

Safety Data Sheet

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

1.1. Product identifier

TrueVIS Ink, TR2-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

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|----------|-------------|--|
| Colorant | CBI | 1-5 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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 |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information**11.1. Information on toxicological effects****Acute toxicity:**

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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**

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

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:

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-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

Manufacture's name: Roland DG Corporation

Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|----------|-------------|--|
| Colorant | CBI | 1-10 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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:** Causes severe eye injury which may persist for several days.
- Skin:** Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation:** Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion:** May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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 |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information**11.1. Information on toxicological effects****Acute toxicity:**

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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**

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

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:**

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-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

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|----------|-------------|--|
| Colorant | CBI | 1-10 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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: | Yellow Liquid |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information**11.1. Information on toxicological effects****Acute toxicity:**

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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**

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

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:**

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-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 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: This product contains Carbon black.IARC evaluated printing ink as a Group 3.(IARC Group 3: Not classifiable as to carcinogenicity to humans)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|-----------|-------------|--|
| Carbon black | 1333-86-4 | 1-10 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

— Carbon black:

[Long term exposure] 2 mg/m³

[Short term exposure] no data available

— Diethylene glycol diethyl ether:

[Long term exposure] 50.05 mg/m³

[Short term exposure] no hazard identified

— gamma-butyrolactone:

[Long term exposure] 130 mg/m³

[Short term exposure] 958 mg/m³

— Triethylene glycol monobutyl ether:

[Long term exposure] 195 mg/m³

[Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment.

Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be

exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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 |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |

| | |
|---|-------------------|
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

Respiratory or skin sensitisation:

no data available.

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

no data available.

Carcinogenicity:

This product contains Carbon black.

IARC evaluated printing ink as a Group 3.

(IARC Group 3: Not classifiable as to carcinogenicity to humans)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Carbon black

Triethylene glycol monobutyl ether

International Information:

This product contains Carbon black.

IARC evaluated printing ink as a Group 3.

(IARC Group 3: Not classifiable as to carcinogenicity to humans)

16. Other information

List of relevant H-Statements:

(Reference for Section 3. "Composition/information on ingredients")

— H302: Harmful if swallowed.

— H315: Causes skin irritation.

— H318: Causes serious eye damage.

— H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-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

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|----------|-------------|--|
| Colorant | CBI | 0-1 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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 |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information**11.1. Information on toxicological effects****Acute toxicity:**

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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**

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

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:**

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-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

Manufacture's name: Roland DG Corporation

Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|----------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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:** Causes severe eye injury which may persist for several days.
- Skin:** Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation:** Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion:** May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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 |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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**

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste)

contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

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:

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-LK

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

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: This product contains Carbon black.IARC evaluated printing ink as a Group 3.(IARC Group 3: Not classifiable as to carcinogenicity to humans)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|-----------|-------------|--|
| Carbon black | 1333-86-4 | 0-1 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

— Carbon black:

[Long term exposure] 2 mg/m³

[Short term exposure] no data available

— Diethylene glycol diethyl ether:

[Long term exposure] 50.05 mg/m³

[Short term exposure] no hazard identified

— gamma-butyrolactone:

[Long term exposure] 130 mg/m³

[Short term exposure] 958 mg/m³

— Triethylene glycol monobutyl ether:

[Long term exposure] 195 mg/m³

[Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment.

Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be

exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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 |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |

| | |
|---|-------------------|
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

Respiratory or skin sensitisation:

no data available.

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

no data available.

Carcinogenicity:

This product contains Carbon black.

IARC evaluated printing ink as a Group 3.

(IARC Group 3: Not classifiable as to carcinogenicity to humans)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Carbon black

Triethylene glycol monobutyl ether

International Information:

This product contains Carbon black.

IARC evaluated printing ink as a Group 3.

(IARC Group 3: Not classifiable as to carcinogenicity to humans)

16. Other information

List of relevant H-Statements:

(Reference for Section 3. "Composition/information on ingredients")

— H302: Harmful if swallowed.

— H315: Causes skin irritation.

— H318: Causes serious eye damage.

— H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-WH

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

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: This product contains Titanium dioxide. IARC evaluated printing ink as a Group 3. (IARC Group 3: Not classifiable as to carcinogenicity to humans)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|------------|-------------|--|
| titanium dioxide | 13463-67-7 | 5-15 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | 5-15 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 5-15 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- titanium dioxide:
 - [Long term exposure] no data available
 - [Short term exposure] no data available
- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be

exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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: | White Liquid |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |

| | |
|---|-------------------|
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 940 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

gamma-butyrolactone

LD50(oral) : 1582.0mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

Respiratory or skin sensitisation:

no data available.

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

no data available.

Carcinogenicity:

This product contains Titanium dioxide.

IARC evaluated printing ink as a Group 3.

(IARC Group 3: Not classifiable as to carcinogenicity to humans)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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

| | |
|-------------------------|--|
| Product: | Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself. |
| Recommended waste code: | 08 03 12* (waste ink containing dangerous substances) |
| Uncleaned packaging: | 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes) |
| Recommendation: | Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance. |

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

International Information:

This product contains Titanium dioxide.

IARC evaluated printing ink as a Group 3.

(IARC Group 3: Not classifiable as to carcinogenicity to humans)

16. Other information

List of relevant H-Statements:

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-OR

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

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|----------|-------------|--|
| Colorant | CBI | 1-5 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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: | Orange Liquid |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information**11.1. Information on toxicological effects****Acute toxicity:**

gamma-butyrolactone

LD50 (oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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**

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

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:**

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-GR

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

Phone: + 81-53-484-1224

FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

- Combustible liquid.
- May be harmful if swallowed.
- Causes skin irritation.
- Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards

Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this ink is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|------------------------------------|----------|-------------|--|
| Colorant | CBI | 1-5 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 55-65 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | <20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |
| Dialkylene glycol dialkyl ether | CBI | 10-20 | Not classified as hazardous |
| Triethylene glycol monobutyl ether | 143-22-6 | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | CBI | 1-10 | Not classified as hazardous |

† CBI: Confidential Business Information

‡ For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.
- Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA). Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

- Diethylene glycol diethyl ether:
 - [Long term exposure] 50.05 mg/m³
 - [Short term exposure] no hazard identified
- gamma-butyrolactone:
 - [Long term exposure] 130 mg/m³
 - [Short term exposure] 958 mg/m³
- Triethylene glycol monobutyl ether:
 - [Long term exposure] 195 mg/m³
 - [Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the ink, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

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

Skin protection:

Not required under suitable use as setting the ink on the printer. However, in case of direct contact to the 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: | Green Liquid |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 950 grams / L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information**11.1. Information on toxicological effects****Acute toxicity:**

gamma-butyrolactone

LD50 (oral) : 1582.0mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone
- Triethylene glycol monobutyl ether

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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**

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste)

contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

Triethylene glycol monobutyl ether

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:

(Reference for Section 3. "Composition/information on ingredients")

- H302: Harmful if swallowed.
- H315: Causes skin irritation.
- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.

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

TrueVIS Ink, TR2-CL
CLEANING LIQUID, (TR2) 100ML
CLEANING LIQUID(TR2-CL) SV 500ML

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

Cleaning liquid

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
Phone: + 81-53-484-1224 FAX: + 81-53-484-1226

E-mail:

Revised date: 3-Feb-2020

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

| | |
|-----------------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity (oral) | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Serious eye damage/eye irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram(s)



Signal Word:

Danger

Hazard Statement:

Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.

Precautionary statements — Prevention:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statements — Response:

IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call a POISON CENTRE/doctor if you feel unwell.

Precautionary statements — Storage:

Store in a well-ventilated place. Keep cool.

2.3. Other hazards
Potential Health Effects:

Eyes: Causes severe eye injury which may persist for several days.
Skin: Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
Ingestion: May cause injury of mouth, throat, and stomach.
Chronic Health Hazards: Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity: None of the ingredients in this cleaner is listed by IARC as a carcinogen. (1, 2A and 2B)
Others: No information.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | % By Weight | GHS Classification |
|---------------------------------|----------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 80-90 | Skin Irrit. 2: H315 |
| gamma-butyrolactone | 96-48-0 | 10-20 | Acute Tox. 4: H302 Eye Damage 1: H318 STOT Single Exp. 3: H336 |

† For the full text of the H-Statements 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 several 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: Causes severe eye injury which may persist for several days.

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

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

Ingestion: May cause injury of mouth, throat, and 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, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

Flash Point: > 71deg.C

5.3. Advice for firefighters

Wear special chemical protective clothing and positive pressure self-contained breathing apparatus (SCBA).

Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Decontaminate or discard any clothing that may contain chemical residues. Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

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

Wipe off spillage. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

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. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink.

7.2 Conditions for safe storage, including any incompatibilities

Keep containers tightly closed. Do not store the product in high or freezing temperatures. Keep the product out of direct sunlight. Do not store the product with metals, amines, free radical initiators, oxidising agents.

7.3 Specific end use(s): Cleaning liquid

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

— Diethylene glycol diethyl ether:

[Long term exposure] 50.05 mg/m³

[Short term exposure] no hazard identified

— gamma-butyrolactone:

[Long term exposure] 130 mg/m³

[Short term exposure] 958 mg/m³

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory equipment. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor cartridge. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self contained air supply. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Hand protection:

Not required under suitable use as setting the cleaning liquid on the printer. However, in case of direct contact to the cleaning liquid, use protective gloves. Recommended impervious gloves is butyl rubber glove.

Eye protection:

Not required under suitable use as setting the cleaning liquid on the printer. However, in case of direct contact to the cleaning liquid, wear safety glasses or chemical splash goggles.

Skin protection:

Not required under suitable use as setting the cleaning liquid on the printer. However, in case of direct contact to the cleaning liquid, 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: | Clear Liquid |
| Odour: | Slightly odour |
| Odour threshold: | Not defined |
| pH: | Not applicable |
| Melting point/freezing point: | No data available |
| Initial boiling point and boiling range: | No data available |
| Flash point: | > 71 deg.C |
| Evaporation rate: | No data available |
| Flammability (solid, gas) | Not applicable |
| Upper/lower flammability or explosive limits: | No data available |
| Vapor pressure: | No data available |
| Vapor density: | No data available |
| Relative density: | No data available |
| Solubility(ies): | soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Auto-ignition temperature: | No data available |
| Decomposition temperature: | No data available |
| Viscosity: | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | No data available |
| Volatile organic compounds (VOC) content: | 930 grams/L |

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:

Elevated temperatures/heat, UV light, when not in use.

10.5 Incompatible materials:

Avoid contact with acids, amines, free radical initiators, oxidizing agents.

10.6 Hazardous decomposition products:

Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.

11. Toxicological information**11.1. Information on toxicological effects****Acute toxicity:**

gamma-butyrolactone

LD50(oral) : 1582.0 mg/kg, LD50 (dermal): no data available, LD50 (Inhal.): 5.1 mg/kg

Serious eye damage/eye irritation:

Causes serious eye damage.

- gamma-butyrolactone

Skin corrosion/irritation:

Causes skin irritation.

- Diethylene glycol diethyl ether

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 cleaner is listed by IARC as a carcinogen. (1, 2A and 2B)

Specific target organ toxicity - single exposure, (STOT-SE):

May cause drowsiness or dizziness.

- gamma-butyrolactone

Specific target organ toxicity - repeat exposure, (STOT-RE):

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

Product: Dispose as hazardous waste. Packaging with product residues must be disposed of under the same conditions as the product itself.

Recommended waste code: 08 03 12* (waste ink containing dangerous substances)

Uncleaned packaging: 15 01 10* (packaging, the residues of dangerous substances or hazardous waste contain or are contaminated by dangerous substances or special wastes)

Recommendation: Uncontaminated packaging can be recycled. Non-cleanable packaging must be disposed of in the same way as the substance.

14. Transport information

14.1 UN Class/UN Number

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

14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

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

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : 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 regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)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.

Canadian Information:

Canadian Ingredient Disclosure list (limit 0.1%)

None of the ingredients are listed.

Canadian Ingredient Disclosure list (limit 1%)

Diethylene glycol diethyl ether

International Information:

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

16. Other information

List of relevant H-Statements:

(Reference for Section 3. "Composition/information on ingredients")

— H302: Harmful if swallowed.

— H315: Causes skin irritation.

— H318: Causes serious eye damage.

— H336: May cause drowsiness or dizziness.

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.