ACGIH:TLV           |
|-----------------|-----------------------|---------------------|
| Glycerol (mist) | 15mg/m <sup>3</sup> - | 10mg/m <sup>3</sup> |
| Triethanolamine |                       | 5mg/m <sup>3</sup>  |

Australia: OELs

| components      | TWA                   | STEL |
|-----------------|-----------------------|------|
| Glycerol (mist) | 10mg/m <sup>3</sup> - | -    |
| Triethanolamine | 5mg/m <sup>3</sup>    |      |

**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:                                     | Approx. 7.5-9.5                |
| Melting or freezing point:              | No data available              |
| Boiling point:                          | No data available              |
| Flash point:                            | > 100 °C                       |
| Flammability(solid,gas):                | None                           |
| Explosive properties:                   | None                           |
| Oxidizing properties:                   | None                           |
| Vapor pressure:                         | No data available              |
| Density:                                | Approx. 1.08 g/cm <sup>3</sup> |
| 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:                         | No data available                                                                                                                   |
| 10.2. Possibility of hazardous reactions: | Not expected                                                                                                                        |
| 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, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.              |
| 10.6. Hazardous decomposition products:   | No data available                                                                                                                   |

## 11. Toxicological information

Acute toxicity:

Oral LD50

No data available  
(Disperse dye : LD50>5000mg/kg (Rat))  
(Triethanolamine : LD50=8000~9000mg/kg (Rat))

Dermal LD50

No data available

Inhalant LC50

No data available

Skin corrosion/irritation:

No data available

Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin resulting in desiccation of the skin. The product may be absorbed through the skin.

Serious eye damage/eye irritation:

No data available

Respiratory or skin sensitisation:

No data available

Germ cell mutagenicity:

No data available

Reproductive toxicity:

No data available

Carcinogenicity:

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

STOT-single exposure:

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

STOT-repeated exposure:

No data available

Aspiration hazard:

No data available

## 12. Ecological Information

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.

California Proposition 65: Not regulated

SARA TITLE III: Not regulated

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: Not classified as hazardous according to NOHSC criteria.

## 16. Other Information

NFPA 704: Hazard Rating System

Health - 1 , Flammable - 0 , 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

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Eyes: Contact with eye may be mildly irritating.

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Ingestion: May cause upset stomach.

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See section 11 for more information.

### 3. Composition/Information on Ingredients

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| Triethanolamine | 102-71-6  | 0.5-2       | Not classified as hazardous |

### 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:

Not Flammable, Flash Point: >100 °C

As the product contains combustible organic components, fire will produce dense black smoke containing hazardous products of combustion. Exposure to decomposition products may be a hazard to health. Cool closed containers exposed to fire with water spray. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

#### 5.2. Extinguishing media

Suitable extinguishing media: Carbon dioxide, alcohol-resistant foam, dry chemical or water spray.

Unsuitable extinguishing media: Do NOT use water jet.

#### 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

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#### 7.2. Storage

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### 8. Exposure Controls/Personal Protection

#### 8.1. Exposure Guidelines

Occupational Exposure Limits:

EU: DNEL

| components      | Long term exposure    | Short term exposure |
|-----------------|-----------------------|---------------------|
| Glycerol        | 56mg/m <sup>3</sup> - | -                   |
| Triethanolamine | 5mg/m <sup>3</sup>    | -                   |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components      | OSHA:PEL              | ACGIH:TLV           |
|-----------------|-----------------------|---------------------|
| Glycerol (mist) | 15mg/m <sup>3</sup> - | 10mg/m <sup>3</sup> |
| Triethanolamine |                       | 5mg/m <sup>3</sup>  |

Australia: OELs

| components      | TWA                   | STEL |
|-----------------|-----------------------|------|
| Glycerol (mist) | 10mg/m <sup>3</sup> - | -    |
| Triethanolamine | 5mg/m <sup>3</sup>    |      |

## 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:                                     | Approx. 7.5-9.5                |
| Melting or freezing point:              | No data available              |
| Boiling point:                          | No data available              |
| Flash point:                            | > 100 °C                       |
| Flammability(solid,gas):                | None                           |
| Explosive properties:                   | None                           |
| Oxidizing properties:                   | None                           |
| Vapor pressure:                         | No data available              |
| Density:                                | Approx. 1.08 g/cm <sup>3</sup> |
| 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:                         | No data available                                                                                                                   |
| 10.2. Possibility of hazardous reactions: | Not expected                                                                                                                        |
| 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, strongly alkaline and strongly acid materials in order to avoid exothermic reactions.              |
| 10.6. Hazardous decomposition products:   | No data available                                                                                                                   |

## 11. Toxicological information

### Acute toxicity:

#### Oral LD50

No data available  
(Disperse dye : LD50>5000mg/kg (Rat))  
(Triethanolamine : LD50=8000~9000mg/kg (Rat))

#### Dermal LD50

No data available

#### Inhalant LC50

No data available

### Skin corrosion/irritation:

No data available

Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin resulting in desiccation of the skin. The product may be absorbed through the skin.

### Serious eye damage/eye irritation:

No data available

### Respiratory or skin sensitisation:

No data available

### Germ cell mutagenicity:

No data available

### Reproductive toxicity:

No data available

### Carcinogenicity:

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

### STOT-single exposure:

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

### STOT-repeated exposure:

No data available

### Aspiration hazard:

No data available

## 12. Ecological Information

### 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:

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

California Proposition 65: Not regulated

SARA TITLE III: Not regulated

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: Not classified as hazardous according to NOHSC criteria.

## 16. Other Information

NFPA 704: Hazard Rating System

Health - 1 , Flammable - 0 , 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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