

물질안전보건자료

(Material Safety Data Sheet)

1. Product and Company Identification

- A. Product Name :** DTI04-100MY / DTI04-01LY / DTI04-20LY (Water-based dye ink)
- B. Recommended use of the chemical and restrictions on use:** Water-based ink for inkjet printer
Do not use for the other application.
- C. Manufacturer :**
Name : InkTec Co.,Ltd.
Address : #98-12, Neungan-ro, Danwon-gu, Ansan-city, Gyeonggi-do
425-839, Korea
Emergency telephone number : +82-31-494-0001
FAX number : +82-31-492-2041

2. Hazards Identification

- A. Classification of the substance or mixture:** Not applicable
classified as dangerous according to Directive 1999/45/EC.
For. Full text of R-phrases : See section 16.
- B. Label elements, including precautionary statements**

Hazard symbols : Not applicable

Signal word : Not applicable

classified as dangerous according to Regulation (EC) No 1272/2008.
Hazard statement : Not applicable
Precautionary statement : Not applicable
- C. Other hazards which do not result in classification :**
No information available

3. Composition Information

| Ingredients | % By weight | CAS No. | EC No. | Classification | | | | Note |
|---------------------|-------------|-------------|-------------|----------------|---------------------------------|------------------|-----------------------|------|
| | | | | 67/548/EEC | CLP | | | |
| | | | | | Hazard class and category codes | Hazard statement | Pictogram/Signal word | |
| Yellow disperse Dye | 1 < C < 5 | Proprietary | Proprietary | | | | | |
| Ethane-1,2-diol | 17 < C < 22 | 107-21-1 | 203-473-3 | Xn; R22 | Acute tox4* | H302 | GHS08 Dgr | |
| Glycerol | 8 < C < 14 | 56-81-5 | 200-289-5 | | | | | |
| DL-hexane-1,2-diol | 1 < C < 5 | 6920-22-5 | 230-029-6 | | | | | |
| Water | | 7732-18-5 | 231-791-2 | | | | | |

4. First-aid measures

A. Eye contact: While lifting upper eyelid, flush eyes with plenty of water for at least 15 minutes, and then get immediate medical attention. If you' re not experienced enough, do not remove contact lenses.

B. Skin contact: Get medical attention, if needed.

Wash skin with soap and plenty of water for least 15 minutes.

Thoroughly clean and dry contaminated clothing and shoes before reuse.

Remove contaminated clothing and shoes and wash skin with water and soap for at least 15 minutes.

Remove contaminated clothing and shoes.

Thoroughly clean and dry contaminated clothing and shoes before reuse.

If skin is irritated or shows other symptoms, get medical attention.

C. Inhalation: If breathing is difficult, give oxygen.

Give artificial respiration if not breathing, and get immediate medical attention.

Avoid being exposed to it.

If the person develops a symptom, move him to an area where fresh air is available.

If the person develops a side effect, more him to an area free of contamination.

Get medical attention.

D. Ingestion: Get medical attention.

Never make an unconscious person vomit or drink fluids.

Make person vomit only after seeking a permit from a doctor.

If victim is conscious, give 2-4 cups of water or milk.

If vomiting occurs, keep head lower than hips to help prevent aspiration.
Contact poison control center or physician immediately
Give person plenty of water.
Do not try to make person vomit, because he may suffer a seizure or stop breathing.
If vomiting occurs, keep head lower than hips to help prevent aspiration.
If person is unconscious, turn head to side.
If the person has swallowed a large quantity, let him get medical attention.

E. Major emergency and potential health symptoms/effects : No data available

F. Indication of immediate medical attention and special treatment needed, if necessary :

Call emergency clinics.
When it' s been consumed, wash the stomach.
Consider providing additional oxygen.
Inform medical personnel about the contamination, so they can prepare adequate preventive measures.
The effects of exposure (inhalation, consumption, contact) to it can appear later.
Major health hazards: There has been no report of major effect on targeted internal organs

5. Fire-fighting measures

A. Fire extinguishing agent:

Appropriate fire extinguisher: Powder fire extinguishing agent

Spray stream
Carbon dioxide
General foam extinguishing agent
Alcohol resistant foam extinguishing agent
Water

Improper fire extinguishing agent: No data available.

For a large fire: Use alcohol resistant foam extinguishing agent, or flood with fine water spray.

Use general foam extinguishing agent, or flood with fine water spray.

Move containers from fire area if it can be done without risk.

Keep fire extinguishing water in a dike or ditch to handle later.

B. Certain toxic materials produced by chemical agents.

Products from thermal cracking: Discharge of toxic smoke, like carbon oxide, sulfur compounds, acrolein and nitroxide.

Fire and explosion hazards: There' s a small change of fire.

A mixture of vapor and air can be explosive at above a certain ignition point.

Vapor or gas can spread instantly after being ignited from a distanced ignition point. Vapor is heavier than air.

Halogen gas can be produced when it contacts metal.

May develop irritating, corrosive, or toxic gases by fire.

C. Protect gears that should be worn while controlling fire and preventive measures:

Move containers from fire area if it can be done without risk.

Cool container with flooding quantities of water until well after fire is out.

Do not approach both ends of the tank.

When there' s a fire in shipping and unloading or storage area: Cool container with flooding quantities of water until well after fire is out by using unmanned hose holders or monitor nozzles.

If that is not possible, consider following preventive measures.

Keep unnecessary people away, isolate hazard area and deny entry. And allow the fire to burn itself out.

Withdraw immediately in case of rising sound from safety devices due to the fire or discoloration of tank.

Fire involving tank, rail, car, or tank truck: Evacuation for 0.8Km (1/2 mile) in all directions

Shut off the source of the leakage before trying to extinguish fire.

Flood with fine water spray.

Do not scatter spilled material with high–pressure water streams.

Cool containers with water spray until well after the fire is out.

Apply water from a protected location or from a safe distance.

Avoid inhalation of material or combustion by–products.

Stay upwind and keep out of low areas.

Dike for later disposal.

Use extinguishing agent appropriate for surrounding fire.

The most effect measures would be removing fuel source and suffocating by blocking air supply.

6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures

Absorb with paper.

Ventilate to eliminate all vapors, and burn papers.

Eliminate all ignition sources.

Absorb with dry earth, sand or other non– combustible material, and place in a container.

Ventilate a closed area before entering.

Use water spray to reduce vapors.

Store in an area separated from water supply and sewer.

Check shipping information and included documents, and contact related agencies and companies to find detailed information on the material.

Keep unnecessary people away, isolate hazard area and deny entry.

Keep away from heat, fire, flame and other sources of ignition.

Stop leak if without risk.

Deny entry to an area within 25~50m radius from leak, and keep unnecessary people away

Stop leak, if it can be done without risk to worker.

Stay upwind.

Vaporize the surface leaked.

Place leaked material in an appropriate container to dispose.

B. Precautions :

Store in an area separated from water supply and sewer.

C. Methods and materials for containment and cleaning up :

Small leak: Place leaked material in an appropriate container to dispose.

Absorb with dry earth, sand or other non-combustible material.

Prevent entry into waterways, sewers, basements or confined areas.

Keep unnecessary people away, isolate hazard area and deny entry.

Do not touch a damaged container or spilled material without wearing proper protective gears.

Notify the central government and local independent commission for discharge of amounts greater than or equal to the standard.

Large leak: Stay upwind and keep out of low areas.

Dike for later disposal.

Keep unnecessary people away, isolate hazard area and deny entry.

7. Handling and storage

A. Precautions for safe handling : Do not press, cut, weld, solder, join, perforate, grind, or heat.

An empty container containing residues (liquid, steam) can be dangerous.

Store by closing a container.

Store in a closed container.

Do not inhale dust, steam, mist or gas.

Minimize development and accumulation of dust.

Use spark-proof tools and explosion-proof equipment.

Do not inhale or ingest.

Wash hands before eating.

Remove contaminated clothing and wash before reuse.

Perform proper ventilation.

Wash thoroughly after handling.

Use only in a well ventilated area.

Handle according to current laws and regulations.

Do not get in eyes, on skin and clothing.

Avoid flame, sparks, static electricity and other ignition sources.

B. Conditions for safe storage, including any incompatibilities :

US Warehouse Regulations: U.S. OSHA 29 CFR 1910.106.

Grounding and equipotential bonding are required.

Avoid contacting halogen or halogen compounds.

Store and handle in accordance with all current regulations and standards.

Keep separated from incompatible substances.

Notify the central government or local independent commission for storage or use at amounts greater than or equal to the TPQ (U.S. SARA Section 302).

SARA section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355.30).

Avoid contacting strong oxidizer.

Store in a cool, dry place.

Store in a dark area.

Keep away from sources of ignition.

8. Exposure controls/personal protection

A. Exposure limits for chemical and biological materials:

Occupational exposure limit values listed in Commission Directive 2009/161/EU:

Not applicable

B. Appropriate engineering controls :

According to studies so far, additional ventilation equipment is not required.

If a material has a potential to explode, install explosion-proof equipment in the corresponding ventilation equipment.

Check if the corresponding exposure level is appropriate.

Install a local exhaust ventilation, and make sure it maintains a proper capture velocity.

C. Individual protection measures, such as personal protective equipment :

Respiratory protection: Consider warning properties before use.

None required under normal operating conditions.

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Wear respiratory protection that has received the Korea Occupational Safety and Health Agency' s black " Safety" mark.

Eye protection: Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Wear splash-proof eye goggles.

Wear splash resistant safety goggles with a face shield.

Hand protection: Protective gloves are not required.

Wear appropriate chemical resistant gloves.

Body protection: Body protection clothing is not required.

Wear appropriate chemical resistant clothing.

9. Physical and chemical properties

| Properties | Data | Properties | Data |
|----------------------------------|------------------------------------|--|-----------------------------|
| Appearance | Yellow Liquid | Upper/lower flammability or explosive limits | None |
| Odor | Odorless or mild odor | Vapor pressure | None |
| Odor threshold | None | Vapor density | Greater than 1 (air=1) |
| pH | 8.5 – 9.5 | Relative density | 1.06 at 68 deg.F / 20 deg.C |
| Melting point/ Freezing point | Less than 32 deg.F / 0 deg.C | Solubility in water | Miscible |
| Boiling point | Greater than 212 deg.F / 100 deg.C | Partition coefficient n-octanol/water | None |
| Flash point | Greater than 230 deg.F / 110 deg.C | Auto ignition temperature | None |
| Evaporation rate | None | Decomposition temperature | None |
| Flammability (Solid/Gas) | None | Viscosity | 2.8 – 3.4 cP |

10. Stability and reactivity

A. Chemical stability: Do not store for an extended period, or store or use in an area in direct contact with air and sun and above room temperature.

May form explosive peroxides.

Stable at room temperature and atmospheric pressure.

B. Hazardous reactivity: Stable at room temperature and atmospheric pressure. Polymerization will not occur.

C. Conditions to avoid (electrostatic discharge, shock, vibration, etc) : Avoid heat, flames, sparks and other sources of ignition.

Keep separated from incompatible substances.

If container is exposed to heat, it may rupture or explode.

D. Incompatibility with other materials: acid, base, oxidizing agents, metallic oxide, peroxides, reducing agents, halogen, inflammables, mineral salt.

E. Hazardous decomposition products: Produce carbon oxide and sulfur compounds during

thermal decomposition.

Variety of organic matters, cyanide compounds, ammonia, nitrogen oxide.

11. Toxicological information

A. Primary route of entry:

Inhalation toxicity : May cause irritation, nausea, headache, drowsiness, dizziness, dyspnea, pulmonary congestion, internal bleeding, blood disorders , kidney failure, unconsciousness, loss of coordination(function).

Oral toxicity: May cause hypothermia or fever, change in blood pressure, nausea, vomiting, diarrhea, headache, dizziness, stomach pain, chest pain, dyspnea, irregular heart beat, drowsiness, sleep disorders, blood disorders , kidney failure, paralysis, convulsions, loss of coordination(function), pulmonary congestion, convulsions, unconsciousness, lethargy.

Eye, skin toxicity : Long term exposure can create irritation.

It can be absorbed through skin, making it red and developing irritation.

B. Delayed, immediate and chronic effects following short-term and long-term exposures:

Acute toxicity : No data available.

Skin corrosion or irritation : Skin rabbit, according to skin Irritation test.

Severe eye damage and irritation : According to rabbit tests, it can develop corneal opacity with pain to human, but it was recovered in a few days.

Respiratory sensitization : No data available.

Skin sensitization : No data available.

Germ cell mutagenicity : No data available.

Carcinogenicity : No data available.

Reproductive toxicity : No data available.

STOT-single exposure : It develops lethargy, dizziness, dyspnea, metabolic acidosis, hematuria, or liver disease. When it is inhaled, it irritates nose and neck. It develops repetitive respiratory irritation.

STOT-repeated exposure : According to animal tests, inhalation can cause toxic effects on blood.

Aspiration hazard : No data available.

C. Numerical measures of toxicity (such as acute toxicity estimates) : No data available.

12. Ecological information

A. Aquatic and/or terrestrial organisms toxicity : No data available.

B. Persistence and degradability : No data available.

C. Bio accumulative potential : No data available.

D. Mobility in soil : No data available.

E. Other adverse effects : No data available.

13. Disposal considerations

A. **Method of disposal:** Dispose the content and container in accordance with all applicable regulations of Waste Management Law.

Please dispose by using one of the following methods:

1. Neutralize, hydrolyze, oxidize, or restore it.
2. Incinerate or melt it in high temperature.
3. Solidify it.

B. **Discourage sewage disposal :** Consider all cautions specified in all applicable regulations of Waste Management Law.

14. Transport information

- A. UN number : Not applicable.
- B. UN proper shipping number : Not applicable.
- C. Transport hazard class : Not applicable.
- D. Packing group, if applicable : Not applicable.
- E. Environmental hazards : No data available.
- F. Special precautions for user: Not applicable.

15. Regulatory information

A. Regulation by the Korea Industrial Safety and Health Act :

| Ingredients | CAS No. | |
|-----------------|----------|--|
| Ethane-1,2-diol | 107-21-1 | Work environment measuring material Special health diagnosis material (Inspection cycle: 12 months) Exposure limits for chemical and biological materials |
| Glycerol | 56-81-5 | Exposure limits for chemical and biological materials |

B. Regulation by the Enforcement Decree of the Toxic Chemicals Control Act: No data available.

C. Regulation by the Safety Control of Dangerous Substances Act: No data available.

D. Regulation by the Waste Management Law: Authorized waste

E. Regulation by other national and international regulations:

There are restrictions for substances classified as toxic to reproduction category 1A or 1B under Title VIII of Regulation (EC) No. 1907/2006.

Annex XVII to Regulation (EC) No 1907/2006 – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles:

Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as toxic to reproduction category 1A or 1B (Table 3.1) or toxic to reproduction category 1 or 2 (Table 3.2) and listed as follows:

- reproductive toxicant category 1A adverse effects on sexual function and fertility or on development (Table 3.1) or reproductive toxicant category 1 with R60 (May impair fertility) or R61 (May cause harm to the unborn child) (Table 3.2) listed in Appendix 5
- reproductive toxicant category 1B adverse effects on sexual function and fertility or on development (Table 3.1) or reproductive toxicant category 2 with R60 (May impair fertility) or R61 (May cause harm to the unborn child) (Table 3.2) listed in Appendix 6:

1. Shall not be placed on the market, or used,

- as substances,
- as constituents of other substances, or,
- in mixtures,

for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than:

- either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or,
- the relevant concentration specified in Directive 1999/45/EC.

Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows:

‘ Restricted to professional users’ .

2. By way of derogation, paragraph 1 shall not apply to:

- (a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC;
- (b) cosmetic products as defined by Directive 76/768/EEC;
- (c) the following fuels and oil products:
 - motor fuels which are covered by Directive 98/70/EC,
 - mineral oil products intended for use as fuel in mobile or fixed combustion plants,
 - fuels sold in closed systems (e.g. liquid gas bottles);
- (d) artists’ paints covered by Directive 1999/45/ EC;
- (e) the substances listed in Appendix 11, column 1, for the applications or uses listed in

Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date.

Substances classified as toxic to reproduction category 1B contained in the mixture are not subject to authorization under Title VII of Regulation (EC) No. 1907/2006. Other substances in the mixture are not subject to authorisation under Title VII or restrictions under Title VIII of Regulation (EC) No. 1907/2006.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC;

Regulation (EC) No 1272/2008 of the European parliament and of the Council of 16 December 2008 on classification, labeling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006;

COMMISSION REGULATION (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH);

DIRECTIVE 1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations;

COUNCIL DIRECTIVE of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (67/548/EEC).

16. Other information

A. Literature references and sources for data : Korea Occupational Safety and Health Agency
SDS was elaborated according to requirements set in Annex II of Regulation (EC) No 1907/2006 of the European Parliament and of the Council. SDS was prepared using data from the producer.

B. Date of preparation : 29. May. 2009

C. Latest revision and changes Date : Rev. 1.2 Date : 31. July. 2014

D. Explanation : This MSDS (Material Safety Data Sheets) contains health, safety and environment information, and was written by reflecting our company' s current technology. This data

is not a guarantee for the product' s character or quality, and should be used only as a reference in relation to safe use of the product.

List of relevant risk phrases and hazard statements:

R22 Harmful if swallowed.

Xn : Harmful

Instructions for the training: Product handling instruction shall be included into the educational system about the safety work (initial training, training at the workplace, repeated training) according to specific conditions at the workplace.

Recommended restrictions on use (i.e. non-statutory recommendations by supplier):

Mixture should not be used for any other purpose than for which is appointed (point 1.2).

Because of the fact that specific conditions of use of mixture are out of supplier' s control,

It is responsibility of the user to adjust the prescribed warnings to local laws and regulations.

Safety information describes the product in terms of safety and it cannot be considered as technical information about product.