Safety Data Sheets

1. Identification

Product Name	: LUS-200 Yellow
Order No.	: LUS20-Y-BA
Ink Ver.	:1
General Use	: Ink jet printing ink
Product Description	: UV curable ink
SDS Number	: 037-U100373
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.	: +1 866 928 0789 (within United States only, Toll free) +1 215 207 0061

2. Hazards Identification

[GHS Classification]

Physical Hazards	
Flammable Liquids	: Not classified
Health Hazards	
Skin Corrosion / Irritation	: Category 2
Eye Damage / Irritation	: Category 1
Sensitization – Skin	: Category 1A
Carcinogenicity	: Category 1A
Toxic to Reproduction	: Category 1B
Specific Target Organ Toxicity (Repeated Exposure)	: Category 1 (respiratory system)
Environmental Hazards	
Hazardous to the Aquatic Environment - Acute Hazard	: Category 1

Hazardous to the Aquatic Environment - Long Term Hazard : Category 1

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

[GHS Label Elements]

Symbol

Signal Word

Danger

Hazard Statements

H315 Cause skin irritation
H317 May cause an allergic skin reaction
H318 Cause serious eye damage
H350 May cause cancer
H360 May damage fertility or the unborn child
H372 Causes damage to organs through prolonged or repeated exposure (respiratory system)
H410 Very toxic to aquatic life with long lasting effects

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 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.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
[Response]
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.
(P305)+P310 (IF IN EYES):Immediately call a POISON CENTER or doctor/physician.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P314 Get medical advice/attention if you feel unwell.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 Take off contaminated clothing and wash before reuse.
P391 Collect spillage.
[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]

May cause chemical gastrointestinal burns.

9% of the mixture consists of ingredients of unknown acute oral toxicity.

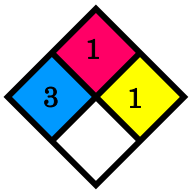
NFPA Rating (scale 0 – 4)

Health = 3

Flammability = 1

Reactivity= 1

Special = None



3. Composition / Information on Ingredients

No	Chemical Name	Wt%	CAS No.
1	ISOBORNYL ACRYLATE	15-40	5888-33-5
2	PHENOXY ETHYL ACRYLATE	10-30	48145-04-6
3	TETRAHYDROFURFURYL ACRYLATE	7-13	2399-48-6
4	VINYLCAPROLACTAM	7-13	2235-00-9
5	2,4,6-TRIMETHYLBENZOYLDIPHENYLPHOSPHINE OXIDE	5-10	75980-60-8
6	ALIPHATIC URETHANEACRYLATE	5-10	Trade Secret
7	DICYCLOPENTYLDIMETHYLENE DIACRYLATE	3-7	42594-17-2
8	9H-THIOXANTHEN-9-ONE, 2,4-DIETHYL-	1-5	82799-44-8
9	NICKEL, 5,5'-AZOBIS-2,4,6(1H,3H,5H)-PYRIMIDINETRIONE COMPLEXES	1-5	68511-62-6
10	SUBSTITUTED AMINE OLIGOMER	1-5	Trade Secret
11	DISPERSANT	0.1-3	Trade Secret
12	STABILIZER	0.5-1.5	Trade Secret

*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 for at least 15 minutes.

	Remove contact lenses if easy to do. Continue rinsing. Immediately 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. Do not induce vomiting. Get immediate medical attention.
Most important symptoms and effects, both acute and delayed	: See Section 11 Information on toxicological effects.
Indication of Immediate Medical Attention and Special Treatment Needed, If Needed	: Not applicable.

5. Fire Fighting Measures

Flammable Properties	: Flash point 95 °C
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. Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

6. Accidental Release Measures

Personal precautions, protective equipment and	: Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse

emergency procedures	or exhaust vapors, in accordance with good industrial hygiene practice. 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 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 in accordance with applicable local/regional/national/international regulations.

7. Handling and Storage

Precautions for Safe Handling	: Avoid skin contact with hot material. For industrial/occupational use only. Not for consumer sale or use. 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

Control parameters

Occupational exposure limits : 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
VINYLCAPROLACTAM	2235-00-9	Manufacturer determined	TWA:0.1 ppm(0.57 mg/m3)	
TETRAHYDROFURFURYL ACRYLATE	2399-48-6	Manufacturer determined	TWA:0.1 ppm(0.64mg/m3) STEL:0.3 ppm(1.91mg/m3)	Dermal Sensitizer
NICKEL, INSOLUBLE COMPOUNDS	68511-62-6	OSHA	TWA(as Ni):1 mg/m3	

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 Engineering Controls : Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or 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.

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:
Full Face Shield
Indirect Vented Goggles

9. Physical and Chemical Properties

Appearance	- Physical State	: liquid
	- Color	: Yellow color
Odor		: Acrylate odor
Odor threshold;		: No Data Available
pH		: No Data Available
Melting Point		: Not Applicable
Boiling Point		: > 95 °C
Flash Point		: 95 °C [Test Method: Closed Cup]

Evaporation Rate	: No Data Available
Flammability (Solid, Gas)	: Not Applicable
Flammable Limits(LEL)	: No Data Available
Flammable Limits(UEL)	: No Data Available
Vapor Pressure	: No Data Available
Vapor Density	: No Data Available
Density	: No Data Available
Specific Gravity	: 1.08 [Ref Std: WATER=1]
Solubility In Water	: No Data Available
Solubility- non-water	: No Data Available
Partition Coefficient (n-octanol / Water)	: No Data Available
Auto ignition temperature	: No Data Available
Decomposition Temperature	: No Data Available
Viscosity	: 20 centipoise [@ 25 °C]
Percent volatile	: No Data 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 may occur. (Upon depletion of inhibitor or exposure to heat)
Conditions to Avoid	: Heat
Incompatible Materials	: Strong oxidizing agents
Hazardous Decomposition	: None known.

Refer to section 5 for hazardous decomposition products during combustion

11. Toxicological Information

Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation	: Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and

throat pain.

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.

Eye Contact : Corrosive (Eye Burns): Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Ingestion : May be harmful if swallowed.
Gastrointestinal Corrosion: Signs/symptoms may include severe mouth, throat and abdominal pain; nausea; vomiting; and diarrhea; blood in the feces and/or vomitus may also be seen.

Prolonged or repeated exposure may cause target organ effects: : Respiratory Effects: Signs/symptoms may include cough, shortness of breath, chest tightness, wheezing, increased heart rate, bluish colored skin (cyanosis), sputum production, changes in lung function tests, and/or respiratory failure.

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
NI CMPDS NOT ALLOYS	68511-62-6	Known human carcinogen	National Toxicology Program Carcinogens
NICKEL COMPOUNDS	68511-62-6	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer

Acute Toxicity

Name	Route	Value
Overall product	Ingestion	ATE: 2,000 - 5,000 mg/kg

Irritation/Corrosivity Data : skin irritation, eye damage

Respiratory Sensitization : No information available for the product.

Dermal Sensitization : Available data characterizes components of this product as dermal sensitization hazards.

Germ Cell Mutagenicity : No information available for the product.

Specific Target Organ Toxicity (Single Exposure) : No target organs identified.

Specific Target Organ Toxicity (repeated Exposure) : Causes damage to organs through prolonged or repeated exposure (respiratory system)

Aspiration Hazard	: Not expected to be an aspiration hazard.

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	: Acute Hazard, Category 1, Very toxic to aquatic life Long Term Hazard, Category 1, Very toxic to aquatic life with long lasting effects
Persistence and Degradability	: Not available
Bioaccumulation	: Not available
Mobility	: Not available
Other Toxicity	: Not available

13. Disposal Considerations

	Comply with all USA, national and local regulations. Do not dump this product into sewers, on the ground or into any body of water.
Disposal methods	: Dispose in accordance with all applicable regulations.
Disposal of Contaminated Packaging	: Empty containers may contain product residue. Dispose in accordance with all applicable regulations.
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.
Sea Transport (IMDG)	
Class	: 9
Packing Group (PG)	: Ⅲ

Safety Data Sheets

UN Number	: UN 3082
Proper Shipping Name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (Contains: ISOBORNYL ACRYLATE AND NICKEL, 5,5'-AZOBIS-2,4,6(1H,3H,5H)-PYRIMIDINETRIONE COMPLEXES)
Marine Pollutant	: Yes
Remarks	: Single or inner packaging less than 5 L (liquid) or 5 kg net (solids) is excepted from Dangerous Goods regulations. Refer to ICAO/IATA A197, IMDG 2.10.2.7, ADR SP 375.

15. Regulatory Information

EPCRA 311/312 Hazard Classifications

Physical Hazards : Not applicable

Health Hazards : Carcinogenicity
: Hazard Not Otherwise Classified (HNOC)
Reproductive toxicity
Respiratory or Skin Sensitization
Serious eye damage or eye irritation
Skin Corrosion or Irritation
Specific target organ toxicity (single or repeated exposure)

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	CAS No.	%
NICKEL, 5,5'-AZOBIS-2,4,6(1H,3H,5H)-PYRIMIDINETRIONE COMPLEXES (NICKEL COMPOUNDS)	68511-62-6	1 - 5
PHENOXY ETHYL ACRYLATE (GLYCOL ETHERS)	48145-04-6	10 - 30

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

Ingredient	CAS No.	Regulation	Status
9H-Thioxanthen-9-one, 2,4-diethyl-	82799-44-8	Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals	Applicable

This material contains a chemical regulated by an EPA Significant New Use Rule (TSCA Section 5)

Ingredient	CAS No.	Reference
9H-Thioxanthen-9-one, 2,4-diethyl-	82799-44-8	40CFR721.9664

State Regulations

California Proposition 65 : **WARNING**

This product can expose you to chemicals including Nickel compounds and Toluene, which are known to the State of California to cause cancer/ birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Chemical Inventories : The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

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.