Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Dye-based Ink, FDY-CY

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacture's name: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103
JAPAN
Phone: +81-53-484-1224
Fax: +81-53-484-1226

E-mail Address:
Revision: 20 March, 2014

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is not classified as hazardous according to Directive 1999/45/EC.
This product is classified as dangerous according to GHS criteria.
Acute toxicity - oral
Category 5

2.2. GHS label elements, including precautionary statements
Pictogram
None

Signal word(s)
Warning

Hazard statement(s)
Harmful if swallowed.

Precautionary statement(s)
Response
Call a POISON CENTER or doctor/physician if you feel unwell.

2.3. Other hazards
Potential Health Effects:
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: None Known.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
3. Composition/information on ingredients

**Chemical nature:** mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
<th>Classification 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorants</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>111-46-6</td>
<td>203-872-2</td>
<td>N/A for the moment</td>
<td>10-15</td>
<td>Acute Tox. 4: H302</td>
<td>Xn: R22</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>143-22-6</td>
<td>205-592-6</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>102-71-6</td>
<td>203-049-8</td>
<td>N/A for the moment</td>
<td>&lt;1</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Proprietary organic materials</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Glycerols</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>N/A for the moment</td>
<td>&lt;80</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

**Eyes:**
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

**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:**
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**
If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

**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.

4.3. Indication of any immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

**Suitable extinguishing media:**
Dry chemical or CO₂

**Unsuitable extinguishing media:**
No information
5.2. Special hazards arising from the substance or mixture
Not Flammable
Flash point: Not detected until 110°C/230°F (closed cup, ASTM D3278)

5.3. Advice 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, protective equipment and emergency procedures
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 and material for containment and cleaning up
Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections
Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage
7.1. Precautions for safe 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. Conditions for safe storage, including any incompatibilities
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.

7.3. Specific end use(s):
Inkjet printing

8. Exposure controls/ personal protection
8.1. Control parameters
Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>Components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>60mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>195mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethanolamine</td>
<td>-</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>15mg/m³</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>
Australia: OELs

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>100mg/m³, 23ppm</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>

8.2. Exposure controls:
- Occupational exposure control: Control the airborne concentrations below the exposure limits. Use only with adequate ventilation.
- Personal protective equipment:
  - Respiratory protection: Not required under suitable use as setting the cartridge on the printer. However, in case ventilation is not sufficient, wear respiratory protection.
  - 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.
  - Eye 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.
- 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.
- 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.
- Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties
- Appearance: Cyan Liquid
- Odor: Slightly
- pH: 9.3 ± 0.5 at 20°C / 68 °F
- Boiling point: No data available
- Flash point: Not detected until 110°C/230°F (closed cup, ASTM D3278)
- Flammability (solid, gas): Not applicable (liquid)
- Explosive properties: None
- Oxidizing properties: None
- Vapor pressure: No data available
- Relative density: About 1.07 at 20°C / 68 °F
- Water Solubility: Complete
- Solubility: No data available
- Partition coefficient: n-octanol/water: No data available
- Viscosity: Less than 5 mPa·s at 20°C / 68 °F
- Evaporation rate: No data available
- Vapor density: No data available
- Melting point: No data available

9.2. Other information: No information

10. Stability and reactivity
10.1. Reactivity: No reactivity under normal temperature
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: None under normal temperature
11. Toxicological information

11.1. Information on toxicological effects

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

Acute toxicity:

- Oral LD50 >5000mg/kg (Rat)
- Dermal LD50 >2000mg/kg (Rat)
- Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)

Serious eye damage/eye irritation: Mild-irritant (Rabbit, OECD405)

Respiratory or skin sensitisation: Non-sensitizer (Guinea Pig, OECD 406)

Germ cell mutagenicity: Negative (by Ames Test)

Reproductive toxicity: No data available

Carcinogenicity:

STOT-single exposure: Overexposure of eye may be mildly irritating.

STOT-repeated exposure: No data available

Aspiration hazard: No data available

12. Ecological information

12.1. Toxicity: No data available

12.2. Persistence and degradability: No data available

12.3. Bioaccumulative potential: No data available

12.4. Mobility in soil: No data available

12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.

12.6. Other adverse effects: No data available

13. Disposal considerations

13.1. Waste treatment methods:

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:

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

14.2. UN proper shipping name:

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

14.3. Transport hazard class(es):

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

14.4. Packing group:

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

14.5. Environmental hazards:

- ADR/ADG/DOT, 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

#### EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

#### US Information:
Toxic Substances Control Act (TSCA): All components of this product are listed on the TSCA Inventory.
California Proposition 65: Not regulated
SARA TITLE III:
Section 313: Triethylene glycol monobutyl ether (Chemical Category N230)

#### California Proposition 65:
Not regulated

#### SARA TITLE III:
Section 313: Triethylene glycol monobutyl ether (Chemical Category N230)

#### Australia Information:
Hazardous statement: Not classified as hazardous according to NOHSC criteria.

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

### 16. Other information

#### List of relevant H-Statements in section 3:
- H302 Harmful if swallowed.

#### List of relevant R-phrases:
- R22 Harmful if swallowed.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. 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. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking
   1.1. Product identifier
       Dye-based Ink, FDY-MG

   1.2. Relevant identified uses of the substance or mixture and uses advised against
       Inkjet Printing

   1.3. Details of the supplier of the safety data sheet
       Manufacturer's name: Roland DG Corporation
       Address: 1-6-4 Shinmityakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103
       JAPAN
       Phone: + 81-53-484-1224
       Fax: + 81-53-484-1226

   1.4. Emergency telephone:

2. Hazard identification
   2.1. Classification of the substance or mixture
       This product is not classified as hazardous according to Directive 1999/45/EC.

       This product is classified as dangerous according to GHS criteria.
       Acute toxicity - oral Category 5

   2.2. GHS label elements, including precautionary statements
       Pictogram None
       Signal word(s) Warning
       Hazard statement(s) Harmful if swallowed.
       Precautionary statement(s) Response Call a POISON CENTER or doctor/physician if you feel unwell.

2.3. Other hazards
   Potential Health Effects:
   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: None Known
   Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
3. Composition/information on ingredients

**Chemical nature:** mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
<th>Classification 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethanolamine</td>
<td>102-71-6</td>
<td>203-049-8</td>
<td>N/A for the moment</td>
<td>&lt;1</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Proprietary organic materials</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>111-46-6</td>
<td>203-872-2</td>
<td>N/A for the moment</td>
<td>5-10</td>
<td>Acute Tox. 4: H302</td>
<td>Xn: R22</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>143-22-6</td>
<td>205-592-6</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Glycerols</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Colorant*</td>
<td>-*</td>
<td>-</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Eye Irrit. 2: H319</td>
<td>Xi: R36</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Aquatic Chronic 3: H412</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>Exemption</td>
<td>&lt;80</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

*Exact chemical name and EC number of colorant

Chemical name: Tetra-ammonium 2-[6-[7-(2-carboxylato-phenylazo)-8-hydroxy-3, 6-disulfonato-1-naphthlamino]-4-hydroxy-1,3,5-triazin-2-ylamino]benzoate

EC number: 418-520-5

4. First aid measures

4.1. Description of first aid measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

**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:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:** If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

**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.

4.3. Indication of any immediate medical attention and special treatment needed

No information
5. Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media:
- Dry chemical or CO₂
Unsuitable extinguishing media:
- No information

5.2. Special hazards arising from the substance or mixture
- Not Flammable
- Flash point: Not detected until 110°C/230°F (closed cup, ASTM D3278)

5.3. Advice 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, protective equipment and emergency procedures
- 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 and material for containment and cleaning up
- Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections
- Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe 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. Conditions for safe storage, including any incompatibilities
- 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.

7.3. Specific end use(s):
- Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters
- Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>Components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>60mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>195mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)
8.2. Exposure controls:  

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

Personal protective equipment:  

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

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.

Eye 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.

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.

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Magenta Liquid  
Odor: Slightly  
pH: 9.1 ± 0.5 at 20°C / 68 °F  
Boiling point: No data available  
Flash point: Not detected until 110°C/230°F (closed cup, ASTM D3278)  
Explosive properties: Not applicable (liquid)  
Oxidizing properties: None  
Vapor pressure: No data available  
Relative density: About 1.08 at 20°C / 68 °F  
Water Solubility: Complete  
Solubility: No data available  
Partition coefficient: n-octanol/water: No data available  
Viscosity: Less than 5 mPa·s at 20°C / 68 °F  
Evaporation rate: No data available  
Vapor density: No data available  
Melting point: No data available

9.2. Other information: No information
10. Stability and reactivity
10.1. Reactivity: No reactivity under normal temperature
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: None under normal temperature

11. Toxicological information
11.1. Information on toxicological effects
Routes Of Overexposure: Eye, skin, inhalation, and oral
Acute toxicity:
Oral LD50 >5000mg/kg (Rat)
Dermal LD50 >2000mg/kg (Rat)
Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)
Serious eye damage/eye irritation: Mild-irritant (Rabbit, OECD405)
Respiratory or skin sensitisation: Non-sensitizer  (Guinea Pig, OECD 406)
Reproductive toxicity: Negative (by Ames Test)
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
12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available

13. Disposal considerations
13.1. Waste treatment methods:
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:
   ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.2. UN proper shipping name:
   ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.3. Transport hazard class(es):
   ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.4. Packing group:
   ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.5. Environmental hazards:
   ADR/ADG/DOT, 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
   EU Information:
   Chemical Safety Assessment according to (EC)1907/2006:
   This product has not carried out any Chemical Safety Assessment yet.

   US Information:
   Toxic Substances Control Act (TSCA): All components of this product are listed on the TSCA Inventory.
   California Proposition 65: Not regulated
   SARA TITLE III:
   Section 313: Triethylene glycol monobutyl ether (Chemical Category N230)

   Australia Information:
   Hazardous statement: Not classified as hazardous according to NOHSC criteria.

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

16. Other information
   List of relevant H-statements in section 3:
   H302 Harmful if swallowed.
   H319 Causes serious eye irritation.
   H412 Harmful to aquatic life with long lasting effects

   List of relevant R-phrases:
   R22 Harmful if swallowed.
   R36 Irritating to eyes.
   R52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and
belief at the date of its publication. 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. Roland DG does not warrant the completeness or accuracy of the information
contained herein.
Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Dye-based Ink, FDY-YE

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacture's name: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:
Revision: 20 March, 2014

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is not classified as hazardous according to Directive 1999/45/EC.
This product is classified as dangerous according to GHS criteria.
Acute toxicity - oral Category 5

2.2. GHS label elements, including precautionary statements
Pictogram None

Signal word(s) Warning
Hazard statement(s) Harmful if swallowed.

Precautionary statement(s)
Response Call a POISON CENTER or doctor/physician if you feel unwell.

2.3. Other hazards
Potential Health Effects:
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: None Known
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
3. Composition/information on ingredients

**Chemical nature:** mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
<th>Classification 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorants</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>111-46-6</td>
<td>203-872-2</td>
<td>N/A for the moment</td>
<td>10-15</td>
<td>Acute Tox. 4: H302</td>
<td>Xn: R22</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>143-22-6</td>
<td>205-592-6</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>102-71-6</td>
<td>203-049-8</td>
<td>N/A for the moment</td>
<td>&lt;1</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Glycerols</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>Exemption</td>
<td>&lt;80</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

**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:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:** If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

**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.

4.3. Indication of any immediate medical attention and special treatment needed

None of the ingredients listed in this document require any immediate medical attention or special treatment.

5. Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media:
  - Dry chemical or CO₂

- Unsuitable extinguishing media:
  - No information

5.2. Special hazards arising from the substance or mixture

- Not Flammable
- Flash point: Not detected until 110°C/230°F (closed cup, ASTM D3278)

5.3. Advice 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, protective equipment and emergency procedures
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 and material for containment and cleaning up
Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections
Refer to “Section 8 Exposure controls/personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage

7.1. Precautions for safe 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. Conditions for safe storage, including any incompatibilities
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.

7.3. Specific end use(s):
Inkjet printing

8. Exposure controls/personal protection

8.1. Control parameters
Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>EU: DNEL</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>components</td>
<td>Diethylene glycol</td>
<td>60mg/m³</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>195mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

<table>
<thead>
<tr>
<th>US: OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>components</td>
<td>15mg/m³</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>-</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>15mg/m³</td>
</tr>
</tbody>
</table>

Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>IWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>components</td>
<td>Diethylene glycol</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>
8.2. Exposure controls:

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

Personal protective equipment:

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

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.

Eye 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.

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.

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.

Environmental measures: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Yellow Liquid
Odor: Slightly
pH: 9.1 ± 0.5 at 20°C / 68 °F
Boiling point: No data available
Flash point: Not detected until 110°C / 230°F (closed cup, ASTM D3278)
Flammability (solid, gas): Not applicable (liquid)
Explosive properties: None
Oxidizing properties: None
Vapor pressure: No data available
Relative density: About 1.06 at 20°C / 68 °F
Water Solubility: Complete
Partition coefficient: :n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C / 68 °F
Evaporation rate: No data available
Vapor density: No data available
Melting point: No data available

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity: No reactivity under normal temperature
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: None under normal temperature

11. Toxicological information

11.1. Information on toxicological effects

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

Acute toxicity:

Oral LD50 >5000mg/kg (Rat)
Dermal LD50 >2000mg/kg (Rat)
Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)

Serious eye damage/eye irritation: Mild-irritant (Rabbit, OECD405)
Respiratory or skin sensitisation: Non-sensitizer (Guinea Pig, OECD 406)

Germ cell mutagenicity: Negative (by Ames Test)

Reproductive toxicity: No data available

Carcinogenicity:
STOT-single exposure: Overexposure of eye may be mildly irritating.
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
12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available

13. Disposal considerations
13.1. Waste treatment methods:
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:
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.5. Environmental hazards:
ADR/ADG/DOT, 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
EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All components of this product are listed on the TSCA Inventory.
California Proposition 65: Not regulated
SARA TITLE III:
Section 313: Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Not classified as hazardous according to NOHSC criteria.

International Information:
None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
16. Other information

List of relevant H-Statements in section 3:
   H302 Harmful if swallowed.

List of relevant R-phrases:
   R22 Harmful if swallowed.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. 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. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
Dye-based Ink, FDY-BK

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacture's name: Roland DG Corporation
Address: 1-6-4 Shinniyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:
Revision: 20 March, 2014

1.4. Emergency telephone:

2. Hazard identification
2.1. Classification of the substance or mixture
This product is not classified as hazardous according to Directive 1999/45/EC.

This product is classified as dangerous according to GHS criteria.
Eye damage/irritation Category 2

2.2. GHS label elements, including precautionary statements
Pictogram

Signal word(s) Warning
Hazard statement(s) Causes serious eye irritation.
Precautionary statement(s)
Prevention Wear protective gloves/protective clothing/eye protection/face protection.
Response IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
2.3. Other hazards
Potential Health Effects:

- **Eyes:** Causes severe eye injury which may persist for several days. 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:** None Known
- **Carcinogenicity:** None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)

3. Composition/information on ingredients

**Chemical nature:** mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
<th>Classification 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colorants</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5-10</td>
<td>Not classified hazardous</td>
<td>Not classified hazardous</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>102-71-6</td>
<td>203-049-8</td>
<td>N/A for the moment</td>
<td>&lt;1</td>
<td>Not classified hazardous</td>
<td>Not classified hazardous</td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>111-46-6</td>
<td>203-872-2</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Acute Tox. 4: H302</td>
<td>Xn: R22</td>
</tr>
<tr>
<td>Proprietary organic materials</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>1-5</td>
<td>Not classified hazardous</td>
<td>Not classified hazardous</td>
</tr>
<tr>
<td>Diethylene glycol monobutyl ether</td>
<td>112-34-5</td>
<td>203-961-6</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Eye Irrit. 2: H319</td>
<td>Xi: R36</td>
</tr>
<tr>
<td>Glycerols</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified hazardous</td>
<td>Not classified hazardous</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>Exemption</td>
<td>&lt;80</td>
<td>Not classified hazardous</td>
<td>Not classified hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

- **Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- **Skin:** In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse.
- **Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- **Ingestion:** If swallowed, DO NOT induce vomiting. Seek immediate medical advice.
4.2. Most important symptoms and effects, both acute and delayed
   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) will cause respiratory irritation and anesthesia.
   Ingestion: May cause upset stomach.

4.3. Indication of any immediate medical attention and special treatment needed
   No information

5. Firefighting measures
   5.1. Extinguishing media
       Suitable extinguishing media: Dry chemical or CO2
       Unsuitable extinguishing media: No information

5.2. Special hazards arising from the substance or mixture
       Not Flammable
       Flash point: Not detected until 100°C/230°F (closed cup, ASTM D3278)

5.3. Advice 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, protective equipment and emergency procedures
       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 and material for containment and cleaning up
       Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections
       Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage
   7.1. Precautions for safe 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. Conditions for safe storage, including any incompatibilities
       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.

   7.3. Specific end use(s): Inkjet printing
8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

<table>
<thead>
<tr>
<th>Components</th>
<th>The threshold limit</th>
<th>STEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol monobutyl ether</td>
<td>67.5mg/m³, 10ppm</td>
<td>101.2mg/m³, 15ppm</td>
</tr>
</tbody>
</table>

DNEL

<table>
<thead>
<tr>
<th>Components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>60mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Diethylene glycol monobutyl ether</td>
<td>67.5mg/m³</td>
<td>101.2mg/m³</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethanolamine</td>
<td>-</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>15mg/m³</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>

Australia: OELs

<table>
<thead>
<tr>
<th>Components</th>
<th>TWA</th>
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</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
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<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
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<tr>
<td>Glycerol (mist)</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>

8.2. Exposure controls:

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

Personal protective equipment:

Respiratory protection: In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge.

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.

Eye 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.

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.

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.

Environmental exposure control: Avoid release to the environment.
9. Physical and chemical properties
9.1. Information on basic physical and chemical properties

- **Appearance:** Black Liquid
- **Odor:** Slightly
- **pH:** 8.5 ± 0.5 at 20°C / 68 °F
- **Boiling point:** No data available
- **Flash point:** Not detected until 100°C / 230°F (closed cup, ASTM D3278)
- **Flammability (solid, gas):** Not applicable (liquid)
- **Explosive properties:** None
- **Oxidizing properties:** None
- **Vapor pressure:** No data available
- **Relative density:** About 1.07 at 20°C / 68 °F
- **Water Solubility:** Complete
- **Solubility:** No data available
- **Partition coefficient: n-octanol/water:** No data available
- **Viscosity:** Less than 5 mPa·s at 20°C / 68 °F
- **Evaporation rate:** No data available
- **Vapor density:** No data available
- **Melting point:** No data available

9.2. Other information: No information

10. Stability and reactivity
10.1. Reactivity: No reactivity under normal temperature
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: None under normal temperature

11. Toxicological information
11.1. Information on toxicological effects

- **Routes Of Overexposure:** Eye, skin, inhalation, and oral
- **Acute toxicity:**
  - Oral LD50: >2000mg/kg (Rat)
  - Dermal LD50: >2000mg/kg (Rat)
  - Inhalant LC50: No data available

- **Skin corrosion/irritation:** Non-irritant (Rabbit, OECD404)
- **Serious eye damage/eye irritation:** Minimal-irritant (Rabbit, OECD405)
- **Respiratory or skin sensitisation:** Non-sensitizer (Guinea Pig, OECD 406)
- **Germ cell mutagenicity:** Negative (by Ames Test)
- **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

12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available

13. Disposal considerations

13.1. Waste treatment methods:
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:
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA: Not applicable

14.5. Environmental hazards:
ADR/ADG/DOT, 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

EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All components of this product are listed on the TSCA Inventory.
California Proposition 65: Not regulated
SARA TITLE III:
Section 313: Diethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:
None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
16. Other information

List of relevant H-Statements in section 3:
- H302 Harmful if swallowed.
- H319 Causes serious eye irritation.

List of relevant R-phrases:
- R22 Harmful if swallowed.
- R36 Irritating to eyes.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. 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. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
  Dye-based Ink, FDY-LC

1.2. Relevant identified uses of the substance or mixture and uses advised against
  Inkjet Printing

1.3. Details of the supplier of the safety data sheet
  Manufacture's name: Roland DG Corporation
  Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
  Phone: + 81-53-484-1224
  Fax: + 81-53-484-1226

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
  This product is not classified as hazardous according to Directive 1999/45/EC.

  This product is classified as dangerous according to GHS criteria.
  Acute toxicity - oral Category 5

2.2. GHS label elements, including precautionary statements
  Pictogram None
  Signal word(s) Warning
  Hazard statement(s) Harmful if swallowed.
  Precautionary statement(s)
    Response Call a POISON CENTER or doctor/physician if you feel unwell.

2.3. Other hazards
  Potential Health Effects:
  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: None Known
  Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
3. Composition/information on ingredients

**Chemical nature:** mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
<th>Classification 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>111-46-6</td>
<td>203-872-2</td>
<td>N/A for the moment</td>
<td>about 15</td>
<td>Acute Tox. 4: H302</td>
<td>Xn: R22</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>143-22-6</td>
<td>205-592-6</td>
<td>N/A for the moment</td>
<td>about 10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>102-71-6</td>
<td>203-049-8</td>
<td>N/A for the moment</td>
<td>&lt;1</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Glycerols</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>about 10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>Exemption</td>
<td>&lt;80</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information
*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.

**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:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:** If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

**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.

4.3. Indication of any immediate medical attention and special treatment needed

No information.

5. Firefighting measures

5.1. Extinguishing media

**Suitable extinguishing media:**
- Dry chemical or CO₂

**Unsuitable extinguishing media:**
- No information

5.2. Special hazards arising from the substance or mixture

- Not Flammable
- Flash point: Not detected until 110°C/230°F (closed cup, ASTM D3278)
5.3. Advice 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, protective equipment and emergency procedures
   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 and material for containment and cleaning up
   Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections
   Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage
   7.1. Precautions for safe 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. Conditions for safe storage, including any incompatibilities
   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.

   7.3. Specific end use(s):
   Inkjet printing

8. Exposure controls/ personal protection
   8.1. Control parameters
   Occupational Exposure Limits:
   - EU: DNEL
   - US: OSHA:PEL, ACGIH:TLV

<table>
<thead>
<tr>
<th>Components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>60mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>195mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

   REACH Toxicological Information (Workers - Hazard via inhalation route)

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethanolamine</td>
<td>-</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>15mg/m³</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>
Australia: OELs

<table>
<thead>
<tr>
<th>components</th>
<th>TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>100mg/m³, 23ppm</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>

8.2. Exposure controls:

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

Personal protective equipment:

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

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.

Eye 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.

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.

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Light cyan Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Slightly</td>
</tr>
<tr>
<td>pH</td>
<td>9.4 ± 0.5 at 20°C / 68 °F</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not detected until 110°C/230°F (closed cup, ASTM D3278)</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not applicable (liquid)</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>None</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>None</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>About 1.06 at 20°C / 68 °F</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Complete</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Less than 5 mPa·s at 20°C / 68 °F</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor density</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information: No information

10. Stability and reactivity

10.1. Reactivity: No reactivity under normal temperature

10.2. Chemical stability: Stable under normal temperature

10.3. Possibility of hazardous reactions: Not expected

10.4. Conditions to avoid: High and freezing temperatures

10.5. Incompatible materials: Oxidizers and explosives

10.6. Hazardous decomposition products: None under normal temperature
11. Toxicological information
11.1. Information on toxicological effects

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

Acute toxicity:
- Oral LD50 >5000mg/kg (Rat)
- Dermal LD50 >2000mg/kg (Rat)
- Inhalant LC50 No data available

Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)
Serious eye damage/eye irritation: Mild-irritant (Rabbit, OECD405)
Respiratory or skin sensitisation: Non-sensitizer (Guinea Pig, OECD 406)
Germ cell mutagenicity: Negative (by Ames Test)
Reproductive toxicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
Carcinogenicity:
- 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
12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available

13. Disposal considerations
13.1. Waste treatment methods:
- 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:
- ADR/ADG/DOT, IMDG, or IATA: Not applicable
14.2. UN proper shipping name: Not applicable
14.3. Transport hazard class(es):
- ADR/ADG/DOT, IMDG, or IATA: Not applicable
14.4. Packing group:
- ADR/ADG/DOT, IMDG, or IATA: Not applicable
14.5. Environmental hazards:
- ADR/ADG/DOT, 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

30/37
15. Regulatory information

EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All components of this product are listed on the TSCA Inventory.
California Proposition 65: Not regulated
SARA TITLE III:
Section 313: Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Not classified as hazardous according to NOHSC criteria.

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

16. Other information

List of relevant H-Statements in section 3:
H302 Harmful if swallowed.

List of relevant R-phrases:
R22 Harmful if swallowed.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. 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. Roland DG does not warrant the completeness or accuracy of the information contained herein.
Safety Data Sheet

1. Identification of the substance/mixture and of the company/undertaking
1.1. Product identifier
Dye-based Ink, FDY-LM

1.2. Relevant identified uses of the substance or mixture and uses advised against
Inkjet Printing

1.3. Details of the supplier of the safety data sheet
Manufacturer's name: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

2. Hazard identification
2.1. Classification of the substance or mixture
This product is not classified as hazardous according to Directive 1999/45/EC.

This product is classified as dangerous according to GHS criteria.
Acute toxicity - oral Category 5

2.2. GHS label elements, including precautionary statements
Pictogram None
Signal word(s) Warning
Hazard statement(s) Harmful if swallowed.
Precautionary statement(s) Response Call a POISON CENTER or doctor/physician if you feel unwell.

2.3. Other hazards
Potential Health Effects:
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: None Known
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B)
3. Composition/information on ingredients

**Chemical nature:** mixture

<table>
<thead>
<tr>
<th>Composition</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>EU registration No.</th>
<th>% By Weight</th>
<th>Classification EC No. 1272/2008</th>
<th>Classification 67/548/EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>143-22-6</td>
<td>205-592-6</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Diethylene glycol</td>
<td>111-46-6</td>
<td>203-872-2</td>
<td>N/A for the moment</td>
<td>10-15</td>
<td>Acute Tox. 4; H302</td>
<td>Xn: R22</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>102-71-6</td>
<td>203-049-8</td>
<td>N/A for the moment</td>
<td>&lt;1</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Proprietary organic materials</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>5-10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Glycerols</td>
<td>C.B.I.</td>
<td>C.B.I.</td>
<td>N/A for the moment</td>
<td>about10</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>231-791-2</td>
<td>Exemption</td>
<td>&lt;80</td>
<td>Not classified as hazardous</td>
<td>Not classified as hazardous</td>
</tr>
</tbody>
</table>

*C.B.I.: Confidential Business Information

*For the full text of the H-Statements and R-phrases mentioned in this Section, see Section 16.

4. First aid measures

4.1. Description of first aid measures

- **Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- **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:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- **Ingestion:** If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

4.2. Most important symptoms and effects, both acute and delayed

- **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.

4.3. Indication of any immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:
- Dry chemical or CO₂

Unsuitable extinguishing media:
- No information
5.2. Special hazards arising from the substance or mixture
   Not Flammable
   Flash point: Not detected until 110°C/230°F (closed cup, ASTM D3278)

5.3. Advice 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, protective equipment and emergency procedures
   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 and material for containment and cleaning up
   Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

6.4. Reference to other sections
   Refer to “Section 8 Exposure controls/ personal protection” and “Section 13 Disposal consideration” as appropriate.

7. Handling and storage
   7.1. Precautions for safe 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. Conditions for safe storage, including any incompatibilities
      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.

   7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection
   8.1. Control parameters
      Occupational Exposure Limits:
      EU: DNEL

<table>
<thead>
<tr>
<th>Components</th>
<th>Long term exposure</th>
<th>Short term exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylene glycol</td>
<td>60mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethylene glycol monobutyl ether</td>
<td>195mg/m³</td>
<td>-</td>
</tr>
<tr>
<td>Triethanolamine</td>
<td>5mg/m³</td>
<td>-</td>
</tr>
</tbody>
</table>

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA:PEL</th>
<th>ACGIH:TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triethanolamine</td>
<td>-</td>
<td>5mg/m³</td>
</tr>
<tr>
<td>Glycerol (mist)</td>
<td>15mg/m³</td>
<td>10mg/m³</td>
</tr>
</tbody>
</table>
8.2. Exposure controls:

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

Personal protective equipment:

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

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.

Eye 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.

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.

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.

Environmental exposure control: Avoid release to the environment.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance: Light magenta Liquid
Odor: Slightly
pH: 9.1 ± 0.5 at 20°C / 68 °F
Boiling point: No data available
Flash point: Not detected until 110°C / 230°F (closed cup, ASTM D3278)
Flammability (solid, gas) Not applicable (liquid)
Explosive properties: None
Oxidizing properties: None
Vapor pressure: No data available
Relative density: About 1.08 at 20°C / 68 °F
Water Solubility: Complete
Solubility: No data available
Partition coefficient: n-octanol/water: No data available
Viscosity: Less than 5 mPa·s at 20°C / 68 °F
Evaporation rate: No data available
Vapor density: No data available
Melting point: No data available

9.2. Other information: No information
10. Stability and reactivity
10.1. Reactivity: No reactivity under normal temperature
10.2. Chemical stability: Stable under normal temperature
10.3. Possibility of hazardous reactions: Not expected
10.4. Conditions to avoid: High and freezing temperatures
10.5. Incompatible materials: Oxidizers and explosives
10.6. Hazardous decomposition products: None under normal temperature

11. Toxicological information
11.1. Information on toxicological effects
   Routes Of Overexposure: Eye, skin, inhalation, and oral
   Acute toxicity:
      Oral LD50 >5000mg/kg (Rat)
      Dermal LD50 >2000mg/kg (Rat)
      Inhalant LC50 No data available
   Skin corrosion/irritation: Non-irritant (Rabbit, OECD404)
   Serious eye damage/eye irritation: Mild-irritant (Rabbit, OECD405)
   Respiratory or skin sensitisation: Non-sensitizer (Guinea Pig, OECD 406)
   Germ cell mutagenicity: Negative (by Ames Test)
   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
12.1. Toxicity: No data available
12.2. Persistence and degradability: No data available
12.3. Bioaccumulative potential: No data available
12.4. Mobility in soil: No data available
12.5. Results of PBT and vPvB assessment: Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects: No data available

13. Disposal considerations
13.1. Waste treatment methods:
      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:
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.2. UN proper shipping name:
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.3. Transport hazard class(es):
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.4. Packing group:
ADR/ADG/DOT, IMDG, or IATA : Not applicable
14.5. Environmental hazards:
ADR/ADG/DOT, 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
EU Information:
Chemical Safety Assessment according to (EC)1907/2006:
This product has not carried out any Chemical Safety Assessment yet.

US Information:
Toxic Substances Control Act (TSCA): All components of this product are listed on the TSCA Inventory.
California Proposition 65: Not regulated
SARA TITLE III:
Section 313: Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:
Hazardous statement: Not classified as hazardous according to NOHSC criteria.

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

16. Other information
List of relevant H-Statements in section 3:
H302 Harmful if swallowed.

List of relevant R-phrases:
R22 Harmful if swallowed.

The information in this Safety Data Sheet (SDS) is believed to be correct to the best of our knowledge, information and belief at the date of its publication. 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. Roland DG does not warrant the completeness or accuracy of the information contained herein.