

Material Safety Data Sheet

1. Product and Company Identification

Product name Black Ink VJ-BIOINK1-BK880
 Company name MUTOH INDUSTRIES LTD.
 Address 3128 Shimosuwa-machi Suwa-gun Nagano-ken 393-8585 JAPAN
 Contact section Quality Assurance section
 Phone +81-266-28-9736
 Fax +81-266-28-7760
 MSDS No. MSDS-VJBIOINK1BK880-00E

2. Hazard Identification

Emergency overview: Combustible liquid. Closed containers exposed to heat and fire may build pressure and explode. This product is irritating to the eyes, respiratory system and skin. Risk of serious damage to eyes. Inhalation of large amounts may cause drowsiness and dizziness.

Potential Health Effects

Eyes: Avoid contact with eyes. Contact can cause moderate to severe irritation and possible injury to the eyes.

Skin: Avoid contact with skin. Prolonged and/or repeated skin contact may result in irritation or redness.

Inhalation: Avoid breathing vapors or mists of this product. Inhalation of vapors or mists of the product may be irritating to the respiratory system. Inhalation of high vapor amounts may lead to central nervous system depression.

Ingestion: Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

3. Composition/Information on Ingredients

Ingredients	CAS No.	% by weight	Notes
Ethyl lactate	97-64-3	69-75 %	
Proprietary lactate solvent blend	-	2-6 %	
Resin	-	1-5 %	
Carbon black	1333-86-4	1-5 %	

4. First Aid Measures

Eyes: Immediately flush eyes with large amount of water for at least 15 minutes. Get medical attention or advice. Remove contact lenses, if possible.

Skin: Remove all contaminated clothing. Wash skin with soap and water. If irritation develops, get medical attention. Wash contaminated clothing before reuse.

Inhalation: Remove affected person to fresh air. Call a physician if symptoms develop or persist. If the affected person is not breathing, apply artificial respiration.

Ingestion: If ingested, get immediate medical attention. Do NOT induce vomiting unless instructed to do so by medical personnel.

5. Fire Fighting Measures

General fire hazards: See Section 9 "Physical and Chemical Properties" for flammability properties. Combustible liquid. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Hazardous combustion products: See Section 10 "Stability and Reactivity" for hazardous combustion and thermal decomposition information. Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

Extinguishing media: Alcohol foam. Dry chemical. Carbon dioxide. Use water to cool fire-exposed containers and to protect personnel.

Fire fighting equipment/instructions: Firefighters should wear full protective clothing, including helmet, self-contained positive or pressure demand breathing apparatus and face mask.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

6. Accidental Release Measures

- Evacuation procedures: Evacuate spill area of unprotected and untrained personnel. Ventilate the contaminated area. Remove or disable all sources of ignition.
- Containment procedures: Contain the discharged material. Dike the spilled material, where this is possible. Cover with inert absorbent such as dry clay, sand, diatomaceous earth or commercial sorbents.
- Personal precautions: Wear appropriate protective equipment and clothing during clean-up. Avoid skin contact and inhalation of vapors during disposal of spills.
- Clean-up procedures: Wear appropriate protective equipment and clothing during clean-up. Sweep, gather or collect up spilled material and place in covered container appropriate for disposal. Use non-sparking tools.
- Special procedures: Regulations vary. Consult local authorities before disposal. Follow all Local, State, Federal and Provincial regulations for disposal.

7. Handling and Storage

- Handling procedures: Use good industrial hygiene practices when handling this material. Avoid contact with skin and eyes. Avoid breathing mists or vapors. Do not handle or store near an open flame, heat or other sources of ignition. Wash hands after handling and before eating.
- Storage procedures: Keep this material in cool, well-ventilated place. Do not handle or store near an open flame, heat or other sources of ignition. Store away from strong oxidizers.

8. Exposure Controls and Personal Protection

- Exposure limits: Ethyl lactate: ACGIH: None established, OSHA: None established
Carbon black: ACGIH: 3.5mg/m³ TWA, OSHA: 3.5mg/m³ TWA, NIOSH: 3.5mg/m³ TWA; 0.1mg/m³ TWA (as PAH, carbon black in presence of polycyclic aromatic
- Engineering controls: Use general dilution and local exhaust ventilation to effectively remove and prevent build up of any vapors, mists or spray generated from the handling/processing of this product. If ventilation is not adequate, use respiratory protection equipment.
- Personal protective equipment
 - Eyes/Face: Avoid contact with eyes. Wear chemical goggles. When splash potential exists, full face shield also recommended.
 - Skin: Avoid contact with skin. Normal work clothing (long sleeved shirts and long pants) is recommended. Consult with glove/clothing manufacturer for selection and compatibility testing of appropriate materials.
 - Respiratory: If ventilation is not sufficient to effectively prevent buildup of vapor, mist or fume, appropriate NIOSH respiratory protection must be provided.
 - General: Use good industrial hygiene practices when handling this material. When using this material, do not eat, drink or smoke. Eye wash fountain and emergency showers are recommended.

9. Physical and Chemical Properties

Appearance:	Black liquid	Vapor density:	Not determined
Odor:	Sweet solvent odor	Specific gravity:	1.03-1.04
pH:	Not determined	Solubility (H ₂ O):	No data available
Melting point:	Not determined	Octanol/water coeff.:	Not determined
Boiling point:	Not determined	Auto ignition:	Not determined
Flash point:	63°C (145°F) (Closed cup)	Decomposition point:	Not determined
Flammability limit:	Not determined	VOC:	948-973g/L (7.91-8.12lb/gal)
Vapor pressure:	Not determined	Evaporation rate:	Not determined

10. Stability and Reactivity

- Stability: Stable under normal conditions.
- Possibility of hazardous reactions: Hazardous polymerization will not occur.
- Conditions to avoid: Keep away from heat, ignition sources and incompatible materials. Avoid contact with strong oxidizers.
- Incompatibility: This product may react with strong oxidizing agents.
- Hazardous decomposition: Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

11. Toxicology and Health Hazards

- Acute dose effects: Toxicology studies on humans and/or animals have not been conducted on this product/product family

Oral:	Ingestion of product may produce gastrointestinal irritation and disturbances. Ingestion of this product may cause nausea, vomiting and diarrhea. Ethyl lactate: LD50 >5g/kg (Rat) Proprietary lactate solvent blend: LD50 >2000mg/kg (Rat) Carbon black: LD50 >15400mg/kg (Rat)
Dermal:	Ethyl lactate: LD50 >5g/kg (Rabbit) Carbon black: LD50 >3g/kg (Rabbit)
Inhalation:	Inhalation of vapors or mists of the product may be irritating to the respiratory system. Inhalation of high vapor amounts may lead to central nervous system depression.
Skin corrosion/irritation:	Causes mild skin irritation.
Serious eye damage/irritation:	Risk of serious damage to eyes.
Respiratory or skin sensitization:	May cause allergic skin reaction.
Germ cell mutagenicity	Non identified.
Carcinogenicity	No carcinogenicity data available for this product. This product contains carbon black which is a suspect carcinogen via inhalation. Carbon black is not expected to pose a hazard unless ink is dried and residue is inhaled. Carbon black: ACGIH: A4 - Not classifiable as a human carcinogen. NIOSH: Potential occupational carcinogen. IARC: Monograph 93 posted, Monograph 95 [1996] (Group 2B (possibly carcinogenic to humans)).
Reproductive toxicity:	Suspected of damaging fertility or the unborn child based upon trace components.
Specific target organ systemic toxicity	
Single exposure:	None identified.
Repeated exposure:	May cause damage to the liver through prolonged or repeated exposure.
Aspiration respiratory organs hazard:	None identified.

12. Ecological Information

Ecotoxicity:	Ecotoxicity test data not available for this product. Based upon components, may be harmful to aquatic life. Carbon black: 24Hr EC50 >5600mg/L (Daphnia magna)
Persistence/degradability:	No information available.
Bioaccumulation:	No information available.
Mobility in soil:	No information available.

13. Disposal Considerations

Disposal instructions:	This product contains a component or components identified as hazardous under 40 CFR 261. Regulations vary. Consult local authorities before disposal. Waste must be handled in accordance with all federal, state, provincial and local regulations.
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14. Transportation Information

IATA information:	Not regulated as dangerous goods.
US DOT information:	Not regulated as dangerous goods.

15. Regulatory Considerations

US federal regulations:	No information available for the product. None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).
California Proposition 65:	WARNING! This product contains a chemical known to the state of California to cause cancer. WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental affects.

EU information

Symbol(s):	 Xi Irritant
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Risk phrases:	R41 Risk of serious damage to eyes. R37 Irritating to respiratory system.
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Safety phrases:	S2 Keep out of the reach of children. S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical
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S39 Wear eye/face protection.

S46 If swallowed, seek medical advice immediately and show this container or label.

16. Other Information

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of preparation, but should only be used as a guide. It is subject to revision from time to time. MUTOH does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Product and Company Identification

Product name: Cleaner VJ-BIOINK1-CL880
 Company name: MUTOH INDUSTRIES LTD.
 Address: 3128 Shimosuwa-machi Suwa-gun Nagano-ken 393-8585 JAPAN
 Contact section: Quality Assurance section
 Phone: +81-266-28-9736
 Fax: +81-266-28-7760
 MSDS No.: MSDS-VJBIOINK1CL880-00E

2. Hazard Identification

Emergency overview: Combustible liquid. Closed containers exposed to heat and fire may build pressure and explode. This product is irritating to the eyes, respiratory system and skin. Risk of serious damage to eyes. Inhalation of large amounts may cause drowsiness and dizziness.

Potential Health Effects

Eyes: Avoid contact with eyes. Contact can cause moderate to severe irritation and possible injury to the eyes.

Skin: Avoid contact with skin. Prolonged and/or repeated skin contact may result in irritation or redness.

Inhalation: Avoid breathing vapors or mists of this product. Inhalation of vapors or mists of the product may be irritating to the respiratory system. Inhalation of high vapor amounts may lead to central nervous system depression.

Ingestion: Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances.

HMIS ratings: Health: 1, Fire: 2, Physical Hazard: 0

3. Composition/Information on Ingredients

Ingredients	CAS No.	% by weight	Notes
Ethyl lactate	97-64-3	> 95 %	

4. First Aid Measures

Eyes: Immediately flush eyes with large amount of water for at least 15 minutes. Get medical attention or advice. Remove contact lenses, if possible.

Skin: Remove all contaminated clothing. Wash skin with soap and water. If irritation develops, get medical attention. Wash contaminated clothing before reuse.

Inhalation: Remove affected person to fresh air. Call a physician if symptoms develop or persist. If the affected person is not breathing, apply artificial respiration.

Ingestion: If ingested, get immediate medical attention. Do NOT induce vomiting unless instructed to do so by medical personnel.

5. Fire Fighting Measures

General fire hazards: See Section 9 "Physical and Chemical Properties" for flammability properties. Combustible liquid. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Hazardous combustion products: See Section 10 "Stability and Reactivity" for hazardous combustion and thermal decomposition information. Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

Extinguishing media: Alcohol foam. Dry chemical. Carbon dioxide. Use water to cool fire-exposed containers and to protect personnel.

Fire fighting equipment/instructions: Firefighters should wear full protective clothing, including helmet, self-contained positive or pressure demand breathing apparatus and face mask.

HMIS ratings: Health: 1, Fire: 2, Physical Hazard: 0

6. Accidental Release Measures

Evacuation procedures: Evacuate spill area of unprotected and untrained personnel. Ventilate the contaminated area. Remove or disable all sources of ignition.

- Containment procedures: Contain the discharged material. Dike the spilled material, where this is possible. Cover with inert absorbent such as dry clay, sand, diatomaceous earth or commercial sorbents.
- Personal precautions: Wear appropriate protective equipment and clothing during clean-up. Avoid skin contact and inhalation of vapors during disposal of spills.
- Clean-up procedures: Wear appropriate protective equipment and clothing during clean-up. Sweep, gather or collect up spilled material and place in covered container appropriate for disposal. Use non-sparking tools.
- Special procedures: Regulations vary. Consult local authorities before disposal. Follow all Local, State, Federal and Provincial regulations for disposal.

7. Handling and Storage

- Handling procedures: Use good industrial hygiene practices when handling this material. Avoid contact with skin and eyes. Avoid breathing mists or vapors. Do not handle or store near an open flame, heat or other sources of ignition. Wash hands after handling and before eating.
- Storage procedures: Keep this material in cool, well-ventilated place. Do not handle or store near an open flame, heat or other sources of ignition. Store away from strong oxidizers.

8. Exposure Controls and Personal Protection

- Exposure limits: Ethyl lactate: ACGIH: None established, OSHA: None established
- Engineering controls: Use general dilution and local exhaust ventilation to effectively remove and prevent build up of any vapors, mists or spray generated from the handling/processing of this product. If ventilation is not adequate, use respiratory protection equipment.
- Personal protective equipment
- Eyes/Face: Avoid contact with eyes. Wear chemical goggles. When splash potential exists, full face shield also recommended.
- Skin: Avoid contact with skin. Normal work clothing (long sleeved shirts and long pants) is recommended. Consult with glove/clothing manufacturer for selection and compatibility testing of appropriate materials.
- Respiratory: If ventilation is not sufficient to effectively prevent buildup of vapor, mist or fume, appropriate NIOSH respiratory protection must be provided.
- General: Use good industrial hygiene practices when handling this material. When using this material, do not eat, drink or smoke. Eye wash fountain and emergency showers are recommended.

9. Physical and Chemical Properties

Appearance:	Clear liquid	Vapor density:	4.07 (Air=1)
Odor:	Mild solvent odor	Specific gravity:	1.029-1.037
pH:	7.4 (10% Solution)	Solubility (H ₂ O):	Soluble
Melting point:	Not determined	Octanol/water coeff.:	Not determined
Boiling point:	154°C (309°F)	Auto ignition:	400°C (752°F)
Flash point:	63°C (145°F) (Closed cup)	Decomposition point:	Not determined
Flammability limit:	Not determined	VOC:	906g/L (7.56lb/gal)
Vapor pressure:	1.7 (20°C)	Evaporation rate:	0.22 (BuAc=1)

10. Stability and Reactivity

- Stability: Stable under normal conditions.
- Possibility of hazardous reactions: Hazardous polymerization will not occur.
- Conditions to avoid: Keep away from heat, ignition sources and incompatible materials. Avoid contact with strong oxidizers.
- Incompatibility: This product may react with strong oxidizing agents.
- Hazardous decomposition: Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

11. Toxicology and Health Hazards

- Acute dose effects: Toxicology studies on humans and/or animals have not been conducted on this product/product family
- Oral: Ingestion of product may produce gastrointestinal irritation and disturbances. Ingestion of this product may cause nausea, vomiting and diarrhea.
Ethyl lactate: LD50 >5g/kg (Rat)
- Dermal: Ethyl lactate: LD50 >5g/kg (Rabbit)

Inhalation: Inhalation of vapors or mists of the product may be irritating to the respiratory system. Inhalation of high vapor amounts may lead to central nervous system depression.

Skin corrosion/irritation: Causes mild skin irritation.

Serious eye damage/irritation: Risk of serious damage to eyes.

Respiratory or skin sensitization: No information available.

Germ cell mutagenicity: Non identified.

Carcinogenicity: No carcinogenicity data available for this product. None of this product's components are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Reproductive toxicity: No information available.

Specific target organ systemic toxicity

Single exposure: None identified.

Repeated exposure: No information available.

Aspiration respiratory organs hazard: None identified.

12. Ecological Information

Ecotoxicity: Environmental toxicity studies have not been conducted on this product/product family.

Persistence/degradability: Biodegradable.

Bioaccumulation: No information available.

Mobility in soil: No information available.

13. Disposal Considerations

Disposal instructions: This product contains a component or components identified as hazardous under 40 CFR 261. Regulations vary. Consult local authorities before disposal. Waste must be handled in accordance with all federal, state, provincial and local regulations.

14. Transportation Information

IATA information: Not regulated as dangerous goods.

US DOT information: Not regulated as dangerous goods.

15. Regulatory Considerations

US federal regulations: None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

EU information

Symbol(s):



Xi
Irritant

Risk phrases: R41 Risk of serious damage to eyes.
R37 Irritating to respiratory system.

Safety phrases: S2 Keep out of the reach of children.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical
S39 Wear eye/face protection.
S46 If swallowed, seek medical advice immediately and show this container or label.

16. Other Information

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of preparation, but should only be used as a guide. It is subject to revision from time to time. MUTOH does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Product and Company Identification

Product name Cyan Ink VJ-BIOINK1-CY880
 Company name MUTOH INDUSTRIES LTD.
 Address 3128 Shimosuwa-machi Suwa-gun Nagano-ken 393-8585 JAPAN
 Contact section Quality Assurance section
 Phone +81-266-28-9736
 Fax +81-266-28-7760
 MSDS No. MSDS-VJBIOINK1CY880-00E

2. Hazard Identification

Emergency overview: Combustible liquid. Closed containers exposed to heat and fire may build pressure and explode. This product is irritating to the eyes, respiratory system and skin. Risk of serious damage to eyes. Inhalation of large amounts may cause drowsiness and dizziness.

Potential Health Effects

Eyes: Avoid contact with eyes. Contact can cause moderate to severe irritation and possible injury to the eyes.

Skin: Avoid contact with skin. Prolonged and/or repeated skin contact may result in irritation or redness.

Inhalation: Avoid breathing vapors or mists of this product. Inhalation of vapors or mists of the product may be irritating to the respiratory system. Inhalation of high vapor amounts may lead to central nervous system depression.

Ingestion: Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

3. Composition/Information on Ingredients

Ingredients	CAS No.	% by weight	Notes
Ethyl lactate	97-64-3	69-75 %	
Proprietary lactate solvent blend	-	2-6 %	
Resin	-	1-5 %	
Cyan pigment	-	1-5 %	

4. First Aid Measures

Eyes: Immediately flush eyes with large amount of water for at least 15 minutes. Get medical attention or advice. Remove contact lenses, if possible.

Skin: Remove all contaminated clothing. Wash skin with soap and water. If irritation develops, get medical attention. Wash contaminated clothing before reuse.

Inhalation: Remove affected person to fresh air. Call a physician if symptoms develop or persist. If the affected person is not breathing, apply artificial respiration.

Ingestion: If ingested, get immediate medical attention. Do NOT induce vomiting unless instructed to do so by medical personnel.

5. Fire Fighting Measures

General fire hazards: See Section 9 "Physical and Chemical Properties" for flammability properties. Combustible liquid. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Hazardous combustion products: See Section 10 "Stability and Reactivity" for hazardous combustion and thermal decomposition information. Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

Extinguishing media: Alcohol foam. Dry chemical. Carbon dioxide. Use water to cool fire-exposed containers and to protect personnel.

Fire fighting equipment/instructions: Firefighters should wear full protective clothing, including helmet, self-contained positive or pressure demand breathing apparatus and face mask.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

6. Accidental Release Measures

- Evacuation procedures: Evacuate spill area of unprotected and untrained personnel. Ventilate the contaminated area. Remove or disable all sources of ignition.
- Containment procedures: Contain the discharged material. Dike the spilled material, where this is possible. Cover with inert absorbent such as dry clay, sand, diatomaceous earth or commercial sorbents.
- Personal precautions: Wear appropriate protective equipment and clothing during clean-up. Avoid skin contact and inhalation of vapors during disposal of spills.
- Clean-up procedures: Wear appropriate protective equipment and clothing during clean-up. Sweep, gather or collect up spilled material and place in covered container appropriate for disposal. Use non-sparking tools.
- Special procedures: Regulations vary. Consult local authorities before disposal. Follow all Local, State, Federal and Provincial regulations for disposal.

7. Handling and Storage

- Handling procedures: Use good industrial hygiene practices when handling this material. Avoid contact with skin and eyes. Avoid breathing mists or vapors. Do not handle or store near an open flame, heat or other sources of ignition. Wash hands after handling and before eating.
- Storage procedures: Keep this material in cool, well-ventilated place. Do not handle or store near an open flame, heat or other sources of ignition. Store away from strong oxidizers.

8. Exposure Controls and Personal Protection

- Exposure limits: Ethyl lactate: ACGIH: None established, OSHA: None established
- Engineering controls: Use general dilution and local exhaust ventilation to effectively remove and prevent build up of any vapors, mists or spray generated from the handling/processing of this product. If ventilation is not adequate, use respiratory protection equipment.
- Personal protective equipment
 - Eyes/Face: Avoid contact with eyes. Wear chemical goggles. When splash potential exists, full face shield also recommended.
 - Skin: Avoid contact with skin. Normal work clothing (long sleeved shirts and long pants) is recommended. Consult with glove/clothing manufacturer for selection and compatibility testing of appropriate materials.
 - Respiratory: If ventilation is not sufficient to effectively prevent buildup of vapor, mist or fume, appropriate NIOSH respiratory protection must be provided.
 - General: Use good industrial hygiene practices when handling this material. When using this material, do not eat, drink or smoke. Eye wash fountain and emergency showers are recommended.

9. Physical and Chemical Properties

Appearance:	Cyan liquid	Vapor density:	Not determined
Odor:	Sweet solvent odor	Specific gravity:	1.03-1.04
pH:	Not determined	Solubility (H ₂ O):	No data available
Melting point:	Not determined	Octanol/water coeff.:	Not determined
Boiling point:	Not determined	Auto ignition:	Not determined
Flash point:	63°C (145°F) (Closed cup)	Decomposition point:	Not determined
Flammability limit:	Not determined	VOC:	948-973g/L (7.91-8.12lb/gal)
Vapor pressure:	Not determined	Evaporation rate:	Not determined

10. Stability and Reactivity

- Stability: Stable under normal conditions.
- Possibility of hazardous reactions: Hazardous polymerization will not occur.
- Conditions to avoid: Keep away from heat, ignition sources and incompatible materials. Avoid contact with strong oxidizers.
- Incompatibility: This product may react with strong oxidizing agents.
- Hazardous decomposition: Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

11. Toxicology and Health Hazards

- Acute dose effects: Toxicology studies on humans and/or animals have not been conducted on this product/product family

Oral: Ingestion of product may produce gastrointestinal irritation and disturbances. Ingestion of this product may cause nausea, vomiting and diarrhea.
 Ethyl lactate: LD50 >5g/kg (Rat)
 Proprietary lactate solvent blend: LD50 >2000mg/kg (Rat)

Dermal: Ethyl lactate: LD50 >5g/kg (Rabbit)

Inhalation: Inhalation of vapors or mists of the product may be irritating to the respiratory system.
 Inhalation of high vapor amounts may lead to central nervous system depression.

Skin corrosion/irritation: Causes mild skin irritation.

Serious eye damage/irritation: Risk of serious damage to eyes.

Respiratory or skin sensitization: May cause allergic skin reaction.

Germ cell mutagenicity Non identified.

Carcinogenicity No carcinogenicity data available for this product.

Reproductive toxicity: No information available.

Specific target organ systemic toxicity

Single exposure: None identified.

Repeated exposure: May cause damage to the liver through prolonged or repeated exposure.

Aspiration respiratory organs hazard: None identified.

12. Ecological Information

Ecotoxicity: Ecotoxicity test data not available for this product. Based upon components, may be harmful to aquatic life.

Persistence/degradability: No information available.

Bioaccumulation: No information available.

Mobility in soil: No information available.

13. Disposal Considerations

Disposal instructions: This product contains a component or components identified as hazardous under 40 CFR 261. Regulations vary. Consult local authorities before disposal. Waste must be handled in accordance with all federal, state, provincial and local regulations.

14. Transportation Information

IATA information: Not regulated as dangerous goods.

US DOT information: Not regulated as dangerous goods.

15. Regulatory Considerations

US federal regulations: No information available for the product.
 None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

EU information

Symbol(s):



Xi
Irritant

Risk phrases: R41 Risk of serious damage to eyes.

R37 Irritating to respiratory system.

Safety phrases: S2 Keep out of the reach of children.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical

S39 Wear eye/face protection.

S46 If swallowed, seek medical advice immediately and show this container or label.

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Material Safety Data Sheet

1. Product and Company Identification

Product name: Magenta Ink VJ-BIOINK1-MA880
 Company name: MUTOH INDUSTRIES LTD.
 Address: 3128 Shimosuwa-machi Suwa-gun Nagano-ken 393-8585 JAPAN
 Contact section: Quality Assurance section
 Phone: +81-266-28-9736
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2. Hazard Identification

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Potential Health Effects

Eyes: Avoid contact with eyes. Contact can cause moderate to severe irritation and possible injury to the eyes.

Skin: Avoid contact with skin. Prolonged and/or repeated skin contact may result in irritation or redness.

Inhalation: Avoid breathing vapors or mists of this product. Inhalation of vapors or mists of the product may be irritating to the respiratory system. Inhalation of high vapor amounts may lead to central nervous system depression.

Ingestion: Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

3. Composition/Information on Ingredients

Ingredients	CAS No.	% by weight	Notes
Ethyl lactate	97-64-3	69-75 %	
Proprietary lactate solvent blend	-	2-6 %	
Resin	-	1-5 %	
Magenta pigment	-	1-5 %	

4. First Aid Measures

Eyes: Immediately flush eyes with large amount of water for at least 15 minutes. Get medical attention or advice. Remove contact lenses, if possible.

Skin: Remove all contaminated clothing. Wash skin with soap and water. If irritation develops, get medical attention. Wash contaminated clothing before reuse.

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Fire fighting equipment/instructions: Firefighters should wear full protective clothing, including helmet, self-contained positive or pressure demand breathing apparatus and face mask.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

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- Evacuation procedures: Evacuate spill area of unprotected and untrained personnel. Ventilate the contaminated area. Remove or disable all sources of ignition.
- Containment procedures: Contain the discharged material. Dike the spilled material, where this is possible. Cover with inert absorbent such as dry clay, sand, diatomaceous earth or commercial sorbents.
- Personal precautions: Wear appropriate protective equipment and clothing during clean-up. Avoid skin contact and inhalation of vapors during disposal of spills.
- Clean-up procedures: Wear appropriate protective equipment and clothing during clean-up. Sweep, gather or collect up spilled material and place in covered container appropriate for disposal. Use non-sparking tools.
- Special procedures: Regulations vary. Consult local authorities before disposal. Follow all Local, State, Federal and Provincial regulations for disposal.

7. Handling and Storage

- Handling procedures: Use good industrial hygiene practices when handling this material. Avoid contact with skin and eyes. Avoid breathing mists or vapors. Do not handle or store near an open flame, heat or other sources of ignition. Wash hands after handling and before eating.
- Storage procedures: Keep this material in cool, well-ventilated place. Do not handle or store near an open flame, heat or other sources of ignition. Store away from strong oxidizers.

8. Exposure Controls and Personal Protection

- Exposure limits: Ethyl lactate: ACGIH: None established, OSHA: None established
- Engineering controls: Use general dilution and local exhaust ventilation to effectively remove and prevent build up of any vapors, mists or spray generated from the handling/processing of this product. If ventilation is not adequate, use respiratory protection equipment.
- Personal protective equipment
 - Eyes/Face: Avoid contact with eyes. Wear chemical goggles. When splash potential exists, full face shield also recommended.
 - Skin: Avoid contact with skin. Normal work clothing (long sleeved shirts and long pants) is recommended. Consult with glove/clothing manufacturer for selection and compatibility testing of appropriate materials.
 - Respiratory: If ventilation is not sufficient to effectively prevent buildup of vapor, mist or fume, appropriate NIOSH respiratory protection must be provided.
 - General: Use good industrial hygiene practices when handling this material. When using this material, do not eat, drink or smoke. Eye wash fountain and emergency showers are recommended.

9. Physical and Chemical Properties

Appearance:	Magenta liquid	Vapor density:	Not determined
Odor:	Sweet solvent odor	Specific gravity:	1.03-1.04
pH:	Not determined	Solubility (H ₂ O):	No data available
Melting point:	Not determined	Octanol/water coeff.:	Not determined
Boiling point:	Not determined	Auto ignition:	Not determined
Flash point:	63°C (145°F) (Closed cup)	Decomposition point:	Not determined
Flammability limit:	Not determined	VOC:	948-973g/L (7.91-8.12lb/gal)
Vapor pressure:	Not determined	Evaporation rate:	Not determined

10. Stability and Reactivity

- Stability: Stable under normal conditions.
- Possibility of hazardous reactions: Hazardous polymerization will not occur.
- Conditions to avoid: Keep away from heat, ignition sources and incompatible materials. Avoid contact with strong oxidizers.
- Incompatibility: This product may react with strong oxidizing agents.
- Hazardous decomposition: Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

11. Toxicology and Health Hazards

- Acute dose effects: Toxicology studies on humans and/or animals have not been conducted on this product/product family

Oral: Ingestion of product may produce gastrointestinal irritation and disturbances. Ingestion of this product may cause nausea, vomiting and diarrhea.
 Ethyl lactate: LD50 >5g/kg (Rat)
 Proprietary lactate solvent blend: LD50 >2000mg/kg (Rat)

Dermal: Ethyl lactate: LD50 >5g/kg (Rabbit)

Inhalation: Inhalation of vapors or mists of the product may be irritating to the respiratory system.
 Inhalation of high vapor amounts may lead to central nervous system depression.

Skin corrosion/irritation: Causes mild skin irritation.

Serious eye damage/irritation: Risk of serious damage to eyes.

Respiratory or skin sensitization: May cause allergic skin reaction.

Germ cell mutagenicity Non identified.

Carcinogenicity No carcinogenicity data available for this product.

Reproductive toxicity: No information available.

Specific target organ systemic toxicity

Single exposure: None identified.

Repeated exposure: May cause damage to the liver through prolonged or repeated exposure.

Aspiration respiratory organs hazard: None identified.

12. Ecological Information

Ecotoxicity: Ecotoxicity test data not available for this product. Based upon components, may be harmful to aquatic life.

Persistence/degradability: No information available.

Bioaccumulation: No information available.

Mobility in soil: No information available.

13. Disposal Considerations

Disposal instructions: This product contains a component or components identified as hazardous under 40 CFR 261. Regulations vary. Consult local authorities before disposal. Waste must be handled in accordance with all federal, state, provincial and local regulations.

14. Transportation Information

IATA information: Not regulated as dangerous goods.

US DOT information: Not regulated as dangerous goods.

15. Regulatory Considerations

US federal regulations: No information available for the product.
 None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

EU information

Symbol(s):



Xi
Irritant

Risk phrases: R41 Risk of serious damage to eyes.

R37 Irritating to respiratory system.

Safety phrases: S2 Keep out of the reach of children.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical

S39 Wear eye/face protection.

S46 If swallowed, seek medical advice immediately and show this container or label.

16. Other Information

This "Material Safety Data Sheet" contains health, safety, and environmental information. It does not replace any precautionary language or use and disposal information which accompanies the product. The information contained herein is believed to be accurate at the time of preparation, but should only be used as a guide. It is subject to revision from time to time. MUTOH does not warrant the completeness or accuracy of the information contained herein.

Material Safety Data Sheet

1. Product and Company Identification

Product name Yellow Ink VJ-BIOINK1-YE880
 Company name MUTOH INDUSTRIES LTD.
 Address 3128 Shimosuwa-machi Suwa-gun Nagano-ken 393-8585 JAPAN
 Contact section Quality Assurance section
 Phone +81-266-28-9736
 Fax +81-266-28-7760
 MSDS No. MSDS-VJBIOINK1YE880-00E

2. Hazard Identification

Emergency overview: Combustible liquid. Closed containers exposed to heat and fire may build pressure and explode. This product is irritating to the eyes, respiratory system and skin. Risk of serious damage to eyes. Inhalation of large amounts may cause drowsiness and dizziness.

Potential Health Effects

Eyes: Avoid contact with eyes. Contact can cause moderate to severe irritation and possible injury to the eyes.

Skin: Avoid contact with skin. Prolonged and/or repeated skin contact may result in irritation or redness.

Inhalation: Avoid breathing vapors or mists of this product. Inhalation of vapors or mists of the product may be irritating to the respiratory system. Inhalation of high vapor amounts may lead to central nervous system depression.

Ingestion: Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

3. Composition/Information on Ingredients

Ingredients	CAS No.	% by weight	Notes
Ethyl lactate	97-64-3	69-75 %	
Proprietary lactate solvent blend	-	2-6 %	
Resin	-	1-5 %	
Yellow pigment	-	1-5 %	

4. First Aid Measures

Eyes: Immediately flush eyes with large amount of water for at least 15 minutes. Get medical attention or advice. Remove contact lenses, if possible.

Skin: Remove all contaminated clothing. Wash skin with soap and water. If irritation develops, get medical attention. Wash contaminated clothing before reuse.

Inhalation: Remove affected person to fresh air. Call a physician if symptoms develop or persist. If the affected person is not breathing, apply artificial respiration.

Ingestion: If ingested, get immediate medical attention. Do NOT induce vomiting unless instructed to do so by medical personnel.

5. Fire Fighting Measures

General fire hazards: See Section 9 "Physical and Chemical Properties" for flammability properties. Combustible liquid. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Hazardous combustion products: See Section 10 "Stability and Reactivity" for hazardous combustion and thermal decomposition information. Carbon monoxide, carbon dioxide and other hydrocarbon fragments.

Extinguishing media: Alcohol foam. Dry chemical. Carbon dioxide. Use water to cool fire-exposed containers and to protect personnel.

Fire fighting equipment/instructions: Firefighters should wear full protective clothing, including helmet, self-contained positive or pressure demand breathing apparatus and face mask.

HMIS ratings: Health: 2, Fire: 2, Physical Hazard: 0

6. Accidental Release Measures

- Evacuation procedures: Evacuate spill area of unprotected and untrained personnel. Ventilate the contaminated area. Remove or disable all sources of ignition.
- Containment procedures: Contain the discharged material. Dike the spilled material, where this is possible. Cover with inert absorbent such as dry clay, sand, diatomaceous earth or commercial sorbents.
- Personal precautions: Wear appropriate protective equipment and clothing during clean-up. Avoid skin contact and inhalation of vapors during disposal of spills.
- Clean-up procedures: Wear appropriate protective equipment and clothing during clean-up. Sweep, gather or collect up spilled material and place in covered container appropriate for disposal. Use non-sparking tools.
- Special procedures: Regulations vary. Consult local authorities before disposal. Follow all Local, State, Federal and Provincial regulations for disposal.

7. Handling and Storage

- Handling procedures: Use good industrial hygiene practices when handling this material. Avoid contact with skin and eyes. Avoid breathing mists or vapors. Do not handle or store near an open flame, heat or other sources of ignition. Wash hands after handling and before eating.
- Storage procedures: Keep this material in cool, well-ventilated place. Do not handle or store near an open flame, heat or other sources of ignition. Store away from strong oxidizers.

8. Exposure Controls and Personal Protection

- Exposure limits: Ethyl lactate: ACGIH: None established, OSHA: None established
- Engineering controls: Use general dilution and local exhaust ventilation to effectively remove and prevent build up of any vapors, mists or spray generated from the handling/processing of this product. If ventilation is not adequate, use respiratory protection equipment.
- Personal protective equipment
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 - General: Use good industrial hygiene practices when handling this material. When using this material, do not eat, drink or smoke. Eye wash fountain and emergency showers are recommended.

9. Physical and Chemical Properties

Appearance:	Yellow liquid	Vapor density:	Not determined
Odor:	Sweet solvent odor	Specific gravity:	1.03-1.04
pH:	Not determined	Solubility (H ₂ O):	No data available
Melting point:	Not determined	Octanol/water coeff.:	Not determined
Boiling point:	Not determined	Auto ignition:	Not determined
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