

Safety Data Sheet

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

1.1. Product identifier

TrueVIS INK, TR-CY

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:

Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

Hazard statement(s)

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

Contains methyl methacrylate. May produce an allergic reaction.

Precautionary statement(s)

| | |
|------------|---|
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |

3. Composition/information on ingredients
Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|------------------------------------|----------|-----------|---------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 65-75 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Triethylene glycol monobutyl ether | 143-22-6 | 205-592-6 | N/A for the moment | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 5-15 | Not classified as hazardous |
| Colorant | C.B.I. | C.B.I. | N/A for the moment | 1-5 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
- Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media:
Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid
- Unsuitable extinguishing media:
No information

5.2. Special hazards arising from the substance or mixture

- Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: 71 deg.C

5.3. Advice for firefighters

- Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--------------------------------|-----------|
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

| | |
|---------------------------------|---|
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | Cyan Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | | |
|-------------------------|---------------------------------|-------------------|
| Routes of Overexposure: | Eye, skin, inhalation, and oral | |
| Acute toxicity: | | |
| | Diethylene glycol diethyl ether | |
| | LD50 (oral-rat) | 4790 mg/kg |
| | LD50 (skin-rat) | No data available |
| | γ -butyrolactone | |
| | LD50 (oral-rat) | 1580 mg/kg |
| | LD50 (skin-marmot) | 5600 mg/kg |

| | |
|------------------------------------|--|
| Skin corrosion/irritation: | No data available Causes skin irritation. (Diethylene glycol diethyl ether) |
| Serious eye damage/eye irritation: | No data available Causes serious eye damage. (γ -butyrolactone) |
| Respiratory or skin sensitisation: | No data available |
| Germ cell mutagenicity: | No data available |
| Reproductive toxicity: | No data available |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |
| STOT-single exposure: | No data available |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

| | |
|--------------------------------|---|
| 13.1. Waste treatment methods: | Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system. |
|--------------------------------|---|

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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: | 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

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, TR-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
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:

Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

Hazard statement(s)

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

Contains methyl methacrylate. May produce an allergic reaction.

Precautionary statement(s)

| | |
|------------|---|
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |

3. Composition/information on ingredients
Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|------------------------------------|----------|-----------|---------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 65-75 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Triethylene glycol monobutyl ether | 143-22-6 | 205-592-6 | N/A for the moment | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 5-15 | Not classified as hazardous |
| Colorant | C.B.I. | C.B.I. | N/A for the moment | 5-15 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
- Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media:
Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid
- Unsuitable extinguishing media:
No information

5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: 71 deg.C

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--------------------------------|-----------|
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

| | |
|---------------------------------|---|
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | Magenta Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | | |
|-------------------------|---------------------------------|-------------------|
| Routes of Overexposure: | Eye, skin, inhalation, and oral | |
| Acute toxicity: | | |
| | Diethylene glycol diethyl ether | |
| | LD50 (oral-rat) | 4790 mg/kg |
| | LD50 (skin-rat) | No data available |
| | γ -butyrolactone | |
| | LD50 (oral-rat) | 1580 mg/kg |
| | LD50 (skin-marmot) | 5600 mg/kg |

| | |
|------------------------------------|--|
| Skin corrosion/irritation: | No data available Causes skin irritation. (Diethylene glycol diethyl ether) |
| Serious eye damage/eye irritation: | No data available Causes serious eye damage. (γ -butyrolactone) |
| Respiratory or skin sensitisation: | No data available |
| Germ cell mutagenicity: | No data available |
| Reproductive toxicity: | No data available |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |
| STOT-single exposure: | No data available |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

| | |
|--------------------------------|---|
| 13.1. Waste treatment methods: | Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system. |
|--------------------------------|---|

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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: | 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

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, TR-YE

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:

Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

Hazard statement(s)

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

Contains methyl methacrylate. May produce an allergic reaction.

Precautionary statement(s)

| | |
|------------|---|
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |

3. Composition/information on ingredients
Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|------------------------------------|----------|-----------|---------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 65-75 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Triethylene glycol monobutyl ether | 143-22-6 | 205-592-6 | N/A for the moment | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 5-15 | Not classified as hazardous |
| Colorant | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous |
| Additive | C.B.I. | C.B.I. | N/A for the moment | 1-5 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician. |
| Skin: | In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician. |
| Inhalation: | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. |
| Ingestion: | If swallowed, DO NOT induce vomiting. Seek immediate medical advice. |

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

| | |
|-------------|---|
| Eyes: | Non-corrosive but causes irreversible eye effects. |
| Skin: | Contact with skin may cause irritation, swelling or redness. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid

Unsuitable extinguishing media:

No information

5.2. Special hazards arising from the substance or mixture

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

Flash Point: 71 deg.C

5.3. Advice for firefighters

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

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

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--------------------------------|-----------|
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

| | |
|---------------------------------|---|
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | Yellow Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | | |
|-------------------------|---------------------------------|-------------------|
| Routes of Overexposure: | Eye, skin, inhalation, and oral | |
| Acute toxicity: | | |
| | Diethylene glycol diethyl ether | |
| | LD50 (oral-rat) | 4790 mg/kg |
| | LD50 (skin-rat) | No data available |
| | γ -butyrolactone | |
| | LD50 (oral-rat) | 1580 mg/kg |
| | LD50 (skin-marmot) | 5600 mg/kg |

| | |
|------------------------------------|--|
| Skin corrosion/irritation: | No data available Causes skin irritation. (Diethylene glycol diethyl ether) |
| Serious eye damage/eye irritation: | No data available Causes serious eye damage. (γ -butyrolactone) |
| Respiratory or skin sensitisation: | No data available |
| Germ cell mutagenicity: | No data available |
| Reproductive toxicity: | No data available |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |
| STOT-single exposure: | No data available |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

| | |
|--------------------------------|---|
| 13.1. Waste treatment methods: | Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system. |
|--------------------------------|---|

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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: | 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

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, TR-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
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:

Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

Hazard statement(s)

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

Contains methyl methacrylate. May produce an allergic reaction.

Precautionary statement(s)

| | |
|------------|---|
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | The product contains Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans). |

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|------------------------------------|----------|-----------|---------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 65-75 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Triethylene glycol monobutyl ether | 143-22-6 | 205-592-6 | N/A for the moment | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 5-15 | Not classified as hazardous |
| Carbon black | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous |
| Additive | C.B.I. | C.B.I. | N/A for the moment | 1-5 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
- Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media:
Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid
- Unsuitable extinguishing media:
No information

5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: 71 deg.C

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--------------------------------|----------------------|
| Carbon black | 3.5mg/m ³ | 3.5mg/m ³ |
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Carbon black | 3mg/m ³ |
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

| | |
|---------------------------------|---|
| Occupational exposure control: | Provide general and/or local exhaust ventilation. |
| Personal protective equipment: | |
| Respiratory protection: | In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor pouch. |
| Hand protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, use protective gloves. Recommended impervious gloves is butyl rubber glove. |
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | Black Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm^3 , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | | | | | | | | | | | | | |
|------------------------------------|---|---------------------------------|--|-------------------|------------|-------------------|-------------------|-------------------------|--|-------------------|------------|----------------------|------------|
| Routes of Overexposure: | Eye, skin, inhalation, and oral | | | | | | | | | | | | |
| Acute toxicity: | <table border="0"> <tr> <td>Diethylene glycol diethyl ether</td> <td></td> </tr> <tr> <td>LD50 (oral-rat)</td> <td>4790 mg/kg</td> </tr> <tr> <td>LD50 (skin-rat)</td> <td>No data available</td> </tr> <tr> <td>γ-butyrolactone</td> <td></td> </tr> <tr> <td>LD50 (oral-rat)</td> <td>1580 mg/kg</td> </tr> <tr> <td>LD50 (skin-marmot)</td> <td>5600 mg/kg</td> </tr> </table> | Diethylene glycol diethyl ether | | LD50 (oral-rat) | 4790 mg/kg | LD50 (skin-rat) | No data available | γ -butyrolactone | | LD50 (oral-rat) | 1580 mg/kg | LD50 (skin-marmot) | 5600 mg/kg |
| Diethylene glycol diethyl ether | | | | | | | | | | | | | |
| LD50 (oral-rat) | 4790 mg/kg | | | | | | | | | | | | |
| LD50 (skin-rat) | No data available | | | | | | | | | | | | |
| γ -butyrolactone | | | | | | | | | | | | | |
| LD50 (oral-rat) | 1580 mg/kg | | | | | | | | | | | | |
| LD50 (skin-marmot) | 5600 mg/kg | | | | | | | | | | | | |
| Skin corrosion/irritation: | No data available Causes skin irritation. (Diethylene glycol diethyl ether) | | | | | | | | | | | | |
| Serious eye damage/eye irritation: | No data available Causes serious eye damage. (γ -butyrolactone) | | | | | | | | | | | | |
| Respiratory or skin sensitisation: | No data available | | | | | | | | | | | | |
| Germ cell mutagenicity: | No data available | | | | | | | | | | | | |
| Reproductive toxicity: | No data available | | | | | | | | | | | | |
| Carcinogenicity: | The product contains Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans). | | | | | | | | | | | | |
| STOT-single exposure: | No data available | | | | | | | | | | | | |
| STOT-repeated exposure: | No data available | | | | | | | | | | | | |
| Aspiration hazard: | No data available | | | | | | | | | | | | |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

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

14. Transport information

- 14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not 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: 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

The product contains Carbon black.

IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

- H225 Highly flammable liquid and vapour.
- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.
- 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, TR-LC

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

Manufacture's name: Roland DG Corporation
Address: 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:

Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.

Contains methyl methacrylate. May produce an allergic reaction.

Precautionary statement(s)

| | |
|------------|---|
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |

3. Composition/information on ingredients
Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|------------------------------------|----------|-----------|---------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 65-75 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Triethylene glycol monobutyl ether | 143-22-6 | 205-592-6 | N/A for the moment | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 10-20 | Not classified as hazardous |
| Colorant | C.B.I. | C.B.I. | N/A for the moment | <1 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician. |
| Skin: | In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician. |
| Inhalation: | If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician. |
| Ingestion: | If swallowed, DO NOT induce vomiting. Seek immediate medical advice. |

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

| | |
|-------------|---|
| Eyes: | Non-corrosive but causes irreversible eye effects. |
| Skin: | Contact with skin may cause irritation, swelling or redness. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid

Unsuitable extinguishing media:

No information

5.2. Special hazards arising from the substance or mixture

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

Flash Point: 71 deg.C

5.3. Advice for firefighters

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

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

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--------------------------------|-----------|
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

| | |
|---------------------------------|---|
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | Cyan Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | | |
|-------------------------|---------------------------------|-------------------|
| Routes of Overexposure: | Eye, skin, inhalation, and oral | |
| Acute toxicity: | | |
| | Diethylene glycol diethyl ether | |
| | LD50 (oral-rat) | 4790 mg/kg |
| | LD50 (skin-rat) | No data available |
| | γ -butyrolactone | |
| | LD50 (oral-rat) | 1580 mg/kg |
| | LD50 (skin-marmot) | 5600 mg/kg |

| | |
|------------------------------------|--|
| Skin corrosion/irritation: | No data available Causes skin irritation. (Diethylene glycol diethyl ether) |
| Serious eye damage/eye irritation: | No data available Causes serious eye damage. (γ -butyrolactone) |
| Respiratory or skin sensitisation: | No data available |
| Germ cell mutagenicity: | No data available |
| Reproductive toxicity: | No data available |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |
| STOT-single exposure: | No data available |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

| | |
|--------------------------------|---|
| 13.1. Waste treatment methods: | Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system. |
|--------------------------------|---|

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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: | 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

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, TR-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
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:
Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.

Contains methyl methacrylate. May produce an allergic reaction.

Precautionary statement(s)

| | |
|------------|---|
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |

3. Composition/information on ingredients
Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|------------------------------------|----------|-----------|---------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 65-75 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Triethylene glycol monobutyl ether | 143-22-6 | 205-592-6 | N/A for the moment | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 10-20 | Not classified as hazardous |
| Colorant | C.B.I. | C.B.I. | N/A for the moment | 1-5 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
- Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media:
Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid
- Unsuitable extinguishing media:
No information

5.2. Special hazards arising from the substance or mixture

Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: 71 deg.C

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--------------------------------|-----------|
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

Occupational exposure control: Provide general and/or local exhaust ventilation.

Personal protective equipment:

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

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

| | |
|---------------------------------|---|
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | Magenta Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | | |
|-------------------------|---------------------------------|-------------------|
| Routes of Overexposure: | Eye, skin, inhalation, and oral | |
| Acute toxicity: | | |
| | Diethylene glycol diethyl ether | |
| | LD50 (oral-rat) | 4790 mg/kg |
| | LD50 (skin-rat) | No data available |
| | γ -butyrolactone | |
| | LD50 (oral-rat) | 1580 mg/kg |
| | LD50 (skin-marmot) | 5600 mg/kg |

| | |
|------------------------------------|--|
| Skin corrosion/irritation: | No data available Causes skin irritation. (Diethylene glycol diethyl ether) |
| Serious eye damage/eye irritation: | No data available Causes serious eye damage. (γ -butyrolactone) |
| Respiratory or skin sensitisation: | No data available |
| Germ cell mutagenicity: | No data available |
| Reproductive toxicity: | No data available |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) |
| STOT-single exposure: | No data available |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

| | |
|--------------------------------|---|
| 13.1. Waste treatment methods: | Treatment, storage, transportation and disposal must be in accordance with applicable federal, state/provincial, and local regulations. Do not flush to surface water or sanitary sewer system. |
|--------------------------------|---|

14. Transport information

| | |
|---|---|
| 14.1. UN Class/UN Number: | |
| ADR/ADG/DOT, IMDG, or IATA : | Not 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: | 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H315 Causes skin irritation.

H317 May cause an allergic skin reaction.

H318 Causes serious eye damage.

H335 May cause respiratory irritation.

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, TR-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
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:

Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s)

Danger

Hazard statement(s)

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

Contains methyl methacrylate. May produce an allergic reaction.

| | |
|----------------------------|---|
| Precautionary statement(s) | |
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | The product contains Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans). |

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|------------------------------------|----------|-----------|---------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 65-75 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Triethylene glycol monobutyl ether | 143-22-6 | 205-592-6 | N/A for the moment | 1-10 | Eye Dam. 1: H318 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 5-15 | Not classified as hazardous |
| Carbon black | C.B.I. | C.B.I. | N/A for the moment | <1 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
- Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid

Unsuitable extinguishing media:

No information

5.2. Special hazards arising from the substance or mixture

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

Flash Point: 71 deg.C

5.3. Advice for firefighters

Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--------------------------------|----------------------|
| Carbon black | 3.5mg/m ³ | 3.5mg/m ³ |
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Carbon black | 3mg/m ³ |
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

| | |
|---------------------------------|---|
| Occupational exposure control: | Provide general and/or local exhaust ventilation. |
| Personal protective equipment: | |
| Respiratory protection: | In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor pouch. |
| Hand protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, use protective gloves. Recommended impervious gloves is butyl rubber glove. |
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | Black Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | |
|------------------------------------|--|
| Routes of Overexposure: | Eye, skin, inhalation, and oral |
| Acute toxicity: | Diethylene glycol diethyl ether LD50 (oral-rat) 4790 mg/kg LD50 (skin-rat) No data available |
| | γ -butyrolactone LD50 (oral-rat) 1580 mg/kg LD50 (skin-marmot) 5600 mg/kg |
| Skin corrosion/irritation: | No data available Causes skin irritation. (Diethylene glycol diethyl ether) |
| Serious eye damage/eye irritation: | No data available Causes serious eye damage. (γ -butyrolactone) |
| Respiratory or skin sensitisation: | No data available |
| Germ cell mutagenicity: | No data available |
| Reproductive toxicity: | No data available |
| Carcinogenicity: | The product contains Carbon black. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans). |
| STOT-single exposure: | No data available |
| STOT-repeated exposure: | No data available |
| Aspiration hazard: | No data available |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

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

14. Transport information

- 14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not 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: 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

The product contains Carbon black.

IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

- H225 Highly flammable liquid and vapour.
- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.
- 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, TR-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
JAPAN
Phone: + 81-53-484-1224
Fax: + 81-53-484-1226

E-mail Address:

Prepared date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Acute toxicity - oral | Category 5 |
| Skin corrosion/irritation | Category 2 |
| Eye damage/irritation | Category 1 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s) Danger

Hazard statement(s) Combustible liquid.
May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.

Contains methyl methacrylate. May produce an allergic reaction.

| | |
|----------------------------|---|
| Precautionary statement(s) | |
| Prevention | Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER or doctor/physician if you feel unwell. |
| 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. |
| Inhalation: | Exposure to vapors (mist) will cause respiratory irritation and anesthesia. |
| Ingestion: | May cause upset stomach. |
| Chronic Health Hazards: | None Known. |
| Carcinogenicity: | The product contains Titanium dioxide. IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans). |

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|---------------------------------|----------|-----------|-----------------------|-------------|--|
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 60-70 | Skin Irrit. 2: H315 |
| γ -butyrolactone | 96-48-0 | 202-509-5 | N/A for the moment | 5-15 | Acute Tox. 4: H302 Eye Dam. 1: H318 STOT SE 3: H336 |
| Synthetic resins | C.B.I. | C.B.I. | N/A for the moment | 5-15 | Not classified as hazardous |
| Titanium dioxide | C.B.I. | C.B.I. | N/A for the moment | 10-20 | Not classified as hazardous |
| Additive | C.B.I. | C.B.I. | N/A for the moment | 1-10 | Not classified as hazardous |
| Methyl methacrylate | 80-62-6 | 201-297-1 | N/A for the moment | <0.3 | Flam. Liq. 2: H225 STOT SE 3: H335 Skin Irrit. 2: H315 Skin Sens. 1: H317 |

*C.B.I.: 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 at least 15 minutes. Hold eyelids open during flushing. Call a physician.
- Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
- Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
- Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

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

- Eyes: Non-corrosive but causes irreversible eye effects.
- Skin: Contact with skin may cause irritation, swelling or redness.
- Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
- Ingestion: May cause upset stomach.

4.3. Indication of immediate medical attention and special treatment needed

No information

5. Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media:
Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid
- Unsuitable extinguishing media:
No information

5.2. Special hazards arising from the substance or mixture

- Combustible liquid under Hazard Communication Standard (HCS, U.S.A).
Flash Point: 71 deg.C

5.3. Advice for firefighters

- Wear self-contained breathing apparatus (SCBA) and full protective equipment.
Applying direct water may be dangerous because fire may expand to surroundings.

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

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

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Keep out of reach of children and do not drink. Do not dismantle container. Make sure pouch is dry before insertion into printer housing.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s): Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA | STEL |
|---------------------|-------|--------|
| Methyl methacrylate | 50ppm | 100ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|----------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |
| γ-butyrolactone | 130mg/m ³ | 958mg/m ³ |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|---------------------|--|----------------------|
| Titanium dioxide | 15mg/m ³ * *for total dust | 3.5mg/m ³ |
| Methyl methacrylate | 100ppm 416mg/m ³ | - |

Australia: OELs

| components | TWA |
|---------------------|-----------------------|
| Titanium dioxide | 10mg/m ³ |
| Methyl methacrylate | 208 mg/m ³ |

8.2. Exposure controls:

| | |
|---------------------------------|---|
| Occupational exposure control: | Provide general and/or local exhaust ventilation. |
| Personal protective equipment: | |
| Respiratory protection: | In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with goggles) or full face-piece respirator (without goggles) filtered with organic vapor pouch. |
| Hand protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, use protective gloves. Recommended impervious gloves is butyl rubber glove. |
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, wear protective clothing. |
| Hygiene measures: | Wash hands after handling. In case contact with clothing, wash before reuse. Do not eat, drink or smoke in handling or storage area. |
| Environmental exposure control: | Avoid release to the environment. |

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|---|-------------------|
| Appearance: | White Liquid |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 71 deg.C |
| Flammability(solid,gas): | Not applicable |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Lightly soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

| | |
|---|---|
| 10.1. Reactivity: | Stable under normal temperature |
| 10.2. Chemical stability: | Physically stable under an ambient temperature or lower. |
| 10.3. Possibility of hazardous reactions: | No data available |
| 10.4. Conditions to avoid: | If it is heated, the container could explode to be broken down. Do not subject the container to static electricity. |
| 10.5. Incompatible materials: | This product should not mix with strong oxidants and high-pressure |
| 10.6. Hazardous decomposition products: | Toxic gases such as CO and NOx will be generated during combustion. |

11. Toxicological information

11.1. Information on toxicological effects

| | | | | | | | | | | | | | |
|------------------------------------|--|---------------------------------|--|-------------------|------------|-------------------|-------------------|-------------------------|--|-------------------|------------|----------------------|------------|
| Routes of Overexposure: | Eye, skin, inhalation, and oral | | | | | | | | | | | | |
| Acute toxicity: | <table> <tr> <td>Diethylene glycol diethyl ether</td> <td></td> </tr> <tr> <td>LD50 (oral-rat)</td> <td>4790 mg/kg</td> </tr> <tr> <td>LD50 (skin-rat)</td> <td>No data available</td> </tr> <tr> <td>γ-butyrolactone</td> <td></td> </tr> <tr> <td>LD50 (oral-rat)</td> <td>1580 mg/kg</td> </tr> <tr> <td>LD50 (skin-marmot)</td> <td>5600 mg/kg</td> </tr> </table> | Diethylene glycol diethyl ether | | LD50 (oral-rat) | 4790 mg/kg | LD50 (skin-rat) | No data available | γ -butyrolactone | | LD50 (oral-rat) | 1580 mg/kg | LD50 (skin-marmot) | 5600 mg/kg |
| Diethylene glycol diethyl ether | | | | | | | | | | | | | |
| LD50 (oral-rat) | 4790 mg/kg | | | | | | | | | | | | |
| LD50 (skin-rat) | No data available | | | | | | | | | | | | |
| γ -butyrolactone | | | | | | | | | | | | | |
| LD50 (oral-rat) | 1580 mg/kg | | | | | | | | | | | | |
| LD50 (skin-marmot) | 5600 mg/kg | | | | | | | | | | | | |
| Skin corrosion/irritation: | <p>No data available</p> <p>Causes skin irritation. (Diethylene glycol diethyl ether)</p> | | | | | | | | | | | | |
| Serious eye damage/eye irritation: | <p>No data available</p> <p>Causes serious eye damage. (γ-butyrolactone)</p> | | | | | | | | | | | | |
| Respiratory or skin sensitisation: | No data available | | | | | | | | | | | | |
| Germ cell mutagenicity: | No data available | | | | | | | | | | | | |
| Reproductive toxicity: | No data available | | | | | | | | | | | | |
| Carcinogenicity: | <p>The product contains Titanium dioxide.</p> <p>IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).</p> | | | | | | | | | | | | |
| STOT-single exposure: | No data available | | | | | | | | | | | | |
| STOT-repeated exposure: | No data available | | | | | | | | | | | | |
| Aspiration hazard: | No data available | | | | | | | | | | | | |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

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

14. Transport information

- 14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not 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: 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.

US Information:

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

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

California Proposition 65: Not regulated

SARA TITLE III:

Section 313:

Diethylene glycol diethyl ether (Chemical Category N230)

Triethylene glycol monobutyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

The product contains Titanium dioxide.

IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

- H225 Highly flammable liquid and vapour.
- H302 Harmful if swallowed.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.
- 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, TR-CL

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

1.3. Details of the supplier of the safety data sheet

| | |
|---------------------|--|
| Manufacture's name: | Roland DG Corporation |
| Address: | 1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN |
| Phone: | + 81-53-484-1224 |
| Fax: | + 81-53-484-1226 |

E-mail Address:

Revised date: 8 November, 2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as dangerous according to GHS.

| | |
|---------------------------|------------|
| Flammable liquids | Category 4 |
| Skin corrosion/irritation | Category 2 |

2.2. GHS label elements, including precautionary statements

Pictogram



Signal word(s) Warning

Hazard statement(s) Combustible liquid.
Causes skin irritation.

Precautionary statement(s)

| | |
|------------|--|
| Prevention | Keep away from flames and hot surfaces. — No smoking. Wear protective gloves/protective clothing/eye protection/face protection. |
| Response | IF ON SKIN: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. |
| Storage | Store in a well-ventilated place. Keep cool. |

2.3. Other hazards

Potential Health Effects:

- Eyes: Contact with eye may be mildly irritating.
 Skin: Contact with skin may cause irritation, swelling or redness.
 Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
 Ingestion: May cause upset stomach.
 Chronic Health Hazards: None Known.
 Carcinogenicity: None of the ingredients in this product is listed by IARC as a carcinogen.

3. Composition/information on ingredients

Chemical nature: mixture

| Composition | CAS No. | EC No. | EU registration No. | % By Weight | Classification EC No. 1272/2008 |
|-------------------------------------|------------|-----------|-----------------------|-------------|------------------------------------|
| Dipropylene glycol monomethyl ether | 34590-94-8 | 252-104-2 | N/A for the moment | 35-45 | Not classified as hazardous |
| Diethylene glycol diethyl ether | 112-36-7 | 203-963-7 | N/A for the moment | 35-45 | Skin Irrit. 2: H315 |
| Trialkylene glycol monoalkyl ether | C.B.I. | C.B.I. | N/A for the moment | 15-25 | Not classified as hazardous |

*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 at least 15 minutes. Hold eyelids open during flushing. Call a physician.
 Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.
 Trieth
 Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
 Ingestion: If swallowed, DO NOT induce vomiting. Seek immediate medical advice.

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

- Eyes: Contact with eye may be mildly irritating.
 Skin: Contact with skin may cause irritation, swelling or redness.
 Inhalation: Exposure to vapors (mist) will cause respiratory irritation and anesthesia.
 Ingestion: May cause upset stomach.

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

No information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Powders, bubbles, carbon dioxide, dry sand, water, reinforcement liquid

Unsuitable extinguishing media:

No information

5.2. Special hazards arising from the substance or mixture

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

Flash Point: about 76 deg.C

5.3. Advice for firefighters

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

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

6. Accidental release measures

General:

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

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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. Scrub contaminated area with detergent and water.

6.4. Reference to other sections

Refer to "Section 8 Exposure controls/ personal protection" and "Section 13 Disposal consideration" as appropriate.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container.

7.2. Conditions for safe storage, including any incompatibilities

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

7.3. Specific end use(s):

Inkjet printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

EU:

| components | TWA |
|-------------------------------------|------------------------------|
| Dipropylene glycol monomethyl ether | 308mg/m ³ , 50ppm |

DNEL(Derived No Effect Level)

| components | Long term exposure | Short term exposure |
|---------------------------------|------------------------|---------------------|
| Diethylene glycol diethyl ether | 50.05mg/m ³ | - |

REACH Toxicological Information (Workers - Hazard via inhalation route)

US:

| components | OSHA:PEL | ACGIH:TLV |
|-------------------------------------|------------------------------------|---|
| Dipropylene glycol monomethyl ether | TWA: 600mg/m ³ , 100ppm | TWA: 100ppm, 606 mg/m ³ STEL: 150ppm, 909 mg/m ³ |

Australia: OELs

| components | TWA |
|-------------------------------------|------------------------------|
| Dipropylene glycol monomethyl ether | 308mg/m ³ , 50ppm |

8.2. Exposure controls:

| | |
|---------------------------------|---|
| Occupational exposure control: | Control the airborne concentrations below the exposure limits. Use only with adequate ventilation. |
| Personal protective equipment: | |
| Respiratory protection: | In case ventilation is insufficient, wear respiratory protection. Use a half facepiece respirator (with gollges) or full face-piece respirator (without goggles) filtered with organic vapor pouch. |
| Hand protection: | Not required under suitable use as setting the pouch on the printer. However, in case of direct contact to ink, use protective gloves. Recommended impervious gloves is butyl rubber glove. |
| Eye protection: | Not required under suitable use as setting the pouch on the printer. However, in case of bottle container, wear safety glasses or chemical splash goggles. |
| Skin protection: | Not required under suitable use as setting the pouch on the printer. However, in case of bottle container, 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 |
| Odor: | Slightly |
| pH: | No data available |
| Boiling point: | No data available |
| Flash point: | 76 deg.C |
| Flammability(solid,gas): | No data available |
| Explosive properties: | No data available |
| Oxidizing properties: | None |
| Vapor pressure: | No data available |

| | |
|---|-------------------|
| Specific Gravity (g/cm ³ , 20°C) | No data available |
| Solubility: | No data available |
| Water Solubility: | Soluble |
| Partition coefficient: n-octanol/water: | No data available |
| Viscosity: | No data available |
| Vapor density: | No data available |
| Evaporation rate: | No data available |
| Melting point: | No data available |

9.2. Other information: No information

10. Stability and reactivity

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

11. Toxicological information

11.1. Information on toxicological effects

| | | |
|------------------------------------|--|-------------------|
| Routes Of Overexposure: | Eye, skin, inhalation, and oral | |
| Acute toxicity: | Diethylene glycol diethyl ether | |
| | LD50 (oral-rat) | 4790 mg/kg |
| | LD50 (skin-rat) | No data available |
| Skin corrosion/irritation: | No data available | |
| | Causes skin irritation. (Diethylene glycol diethyl ether) | |
| Serious eye damage/eye irritation: | No data available | |
| Respiratory or skin sensitisation: | No data available | |
| Germ cell mutagenicity: | No data available | |
| Reproductive toxicity: | No data available | |
| Carcinogenicity: | None of the ingredients in this ink is listed by IARC as a carcinogen. (1,2A and 2B) | |
| STOT-single exposure: | No data available | |
| STOT-repeated exposure: | No data available | |
| Aspiration hazard: | No data available | |

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

- 14.1. UN Class/UN Number:
ADR/ADG/DOT, IMDG, or IATA : Not 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: 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.

US Information:

Toxic Substances Control Act (TSCA): All ingredients are listed on the TSCA Inventory.
Product contains Diethylene glycol diethyl ether that is subject to TSCA Section 5 SNUR and to TSCA Section 12(b) export notification requirements.

California; Proposition 65: Not regulated

SARA TITLE III:

Section 313:
Diethylene glycol diethyl ether (Chemical Category N230)
Trialkylene glycol monoalkyl ether (Chemical Category N230)

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other Information

List of relevant H-Statements:

H315 Causes skin irritation.

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