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 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
E-mail Address:	
Revised date:	30 August, 2017

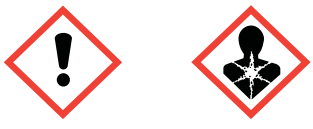
1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.

Flammable liquids	Category 4
Skin corrosion/irritation	Category 2
Eye damage/irritation	Category 2A
Sensitization - skin	Category 1
Toxic to reproduction	Category 2
Specific target organ toxicity (Single exposure)	Category 3 (Respiratory tract irritation)
Specific target organ toxicity (Repeated exposure)	Category 2
Hazardous to the aquatic environment - short-term	Category 3

2.2. GHS label elements, including precautionary statements
Pictogram



Signal word(s) Warning

Hazard statement(s)

Combustible liquid.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.
Harmful to aquatic life.

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)

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorants	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Acrylated amine synergist	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	219-673-9	N/A for the moment	50-60	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317 STOT SE 3: H335
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	N/A for the moment	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	239-701-3	N/A for the moment	10-20	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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	N/A for the moment	1-10	Repr. 2: H361f
Copolymer with pigment affinic groups(1)	-	-	N/A for the moment	<1	Aquatic Acute 1: H400
Hexamethylene diacrylate	13048-33-4	235-921-9	N/A for the moment	< 1	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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 hazardous
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous

(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

*C.B.I.: Confidential Business Information

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

4. First aid measures

4.1. Description of first aid measures

Eyes: In case of contact, immediately flush eyes with plenty of water for 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:

EU: DNEL

components	Long term exposure	Short term exposure
Trimethylolpropane triacrylate	16.2mg/m^3	-
Hexamethylene diacrylate	24.48mg/m^3	-
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.	16.22 mg/m^3	-
1-Vinylazepan-2-one	4.9mg/m^3	-
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	21mg/m^3	-
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	3.5mg/m^3	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2 Exposure controls:

Occupational Exposure controls Provide general and/or local exhaust ventilation.

Appropriate engineering controls:

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.
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.
Respiratory protection:	In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection 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.
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 odor
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 (deg.C)	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	Approx 1.0
Solubility(ies):	Water solubility: 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 gram/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:	No data available
Serious eye damage/eye irritatio	No data available Causes serious eye irritation. (Acrylic esters)
Skin corrosion/irritation:	No data available Causes skin irritation.(Acrylic esters)
Respiratory or skin sensitisation	No data available May cause an allergic skin reaction.(Acrylic esters)
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available 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)

STOT-single exposure:	No data available May cause respiratory irritation. (Benzyl acrylate)
STOT-repeated exposure:	No data available Cause 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:	Harmful to aquatic life.
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:

This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

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

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

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

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

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

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

15. Regulatory information

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

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

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

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H361f Suspected of damaging fertility.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
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
ECO-UV, EUV4-5MG

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

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
E-mail Address:	
Revised date:	30 August, 2017

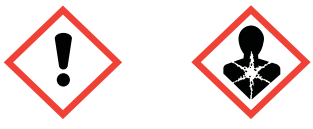
1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.

Flammable liquids	Category 4
Skin corrosion/irritation	Category 2
Eye damage/irritation	Category 2A
Sensitization - skin	Category 1
Toxic to reproduction	Category 2
Specific target organ toxicity (Single exposure)	Category 3 (Respiratory tract irritation)
Specific target organ toxicity (Repeated exposure)	Category 2
Hazardous to the aquatic environment - short-term	Category 3

2.2. GHS label elements, including precautionary statements
Pictogram



Signal word(s) Warning

Hazard statement(s)

Combustible liquid.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.
Harmful to aquatic life.

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)

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Colorants	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Acrylated amine synergist	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	219-673-9	N/A for the moment	50-60	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317 STOT SE 3: H335
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	N/A for the moment	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	239-701-3	N/A for the moment	10-20	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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	N/A for the moment	1-10	Repr. 2: H361f
Copolymer with pigment affinic groups(1)	-	-	N/A for the moment	<1	Aquatic Acute 1: H400
Hexamethylene diacrylate	13048-33-4	235-921-9	N/A for the moment	< 1	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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 hazardous
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous

(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

*C.B.I.: Confidential Business Information

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

4. First aid measures

4.1. Description of first aid measures

Eyes: In case of contact, immediately flush eyes with plenty of water for 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 produ 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. 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:
EU: DNEL

components	Long term exposure	Short term exposure
Trimethylolpropane triacrylate	16.2mg/m^3	-
Hexamethylene diacrylate	24.48mg/m^3	-
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.	16.22 mg/m³	-
1-Vinylazepan-2-one	4.9mg/m^3	-
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	21mg/m^3	-
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	3.5mg/m^3	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2 Exposure controls:
Occupational Exposure controls Provide general and/or local exhaust ventilation.

Appropriate engineering controls:

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.

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.

Respiratory protection:	In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection 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.
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 odor
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 (deg.C)	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	Approx 1.0
Solubility(ies):	Water solubility: 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 gram/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:	No data available
Serious eye damage/eye irritatio	No data available
	Causes serious eye irritation. (Acrylic esters)
Skin corrosion/irritation:	No data available
	Causes skin irritation.(Acrylic esters)
Respiratory or skin sensitisation	No data available
	May cause an allergic skin reaction.(Acrylic esters)
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available
	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)

STOT-single exposure:	No data available
	May cause respiratory irritation. (Benzyl acrylate)
STOT-repeated exposure:	No data available
	Cause 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:	Harmful to aquatic life.
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:

This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

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

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

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

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

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

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

15. Regulatory information

EU information:

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

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H361f Suspected of damaging fertility.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
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 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
E-mail Address:	
Revised date:	30 August, 2017

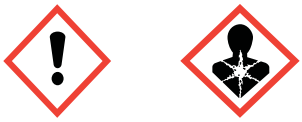
1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.

Flammable liquids	Category 4
Skin corrosion/irritation	Category 2
Eye damage/irritation	Category 2A
Sensitization - skin	Category 1
Toxic to reproduction	Category 2
Specific target organ toxicity (Single exposure)	Category 3 (Respiratory tract irritation)
Specific target organ toxicity (Repeated exposure)	Category 2

2.2. GHS label elements, including precautionary statements
Pictogram



Signal word(s) Warning

Hazard statement(s)

Combustible liquid.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.

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.
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: The product contains Nickel compounds.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Pigment Yellow 150	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Acrylated amine synergist	C.B.I.	C.B.I.	N/A for the moment	1-10	Not classified as hazardous
Synthetic resins	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	219-673-9	N/A for the moment	50-60	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317 STOT SE 3: H335
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	N/A for the moment	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	239-701-3	N/A for the moment	10-20	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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	N/A for the moment	1-10	Repr. 2: H361f
Hexamethylene diacrylate	13048-33-4	235-921-9	N/A for the moment	< 1	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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	1-10	Not classified as hazardous
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous

*C.B.I.: Confidential Business Information

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

4. First aid measures

4.1. Description of first aid measures

Eyes: In case of contact, immediately flush eyes with plenty of water for 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 produ 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. 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

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:

EU: DNEL

components	Long term exposure	Short term exposure
Trimethylolpropane triacrylate	16.2mg/m^3	-
Hexamethylene diacrylate	24.48mg/m^3	-
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.	16.22 mg/m³	-
1-Vinylazepan-2-one	4.9mg/m^3	-
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	21mg/m^3	-
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	3.5mg/m^3	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2 Exposure controls:

Occupational Exposure controls Provide general and/or local exhaust ventilation.

Appropriate engineering controls:

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.
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.
Respiratory protection:	In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection 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.
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 odor
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 (deg.C)	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	Approx 1.0
Solubility(ies):	Water solubility: 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 gram/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: No data available

Serious eye damage/eye irritatio: No data available
Causes serious eye irritation. (Acrylic esters)

Skin corrosion/irritation: No data available
Causes skin irritation.(Acrylic esters)

Respiratory or skin sensitisation: No data available
May cause an allergic skin reaction.(Acrylic esters)

Germ cell mutagenicity: No data available

Reproductive toxicity: No data available
Suspected of damaging fertility or the unborn child.(Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide)

Carcinogenicity:
The product contains Nickel compounds.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

STOT-single exposure: No data available
May cause respiratory irritation. (Benzyl acrylate)

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

13. Disposal considerations

13.1. Waste treatment methods:
This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

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

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

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

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

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

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

15. Regulatory information

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

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

International Information:
The product contains Nickel compounds.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H361f Suspected of damaging fertility.
H372 Causes damage to organs through prolonged or repeated exposure.
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
ECO-UV, EUV4-5BK

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

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
E-mail Address:	
Revised date:	30 August, 2017

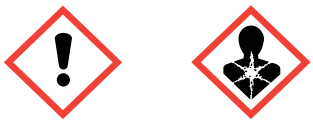
1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.

Flammable liquids	Category 4
Skin corrosion/irritation	Category 2
Eye damage/irritation	Category 2A
Sensitization - skin	Category 1
Toxic to reproduction	Category 2
Specific target organ toxicity (Single exposure)	Category 3 (Respiratory tract irritation)
Specific target organ toxicity (Repeated exposure)	Category 2
Hazardous to the aquatic environment - short-term	Category 3

2.2. GHS label elements, including precautionary statements
Pictogram



Signal word(s) Warning

Hazard statement(s)

Combustible liquid.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.
Harmful to aquatic life.

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: The product contains Carbon black.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Carbon Balck	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	219-673-9	N/A for the moment	50-60	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317 STOT SE 3: H335
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	N/A for the moment	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	239-701-3	N/A for the moment	5-10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	278-355-8	N/A for the moment	5-10	Repr. 2: H361f
Copolymer with pigment affinic groups(1)	-	-	N/A for the moment	<1	Aquatic Acute 1: H400
Hexamethylene diacrylate	13048-33-4	235-921-9	N/A for the moment	< 1	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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	<1	Eye Irrit. 2: H319 Skin Sens. 1: H317
Other polymerization initiator	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous

(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

*C.B.I.: Confidential Business Information

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

4. First aid measures

4.1. Description of first aid measures

Eyes: In case of contact, immediately flush eyes with plenty of water for 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 produ 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. 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

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:

EU: DNEL

components	Long term exposure	Short term exposure
Trimethylolpropane triacrylate	16.2mg/m^3	-
Hexamethylene diacrylate	24.48mg/m^3	-
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.	16.22 mg/m^3	-
1-Vinylazepan-2-one	4.9mg/m^3	-
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	3.5mg/m^3	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

Australia: OELs

components	TWA
Carbon black	3mg/m^3

8.2 Exposure controls:

Occupational Exposure controls Provide general and/or local exhaust ventilation.

Appropriate engineering controls:

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.
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.
Respiratory protection:	In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection 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.
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 odor
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 (deg.C)	$\geq$ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	Approx 1.0
Solubility(ies):	Water solubility: 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 gram/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:	No data available
Serious eye damage/eye irritatio	No data available Causes serious eye irritation. (Acrylic esters)
Skin corrosion/irritation:	No data available Causes skin irritation.(Acrylic esters)
Respiratory or skin sensitisation	No data available May cause an allergic skin reaction.(Acrylic esters)
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available Suspected of damaging fertility or the unborn child.(Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide)

Carcinogenicity:

The product contains Carbon black.

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

STOT-single exposure:	No data available May cause respiratory irritation. (Benzyl acrylate)
STOT-repeated exposure:	No data available Cause 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:	Harmful to aquatic life.
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:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

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

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

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

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

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

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

15. Regulatory information

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

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

International Information:
The product contains Carbon black.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H361f Suspected of damaging fertility.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
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-WH

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

1.3. Details of the supplier of the safety data sheet

Manufacture's name:	Roland DG Corporation
Address:	1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi, Shizuoka-ken, 431-2103 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
E-mail Address:	
Revised date:	30 August, 2017

1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.

Flammable liquids	Category 4
Skin corrosion/irritation	Category 2
Eye damage/irritation	Category 1
Sensitization - skin	Category 1
Toxic to reproduction	Category 2
Specific target organ toxicity (Single exposure)	Category 3 (Respiratory tract irritation)

2.2. GHS label elements, including precautionary statements
Pictogram

Signal word(s) Danger

Hazard statement(s)

Combustible liquid.
Causes skin irritation.
Causes serious eye damage.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child
May cause respiratory irritation.

Precautionary statement(s)

Prevention: Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/fume/gas/mist/vapours/spray.
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: The product contains Titanium dioxide.
IARC evaluated printing ink as a Group3(Not classifiable as to carcinogenicity to humans).

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration No.	% By Weight	Classification EC No. 1272/2008
Titanium Dioxide	C.B.I.	C.B.I.	N/A for the moment	10-20	Not classified as hazardous
Synthetic resins	C.B.I.	C.B.I.	N/A for the moment	1-5	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	219-673-9	N/A for the moment	40-50	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317 STOT SE 3: H335
Dipropyleneglycol diacrylate	57472-68-1	260-754-3	N/A for the moment	20-30	Skin Irrit. 2: H315 Eye Dam. 1: H318 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	N/A for the moment	1-10	Repr. 2: H361f
Other polymerization initiator	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous
Inhibitors	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous

*C.B.I.: Confidential Business Information

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

4. First aid measures

4.1. Description of first aid measures

Eyes: In case of contact, immediately flush eyes with plenty of water for 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 produ 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. 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

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:

EU: DNEL

components	Long term exposure	Short term exposure
1-Vinylazepan-2-one	4.9mg/m^3	-
Phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	21mg/m^3	-
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	3.5mg/m^3	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

Australia: OELs

components	TWA
Titanium dioxide	10mg/m^3

8.2 Exposure controls:

Occupational Exposure controls Provide general and/or local exhaust ventilation.

Appropriate engineering controls:

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.

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.

Respiratory protection:	In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection 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.
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 odor
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 (deg.C)	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	Approx 1.0
Solubility(ies):	Water solubility: 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 gram/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:	No data available
Serious eye damage/eye irritatio	No data available
	Causes serious eye damage. (Dipropyleneglycol diacrylate)
Skin corrosion/irritation:	No data available
	Causes skin irritation.(Acrylic esters)
Respiratory or skin sensitisation	No data available
	May cause an allergic skin reaction.(Acrylic esters)
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available
	Suspected of damaging fertility or the unborn child.(Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide)

Carcinogenicity:

The product contains Titanium dioxide.

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

STOT-single exposure:	No data available
	May cause respiratory irritation. (Benzyl acrylate)
STOT-repeated exposure:	No data available
Aspiration hazard:	No data available

12. Ecological information

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

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.

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

14. Transport information

14.1. UN Class/UN Number:	
ADR/ADG/DOT, IMDG, or IATA :	Not regulated
14.2. UN proper shipping name:	
ADR/ADG/DOT, IMDG, or IATA :	Not regulated
14.3. Transport hazard class(es):	
ADR/ADG/DOT, IMDG, or IATA :	Not regulated
14.4. Packing group:	
ADR/ADG/DOT, IMDG, or IATA :	Not regulated
14.5. Environmental hazards:	
ADR/ADG/DOT, IMDG, or IATA :	Not regulated
14.6. Special precautions for user:	Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:

Not regulated

15. Regulatory information

EU information:

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

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

The product contains Titanium dioxide.

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

16. Other information

List of relevant H-Statements:

H315 Causes skin irritation.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H361f Suspected of damaging fertility.
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 JAPAN
Phone:	+ 81-53-484-1224
Fax:	+ 81-53-484-1226
E-mail Address:	
Revised date:	30 August, 2017

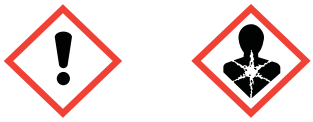
1.4. Emergency telephone:

2. Hazard identification

2.1. Classification of the substance or mixture
This product is classified as dangerous according to GHS.

Flammable liquids	Category 4
Skin corrosion/irritation	Category 2
Eye damage/irritation	Category 2A
Sensitization - skin	Category 1
Toxic to reproduction	Category 2
Specific target organ toxicity (Single exposure)	Category 3 (Respiratory tract irritation)
Specific target organ toxicity (Repeated exposure)	Category 2

2.2. GHS label elements, including precautionary statements
Pictogram



Signal word(s) Warning

Hazard statement(s)

Combustible liquid.
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child
May cause respiratory irritation.
May cause damage to organs through prolonged or repeated exposure.

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.
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)

3. Composition/information on ingredients

Chemical nature: mixture

Composition	CAS No.	EC No.	EU registration 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 hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	219-268-7	N/A for the moment	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	219-673-9	N/A for the moment	40-50	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317 STOT SE 3: H335
1-vinylhexahydro-2H-azepin-2-one	2235-00-9	218-787-6	N/A for the moment	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	239-701-3	N/A for the moment	20-30	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	278-355-8	N/A for the moment	1-10	Repr. 2: H361f
Hexamethylene diacrylate	13048-33-4	235-921-9	N/A for the moment	< 1	Skin Irrit. 2: H315 Eye Irrit. 2: H319 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 hazardous
Others	C.B.I.	C.B.I.	N/A for the moment	0-1	Not classified as hazardous

*C.B.I.: Confidential Business Information

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

4. First aid measures

4.1. Description of first aid measures

Eyes: In case of contact, immediately flush eyes with plenty of water for 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 produ 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. 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

Soak up with sand or earth. Sweep up material and dispose as waste following local regulations. Scrub contaminated area with detergent and water.

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:

EU: DNEL

components	Long term exposure	Short term exposure
Trimethylolpropane triacrylate	16.2mg/m^3	-
Hexamethylene diacrylate	24.48mg/m^3	-
Poly[oxy(methyl-1,2-ethanediyl)], .alpha., .alpha.', .alpha."-1,2,3-propanetriyltris[.omega.-[(1-oxo-2-propenyl)oxy]]-.	16.22 mg/m^3	-
1-Vinylazepan-2-one	4.9mg/m^3	-
Diphenyl(2,4,6-trimethylbenzoyl) phosphine oxide	3.5mg/m^3	-

REACH Toxicological Information (Workers - Hazard via inhalation route)

8.2 Exposure controls:

Occupational Exposure controls Provide general and/or local exhaust ventilation.

Appropriate engineering controls:

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.

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.

Respiratory protection:	In case ventilation is insufficient, employee must use NIOSH approved air purifying respiratory protection 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.
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 odor
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 (deg.C)	≧ 70deg.C
Evaporation rate:	No data available
Flammability (solid, gas):	No data available
Upper/lower flammability or explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	>1
Relative density:	Approx 1.0
Solubility(ies):	Water solubility: 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 gram/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:	No data available
Serious eye damage/eye irritatio	No data available
	Causes serious eye irritation. (Acrylic esters)
Skin corrosion/irritation:	No data available
	Causes skin irritation.(Acrylic esters)
Respiratory or skin sensitisation	No data available
	May cause an allergic skin reaction.(Acrylic esters)
Germ cell mutagenicity:	No data available
Reproductive toxicity:	No data available
	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)

STOT-single exposure:	No data available
	May cause respiratory irritation. (Benzyl acrylate)
STOT-repeated exposure:	No data available
	Cause 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:	No data available
12.2. Persistence and degradability:	No data available
12.3. Bioaccumulative potential:	No data available
12.4. Mobility in soil:	No data available
12.5. Results of PBT and vPvB assessment:	Has not carried out PBT and vPvB assessment.
12.6. Other adverse effects:	No data available

13. Disposal considerations

13.1. Waste treatment methods:

This product is considered as a hazardous waste according to Directive 2008/98/EC.
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial and Local regulations. Do not flush to surface water or sanitary sewer system.

14. Transport information

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

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

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

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

14.5. Environmental hazards:
ADR/ADG/DOT, IMDG, or IATA : Not regulated

14.6. Special precautions for user: Transport and storage of the product in accordance with general precautions and instructions mentioned in this SDS.

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

15. Regulatory information

EU information:

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

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

Australia Information:

Hazardous statement: Classified as hazardous according to NOHSC criteria.

International Information:

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

16. Other information

List of relevant H-Statements:

H302 Harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H361f Suspected of damaging fertility.
H372 Causes damage to organs through prolonged or repeated exposure.

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.