Safety Data Sheet

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

1.1. Product identifier

ECO-UV, EUV4-CY
ECO-UV, EUV4-5CY

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

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

E-mail:
Revised date: 17-Apr-2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

Flammable liquids	Category 4
Acute toxicity (oral)	Category 5
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Sensitisation — Skin	Category 1B
Reproductive toxicity	Category 1B
Specific target organ toxicity — Repeated exposure	Category 2
Hazardous to the aquatic environment — Acute Hazard	Category 1
Hazardous to the aquatic environment — Chronic Hazard	Category 1

2.2. GHS label elements, including precautionary statements

Pictgram(s)

Signal word Danger

Hazard Statement(s): Combustible liquid.

May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

Prevention	Do not handle until all safety precautions have been read and understood.
	Do not breathe dust/fume/gas/mist/vapours/spray.
	Avoid release to the environment.
	Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF ON SKIN: Wash with plenty of soap and water.
	IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

Potential Health Effects:

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

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU regis-tration No.	% By Weight	Classification EC No. 1272/2008
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardou
Acrylated amine synergist	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardou
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<5	Acute Tox. 4: H302 Skin Corr. 1C: H314 Eye Damage 1: H318 Skin Sens. 1B: H317 Repr. 1B: H360
Benzyl acrylate	2495-35-4	219-673-9	01-2120772339-44	50-60	Skin Irrit. 2: H315 Skin Sens. 1B: H317 Aquatic Acute 1: H400
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	01-2119977109-27	<10	Acute Tox. 4: H302 Acute Tox. 4: H312 Eye Irrit. 2A: H319 Skin Sens. 1B: H317
Trimethylolpropane triacrylate	15625-89-5	239-701-3	01-2119489896-11	10-20	Skin Irrit. 2: H315 Skin Sens. 1: H317
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	423-340-5	N/A for the moment	1-10	Skin Sens. 1: H317 Aquatic Chronic 4: H413
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	75980-60-8	278-355-8	01-2119972295-29	1-10	Repr. 2: H361
Others	C.B.I.	C.B.I.	N/A for the moment	<1	Not classified as hazardou
Hexamethylene diacrylate	13048-33-4	235-921-9	01-2119484737-22	<1	Skin Irrit. 2: H315 Skin Sens. 1: H317
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha.''-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-	52408-84-1	500-114-5	N/A for the moment	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317
Other polymerization initiator	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou
Copolymer with pigment affinic groups(1)	C.B.I.	C.B.I.	N/A for the moment	<1	Aquatic Acute 1: H400
Synthetic resins	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou

† C.B.I.: Confidential Business Information
‡ For the full text of the H-Statements mentioned in this Section, see Section 16.
(1) Chemical name : Benzene, ethenyl-, copolymer with 2,5-Furandione and Benzene, 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bis-, rp.with Oxirane, methyl, polymer with oxirane, 2-aminopropyl methyl ether and 1,3-Propanediamine, N,N-dimethyl-, Oxirane, mono[(C10-16-alkyloxy)methyl]derivs.-quaternised, compound with Benzoic acid

4. First aid measures

4.1. Description of first aid measures

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

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

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

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

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

Eyes: Causes severe eye injury which may persist for several days.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

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

no information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.
Flash Point: ≧ 70deg.C

5.3. Advice for firefighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

Hexamethylene diacrylate:

[Long term exposure] 24.5 mg/m³

[Short term exposure] no hazard identified

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

1-vinylhexahydro-2H-azepin-2-one:

[Long term exposure] 4.9 mg/m³

[Short term exposure] no hazard identified

Tetrahydrofurfuryl acrylate:

[Long term exposure] 1.73 mg/m³

[Short term exposure] no hazard identified

Trimethylolpropane triacrylate:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide:

[Long term exposure] 21 mg/m³

[Short term exposure] hazard unknown (no further information necessary)

Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.:
[Long term exposure] 3.7 mg/m³
[Short term exposure] no hazard identified
Phenoxyethanol:
[Long term exposure] 8.07 mg/m³
[Short term exposure] no data available

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

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

Hand protection:

Employee must wear appropriate protective impervious gloves to prevent contact with the ink. Recommended Chemical Protective Gloves are ethylene vinyl alcohol (EVA) Gloves and Laminate gloves. Laminate gloves are made by cutting and then heat-sealing patterns of various hand sizes from laminated sheets of EVA sealed between layers of polyethylene.

Eye protection:

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

Skin protection:

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

Hygiene measures:

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

Environmental exposure control:

Avoid release to the environment.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Cyan Liquid
Odour:	Characteristic odour
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	No data available
Solubility(ies):	Slightly soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Volatile organic compounds (VOC) content:	0.061 grams/liter

9.2 Other information

No information.

10. Stability and reactivity

10.1 Reactivity:

High temperatures and UV light may cause rapid polymerization.

10.2 Chemical stability:

Stable under normal temperature.

10.3 Possibility of hazardous reactions:

Not expected.

10.4 Conditions to avoid:

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

10.5 Incompatible materials:

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

10.6 Hazardous decomposition products:

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

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

1-vinylhexahydro-2H-azepin-2-one (of one component of this product)

LD50 (Oral)	1114.0
LD50 (Dermal)	1700.0

Tetrahydrofurfuryl acrylate (of one component of this product)

LD50 (Oral)	928.0

Serious eye damage/eye irritation:

Causes serious eye damage.

- Tetrahydrofurfuryl acrylate

Causes serious eye irritation.

- Hexamethylene diacrylate
- 1-vinylhexahydro-2H-azepin-2-one
- Trimethylolpropane triacrylate
- Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.

Skin corrosion/irritation:

Causes severe skin burns and eye damage.

- Tetrahydrofurfuryl acrylate

Causes skin irritation.

- Hexamethylene diacrylate
- Benzyl acrylate
- Trimethylolpropane triacrylate

Respiratory or skin sensitisation:

May cause an allergic skin reaction.

- Hexamethylene diacrylate
- Benzyl acrylate
- 1-vinylhexahydro-2H-azepin-2-one
- Tetrahydrofurfuryl acrylate
- Trimethylolpropane triacrylate
- Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide
- Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.
- 2,5-Cyclohexadien-1-one, 2,6-bis(1,1-dimethylethyl)-4-

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

May damage fertility or the unborn child.

- Tetrahydrofurfuryl acrylate

Suspected of damaging fertility or the unborn child.

- Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Carcinogenicity:

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

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

no data available.

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

Causes damage to organs through prolonged or repeated exposure.

- 1-vinylhexahydro-2H-azepin-2-one

Aspiration hazard:

no data available.

12. Ecological information

12.1. Toxicity:

Very toxic to aquatic life.

- Benzyl acrylate
- Copolymer with pigment affinic groups

Very toxic to aquatic life with long lasting effects.

- Benzyl acrylate

Toxic to aquatic life with long lasting effects.

- Tetrahydrofurfuryl acrylate

May cause long lasting harmful effects to aquatic life.

- Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide
- 2,5-Cyclohexadien-1-one, 2,6-bis(1,1-dimethylethyl)-4-

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 : 3082

14.2 UN proper shipping name

ADR/ADG/DOT, IMDG, or IATA : Environmentall hazardous substance, liquid, n.o.s. (Benzyl acrylate)

14.3 Transport hazard class(es)

ADR/ADG/DOT, IMDG, or IATA : 9

14.4 Packing group

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

14.5 Environmental hazards

ADR/ADG/DOT, IMDG, or IATA : Environmentally hazardous substance, liquid, n.o.s. (Benzyl acrylate)

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)1907/2006

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

Australia Information:

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

International Information:

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

16. Other information

List of relevant H-Statements:

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

— H302: Harmful if swallowed.
— H312: Harmful in contact with skin.
— H314: Causes severe skin burns and eye damage.
— H315: Causes skin irritation.
— H317: May cause an allergic skin reaction.
— H318: Causes serious eye damage.
— H319: Causes serious eye irritation.
— H360: May damage fertility or the unborn child.
— H361: Suspected of damaging fertility or the unborn child.
— H372: Causes damage to organs through prolonged or repeated exposure.
— H400: Very toxic to aquatic life.
— H410: Very toxic to aquatic life with long lasting effects.
— H411: Toxic to aquatic life with long lasting effects.
— H413: May cause long lasting harmful effects to aquatic life.

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

ECO-UV, EUV4-MG

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

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

E-mail:
Revised date: 17-Apr-2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

Flammable liquids	Category 4
Acute toxicity (oral)	Category 5
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Sensitisation — Skin	Category 1B
Reproductive toxicity	Category 1B
Specific target organ toxicity — Repeated exposure	Category 2
Hazardous to the aquatic environment — Acute Hazard	Category 1
Hazardous to the aquatic environment — Chronic Hazard	Category 1

2.2. GHS label elements, including precautionary statements

Pictgram(s)

Signal word Danger

Hazard Statement(s): Combustible liquid.

May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

Prevention	Do not handle until all safety precautions have been read and understood.
	Do not breathe dust/fume/gas/mist/vapours/spray.
	Avoid release to the environment.
	Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF ON SKIN: Wash with plenty of soap and water.
	IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

Potential Health Effects:

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

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU regis-tration No.	% By Weight	Classification EC No. 1272/2008
Colorant	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardou
Acrylated amine synergist	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardou
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<5	Acute Tox. 4: H302 Skin Corr. 1C: H314 Eye Damage 1: H318 Skin Sens. 1B: H317 Repr. 1B: H360
Benzyl acrylate	2495-35-4	219-673-9	01-2120772339-44	50-60	Skin Irrit. 2: H315 Skin Sens. 1B: H317 Aquatic Acute 1: H400
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	01-2119977109-27	<10	Acute Tox. 4: H302 Acute Tox. 4: H312 Eye Irrit. 2A: H319 Skin Sens. 1B: H317
Trimethylolpropane triacrylate	15625-89-5	239-701-3	01-2119489896-11	10-20	Skin Irrit. 2: H315 Skin Sens. 1: H317
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	423-340-5	N/A for the moment	1-10	Skin Sens. 1: H317 Aquatic Chronic 4: H413
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	75980-60-8	278-355-8	01-2119972295-29	1-10	Repr. 2: H361
Copolymer with pigment affinic groups(1)	C.B.I.	C.B.I.	N/A for the moment	0-1	Aquatic Acute 1: H400
Hexamethylene diacrylate	13048-33-4	235-921-9	01-2119484737-22	0-1	Skin Irrit. 2: H315 Skin Sens. 1: H317
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha.''-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-	52408-84-1	500-114-5	N/A for the moment	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317
Other polymerization initiator	C.B.I.	C.B.I.	N/A for the moment	0-5	Not classified as hazardou
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou

† C.B.I.: Confidential Business Information
‡ For the full text of the H-Statements mentioned in this Section, see Section 16.
(1) Chemical name : Benzene, ethenyl-, copolymer with 2,5-Furandione and Benzene, 1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bis-, rp.with Oxirane, methyl, polymer with oxirane, 2-aminopropyl methyl ether and 1,3-Propanediamine, N,N-dimethyl-, Oxirane, mono[(C10-16-alkyloxy)methyl]derivs.-quaternised, compound with Benzoic acid

4. First aid measures

4.1. Description of first aid measures

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

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

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

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

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

Eyes: Causes severe eye injury which may persist for several days.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

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

no information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

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

Flash Point: ≧ 70deg.C

5.3. Advice for firefighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

hexamethylene diacrylate:

[Long term exposure] 24.5 mg/m³

[Short term exposure] no hazard identified

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

1-vinylhexahydro-2H-azepin-2-one:

[Long term exposure] 4.9 mg/m³

[Short term exposure] no hazard identified

Tetrahydrofurfuryl acrylate:

[Long term exposure] 1.73 mg/m³

[Short term exposure] no hazard identified

Trimethylolpropane triacrylate:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide:

[Long term exposure] 21 mg/m³

[Short term exposure] hazard unknown (no further information necessary)

Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.:
[Long term exposure] 3.7 mg/m³
[Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

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

Hand protection:

Employee must wear appropriate protective impervious gloves to prevent contact with the ink. Recommended Chemical Protective Gloves are ethylene vinyl alcohol (EVA) Gloves and Laminate gloves. Laminate gloves are made by cutting and then heat-sealing patterns of various hand sizes from laminated sheets of EVA sealed between layers of polyethylene.

Eye protection:

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

Skin protection:

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

Hygiene measures:

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

Environmental exposure control:

Avoid release to the environment.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Magenta Liquid
Odour:	Characteristic odour
Odour threshold:	No data available

pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	No data available
Solubility(ies):	Slightly soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Volatile organic compounds (VOC) content:	0.061 grams/liter

9.2 Other information

No information.

10. Stability and reactivity

10.1 Reactivity:

High temperatures and UV light may cause rapid polymerization.

10.2 Chemical stability:

Stable under normal temperature.

10.3 Possibility of hazardous reactions:

Not expected.

10.4 Conditions to avoid:

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

10.5 Incompatible materials:

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

10.6 Hazardous decomposition products:

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

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

1-vinylhexahydro-2H-azepin-2-one (of one component of this product)

LD50 (Oral)	1114.0
LD50 (Dermal)	1700.0

Tetrahydrofurfuryl acrylate (of one component of this product)

LD50 (Oral)	928.0

Serious eye damage/eye irritation:

Causes serious eye damage.

- Tetrahydrofurfuryl acrylate

Causes serious eye irritation.

- Hexamethylene diacrylate
- 1-vinylhexahydro-2H-azepin-2-one
- Trimethylolpropane triacrylate
- Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.

Skin corrosion/irritation:

Causes severe skin burns and eye damage.

- Tetrahydrofurfuryl acrylate

Causes skin irritation.

- Hexamethylene diacrylate
- Benzyl acrylate
- Trimethylolpropane triacrylate

Respiratory or skin sensitisation:

May cause an allergic skin reaction.

- Hexamethylene diacrylate
- Benzyl acrylate
- 1-vinylhexahydro-2H-azepin-2-one
- Tetrahydrofurfuryl acrylate
- Trimethylolpropane triacrylate
- Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide
- Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

May damage fertility or the unborn child.

- Tetrahydrofurfuryl acrylate

Suspected of damaging fertility or the unborn child.

• Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Carcinogenicity:

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

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

no data available.

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

Causes damage to organs through prolonged or repeated exposure.

• 1-vinylhexahydro-2H-azepin-2-one

Aspiration hazard:

no data available.

12. Ecological information

12.1. Toxicity:

Very toxic to aquatic life.

• Benzyl acrylate

• Copolymer with pigment affinic groups

Very toxic to aquatic life with long lasting effects.

• Benzyl acrylate

Toxic to aquatic life with long lasting effects.

• Tetrahydrofurfuryl acrylate

May cause long lasting harmful effects to aquatic life.

• Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide

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 : 3082

14.2 UN proper shipping name

ADR/ADG/DOT, IMDG, or IATA : Environmentall hazardous substance, liquid, n.o.s.
(Benzyl acrylate)

14.3 Transport hazard class(es)

ADR/ADG/DOT, IMDG, or IATA : 9

14.4 Packing group

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

14.5 Environmental hazards

ADR/ADG/DOT, IMDG, or IATA : Environmentally hazardous substance, liquid, n.o.s.
(Benzyl acrylate)

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)1907/2006

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

Australia Information:

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

International Information:

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

16. Other information

List of relevant H-Statements:

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

— H302: Harmful if swallowed.
— H312: Harmful in contact with skin.
— H314: Causes severe skin burns and eye damage.
— H315: Causes skin irritation.
— H317: May cause an allergic skin reaction.
— H318: Causes serious eye damage.
— H319: Causes serious eye irritation.
— H360: May damage fertility or the unborn child.
— H361: Suspected of damaging fertility or the unborn child.
— H372: Causes damage to organs through prolonged or repeated exposure.
— H400: Very toxic to aquatic life.
— H410: Very toxic to aquatic life with long lasting effects.
— H411: Toxic to aquatic life with long lasting effects.
— H413: May cause long lasting harmful effects to aquatic life.

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

ECO-UV, EUV4-YE
ECO-UV, EUV4-5YE

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

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

E-mail:
Revised date: 17-Apr-2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

Flammable liquids	Category 4
Acute toxicity (oral)	Category 5
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Sensitisation — Skin	Category 1B
Reproductive toxicity	Category 1B
Specific target organ toxicity — Repeated exposure	Category 2
Hazardous to the aquatic environment — Acute Hazard	Category 1
Hazardous to the aquatic environment — Chronic Hazard	Category 1

2.2. GHS label elements, including precautionary statements

Pictgram(s)

Signal word Danger

Hazard Statement(s): Combustible liquid.

May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

Prevention	Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards

Potential Health Effects:

Eyes:	Causes severe eye injury which may persist for several days.
Skin:	Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation:	Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
Ingestion:	May cause injury of mouth, throat, and stomach.
Chronic Health Hazards:	Repeated skin contact may cause a persistent irritation or dermatitis.
Carcinogenicity:	This product contains Nickel compounds (Pigment Yellow 150). IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).
Others:	No information.

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU regis-tration No.	% By Weight	Classification EC No.1272/2008
Pigment Yellow 150	68511-62-6	270-944-8	N/A for the moment	1-5	Not classified as hazardou
Acrylated amine synergist	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardou
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<5	Acute Tox. 4: H302 Skin Corr. 1C: H314 Eye Damage 1: H318 Skin Sens. 1B: H317 Repr. 1B: H360
Benzyl acrylate	2495-35-4	219-673-9	01-2120772339-44	50-60	Skin Irrit. 2: H315 Skin Sens. 1B: H317 Aquatic Acute 1: H400
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	01-2119977109-27	<10	Acute Tox. 4: H302 Acute Tox. 4: H312 Eye Irrit. 2A: H319 Skin Sens. 1B: H317
Trimethylolpropane triacrylate	15625-89-5	239-701-3	01-2119489896-11	10-20	Skin Irrit. 2: H315 Skin Sens. 1: H317
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	423-340-5	N/A for the moment	1-10	Skin Sens. 1: H317 Aquatic Chronic 4: H413
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	75980-60-8	278-355-8	01-2119972295-29	1-10	Repr. 2: H361
Hexamethylene diacrylate	13048-33-4	235-921-9	01-2119484737-22	0-1	Skin Irrit. 2: H315 Skin Sens. 1: H317
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha.''-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-	52408-84-1	500-114-5	N/A for the moment	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317
Other polymerization initiator	C.B.I.	C.B.I.	N/A for the moment	0-5	Not classified as hazardou
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou

† 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 several minutes. Hold eyelids open during flushing. Call a physician.

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

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

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

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

Eyes: Causes severe eye injury which may persist for several days.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

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

no information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

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

Flash Point: ≧ 70deg.C

5.3. Advice for firefighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

1-vinylhexahydro-2H-azepin-2-one:

[Long term exposure] 4.9 mg/m³

[Short term exposure] no hazard identified

Tetrahydrofurfuryl acrylate:

[Long term exposure] 1.73 mg/m³

[Short term exposure] no hazard identified

Trimethylolpropane triacrylate:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide:

[Long term exposure] 21 mg/m³

[Short term exposure] hazard unknown (no further information necessary)

Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.:
[Long term exposure] 3.7 mg/m³
[Short term exposure] no hazard identified
hexamethylene diacrylate:
[Long term exposure] 24.5 mg/m³
[Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

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

Hand protection:

Employee must wear appropriate protective impervious gloves to prevent contact with the ink. Recommended Chemical Protective Gloves are ethylene vinyl alcohol (EVA) Gloves and Laminate gloves. Laminate gloves are made by cutting and then heat-sealing patterns of various hand sizes from laminated sheets of EVA sealed between layers of polyethylene.

Eye protection:

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

Skin protection:

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

Hygiene measures:

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

Environmental exposure control:

Avoid release to the environment.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Yellow Liquid
Odour:	Characteristic odour
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	No data available
Solubility(ies):	Slightly soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Volatile organic compounds (VOC) content:	0.061 grams/liter

9.2 Other information

No information.

10. Stability and reactivity

10.1 Reactivity:

High temperatures and UV light may cause rapid polymerization.

10.2 Chemical stability:

Stable under normal temperature.

10.3 Possibility of hazardous reactions:

Not expected.

10.4 Conditions to avoid:

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

10.5 Incompatible materials:

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

10.6 Hazardous decomposition products:

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

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

1-vinylhexahydro-2H-azepin-2-one (of one component of this product)

LD50 (Oral)	1114.0
LD50 (Dermal)	1700.0

Tetrahydrofurfuryl acrylate (of one component of this product)

LD50 (Oral)	928.0

Serious eye damage/eye irritation:

Causes serious eye damage.

- Tetrahydrofurfuryl acrylate

Causes serious eye irritation.

- 1-vinylhexahydro-2H-azepin-2-one
- Trimethylolpropane triacrylate
- Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.
- Hexamethylene diacrylate

Skin corrosion/irritation:

Causes severe skin burns and eye damage.

- Tetrahydrofurfuryl acrylate

Causes skin irritation.

- Benzyl acrylate
- Trimethylolpropane triacrylate
- Hexamethylene diacrylate

Respiratory or skin sensitisation:

May cause an allergic skin reaction.

- Benzyl acrylate
- 1-vinylhexahydro-2H-azepin-2-one
- Tetrahydrofurfuryl acrylate
- Trimethylolpropane triacrylate
- Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide
- Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.
- Hexamethylene diacrylate

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

May damage fertility or the unborn child.

- Tetrahydrofurfuryl acrylate

Suspected of damaging fertility or the unborn child.

- Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Carcinogenicity:

This product contains Nickel compounds (Pigment Yellow 150). IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

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

no data available.

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

Causes damage to organs through prolonged or repeated exposure.

- 1-vinylhexahydro-2H-azepin-2-one

Aspiration hazard:

no data available.

12. Ecological information

12.1. Toxicity:

Very toxic to aquatic life.

- Benzyl acrylate

Very toxic to aquatic life with long lasting effects.

- Benzyl acrylate

Toxic to aquatic life with long lasting effects.

- Tetrahydrofurfuryl acrylate

May cause long lasting harmful effects to aquatic life.

- Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide

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 : 3082

14.2 UN proper shipping name

ADR/ADG/DOT, IMDG, or IATA : Environmentall hazardous substance, liquid, n.o.s. (Benzyl acrylate)

14.3 Transport hazard class(es)

ADR/ADG/DOT, IMDG, or IATA : 9

14.4 Packing group

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

14.5 Environmental hazards

ADR/ADG/DOT, IMDG, or IATA : Environmentally hazardous substance, liquid, n.o.s. (Benzyl acrylate)

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)1907/2006

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

Australia Information:

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

International Information:

This product contains Nickel compounds (Pigment Yellow 150). IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

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

— H302: Harmful if swallowed.
— H312: Harmful in contact with skin.
— H314: Causes severe skin burns and eye damage.
— H315: Causes skin irritation.
— H317: May cause an allergic skin reaction.
— H318: Causes serious eye damage.
— H319: Causes serious eye irritation.
— H360: May damage fertility or the unborn child.
— H361: Suspected of damaging fertility or the unborn child.
— H372: Causes damage to organs through prolonged or repeated exposure.
— H400: Very toxic to aquatic life.
— H410: Very toxic to aquatic life with long lasting effects.
— H411: Toxic to aquatic life with long lasting effects.
— H413: May cause long lasting harmful effects to aquatic life.

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

ECO-UV, EUV4-BK

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

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

E-mail:
Revised date: 17-Apr-2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

Flammable liquids	Category 4
Acute toxicity (oral)	Category 5
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Sensitisation — Skin	Category 1B
Reproductive toxicity	Category 1B
Specific target organ toxicity — Repeated exposure	Category 2
Hazardous to the aquatic environment — Acute Hazard	Category 1
Hazardous to the aquatic environment — Chronic Hazard	Category 1

2.2. GHS label elements, including precautionary statements

Pictgram(s)

Signal word Danger

Hazard Statement(s): Combustible liquid.

May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

Prevention	Do not handle until all safety precautions have been read and understood.
	Do not breathe dust/fume/gas/mist/vapours/spray.
	Avoid release to the environment.
	Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF ON SKIN: Wash with plenty of soap and water.
	IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

Potential Health Effects:

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

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU regis-tration No.	% By Weight	Classification EC No. 1272/2008
Carbon black	1333-86-4	215-609-9	N/A for the moment	1-5	Not classified as hazardou
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<5	Acute Tox. 4: H302 Skin Corr. 1C: H314 Eye Damage 1: H318 Skin Sens. 1B: H317 Repr. 1B: H360
Benzyl acrylate	2495-35-4	219-673-9	01-2120772339-44	50-60	Skin Irrit. 2: H315 Skin Sens. 1B: H317 Aquatic Acute 1: H400
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	01-2119977109-27	<10	Acute Tox. 4: H302 Acute Tox. 4: H312 Eye Irrit. 2A: H319 Skin Sens. 1B: H317
Trimethylolpropane triacrylate	15625-89-5	239-701-3	01-2119489896-11	1-10	Skin Irrit. 2: H315 Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	75980-60-8	278-355-8	01-2119972295-29	1-10	Repr. 2: H361
Copolymer with pigment affinic groups	C.B.I.	C.B.I.	N/A for the moment	0-1	Aquatic Acute 1: H400
Hexamethylene diacrylate	13048-33-4	235-921-9	01-2119484737-22	0-1	Skin Irrit. 2: H315 Skin Sens. 1: H317
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha.''-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-	52408-84-1	500-114-5	N/A for the moment	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317
Other polymerization initiator	C.B.I.	C.B.I.	N/A for the moment	0-5	Not classified as hazardou
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou

† C.B.I.: Confidential Business Information
‡ For the full text of the H-Statements mentioned in this Section, see Section 16.
(1) Chemical name : Benzene,ethenyl-,copolymer with 2,5-Furandione and Benzene,1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bis-,rp.with Oxirane, methyl,polymer with oxirane, 2-aminopropyl methyl ether and 1,3-Propanediamine,N,N-dimethyl-,Oxirane, mono[(C10-16-alkyloxy)methyl]derivs.-quaternised, compound with Benzoic acid

4. First aid measures

4.1. Description of first aid measures

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

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

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

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

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

Eyes: Causes severe eye injury which may persist for several days.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

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

no information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

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

Flash Point: ≧ 70deg.C

5.3. Advice for firefighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

Hexamethylene diacrylate:

[Long term exposure] 24.5 mg/m³

[Short term exposure] no hazard identified

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

1-vinylhexahydro-2H-azepin-2-one:

[Long term exposure] 4.9 mg/m³

[Short term exposure] no hazard identified

Tetrahydrofurfuryl acrylate:

[Long term exposure] 1.73 mg/m³

[Short term exposure] no hazard identified

Trimethylolpropane triacrylate:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.:

[Long term exposure] 3.7 mg/m³

[Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

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

Hand protection:

Employee must wear appropriate protective impervious gloves to prevent contact with the ink. Recommended Chemical Protective Gloves are ethylene vinyl alcohol (EVA) Gloves and Laminate gloves. Laminate gloves are made by cutting and then heat-sealing patterns of various hand sizes from laminated sheets of EVA sealed between layers of polyethylene.

Eye protection:

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

Skin protection:

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

Hygiene measures:

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

Environmental exposure control:

Avoid release to the environment.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Black Liquid
Odour:	Characteristic odour
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	≧ 70deg.C

Evaporation rate:	No data available
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Relative density:	No data available
Solubility(ies):	Slightly soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Volatile organic compounds (VOC) content:	0.061 grams/liter

9.2 Other information

No information.

10. Stability and reactivity

10.1 Reactivity:

High temperatures and UV light may cause rapid polymerization.

10.2 Chemical stability:

Stable under normal temperature.

10.3 Possibility of hazardous reactions:

Not expected.

10.4 Conditions to avoid:

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

10.5 Incompatible materials:

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

10.6 Hazardous decomposition products:

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

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

1-vinylhexahydro-2H-azepin-2-one (of one component of this product)

LD50 (Oral)	1114.0

LD50 (Dermal) 1700.0

Tetrahydrofurfuryl acrylate (of one component of this product)

LD50 (Oral) 928.0

Serious eye damage/eye irritation:

Causes serious eye damage.

• Tetrahydrofurfuryl acrylate

Causes serious eye irritation.

• Hexamethylene diacrylate

• 1-vinylhexahydro-2H-azepin-2-one

• Trimethylolpropane triacrylate

• Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.

Skin corrosion/irritation:

Causes severe skin burns and eye damage.

• Tetrahydrofurfuryl acrylate

Causes skin irritation.

• Hexamethylene diacrylate

• Benzyl acrylate

• Trimethylolpropane triacrylate

Respiratory or skin sensitisation:

May cause an allergic skin reaction.

• Hexamethylene diacrylate

• Benzyl acrylate

• 1-vinylhexahydro-2H-azepin-2-one

• Tetrahydrofurfuryl acrylate

• Trimethylolpropane triacrylate

• Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

May damage fertility or the unborn child.

• Tetrahydrofurfuryl acrylate

Suspected of damaging fertility or the unborn child.

• Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Carcinogenicity:

This product contains Carbon black. IARC evaluated printing ink as a Group 3 (Not classifiable as to

carcinogenicity to humans).

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

no data available.

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

Causes damage to organs through prolonged or repeated exposure.

• 1-vinylhexahydro-2H-azepin-2-one

Aspiration hazard:

no data available.

12. Ecological information

12.1. Toxicity:

Very toxic to aquatic life.

• Benzyl acrylate

• Benzene,ethenyl-,copolymer with 2,5-Furandione and Benzene,1,1'-(1,1-dimethyl-3-methylene-1,3-propanediyl)bis-,rp.with Oxirane, methyl,polymer with oxirane, 2-aminopropyl methyl ether and 1,3-Propanediamine,N,N-dimethyl-,Oxirane, mono[(C10-16-alkyloxy)methyl]derivs.-quaternised, compound with Benzoic acid

Very toxic to aquatic life with long lasting effects.

• Benzyl acrylate

Toxic to aquatic life with long lasting effects.

• Tetrahydrofurfuryl acrylate

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 : 3082

14.2 UN proper shipping name

ADR/ADG/DOT, IMDG, or IATA : Environmentall hazardous substance, liquid, n.o.s.
(Benzyl acrylate)

14.3 Transport hazard class(es)

ADR/ADG/DOT, IMDG, or IATA : 9

14.4 Packing group

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

14.5 Environmental hazards

ADR/ADG/DOT, IMDG, or IATA : Environmentally hazardous substance, liquid, n.o.s.
(Benzyl acrylate)

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)1907/2006

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

Australia Information:

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

International Information:

This product contains Carbon black. IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

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

— H302: Harmful if swallowed.

— H312: Harmful in contact with skin.

— H314: Causes severe skin burns and eye damage.
— H315: Causes skin irritation.
— H317: May cause an allergic skin reaction.
— H318: Causes serious eye damage.
— H319: Causes serious eye irritation.
— H360: May damage fertility or the unborn child.
— H361: Suspected of damaging fertility or the unborn child.
— H372: Causes damage to organs through prolonged or repeated exposure.
— H400: Very toxic to aquatic life.
— H410: Very toxic to aquatic life with long lasting effects.
— H411: Toxic to aquatic life with long lasting effects.

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

ECO-UV, EUV4-WH

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

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

E-mail:
Revised date: 17-Apr-2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

Flammable liquids	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Sensitisation — Skin	Category 1B
Reproductive toxicity	Category 1B
Hazardous to the aquatic environment — Acute Hazard	Category 1
Hazardous to the aquatic environment — Chronic Hazard	Category 1

2.2. GHS label elements, including precautionary statements

Pictgram(s)

Signal word Danger

Hazard Statement(s):
Combustible liquid.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.

May damage fertility or the unborn child.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

Prevention	Do not handle until all safety precautions have been read and understood.
	Avoid breathing dust/fume/gas/mist/vapours/spray.
	Avoid release to the environment.
	Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF ON SKIN: Wash with plenty of soap and water.
	IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

Potential Health Effects:

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

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU regis-tration No.	% By Weight	Classification EC No. 1272/2008
Titanium dioxide	13463-67-7	236-675-5	01-2119489379-17	10-20	Not classified as hazardou
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<5	Acute Tox. 4: H302 Skin Corr. 1C: H314 Eye Damage 1: H318 Skin Sens. 1B: H317 Repr. 1B: H360
Benzyl acrylate	2495-35-4	219-673-9	01-2120772339-44	40-50	Skin Irrit. 2: H315 Skin Sens. 1B: H317 Aquatic Acute 1: H400
Dipropyleneglycol diacrylate	57472-68-1	260-754-3	N/A for the moment	20-30	Skin Irrit. 2: H315 Eye Damage 1: H318
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	423-340-5	N/A for the moment	1-10	Skin Sens. 1: H317 Aquatic Chronic 4: H413
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	75980-60-8	278-355-8	01-2119972295-29	1-10	Repr. 2: H361
Other polymerization initiator	C.B.I.	C.B.I.	N/A for the moment	0-5	Not classified as hazardou
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou

† 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 several minutes. Hold eyelids open during flushing. Call a physician.

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

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

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

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

Eyes: Causes severe eye injury which may persist for several days.

Skin:	Contact with skin may cause irritation, swelling or redness, allergic sensitization.
Inhalation:	Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.
Ingestion:	May cause injury of mouth, throat, and stomach.

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

no information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products: Carbon monoxide, carbon dioxide, oxides of nitrogen, toxic gases/vapors.
Flash Point: ≧ 70deg.C

5.3. Advice for firefighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

Tetrahydrofurfuryl acrylate:

[Long term exposure] 1.73 mg/m³

[Short term exposure] no hazard identified

Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide:

[Long term exposure] 21 mg/m³

[Short term exposure] hazard unknown (no further information necessary)

Dipropyleneglycol diacrylate:

[Long term exposure] 24.48 mg/m³

[Short term exposure] no data available

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

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

Hand protection:

Employee must wear appropriate protective impervious gloves to prevent contact with the ink. Recommended Chemical Protective Gloves are ethylene vinyl alcohol (EVA) Gloves and Laminate gloves. Laminate gloves are made by cutting and then heat-sealing patterns of various hand sizes from laminated sheets of EVA sealed between layers of polyethylene.

Eye protection:

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

Skin protection:

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

Hygiene measures:

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

Environmental exposure control:

Avoid release to the environment.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	White Liquid
Odour:	Characteristic odour
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	No data available
Solubility(ies):	Slightly soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Volatile organic compounds (VOC) content:	0.072 grams/liter

9.2 Other information

No information.

10. Stability and reactivity

10.1 Reactivity:

High temperatures and UV light may cause rapid polymerization.

10.2 Chemical stability:

Stable under normal temperature.

10.3 Possibility of hazardous reactions:

Not expected.

10.4 Conditions to avoid:

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

10.5 Incompatible materials:

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

10.6 Hazardous decomposition products:

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

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

Tetrahydrofurfuryl acrylate (of one component of this product)

LD50 (Oral)	928.0

Serious eye damage/eye irritation:

Causes serious eye damage.

- Tetrahydrofurfuryl acrylate
- Dipropyleneglycol diacrylate

Skin corrosion/irritation:

Causes severe skin burns and eye damage.

- Tetrahydrofurfuryl acrylate

Causes skin irritation.

- Benzyl acrylate
- Dipropyleneglycol diacrylate

Respiratory or skin sensitisation:

May cause an allergic skin reaction.

- Benzyl acrylate
- Tetrahydrofurfuryl acrylate
- Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide

• Dipropyleneglycol diacrylate

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

May damage fertility or the unborn child.

• Tetrahydrofurfuryl acrylate

Suspected of damaging fertility or the unborn child.

• Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Carcinogenicity:

This product contains Titanium dioxide. IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

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

no data available.

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

no data available.

Aspiration hazard:

no data available.

12. Ecological information

12.1. Toxicity:

Very toxic to aquatic life.

• Benzyl acrylate

Very toxic to aquatic life with long lasting effects.

• Benzyl acrylate

Toxic to aquatic life with long lasting effects.

• Tetrahydrofurfuryl acrylate

May cause long lasting harmful effects to aquatic life.

• Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide

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 : 3082

14.2 UN proper shipping name

ADR/ADG/DOT, IMDG, or IATA : Environmentall hazardous substance, liquid, n.o.s. (Benzyl acrylate)

14.3 Transport hazard class(es)

ADR/ADG/DOT, IMDG, or IATA : 9

14.4 Packing group

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

14.5 Environmental hazards

ADR/ADG/DOT, IMDG, or IATA : Environmentally hazardous substance, liquid, n.o.s. (Benzyl acrylate)

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)1907/2006

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

Australia Information:

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

International Information:

This product contains Titanium dioxide. IARC evaluated printing ink as a Group 3 (Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

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

— H302: Harmful if swallowed.
— H314: Causes severe skin burns and eye damage.
— H315: Causes skin irritation.
— H317: May cause an allergic skin reaction.
— H318: Causes serious eye damage.
— H360: May damage fertility or the unborn child.
— H361: Suspected of damaging fertility or the unborn child.
— H400: Very toxic to aquatic life.
— H410: Very toxic to aquatic life with long lasting effects.
— H411: Toxic to aquatic life with long lasting effects.
— H413: May cause long lasting harmful effects to aquatic life.

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

ECO-UV, EUV4-GL
ECO-UV, EUV4-5GL

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

Inkjet Printing

1.3. Details of the supplier of the safety data sheet

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

E-mail:
Revised date: 17-Apr-2019

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture

This product is classified as hazardous according to GHS.

Flammable liquids	Category 4
Acute toxicity (oral)	Category 5
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 1
Sensitisation — Skin	Category 1B
Reproductive toxicity	Category 1B
Specific target organ toxicity — Repeated exposure	Category 2
Hazardous to the aquatic environment — Acute Hazard	Category 1
Hazardous to the aquatic environment — Chronic Hazard	Category 1

2.2. GHS label elements, including precautionary statements

Pictgram(s)

Signal word Danger

Hazard Statement(s): Combustible liquid.

May be harmful if swallowed.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

Precautionary Statement(s):

Prevention	Do not handle until all safety precautions have been read and understood.
	Do not breathe dust/fume/gas/mist/vapours/spray.
	Avoid release to the environment.
	Wear protective gloves/protective clothing/eye protection/face protection.
Response	IF ON SKIN: Wash with plenty of soap and water.
	IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

Potential Health Effects:

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

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU regis-tration No.	% By Weight	Classification EC No. 1272/2008
Acrylated amine synergist	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardou
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<5	Acute Tox. 4: H302 Skin Corr. 1C: H314 Eye Damage 1: H318 Skin Sens. 1B: H317 Repr. 1B: H360
Benzyl acrylate	2495-35-4	219-673-9	01-2120772339-44	50-60	Skin Irrit. 2: H315 Skin Sens. 1B: H317 Aquatic Acute 1: H400
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	01-2119977109-27	<10	Acute Tox. 4: H302 Acute Tox. 4: H312 Eye Irrit. 2A: H319 Skin Sens. 1B: H317
Trimethylolpropane triacrylate	15625-89-5	239-701-3	01-2119489896-11	20-30	Skin Irrit. 2: H315 Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	75980-60-8	278-355-8	01-2119972295-29	1-10	Repr. 2: H361
Hexamethylene diacrylate	13048-33-4	235-921-9	01-2119484737-22	0-1	Skin Irrit. 2: H315 Skin Sens. 1: H317
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha.''-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-	52408-84-1	500-114-5	N/A for the moment	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardou

† 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 several minutes. Hold eyelids open during flushing. Call a physician.

Skin: In case of contact, immediately flush with plenty of water while removing contaminated clothing and shoes. Wash contaminated clothing before reuse. If swelling or redness occurs, call a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give

oxygen. Call a physician.

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

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

Eyes: Causes severe eye injury which may persist for several days.

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

Inhalation: Exposure to vapors (mist) may be harmful to the unborn child and at the risk of impaired fertility and irritate nose, throat/respiratory system.

Ingestion: May cause injury of mouth, throat, and stomach.

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

no information

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

Dry chemical, Foam, Carbon dioxide, Dry sand, Loaded stream in spray.

Unsuitable extinguishing media:

Water, High-pressure water jet.

5.2. Special hazards arising from the substance or mixture

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

Flash Point: ≧ 70deg.C

5.3. Advice for firefighters

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

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.2. Environmental precautions

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

6.3. Methods and material for containment and cleaning up

Sweep up material and dispose as waste following local regulations.

6.4. Reference to other sections

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

7. Handling and storage

7.1 Precautions for safe handling

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

7.2 Conditions for safe storage, including any incompatibilities

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

7.3 Specific end use(s): Inkjet Printing

8. Exposure controls/ personal protection

8.1. Control parameters

Occupational Exposure Limits:

Derived No-Effect Level (DNEL)

Hexamethylene diacrylate:

[Long term exposure] 24.5 mg/m³

[Short term exposure] no hazard identified

Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

1-vinylhexahydro-2H-azepin-2-one:

[Long term exposure] 4.9 mg/m³

[Short term exposure] no hazard identified

Tetrahydrofurfuryl acrylate:

[Long term exposure] 1.73 mg/m³

[Short term exposure] no hazard identified

Trimethylolpropane triacrylate:

[Long term exposure] 3.5 mg/m³

[Short term exposure] no hazard identified

Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.:

[Long term exposure] 3.7 mg/m³

[Short term exposure] no hazard identified

8.2. Exposure controls

Appropriate engineering controls

Provide general and/or local exhaust ventilation.

Respiratory protection:

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

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

Hand protection:

Employee must wear appropriate protective impervious gloves to prevent contact with the ink. Recommended Chemical Protective Gloves are ethylene vinyl alcohol (EVA) Gloves and Laminate gloves. Laminate gloves are made by cutting and then heat-sealing patterns of various hand sizes from laminated sheets of EVA sealed between layers of polyethylene.

Eye protection:

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

Skin protection:

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

Hygiene measures:

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

Environmental exposure control:

Avoid release to the environment.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	Clear Liquid
Odour:	Characteristic odour
Odour threshold:	No data available
pH:	Not applicable
Melting point/freezing point:	No data available
Initial boiling point and boiling range:	No data available
Flash point:	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	No data available
Solubility(ies):	Slightly soluble

Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosive properties:	No data available
Oxidizing properties:	No data available
Volatile organic compounds (VOC) content:	0.061 grams/liter

9.2 Other information

No information.

10. Stability and reactivity

10.1 Reactivity:

High temperatures and UV light may cause rapid polymerization.

10.2 Chemical stability:

Stable under normal temperature.

10.3 Possibility of hazardous reactions:

Not expected.

10.4 Conditions to avoid:

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

10.5 Incompatible materials:

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

10.6 Hazardous decomposition products:

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

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity:

1-vinylhexahydro-2H-azepin-2-one (of one component of this product)

LD50 (Oral)	1114.0
LD50 (Dermal)	1700.0

Tetrahydrofurfuryl acrylate (of one component of this product)

LD50 (Oral)	928.0

Serious eye damage/eye irritation:

Causes serious eye damage.

• Tetrahydrofurfuryl acrylate

Causes serious eye irritation.

• Hexamethylene diacrylate
• 1-vinylhexahydro-2H-azepin-2-one
• Trimethylolpropane triacrylate
• Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.

Skin corrosion/irritation:

Causes severe skin burns and eye damage.

• Tetrahydrofurfuryl acrylate

Causes skin irritation.

• Hexamethylene diacrylate
• Benzyl acrylate
• Trimethylolpropane triacrylate

Respiratory or skin sensitisation:

May cause an allergic skin reaction.

• Hexamethylene diacrylate
• Benzyl acrylate
• 1-vinylhexahydro-2H-azepin-2-one
• Tetrahydrofurfuryl acrylate
• Trimethylolpropane triacrylate
• Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3- propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.

Germ cell mutagenicity:

no data available.

Reproductive toxicity:

May damage fertility or the unborn child.

• Tetrahydrofurfuryl acrylate

Suspected of damaging fertility or the unborn child.

• Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Carcinogenicity:

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

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

no data available.

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

Causes damage to organs through prolonged or repeated exposure.

• 1-vinylhexahydro-2H-azepin-2-one

Aspiration hazard:
no data available.

12. Ecological information

12.1. Toxicity:

Very toxic to aquatic life.
- Benzyl acrylate

Very toxic to aquatic life with long lasting effects.
- Benzyl acrylate

Toxic to aquatic life with long lasting effects.
- Tetrahydrofurfuryl acrylate

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 : 3082

14.2 UN proper shipping name
ADR/ADG/DOT, IMDG, or IATA : Environmentall hazardous substance, liquid, n.o.s. (Benzyl acrylate)

14.3 Transport hazard class(es)

ADR/ADG/DOT, IMDG, or IATA : 9

14.4 Packing group

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

14.5 Environmental hazards

ADR/ADG/DOT, IMDG, or IATA : Environmentally hazardous substance, liquid, n.o.s.
(Benzyl acrylate)

14.6. Special precautions for user

ADR/ADG/DOT, IMDG, or IATA : Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code: Not regulated

15. Regulatory information

EU Information: Chemical Safety Assessment according to (EC)1907/2006

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

Australia Information:

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

International Information:

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

16. Other information

List of relevant H-Statements:

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

— H302: Harmful if swallowed.
— H312: Harmful in contact with skin.
— H314: Causes severe skin burns and eye damage.
— H315: Causes skin irritation.
— H317: May cause an allergic skin reaction.
— H318: Causes serious eye damage.
— H319: Causes serious eye irritation.
— H360: May damage fertility or the unborn child.
— H361: Suspected of damaging fertility or the unborn child.
— H372: Causes damage to organs through prolonged or repeated exposure.
— H400: Very toxic to aquatic life.
— H410: Very toxic to aquatic life with long lasting effects.
— H411: Toxic to aquatic life with long lasting effects.

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.