

Safety Data Sheets

1. Identification

| | |
|---|---|
| Product Name | : AS5 ink Light Black |
| Order No. | : AS5-LK-60 / AS5-LK-2L |
| Ink Ver. | : 1 |
| General Use | : Ink for ink jet printer |
| Product Description | : Solvent pigment ink |
| SDS Number | : 037-S285816 |
| 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 : Category 4

Health Hazards

Eye Damage / Irritation : Category 1

Carcinogenicity : Category 2

Toxic to Reproduction : Category 1B

Specific Target Organ Toxicity : Category 2

(Single Exposure)

Specific Target Organ Toxicity : Category 2

(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

Danger

Hazard Statements

H227 Combustible liquid.

H318 Cause serious eye damage.

H351 Suspected of causing cancer.

H360 May damage fertility or the unborn child.

H371 May cause damage to organs.

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

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.

P210 Keep away from open flames and other ignition sources. No smoking.

P260 Do not breathe gas/mist/vapours.

P264 Wash hands and eyes thoroughly after handling.

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

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

[Response]

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+P311 IF exposed or concerned: Call a POISON CENTER or doctor/physician.

(P305+)P310 (IF IN EYES) Immediately call a POISON CENTER or doctor/physician.

P314 Get medical advice/attention if you feel unwell.

P370+P378 In case of fire: Use foam, carbon dioxide, dry chemical for extinguish.

[Storage]

P403+P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

[Disposal]

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

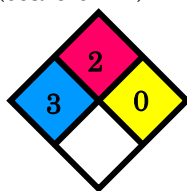
NFPA Rating (scale 0 – 4)

Health = 3

Flammability = 2

Instability = 0

Special = None



CANADIAN WHMIS SYMBOLS



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3. Composition / Information on Ingredients

Mixtures

| No | Chemical Name | Wt% | CAS No. |
|----|------------------------|-------|--------------|
| 1 | Glycol ether solvents | 75-85 | Trade Secret |
| 2 | Lactone solvent series | 10-20 | Trade Secret |
| 3 | Vinyl resin | 1-5 | Trade Secret |
| 4 | Pigment | 0.1-1 | Trade Secret |
| 5 | Pigment(green) | 0.1-1 | Trade Secret |
| 6 | Corrosion inhibitor | 0.1-1 | Trade Secret |

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

4. First Aid Measures

Description of first aid measures

- Eye Contact** : If this product comes in contact with the eyes:
Immediately hold eyelids apart and flush the eye continuously with running water. Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
- Skin Contact** : If skin or hair contact occurs:
Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
- Inhalation** : If fumes, aerosols or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.
- Ingestion** : Immediately give a glass of water. First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Most important symptoms and effects, both acute and delayed

See Section 11.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

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5. Fire Fighting Measures

| | |
|--|--|
| Flammable Properties | : Flash point 64.7 degree C Auto Ignition Temperature: 169 degree C Explosive Limit : 2% to 33.0% |
| Extinguishing Media | : Foam, Dry chemical powder, BCF (where regulations permit), Carbon dioxide, Water spray or fog - Large fires only. |
| Unsuitable Extinguishing Media | : Do not scatter spilled material with high-pressure water streams. |
| Special hazards arising from the substrate or mixture | |
| Fire | : None known. |
| Incompatibility | |
| Special protective equipment and precautions for fire-fighters | |
| Fire Fighting | : Alert Fire Brigade and tell them location and nature of hazard. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Use water delivered as a fine spray to control fire and cool adjacent area. Avoid spraying water onto liquid pools. DO NOT approach containers suspected to be hot. Cool fire exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire. |
| Fire/Explosion Hazard | : Combustible. Slight fire hazard when exposed to heat or flame. Heating may cause expansion or decomposition leading to violent rupture of containers. On combustion, may emit irritating/ toxic fumes. May emit acrid smoke. Mists containing combustible materials may be explosive. May emit poisonous fumes. May emit corrosive fumes. |

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

See section 8.

Environmental precautions

See section 12.

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Methods and material for containment and cleaning up

Minor Spills : Remove all ignition sources. Clean up all spills immediately. Avoid breathing vapours and contact with skin and eyes. Control personal contact with the substance, by using protective equipment. Contain and absorb spill with sand, earth, inert material or vermiculite. Wipe up. Place in a suitable, labelled container for waste disposal.

Major Spills : Moderate hazard. Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. Wear breathing apparatus plus protective gloves. Prevent, by any means available, spillage from entering drains or water course. No smoking, naked lights or ignition sources. Increase ventilation. Stop leak if safe to do so. Contain spill with sand, earth or vermiculite. Collect recoverable product into labelled containers for recycling. Absorb remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. If contamination of drains or waterways occurs, advise emergency services.

7. Handling and Storage

Precautions for Safe Handling : Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Avoid smoking, naked lights or ignition sources. Avoid contact with incompatible materials. When handling, DO NOT eat, drink or smoke. Keep containers securely sealed when not in use. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately.

Conditions for Safe Storage : Store in original containers. Keep containers securely sealed. No smoking, naked lights or ignition sources. Store in a cool, dry, well-ventilated area. Store away from incompatible materials and foodstuff containers. Protect containers against physical damage and check regularly for leaks. Observe manufacturer's storage and handling recommendations contained within this SDS.

Storage : None known.

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incompatibility

8. Exposure Controls / Personal Protection

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

| Source | Ingredient | Material name | TWA | STEL | Peak | Notes |
|------------|------------|--|-----------------------|---------------|---------------|-------------------------------------|
| OSHA-PELs | Pigment | Carbon black | 3.5 mg/m ³ | Not Available | Not Available | Not Available |
| ACGIH-TLV | Pigment | Carbon black | 3 mg/m ³ | Not Available | Not Available | TLV® Basis: Bronchitis |
| NIOSH-RELS | Pigment | Acetylene black, Channel black, Furnace black, Lamp black, Thermal black | 3.5 mg/m ³ | Not Available | Not Available | Ca See Appendix A See Appendix C |

EMERGENCY LIMITS

| Ingredient | Material name | TEEL-1 | TEEL-2 | TEEL-3 |
|------------------------|---------------|-----------------------|-------------------------|-------------------------|
| Pigment | Carbon black | 9 mg/m ³ | 99 mg/m ³ | 590 mg/m ³ |
| Pigment(green) | Trade secret | 12 mg/m ³ | 130 mg/m ³ | 790 mg/m ³ |
| Vinyl resin | Trade secret | 120 mg/m ³ | 1,300 mg/m ³ | 7,900 mg/m ³ |
| Lactone solvent series | Trade secret | 3.6 mg/m ³ | 39 mg/m ³ | 310 mg/m ³ |

| Ingredient | Original IDLH | Revised IDLH |
|------------------------|-----------------------------------|-------------------------|
| Pigment | N.E. mg/m ³ / N.E. ppm | 1,750 mg/m ³ |
| Pigment(green) | Not Available | Not Available |
| Vinyl resin | Not Available | Not Available |
| Glycol ether solvents | Not Available | Not Available |
| Lactone solvent series | Not Available | Not Available |
| Corrosion inhibitor | Not Available | Not Available |

Exposure Controls

Occupational Exposure Controls

Appropriate

: General exhaust is adequate under normal operating conditions. If

Engineering Controls

risk of overexposure exists, wear SAA approved respirator. Correct fit is essential to obtain adequate protection. Provide adequate

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ventilation in warehouse or closed storage areas.

Personal Protection

Respiratory Protection : Consult with a health and safety professional for specific respirators appropriate for your use.



Hand Protection : Wear chemical protective gloves, e.g. PVC.



Eye Protection : Safety glasses with side shields. Chemical goggles. Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.



Skin Protection : Wear safety footwear or safety gumboots, e.g. Rubber. Overalls. P.V.C. apron.



9. Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance: Black liquid

| | | | |
|---|-------------------|--|---------------|
| Physical state | Liquid | Relative density (Water = 1) | 0.974 |
| Odour | Slight | Partition coefficient n-octanol / water | Not Available |
| Odour threshold | Not Available | Auto-ignition temperature (°C) | 169 |
| pH (as supplied) | Not Available | Decomposition temperature | Not Available |
| Melting point /freezing point (°C) | Not Available | Viscosity (cSt) | Not Available |
| Initial boiling point and boiling range (°C) | 176-204 | Molecular weight (g/mol) | Not Available |
| Flash point (°C) | 64.7 (closed cup) | Taste | Not Available |
| Evaporation rate | Not Available | Explosive properties | Not Available |
| Flammability | Combustible | Oxidising properties | Not Available |

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| | | | |
|---------------------------|---------------|----------------------------------|---------------|
| Upper Explosive Limit (%) | 33 | Surface Tension (dyn/cm or mN/m) | Not Available |
| Lower Explosive Limit (%) | 2 | Volatile Component (%vol) | Not Available |
| Vapour pressure (kPa) | 2.67 | Gas group | Not Available |
| Solubility in water (g/L) | Immiscible | pH as a solution (1%) | Not Available |
| Vapour density (Air = 1) | Not Available | VOC g/L | Not Available |

10. Stability and Reactivity

- Reactivity : Stable under normal conditions of use.
- Chemical Stability : Unstable in the presence of incompatible materials.
Product is considered stable.
- Possibility of Hazardous Reactions : Hazardous polymerisation will not occur.
- Conditions to Avoid : See section 7.
- Incompatible Materials : See section 7.
- Hazardous decomposition products : See section 5.

11. Toxicological Information

Information on toxicological effects

- Inhaled : The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
- Ingestion : The material has NOT been classified by EC Directives or other classification systems as 'harmful by ingestion'. This is because of the lack of corroborating animal or human evidence.
- Skin Contact : The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. The material is unlikely to produce an irritant dermatitis as described in EC Directives.
Open cuts, abraded or irritated skin should not be exposed to this material
Entry into the blood-stream, through, for example, cuts, abrasions or

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lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

Eye : If applied to the eyes, this material causes severe eye damage.

Chronic : Ample evidence exists from experimentation that reduced human fertility is directly caused by exposure to the material.

Ample evidence exists, from results in experimentation, that developmental disorders are directly caused by human exposure to the material.

| Ingredient | TOXICITY | IRRITATION |
|------------------------|---------------|---------------|
| As a product | Not Available | Not Available |
| Pigment | Not Available | Not Available |
| Pigment(green) | Not Available | Not Available |
| Vinyl resin | Not Available | Not Available |
| Glycol ether solvents | Not Available | Not Available |
| Lactone solvent series | Not Available | Not Available |
| Corrosion inhibitor | Not Available | Not Available |

Acute Toxicity : Data Not Available to make classification.

Skin : Data Not Available to make classification.

Irritation/Corrosion

Serious Eye : Data available to make classification.

Damage/Irritation

Respiratory or Skin : Data Not Available to make classification.

sensitisation

Mutagenicity : Data Not Available to make classification.

Carcinogenicity : Data available to make classification.

Reproductivity : Data available to make classification.

STOT - Single Exposure : Data available to make classification.

STOT - Repeated : Data available to make classification.

Exposure

Aspiration Hazard : Data Not Available to make classification.

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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.

| Ingredient | Endpoint | Test Duration (hr) | Species | Value | Source |
|------------------------|----------|--------------------|-------------------------------|--------------|--------|
| Pigment | LC50 | 96 | Fish | =1000mg/L | 1 |
| | EC50 | 24 | Crustacea | >5600mg/L | 1 |
| | NOEC | 96 | Fish | =1000mg/L | 1 |
| Glycol ether solvents | LC50 | 96 | Fish | 713.772mg/L | 3 |
| | EC50 | 96 | Algae or other aquatic plants | 4246.290mg/L | 3 |
| | EC50 | 384 | Crustacea | 163.553mg/L | 3 |
| Lactone solvent series | LC50 | 96 | Fish | 220mg/L | 1 |
| | EC50 | 48 | Crustacea | >500mg/L | 1 |
| | EC50 | 96 | Algae or other aquatic plants | 16.400mg/L | 3 |
| | EC20 | 72 | Algae or other aquatic plants | =14mg/L | 1 |
| | NOEC | 24 | Fish | =5mg/L | 1 |
| Corrosion inhibitor | LC50 | 96 | Fish | 1514.080mg/L | 3 |
| | EC50 | 48 | Crustacea | 374mg/L | 2 |
| | EC50 | 96 | Algae or other aquatic plants | 61.454mg/L | 3 |
| | EC50 | 504 | Crustacea | 59.8mg/L | 2 |
| | NOEC | 504 | Crustacea | 3.99mg/L | 2 |

Legend: Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances – Ecotoxicological

Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated)

DO NOT discharge into sewer or waterways.

Persistence and degradability

| Ingredient | Persistence: Water/Soil | Persistence: Air |
|------------------------|-------------------------|------------------|
| Glycol ether solvents | LOW | LOW |
| Lactone solvent series | LOW | LOW |
| Corrosion inhibitor | LOW | LOW |

Bioaccumulative potential

| Ingredient | Bioaccumulation |
|------------|-----------------|
| | |

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| | |
|------------------------|------------------------|
| Glycol ether solvents | LOW (LogKOW = 0.0093) |
| Lactone solvent series | LOW (BCF = 1.8) |
| Corrosion inhibitor | LOW (LogKOW = -0.6047) |

Mobility in soil

| Ingredient | Mobility |
|------------------------|-------------------|
| Glycol ether solvents | LOW (KOC = 10) |
| Lactone solvent series | LOW (KOC = 7.134) |
| Corrosion inhibitor | HIGH (KOC = 1) |

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 : Empty containers may contain product residue. Dispose in

Contaminated accordance with all applicable regulations.

Packaging

14. Transport Information

Check a thing without a leak in a container.

Perform prevention of collapse of cargo surely.

Labels Required : Marine Pollutant: NO

Land transport (DOT) : NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS.
*1

Air transport : NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS.
(ICAO-IATA / DGR)

Sea transport : NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS.
(IMDG-Code / GGVSee)

Transport in bulk : Not Applicable

according to Annex II of

MARPOL and the IBC

code

*1 Class combustible liquid (NA1993), Packing group III for quantities of 450 liters (119 gallons) or more; not regulated for smaller quantities

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15. Regulatory Information

Safety, health and environmental regulations / legislation specific for the substance or mixture

PIGMENT IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - Alaska Limits for Air Contaminants
US - California Permissible Exposure Limits for Chemical Contaminants
US - California Proposition 65 - Carcinogens
US - Hawaii Air Contaminant Limits
US - Idaho - Limits for Air Contaminants
US - Massachusetts - Right To Know Listed Chemicals
US - Michigan Exposure Limits for Air Contaminants
US - Minnesota Permissible Exposure Limits (PELs)
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Oregon Permissible Exposure Limits (Z-1)
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants
US ACGIH Threshold Limit Values (TLV)
US ACGIH Threshold Limit Values (TLV) - Carcinogens
US NIOSH Recommended Exposure Limits (RELs)
US OSHA Permissible Exposure Levels (PELs) - Table Z1
US Priority List for the Development of Proposition 65 Safe Harbor Levels - No Significant Risk Levels (NSRLs) for Carcinogens and
Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

PIGMENT (GREEN) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

VINYL RESIN IS FOUND ON THE FOLLOWING REGULATORY LISTS

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

GLYCOL ETHER SOLVENTS ARE FOUND ON THE FOLLOWING REGULATORY LISTS

US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELs)
US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)

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|---|
| US - Pennsylvania - Hazardous Substance List |
| US Clean Air Act - Hazardous Air Pollutants |
| US EPCRA Section 313 Chemical List |
| US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory |

LACTONE SOLVENT SERIES ARE FOUND ON THE FOLLOWING REGULATORY LISTS

| |
|--|
| US Drug Enforcement Administration (DEA) List I and II Regulated Chemicals |
| US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory |

CORROSION INHIBITOR IS FOUND ON THE FOLLOWING REGULATORY LISTS

| |
|---|
| US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory |
|---|

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SECTION 311/312 HAZARD CATEGORIES


| | |
|---------------------------------|-----|
| Immediate (acute) health hazard | Yes |
| Delayed (chronic) health hazard | Yes |
| Fire hazard | Yes |
| Pressure hazard | No |
| Reactivity hazard | No |

US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4)

None Reported.

State Regulations

US. CALIFORNIA PROPOSITION 65

| | |
|---|--|
|  | <p>: WARNING:</p> <p>This product can expose you to chemicals including Arsenic compounds, Cadmium and cadmium compounds, Carbon black, Chromium (hexavalent compounds), Lead and lead compounds, Mercury and mercury compounds, Nickel compounds, Vinyl Chloride, 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.</p> |
|---|--|

Inventory

| National Inventory | Status |
|--------------------|--------|
| Australia - AICS | Y |
| Canada - DSL | Y |
| Canada - NDSL | Y |



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| | |
|-------------------------------|---|
| China - IECSC | Y |
| Europe - EINEC / ELINCS / NLP | Y |
| Japan - ENCS | Y |
| Korea - KECI | Y |
| New Zealand - NZIoC | Y |
| Philippines - PICCS | N |
| USA - TSCA | Y |

Legend: Y = All ingredients are on the inventory.

N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing
(see specific ingredients in brackets).

16. Other Information

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.