

Safety Data Sheets

1. Identification

| | |
|---|--|
| Product Name | : UV ink F-200 Cyan |
| Order No. | : SPC-0516C |
| General Use | : Ink for ink jet printer |
| Product Description | : UV Inkjet Ink |
| SDS Number | : 037-U040549 |
| Manufacture | |
| Company Name | : Mimaki Engineering Co., Ltd. |
| Address | : 2182-3 Shigeno-otsu, Tomi-shi, Nagano 389-0512 JAPAN |
| Telephone No. | : +81-268-64-2413 |
| Importer / Distributor Established in USA | |
| Company Name | : MIMAKI USA, INC. |
| Address | : 150 Satellite Boulevard, suite A, Suwanee, Georgia 30024, U.S.A. |
| Telephone No. | : +1-678-730-0170 |
| Emergency Telephone No. | : +81-268-64-2281 |

2. Hazards Identification

[GHS Classification]

Physical Hazards

Flammable Liquids : Not classified

Health Hazards

Acute Toxicity – Oral : Category 4
Skin Corrosion / Irritation : Category 2
Eye Damage / Irritation : Category 2A
Carcinogenicity : Category 2
Sensitization – Skin : Category 1
Toxic to Reproduction : Category 2
Specific Target Organ Toxicity : Category 2 (skin)
(Repeated Exposure)

The above list does not include category being non-classifiable or not-applicable.

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[GHS Label Elements]

Symbol



Signal Word

Warning

Hazard Statements

H302 Harmful if swallowed

H315 Causes skin irritation

H317 May cause an allergic skin reaction

H319 Causes serious eye irritation

H351 Suspected of causing cancer

H361 Suspected of damaging fertility or the unborn child

H373 May cause damage to organs through prolonged or repeated exposure (Skin) .

Precautionary Statements

[Prevention]

P201 Obtain SDS (Safety Data Sheet) and printer's operation manual before use.

P202 Do not handle until all safety precautions have been read and understood.

P260 Do not breathe gas/mist.

P264 Wash hands and eyes thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P272 Contaminated work clothing should not be allowed out of the workplace.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

[Response]

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P302+P352 IF ON SKIN: Wash with plenty of soap and water.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P308+P313 IF exposed or concerned: Get medical advice/attention.

P314 Get medical advice/attention if you feel unwell.

(P301+)P330 (IF SWALLOWED:) Rinse mouth.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P337+P313 If eye irritation persists: Get medical advice/attention.

P362+P364 Take off contaminated clothing and wash before re-use.

[Storage]

P405 Store locked up.

[Disposal]

P501 Dispose of contents/container in accordance with local/regional/national/international regulation (to be specified).

[Hazards not otherwise classified]

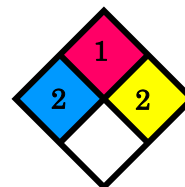
19% of the mixture consists of ingredients of unknown acute oral toxicity.

45% of the mixture consists of ingredients of unknown acute dermal toxicity.

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NFPA Rating (scale 0 – 4)

Health = 2
 Flammability = 1
 Instability = 2
 Special = None



3. Composition / Information on Ingredients

| No | Chemical Name | Wt% | CAS No. |
|----|--|---------|--------------|
| 1 | ISOOCTYL ACRYLATE | 15 - 25 | 29590-42-9 |
| 2 | ISOBORNYL ACRYLATE | 15 - 25 | 5888-33-5 |
| 3 | TETRAHYDROFURFURYL ACRYLATE | 15 - 25 | 2399-48-6 |
| 4 | 2,4,6-TRIMETHYLBENZOYLDIPHENYL PHOSPHINE | 1 - 10 | 75980-60-8 |
| 5 | 1,6-HEXANEDIOL DIACRYLATE | 1 - 10 | 13048-33-4 |
| 6 | AMINE MODIFIED ACRYLATE OLIGOMER | 1 - 10 | Trade Secret |
| 7 | ALIPHATIC URETHANE ACRYLATE | 1 - 10 | Trade Secret |
| 8 | BENZOPHENONE | 1 - 10 | 119-61-9 |
| 9 | C.I. PIGMENT BLUE 15 | 1 - 5 | 147-14-8 |
| 10 | TETRAHYDROFURFURYL ALCOHOL | < 0.5 | 97-99-4 |

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

4. First Aid Measures

Inhalation : Remove person to fresh air. If you feel unwell, get medical attention.

Eye Contact : Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. Get medical attention.

Skin Contact : Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Ingestion : Rinse mouth. If you feel unwell, get medical attention.

Most important symptoms and effects, both acute and delayed : See Section 11.1. Information on toxicological effects.

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Indication of Immediate : Not applicable.

Medical Attention and

Special Treatment

Needed, If Needed

5. Fire Fighting Measures

Flammable Properties : Flash point >200° F

Extinguishing Media : Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

Special Hazards Arising from the Chemical : Closed containers exposed to heat from fire may build pressure and explode.

Hazardous Combustion Products : Carbon monoxide, Carbon dioxide (During Combustion)

Special protective actions for fire-fighters : Water may not effectively extinguish fire; however, it should be used to keep fire-exposed containers and surfaces cool and prevent explosive rupture.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures : Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

Environmental precautions : Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

Methods and material for containment and cleaning up : Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container

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approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Dispose of collected material as soon as possible.

7. Handling and Storage

| | |
|--|--|
| Precautions for Safe Handling | : For industrial or professional use only. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Avoid contact with oxidizing agents (eg. chlorine, chromic acid etc.) Use personal protective equipment (gloves, respirators, etc.) as required. |
| Conditions for Safe Storage, including any Incompatibilities | : Keep cool. Protect from sunlight. Store away from heat. Store away from oxidizing agents. |

8. Exposure Controls / Personal Protection

| | |
|-----------------------|---|
| Exposure Limit Values | : If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component. |
|-----------------------|---|

| Ingredient | CAS No. | Agency | Limit type | Additional Comments |
|---------------------------|------------|--------|---------------------------------------|---------------------|
| BENZOPHENONE | 119-61-9 | AIHA | TWA:0.5 mg/m ³ | |
| 1,6-HEXANEDIOL DIACRYLATE | 13048-33-4 | AIHA | TWA:1 mg/m ³ (0.11 ppm) | Dermal Sensitizer |

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| | | | | |
|--------------------------------|------------|----------------------------|--|--|
| TETRAHYDROFURFURYL ACRYLATE | 2399-48-6 | Manufacturer determined | TWA:0.1 ppm (0.64mg/m ³); STEL:0.3 ppm (1.91mg/m ³) | |
| ISOOCTYL ACRYLATE | 29590-42-9 | AIHA | TWA:37.5 mg/m ³ (5 ppm) | |
| | | Manufacturer determined | TWA:5 ppm | |
| TETRAHYDROFURFURYL ALCOHOL | 97-99-4 | AIHA | TWA:2 mg/m ³ (0.5 ppm) | |

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

Exposure Controls

Occupational Exposure Controls

Appropriate : Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or Engineering Controls control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

Personal Protection

Respiratory Protection



: An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure: Half facepiece or full facepiece air-purifying respirator suitable for organic vapors and particulates
 For questions about suitability for a specific application, consult with your respirator manufacturer.

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Skin/Hand
Protection



: Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.

Gloves made from the following material(s) are recommended:

Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment.

The following protective clothing material(s) are recommended:

Apron - polymer laminate

Eye Protection



: Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended: Indirect Vented Goggles

9. Physical and Chemical Properties

| | | |
|-------------------------------|------------------|-------------------------------------|
| Appearance | - Physical State | : Liquid |
| | - Color | : Cyan |
| Odor | | : Acrylate Odor, |
| pH | | : Not Applicable |
| Boiling Point / Boiling Range | | : >200° F |
| Melting Point / Melting Range | | : Not available |
| Decomposition Temperature | | : Not available |
| Flash Point | | : >200° F [Test Method: Closed Cup] |
| Auto ignition temperature | | : Not available |
| Flammability (Solid, Gas) | | : Not Applicable |
| Explosive Properties | | : Not available |

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| | |
|--|---------------------------|
| Oxidizing Properties | : Not available |
| Upper / Lower Flammability or Explosive Limits | : Not available |
| Vapor Pressure | : < 10 mmHg [@ 20 °C] |
| Specific Gravity | : 1.04 [Ref Std: WATER=1] |
| Solubility | : Not available |
| Water Solubility | : Negligible |
| Partition Coefficient (n-octanol / Water) | : Not available |
| Viscosity | : Not available |
| Vapor Density | : > 1 [Ref Std: AIR=1] |
| Evaporation Rate | : Not available |
| VOC | : Not available |

10. Stability and Reactivity

| | |
|------------------------------------|--|
| Reactivity | : This material may be reactive with certain agents under certain conditions - see the remaining headings in this section. |
| Chemical Stability | : Stable under normal conditions of use. |
| Possibility of Hazardous Reactions | : Hazardous polymerization will not occur. |
| Conditions to Avoid | : Heat |
| Incompatible Materials | : Strong oxidizing agents |
| Hazardous Decomposition | : None known. |

Refer to section 5.2 for hazardous decomposition products during combustion

11. Toxicological Information

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|--------------|--|
| Inhalation | : Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. May cause additional health effects (see below). |
| Skin Contact | : Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, dryness, cracking, blistering, and pain. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching. May cause additional |

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health effects (see below).

Eye Contact : Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion : Harmful if swallowed. Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Additional Health Effects:

Prolonged or repeated exposure may cause target organ effects : Dermal Effects: Signs/symptoms may include redness, itching, acne, or bumps on the skin.

Reproductive/Developmental Toxicity : Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity : Contains a chemical or chemicals which can cause cancer.

| Ingredient | CAS No. | Class Description | Regulation |
|--------------|----------|-------------------------------|---|
| BENZOPHENONE | 119-61-9 | Grp. 2B: Possible human carc. | International Agency for Research on Cancer |

Toxicological Data : If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

| Name | Route | Species | Value |
|-----------------------------|-----------|---------|---|
| Overall product | Dermal | | No data available; calculated ATE > 5,000 mg/kg |
| | Ingestion | | No data available; calculated ATE 300 - 2,000 mg/kg |
| ISOOCTYL ACRYLATE | Dermal | Rabbit | LD50 > 2,000 mg/kg |
| | Ingestion | Rat | LD50 > 5,000 mg/kg |
| ISOBORNYL ACRYLATE | Dermal | Rabbit | LD50 > 5,000 mg/kg |
| | Ingestion | Rat | LD50 4,350 mg/kg |
| TETRAHYDROFURFURYL ACRYLATE | Ingestion | Rat | LD50 551 mg/kg |

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| | | | |
|--|-----------|------------------------|------------------------------------|
| 1,6-HEXANEDIOL DIACRYLATE | Dermal | Rabbit | LD50 3,636 mg/kg |
| | Ingestion | Rat | LD50 > 5,000 mg/kg |
| 2,4,6-TRIMETHYLBENZOYLDIPHENYL PHOSPHINE | Dermal | Professional judgement | LD50 estimated to be > 5,000 mg/kg |
| | Ingestion | Rat | > 5,000 mg/kg |
| BENZOPHENONE | Dermal | Rabbit | LD50 3,535 mg/kg |
| | Ingestion | Rat | LD50 1,900 mg/kg |
| C.I. PIGMENT BLUE 15 | Ingestion | Rat | LD50 10,000 mg/kg |

Skin Corrosion/Irritation

| Name | Species | Value |
|-----------------------------|---------|--------------------|
| ISOOCTYL ACRYLATE | Human | Minimal irritation |
| ISOBORNYL ACRYLATE | Rabbit | Minimal irritation |
| TETRAHYDROFURFURYL ACRYLATE | Rabbit | Irritant |
| 1,6-HEXANEDIOL DIACRYLATE | Rabbit | Irritant |

Serious Eye Damage/Irritation

| Name | Species | Value |
|-----------------------------|------------------------|-------------------|
| ISOOCTYL ACRYLATE | Similar health hazards | Mild irritant |
| ISOBORNYL ACRYLATE | Rabbit | Mild irritant |
| TETRAHYDROFURFURYL ACRYLATE | Rabbit | Severe irritant |
| 1,6-HEXANEDIOL DIACRYLATE | Rabbit | Moderate irritant |

Skin Sensitization

| Name | Species | Value |
|-----------------------------|------------------|--|
| ISOOCTYL ACRYLATE | Guinea pig | Some positive data exist, but the data are not sufficient for classification |
| ISOBORNYL ACRYLATE | Mouse | Sensitizing |
| TETRAHYDROFURFURYL ACRYLATE | Human and animal | Some positive data exist, but the data are not sufficient for classification |
| 1,6-HEXANEDIOL DIACRYLATE | Guinea pig | Sensitizing |

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Respiratory Sensitization

For the component/components, either no data are currently available or the data are not sufficient for classification

Germ Cell Mutagenicity

| Name | Route | Value |
|---------------------------|----------|--|
| ISOOCTYL ACRYLATE | In Vitro | Some positive data exist, but the data are not sufficient for classification |
| ISOBORNYL ACRYLATE | | |
| 1,6-HEXANEDIOL DIACRYLATE | | |

Reproductive and/or Developmental Effects

| Name | Route | Value | Species | Test Result | Exposure Duration |
|---|-----------|--|---------|--------------------------|----------------------|
| ISOOCTYL ACRYLATE | Ingestion | Some positive developmental data exist, but the data are not sufficient for classification | Rat | NOAEL 1,000 mg/kg/day | during organogenesis |
| 2,4,6-TRIMETHYLBENZYL DIPHENYLPHOSPHINE | Ingestion | Toxic to male reproduction | Rat | NOAEL 100 mg/kg/day | 90 days |

Specific Target Organ Toxicity - single exposure

| Name | Route | Target Organ(s) | Value | Species | Test Result |
|-----------------------------|------------|-----------------------------------|--|-------------------------|----------------------|
| ISOOCTYL ACRYLATE | Ingestion | central nervous system depression | Some positive data exist, but the data are not sufficient for classification | Rat | NOAEL 5,000 mg/kg |
| ISOBORNYL ACRYLATE | Inhalation | respiratory irritation | | official classification | Not available |
| TETRAHYDROFURFURYL ACRYLATE | Inhalation | respiratory irritation | | Not available | |
| 1,6-HEXANEDIOL DIACRYLATE | Inhalation | respiratory irritation | | Human | Not Available |

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Specific Target Organ Toxicity - repeated exposure

| Name | Route | Target Organ(s) | Value | Test Result |
|-------------------------------------|-----------|--|--|--------------------------------------|
| ISOOCTYL ACRYLATE | Ingestion | endocrine system liver kidney and/or bladder | Some positive data exist, but the data are not sufficient for classification | NOAEL 600 mg/kg/day (Rat, 90 days) |
| 2,4,6-TRIMETHYLBENZYLDIETHANOLAMINE | Ingestion | skin blood liver kidney and/or bladder | | NOAEL 1,000 mg/kg/day (Rat, 90 days) |
| C.I. PIGMENT BLUE 15 | Ingestion | endocrine system hematopoietic system respiratory system | | NOAEL 1,000 mg/kg/day (Rat, 28 days) |
| 1,6-HEXANEDIOL DIACRYLATE | Dermal | skin | May cause damage to organs though prolonged or repeated exposure | LOAEL 70 mg/kg/day (Mouse, 80 weeks) |

Aspiration Hazard

For the component/components, either no data are currently available or the data are not sufficient for classification

12. Ecological Information

Handling is noted because it might influence the environment when leaking and abandoning it.

Especially, note that the product doesn't flow directly to ground, the river, and the drain ditch.

Ecotoxicity

: Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

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Persistence and Degradability : Not available
Bioaccumulation : Not available
Mobility : Not available
Other Toxicity : Not available

13. Disposal Considerations

Disposal methods : Dispose of contents/ container in accordance with the local/regional/national/international regulations.
Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.
Do not dump this product into sewers, on the ground or into any body of water.

EPA Hazardous Waste Number (RCRA) : Not regulated

14. Transport Information

Check a thing without a leak in a container.
Perform prevention of collapse of cargo surely.

UN Number : UN3082
Shipping Name : Environmentally hazardous substance, liquid, n.o.s.
Hazardous Class or Division : 9



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Packing Group (PG) : III

Remarks : Single or inner packaging less than 5 L (liquid) or 5 kg net (solids) is excepted from Dangerous Goods regulations.

Refer to ICAO/IATAA197, IMDG 2.10.2.7, ADR SP 375.

15. Regulatory Information

U.S. Federal Regulations

SARA TitleIII : Immediate Hazard: Yes

Section 311/312 Delayed Hazard: Yes

Fire: No

Pressure: No

Reactive: No

This material contains a chemical which requires export notification under TSCA Section 12[b]:

| Ingredient | CAS No. | Regulation | Status |
|--------------|----------|---|------------|
| BENZOPHENONE | 119-61-9 | Toxic Substances Control Act (TSCA) 4 Test Rule Chemicals | Applicable |

U.S. State Regulations

California Proposition 65

| Ingredient | CAS No. | Classification |
|--------------|----------|----------------|
| BENZOPHENONE | 119-61-9 | Carcinogen |

WARNING: This product contains a chemical known to the State of California to cause cancer.

Chemical Inventories : The components of this product are in compliance with the chemical notification requirements of TSCA.

16. Other Information

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of Mimaki Engineering Corporation.

It relates only to the specific material designated herein, and does not relate to use in combination with any other material or process.

Mimaki Engineering Corporation assumes no legal responsibility for use or reliance upon this information.