
Safety Data Sheet

1. Product and Company Identification

Product name:

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

Manufacture:

Roland DG Corporation
1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN

Phone: + 81-53-484-1224

Fax: + 81-53-484-1226

Importer/Supplier:

Roland DGA Corporation
15363 Barranca Parkway Irvine, CA 92618-2201
U.S.A.

Phone: 949-727-2100

Fax: 949 727 2112

Emergency telephone: 949-727-2100

Use of the product:

Inkjet Printing

Date of issue:

30 August, 2017

2. Hazard Identification

2.1 Emergency Overview:

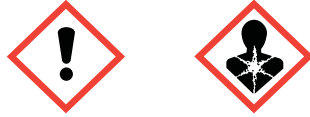
Appearance and odor: Cyan liquid and characteristic odor

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

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.

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 65%

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure:

Eye, skin, inhalation or oral.

Eyes:

Causes severe eye injury which may persist for several days.

Skin:

Contact with skin may cause irritation, swelling or redness, allergy and/or 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)

See section 11 for more information.

2.4. Potential environmental effects

See section 12 for Ecological information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Tetrahydrofurfuryl acrylate	2399-48-6	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	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	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	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	1-10	Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	1-10	Repr. 2: H361f
Hexamethylene diacrylate	13048-33-4	<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	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317

Additional information: Chemical name and exact concentrations are being withheld as trade secrets.

4. First Aid Measures

4.1. First aid procedures

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

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: $\geq 70^{\circ}\text{C}$

5.2. Extinguishing media

Suitable extinguishing media:

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

Unsuitable extinguishing media:

Water, High-pressure water jet

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions 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

General:

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

6.1. Personal precautions

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

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment

Dike spilled product.

6.4. Methods for Clean-up

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

6.5. Other information

No information

6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

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.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

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. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye protection: Employee must wear splash-proof or dust safety goggles and a faceshield to prevent contact with this product. The employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

Hand protection: Employee must wear appropriate protective impervious gloves to prevent contact with this substance.
 Recommended Chemical-Protective Gloves are polyvinyl alcohol (PVA) Gloves and Laminate gloves. Laminate gloves are made by cutting and then heat-sealing patterns of various hand sizes from laminated sheets of PVA sealed between layers of polyethylene.

Skin protection: Employee must wear appropriate protective impervious clothing and equipment to prevent repeated or prolonged skin contact with this substance.

- 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.
- General 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.

9. Physical and Chemical Properties

Appearance:	Cyan Liquid
Odor:	Characteristic odor
pH:	Not applicable
Boiling point (deg.C)	No data available
Flash point (deg.C)	≥ 70deg.C
Ignition temperature(deg.C)	No data available
Flammability limits(vol-%)	No data available
Specific Gravity(H ₂ O=1) (g/cm ³ , 20deg.C)	Approx 1.0
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Solubility:	No data available
Solubility in water (g/l, 20deg.C)	Insoluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Melting Point :	No data available
Evaporation Rate(Butyl Acetate=1)	No data available
Vapor Density(AIR=1)	>1
Volatile organic compounds (VOC) content:	0.061 gram/liter

10. Stability and Reactivity

- 10.1. Reactivity: High temperatures and UV light may cause rapid polymerization.
- 10.2. Chemical stability: Unstable. Polymerize under heat and/or light.
- 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

Acute toxicity:	No data available
Serious eye damage/eye irritation:	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

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

US information:

Toxic Substances Control Act (TSCA):

All components of this product are listed on the TSCA Inventory.
This product contains an ingredient that is regulated under the TSCA Significant New Use Rule (SNUR) prescribed 40 CFR 721.9664.
This product is subject to TSCA export notification requirements prescribed 40 CFR 707.60.

SARA Title III:

Section 313: Not regulated

California; Proposition 65: Not regulated

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.

16. Other Information

NFPA 704: Hazard Rating System

Health - 2 , Flammable - 2 , Reactivity - 1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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. Product and Company Identification

Product name:

ECO-UV, EUV4-MG
ECO-UV, EUV4-5MG

Manufacture:

Roland DG Corporation
1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN

Phone: + 81-53-484-1224

Fax: + 81-53-484-1226

Importer/Supplier:

Roland DGA Corporation
15363 Barranca Parkway Irvine, CA 92618-2201
U.S.A.

Phone: 949-727-2100

Fax: 949 727 2112

Emergency telephone: 949-727-2100

Use of the product:

Inkjet Printing

Date of issue:

30 August, 2017

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor: Magenta liquid and characteristic odor

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

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.

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 67%

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure:

Eye, skin, inhalation or oral.

Eyes:

Causes severe eye injury which may persist for several days.

Skin:

Contact with skin may cause irritation, swelling or redness, allergy and/or 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)

See section 11 for more information.

2.4. Potential environmental effects

See section 12 for Ecological information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Tetrahydrofurfuryl acrylate	2399-48-6	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	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	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	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	1-10	Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	1-10	Repr. 2: H361f
Hexamethylene diacrylate	13048-33-4	<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	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317

Additional information: Chemical name and exact concentrations are being withheld as trade secrets.

4. First Aid Measures

4.1. First aid procedures

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

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: $\geq 70^{\circ}\text{C}$

5.2. Extinguishing media

Suitable extinguishing media:

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

Unsuitable extinguishing media:

Water, High-pressure water jet

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions 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

General:

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

6.1. Personal precautions

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

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment

Dike spilled product.

6.4. Methods for Clean-up

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

6.5. Other information

No information

6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

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.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

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. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye protection:

Employee must wear splash-proof or dust safety goggles and a faceshield to prevent contact with this product. The employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

Hand protection:

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

Skin protection:

Employee must wear appropriate protective impervious clothing and equipment to prevent repeated or prolonged skin contact with this substance.

- 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.
- General 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.

9. Physical and Chemical Properties

Appearance:	Magenta Liquid
Odor:	Characteristic odor
pH:	Not applicable
Boiling point (deg.C)	No data available
Flash point (deg.C)	≥ 70deg.C
Ignition temperature(deg.C)	No data available
Flammability limits(vol-%)	No data available
Specific Gravity(H ₂ O=1) (g/cm ³ , 20deg.C)	Approx 1.0
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Solubility:	No data available
Solubility in water (g/l, 20deg.C)	Insoluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Melting Point :	No data available
Evaporation Rate(Butyl Acetate=1)	No data available
Vapor Density(AIR=1)	>1
Volatile organic compounds (VOC) content:	0.061 gram/liter

10. Stability and Reactivity

- 10.1. Reactivity: High temperatures and UV light may cause rapid polymerization.
- 10.2. Chemical stability: Unstable. Polymerize under heat and/or light.
- 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

Acute toxicity:	No data available
Serious eye damage/eye irritation:	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

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

US information:

Toxic Substances Control Act (TSCA):

All components of this product are listed on the TSCA Inventory.
This product contains an ingredient that is regulated under the TSCA Significant New Use Rule (SNUR) prescribed 40 CFR 721.9664.
This product is subject to TSCA export notification requirements prescribed 40 CFR 707.60.

SARA Title III:

Section 313: Not regulated

California; Proposition 65: Not regulated

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.

16. Other Information

NFPA 704: Hazard Rating System

Health - 2 , Flammable - 2 , Reactivity - 1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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. Product and Company Identification

Product name:

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

Manufacture:

Roland DG Corporation
1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN

Phone: + 81-53-484-1224

Fax: + 81-53-484-1226

Importer/Supplier:

Roland DGA Corporation
15363 Barranca Parkway Irvine, CA 92618-2201
U.S.A.

Phone: 949-727-2100

Fax: 949 727 2112

Emergency telephone: 949-727-2100

Use of the product:

Inkjet Printing

Date of issue:

30 August, 2017

2. Hazard Identification

2.1 Emergency Overview:

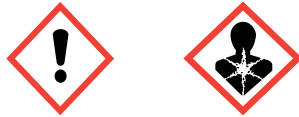
Appearance and odor: Yellow liquid and characteristic odor

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

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.

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 65%

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure:

Eye, skin, inhalation or oral.

Eyes:

Causes severe eye injury which may persist for several days.

Skin:

Contact with skin may cause irritation, swelling or redness, allergy and/or 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

See section 11 for more information.

2.4. Potential environmental effects

See section 12 for Ecological information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Pigment yellow 150	C.B.I.	1-5	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	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	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	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	1-10	Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	1-10	Repr. 2: H361f
Hexamethylene diacrylate	13048-33-4	<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	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317

*C.B.I.: Confidential Business Information

Additional information: Chemical name and exact concentrations are being withheld as trade secrets.

4. First Aid Measures

4.1. First aid procedures

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

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: $\geq 70^{\circ}\text{C}$

5.2. Extinguishing media

Suitable extinguishing media:

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

Unsuitable extinguishing media:

Water, High-pressure water jet

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions 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

General:

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

6.1. Personal precautions

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

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment

Dike spilled product.

6.4. Methods for Clean-up

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

6.5. Other information

No information

6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

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.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

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)

US:

components	OSHA:PEL	ACGIH:TLV
Nickel, metal and insoluble compounds (as Ni)	1mg/m ³	-

8.2. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye protection:

Employee must wear splash-proof or dust safety goggles and a faceshield to prevent contact with this product. The employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

Hand protection:

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

Skin protection:

Employee must wear appropriate protective impervious clothing and equipment to prevent repeated or prolonged skin contact with this substance.

- 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.
- General 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.

9. Physical and Chemical Properties

Appearance:	Yellow Liquid
Odor:	Characteristic odor
pH:	Not applicable
Boiling point (deg.C)	No data available
Flash point (deg.C)	≥ 70 deg.C
Ignition temperature(deg.C)	No data available
Flammability limits(vol-%)	No data available
Specific Gravity(H ₂ O=1) (g/cm ³ , 20deg.C)	Approx 1.0
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Solubility:	No data available
Solubility in water (g/l, 20deg.C)	Insoluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Melting Point :	No data available
Evaporation Rate(Butyl Acetate=1)	No data available
Vapor Density(AIR=1)	>1
Volatile organic compounds (VOC) content:	0.061 gram/liter

10. Stability and Reactivity

- 10.1. Reactivity: High temperatures and UV light may cause rapid polymerization.
- 10.2. Chemical stability: Unstable. Polymerize under heat and/or light.
- 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

Acute toxicity:	No data available
Serious eye damage/eye irritation:	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

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

US information:

Toxic Substances Control Act (TSCA):

All components of this product are listed on the TSCA Inventory.


This product contains an ingredient that is regulated under the TSCA Significant New Use Rule (SNUR) prescribed 40 CFR 721.9664.

This product is subject to TSCA export notification requirements prescribed 40 CFR 707.60.

SARA Title III:

Section 313: Pigment yellow 150 (Nickel compounds) (Category Code N495)

California; Proposition 65:

 **WARNING: Cancer** - www.P65Warnings.ca.gov.

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.

16. Other Information

NFPA 704: Hazard Rating System

Health - 2 , Flammable - 2 , Reactivity - 1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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. Product and Company Identification

Product name:

ECO-UV, EUV4-BK
ECO-UV, EUV4-5BK

Manufacture:

Roland DG Corporation
1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN

Phone: + 81-53-484-1224

Fax: + 81-53-484-1226

Importer/Supplier:

Roland DGA Corporation
15363 Barranca Parkway Irvine, CA 92618-2201
U.S.A.

Phone: 949-727-2100

Fax: 949 727 2112

Emergency telephone: 949-727-2100

Use of the product:

Inkjet Printing

Date of issue:

30 August, 2017

2. Hazard Identification

2.1 Emergency Overview:

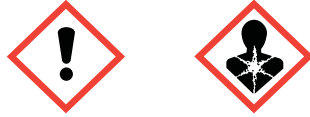
Appearance and odor: Black liquid and characteristic odor

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

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.

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 65%

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure:

Eye, skin, inhalation or oral.

Eyes:

Causes severe eye injury which may persist for several days.

Skin:

Contact with skin may cause irritation, swelling or redness, allergy and/or 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

See section 11 for more information.

2.4. Potential environmental effects

See section 12 for Ecological information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Carbon Balck	C.B.I.	1-5	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	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	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	5-10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	5-10	Repr. 2: H361f
Hexamethylene diacrylate	13048-33-4	<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	<1	Eye Irrit. 2: H319 Skin Sens. 1: H317

*C.B.I.: Confidential Business Information

Additional information: Chemical name and exact concentrations are being withheld as trade secrets.

4. First Aid Measures

4.1. First aid procedures

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

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: $\geq 70^{\circ}\text{C}$

5.2. Extinguishing media

Suitable extinguishing media:

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

Unsuitable extinguishing media:

Water, High-pressure water jet

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions 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

General:

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

6.1. Personal precautions

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

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment

Dike spilled product.

6.4. Methods for Clean-up

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

6.5. Other information

No information

6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

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.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

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)

US:

components	OSHA:PEL	ACGIH:TLV
Carbon black	3.5mg/m ³	3.5mg/m ³

Australia: OELs

components	TWA
Carbon black	3mg/m ³

8.2. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye protection:

Employee must wear splash-proof or dust safety goggles and a faceshield to prevent contact with this product. The employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

Hand protection:

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

Skin protection:

Employee must wear appropriate protective impervious clothing and equipment to prevent repeated or prolonged skin contact with this substance.

- 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.
- General 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.

9. Physical and Chemical Properties

Appearance:	Black Liquid
Odor:	Characteristic odor
pH:	Not applicable
Boiling point (deg.C)	No data available
Flash point (deg.C)	≥ 70deg.C
Ignition temperature(deg.C)	No data available
Flammability limits(vol-%)	No data available
Specific Gravity(H ₂ O=1) (g/cm ³ , 20deg.C)	Approx 1.0
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Solubility:	No data available
Solubility in water (g/l, 20deg.C)	Insoluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Melting Point :	No data available
Evaporation Rate(Butyl Acetate=1)	No data available
Vapor Density(AIR=1)	>1
Volatile organic compounds (VOC) content:	0.061 gram/liter

10. Stability and Reactivity

- 10.1. Reactivity: High temperatures and UV light may cause rapid polymerization.
- 10.2. Chemical stability: Unstable. Polymerize under heat and/or light.
- 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

Acute toxicity:	No data available
Serious eye damage/eye irritation:	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

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

US information:

Toxic Substances Control Act (TSCA):

All components of this product are listed on the TSCA Inventory.

This product contains an ingredient that is regulated under the TSCA Significant New Use Rule (SNUR) prescribed 40 CFR 721.9664.

This product is subject to TSCA export notification requirements prescribed 40 CFR 707.60.

SARA Title III:

Section 313: Not regulated

California; Proposition 65: Not regulated

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.

16. Other Information

NFPA 704: Hazard Rating System

Health - 2 , Flammable - 2 , Reactivity - 1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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. Product and Company Identification

Product name:

ECO-UV, EUV4-WH

Manufacture:

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

Importer/Supplier:

Roland DGA Corporation

Address:

15363 Barranca Parkway Irvine, CA 92618-2201
U.S.A.

Phone:

949-727-2100

Fax:

949 727 2112

Emergency telephone:

949-727-2100

Use of the product:

Inkjet Printing

Date of issue:

30 August, 2017

2. Hazard Identification

2.1 Emergency Overview:

Appearance and odor:

White liquid and characteristic odor

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)

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.

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 54%

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure:

Eye, skin, inhalation or oral.

Eyes:

Causes severe eye injury which may persist for several days.

Skin:

Contact with skin may cause irritation, swelling or redness, allergy and/or 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

See section 11 for more information.

2.4. Potential environmental effects

See section 12 for Ecological information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Titanium Dioxide	C.B.I.	10-20	Not classified as hazardous
Tetrahydrofurfuryl acrylate	2399-48-6	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	40-50	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317 STOT SE 3: H335
Dipropylene glycol diacrylate	57472-68-1	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	1-10	Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	1-10	Repr. 2: H361f

*C.B.I.: Confidential Business Information

Additional information: Chemical name and exact concentrations are being withheld as trade secrets.

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

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: $\geq 70^{\circ}\text{C}$

5.2. Extinguishing media

Suitable extinguishing media:

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

Unsuitable extinguishing media:

Water, High-pressure water jet

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions 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

General:

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

6.1. Personal precautions

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

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment

Dike spilled product.

6.4. Methods for Clean-up

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

6.5. Other information

No information

6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

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.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

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)

US:

components	OSHA:PEL	ACGIH:TLV
Titanium dioxide	15mg/m ³ * *for total dust	10mg/m ³

Australia: OELs

components	TWA
Titanium dioxide	10mg/m ³

8.2. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye protection:

Employee must wear splash-proof or dust safety goggles and a faceshield to prevent contact with this product. The employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

Hand protection:

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

Skin protection:

Employee must wear appropriate protective impervious clothing and equipment to prevent repeated or prolonged skin contact with this substance.

- 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.
- General 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.

9. Physical and Chemical Properties

Appearance:	White Liquid
Odor:	Characteristic odor
pH:	Not applicable
Boiling point (deg.C)	No data available
Flash point (deg.C)	≥ 70deg.C
Ignition temperature(deg.C)	No data available
Flammability limits(vol-%)	No data available
Specific Gravity(H ₂ O=1) (g/cm ³ , 20deg.C)	Approx 1.1
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Solubility:	No data available
Solubility in water (g/l, 20deg.C)	Insoluble
Partition coefficient: n-octanol/water:	No data available
Viscosity:	No data available
Melting Point :	No data available
Evaporation Rate(Butyl Acetate=1)	No data available
Vapor Density(AIR=1)	>1
Volatile organic compounds (VOC) content:	0.061 gram/liter

10. Stability and Reactivity

- | | |
|---|--|
| 10.1. Reactivity: | High temperatures and UV light may cause rapid polymerization. |
| 10.2. Chemical stability: | Unstable. Polymerize under heat and/or light. |
| 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 irritation:	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

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

US information:

Toxic Substances Control Act (TSCA):

All components of this product are listed on the TSCA Inventory.

This product contains an ingredient that is regulated under the TSCA Significant New Use Rule (SNUR) prescribed 40 CFR 721.9664.

This product is subject to TSCA export notification requirements prescribed 40 CFR 707.60.

SARA Title III:

Section 313: Not regulated

California; Proposition 65: Not regulated

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.

16. Other Information

NFPA 704: Hazard Rating System

Health - 3, Flammable - 2, Reactivity - 1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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. Product and Company Identification

Product name:

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

Manufacture:

Roland DG Corporation
1-6-4 Shinmiyakoda, Kita-ku, Hamamatsu-shi,
Shizuoka-ken, 431-2103
JAPAN

Phone: + 81-53-484-1224

Fax: + 81-53-484-1226

Importer/Supplier:

Roland DGA Corporation
15363 Barranca Parkway Irvine, CA 92618-2201
U.S.A.

Phone: 949-727-2100

Fax: 949 727 2112

Emergency telephone: 949-727-2100

Use of the product:

Inkjet Printing

Date of issue:

30 August, 2017

2. Hazard Identification

2.1 Emergency Overview:

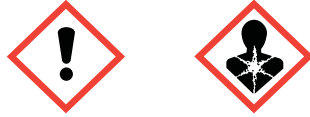
Appearance and odor: Clear liquid and characteristic odor

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

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.

Percentage of the mixture consisting of ingredient(s) of unknown acute toxicity: 58%

2.2. OSHA regulatory status

This product is considered hazardous material by the OSHA Communication Standard (29 CFR 1910.1200)

2.3. Potential health effects

Likely route of exposure:

Eye, skin, inhalation or oral.

Eyes:

Causes severe eye injury which may persist for several days.

Skin:

Contact with skin may cause irritation, swelling or redness, allergy and/or 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)

See section 11 for more information.

2.4. Potential environmental effects

See section 12 for Ecological information.

3. Composition/Information on Ingredients

Composition	CAS No.	% By Weight	Classification HCS
Tetrahydrofurfuryl acrylate	2399-48-6	<10	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Benzyl acrylate	2495-35-4	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	<10	Acute Tox.(oral) 4 : H302 Eye Irrit. 2 : H319 Skin Sens. 1B : H317 STOT Rep. Exp. 1 : H372
Trimethylolpropane triacrylate	15625-89-5	20-30	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Skin Sens. 1: H317
Diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide	75980-60-8	1-10	Repr. 2: H361f
Hexamethylene diacrylate	13048-33-4	<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	0-1	Eye Irrit. 2: H319 Skin Sens. 1: H317

Additional information: Chemical name and exact concentrations are being withheld as trade secrets.

4. First Aid Measures

4.1. First aid procedures

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

4.2. Note to physicians

May cause skin and eye irritation. Excessive inhalation of mist will cause respiratory irritation.

5. Fire Fighting Measures

5.1. Flammable properties:

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

Flash Point: $\geq 70^{\circ}\text{C}$

5.2. Extinguishing media

Suitable extinguishing media:

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

Unsuitable extinguishing media:

Water, High-pressure water jet

5.3. Protection of fire fighters

Special hazards arising from the substance or mixture

Toxic and irritating fume and/or gases may generate by combustion.

Protective equipment and precautions 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

General:

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

6.1. Personal precautions

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

6.2. Environmental precautions

Dike spill. Prevent liquid from entering sewers, waterways or low areas.

6.3. Methods for containment

Dike spilled product.

6.4. Methods for Clean-up

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

6.5. Other information

No information

6.6. Spill or leak statements by type of chemical

Eliminate all ignition sources. Use appropriate personal protective equipment (PPE). Absorb and/or contain spill with inert sand, then place in suitable container. For large spills; use water spray to disperse vapors and dilute spill to a nonflammable mixture. Do not flush to sewer. Prevent run-off from entering drains, sewers or waterways.

7. Handling And Storage

7.1. Handling

Avoid contact with eyes, skin and clothing. Use proper ventilation and no fire in work place. Put protection wear that has electrical conductivity in case of work. Keep out of reach of children and do not drink. Do not dismantle container. Make sure cartridge is dry before insertion into printer housing.

7.2. Storage

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.

8. Exposure Controls/Personal Protection

8.1. Exposure Guidelines

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. Engineering controls

Provide general and/or local exhaust ventilation.

8.3. Personal protective equipment (PPE)

Eye protection:

Employee must wear splash-proof or dust safety goggles and a faceshield to prevent contact with this product. The employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

Hand protection:

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

Skin protection:	Employee must wear appropriate protective impervious clothing and equipment to prevent repeated or prolonged skin contact with this substance.
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.
General 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.

9. Physical and Chemical Properties

Appearance:	Clear Liquid
Odor:	Characteristic odor
pH:	Not applicable
Boiling point (deg.C)	No data available
Flash point (deg.C)	≥ 70deg.C
Ignition temperature(deg.C)	No data available
Flammability limits(vol-%)	No data available
Specific Gravity(H ₂ O=1) (g/cm ³ , 20deg.C)	Approx 1.0
Explosive properties:	No data available
Oxidizing properties:	No data available
Vapor pressure:	No data available
Solubility:	No data available
Solubility in water (g/l, 20deg.C)	No data available
Partition coefficient: n-octanol/water:	Insoluble
Viscosity:	No data available
Melting Point :	No data available
Evaporation Rate(Butyl Acetate=1)	No data available
Vapor Density(AIR=1)	No data available
Volatile organic compounds (VOC) content:	>1
Volatile organic compounds (VOC) content:	0.061 gram/liter

10. Stability and Reactivity

10.1. Reactivity:	High temperatures and UV light may cause rapid polymerization.
10.2. Chemical stability:	Unstable. Polymerize under heat and/or light.
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 irritation:	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

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

US information:

Toxic Substances Control Act (TSCA):

All components of this product are listed on the TSCA Inventory.

SARA Title III:

Section 313: Not regulated

California; Proposition 65: Not regulated

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.

16. Other Information

NFPA 704: Hazard Rating System

Health - 2 , Flammable - 2 , Reactivity - 1

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard

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.