SAFETY DATA SHEET

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Product Name: **I-Image-1L-T6**
Synonyms: Pigment Black ink - Type T6
Proper shipping name: None
Other means of identification: None
Contains: Ethane-1,2-diol

1.2. Relevant identified uses of the substance or mixture and used advised against

1.2.1. Relevant identified uses For Screen Engraving/Film Masking
For Professional/Industrial use only
1.2.2. Uses advised against Advice against other uses

1.3. Details of the supplier of the safety data sheet

Company Name: M&R Printing Equipment, Inc.
Address: 440 Medinah Road
Roselle, IL 60172-2329 USA
Telephone No.: (800) 736-6431

1.4 Emergency Telephone Number: Chemtrec: within USA and Canada: 1-800-441-3637
Within USA (Toll-Free): +1 (703) 741-5970
Outside USA and Canada: 1-800-424-9300

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Classification	Category	Exposure route
Skin Sens.	1	-
STOT Rep. Exp.	2	oral
Acute Tox.	4	-

Other adverse Physico-chemical, human health and environmental effects
None

2.2 Label Elements
Labelling according to Regulation (EC) No 1272/2008 (CLP)
Hazard pictogram:

Signal word: Warning
Hazard statements: H302: Harmful if swallowed
H317: May cause an allergic skin reaction
H373: May cause damage to organs through prolonged or repeated exposure

EU208: May produce an allergic reaction

Precautionary statements:
Prevention: P260: Do not breathe mist/vapors

P280: Wear protective gloves/ protective clothing/ protective eye and face protection

Response: P302+P350: IF ON SKIN: Wash with plenty of soap and water
P333+P313: If skin irritation or rash occurs: Get medical advice / attention
P305+P351+P338 IF IN EYES: Rinse immediately with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

2.3 Other Hazards No reliable data is available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances Not applicable

3.2. Mixtures

Name	CAS No.	EC No.	Index No.	REACH No.	% wt/wt	Classification according to (EC) No1272/2008 (CLP)
Ethylene Glycol	107-21-1	203-473-3	603-027-21-1	01-2119456816-28-0128	<20	Acute Tox4; H302 STOT Rep. Exp. 2 H373

Note: Undisclosed components are not classified or water.

4. FIRST AID MEASURES

4.1. Description of first aid measures

General Advice: Remove contaminated clothing.
If Inhaled: Keep patient calm, remove to fresh air, seek medical attention.
On Skin contact: Wash thoroughly with soap and water
P302+ P352: Wash with plenty of soap and water
On contact with eyes: Remove contact lenses, if present and easy to do. Wash affected eyes for at least 15 minutes under running water with eyelids held open. If eye irritation persists: Get medical advice/attention.
On ingestion: immediately rinse mouth and then drink 200-300 ml of water, seek medical attention
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
Treatment: Treat according to symptoms (decontamination, vital functions), with no known specific antidote.

4.2. Most important symptoms and effects, both acute and delayed

Inhaled: The material is not thought to produce adverse health effects or respiratory tract irritation (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and suitable control measures be used in an occupational setting.
Ingestion: Ingestion is thought to produce harmful effects (as classified under EC Directives); the material causes damage to the health of the following individual ingestion, especially where pre-existing organ (e.g. liver, kidney) damage is evident.
Skin Contact: Since material may cause sensitization to the skin, good hygiene practice requires that exposure be kept to a minimum and suitable gloves be used in an occupational setting.
Eye: The material is thought to cause serious eye irritation.
Chronic: May cause damage to organs through prolonged or repeated exposure: Affected organs: kidney; Route of exposure: Oral.

4.3. Indication of any immediate medical attention and special treatment needed
P314: Get medical attention if you feel unwell

5. FIREFIGHTING MEASURES

5.1. Extinguishing media
There is no restriction on the type of extinguisher which may be used. Use extinguishing media suitable for the surrounding area.

5.2. Special hazards arising from the substance or mixture
No data is available.

5.3. Advice for firefighters
Alert the Fire Brigade and tell them the location and nature of the hazard. Wear breathing apparatus plus protective gloves.
Prevent, by any means available, spillage from entering drains or water courses. Use water delivered as a fine spray to control fire and cool adjacent areas.
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 the path of fire.
Further information: Contaminated extinguishing water must be disposed of in accordance with official regulations.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
P281: Use personal protective equipment as required.

6.1.1. For non-emergency personnel
Avoid breathing mist/vapours/spray. Wear protective gloves/ protective clothing/ protective eye and face protection—Wash hands/ area of contact thoroughly after handling. Do not eat, drink, or smoke when using this product. Obtain special instructions before use. Use personal protective equipment as required.

6.1.2. For emergency responders
Wear suitable protective equipment.

6.2. Environmental precautions
Take precautions to prevent entry into waterways, sewers, or surface drainage systems. Dispose of according to local or international regulations.

6.3. Methods and material for containment and cleaning up
P264: Wash hands/ area of contact thoroughly after handling.

Methods for cleaning up or taking up:
For small amounts: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Dispose of absorbed material in accordance with regulations.
For large amounts: Pump off the product. Correctly dispose of the recovered product immediately.

6.4. Reference to other sections
Personal Protective Equipment advice is contained in Section 8 and section 13 of the MSDS.

7. HANDLING AND STORAGE

7.1. Precautions for safe handling
Avoid ingestion, inhalation, skin and eye contact. Minimize dust generation and accumulation. Handle in accordance with good industrial hygiene practices and any legal requirements.
P270: Do not eat, drink, or smoke when using this product.
P273: Avoid release to the environment.
Handling: Protection against fire and explosion, Electrical devices must meet the specified temperature class.

7.2. Conditions for safe storage, including any incompatibilities
Note: For the best performance of the inks for the application, it is advisable to store and transport between 10 deg C to 35 deg C

Suitable container: PP/ HDPE/LDPE plastic can or drums. Check that all containers are clearly labelled and free from leaks. Keep the container tightly closed in a ventilated place. Store in a cool and dry place. Keep away from heat and direct sunlight.

Storage incompatibility: Avoid reaction with incompatible substances. Avoid reaction with oxidizing agents.

7.3. Specific end use(s)
Apart from the uses mentioned in section 1.2, no other specific uses are stipulated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Substance	Form	TWA	STEL	Reference
Ethylene Glycol	Particulate	10 mg/m³	EH40/2005 WELs (United Kingdom (UK), 8/2007). Absorbed through skin	
	Vapour	52 mg/m³	104 mg/m³	Same
	Vapour	20ppm	40ppm	Same/ ACGIH/ OSHA

Ethylene Glycol

Derived effect levels

Long term exposure

DNEL	35 mg/m³	Workers	skin irritation/corrosion
DNEL	106 mg/kg bw/day	Workers	repeated dose toxicity
DNEL	7 mg/m³	General Population	skin irritation/corrosion
DNEL	53 mg/kg bw/day	General Population	repeated dose toxicity

Predicted effect concentrations

PNEC aqua (freshwater)	10 mg/L	Assessment Factor
PNEC aqua (marine water)	1 mg/L	Assessment Factor
PNEC aqua (intermittent releases)	10 mg/L	Assessment Factor
PNEC STP	199.5 mg/L	Assessment Factor
PNEC sediment (freshwater)	37 mg/kg sediment dw	partition coefficient
PNEC sediment (marine water)	3.7 mg/kg sediment dw	partition coefficient
PNEC soil	1.53 mg/kg soil dw	partition coefficient

8.2. Exposure controls
Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.

The basic types of engineering controls are:

Process controls involve changing the way a job activity or process is done to reduce the risk.

Enclosure and/or isolation of emission source which keeps a selected hazard “physically” away from the worker and ventilation that strategically “adds” and “removes” air in the work environment.

General Personal Protection: Safety goggles or face shields, chemical-resistant gloves, protective clothing and apparatus.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state:	Liquid
Color:	Black
Odor:	Very Mild
Odor threshold:	No data available
pH:	7~9
Melting point / Freezing point:	Not applicable
Boiling point:	>100°C
Flashpoint:	>100°C
Evaporation rate:	Not Established
Flammability (solid, gas):	Non-flammable
Upper/lower flammability:	No data available
Explosive limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Density g/cm3:	1.12
Water Solubility(ies):	Soluble
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	Not applicable
Viscosity:	3-12cPs
Explosive properties:	Not explosive
Oxidizing properties:	Not oxidizing

9.2. Other information
No additional data is available.

10. STABILITY AND REACTIVITY

10.1. Reactivity
Stable under normal storage conditions. May react with strong oxidizing agents and incompatible materials.

10.2. Chemical stability
The product is considered stable during storage and transportation under normal conditions.

10.3. Possibility of hazardous reactions
Stable under normal conditions. Hazardous reactions may occur if contact with incompatible material.

10.4. Conditions to avoid
Heat and direct sunlight, high temperature, ignition sources (sparks, flames, static), and incompatible materials.

10.5. Incompatible materials
No data available

10.6. Hazardous decomposition products
Thermal decomposition products: may emit toxic fumes. Oxides of carbon, sulphur, nitrogen, zinc and phosphorus.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

(a) Acute Oral Toxicity
Data is not available for the mixture.

Component wise data

1. Ethylene glycol

LD50= 7712 mg/kg bw	7d	Rat

Clinical signs
Depression, narcosis.

Gross pathology
Animals that died: kidney damage

(b) Acute Dermal Toxicity
No Data is available for the mixture.

Component wise data

Ethylene glycol LD50 > 3500 mg/kg bw	Mouse

(c) Acute Inhalation Toxicity
No Data is available for the mixture.

Component wise data

Ethylene glycol LC50 > 2.5 mg/L air	6h	Rat

(d) Irritant/Corrosive
No Data is available for the mixture.

Component wise data
Ethylene glycol
Not irritating

(e) Sensitizing
No Data is available for the mixture.

Component wise data
Ethylene glycol
Not sensitizing

(f) Genetic toxicity
No Data is available for the mixture.

Component wise data
Ethylene glycol
In Vitro- Negative
In Vivo- Negative

(g) Carcinogenicity
No Data is available for the mixture.

Component wise data
Ethylene glycol

The results of this study suggest that ingestion of EG at a dosage of 1000 mg/kg diet may have accelerated the appearance of lymphosarcomas in female mice. However, the incidence was equivocal. There was no evidence of an increase in any other tumour type.

(h) STOT- Repeated exposures
No data available for mixtures

Component wise data
Ethylene glycol

Oral- Increased mortality appeared in male animals receiving 1 and 4% in the diet, but the mortality data for females were difficult to interpret. Calcification of the kidneys and oxalate-containing calculi were observed in males on the 0.5, 1 and 4% diets. Females receiving diets containing 1 and 4% showed calcification, but oxalate-containing calculi were detectable only in the females on the 4% diet. One female rat in the group receiving 0.1% ethylene glycol developed a large magnesium phosphate stone that contained no demonstrable amount of oxalate. There was an increased water consumption and protein appearance in the urine of males receiving the 1 and 4% diets and females on the 4% diet.

Dermal- No testicular damage that was definitely induced by the test substance was detected in any of the male dogs investigated.

LD50 dermal (dog): > 4000 mg/kg bw

(i) Reproductive Toxicity
No Data is available for the mixture.

Component wise data
Ethylene glycol

Exposure to ethylene glycol resulted in a small but significant decrease in the number of litters per breeding pair, the number of live pups per pair and the live pup weight. A significant number of pups in the 1.0% dose group were born with distinct facial deformities. In the retained litters at this dose, the facial deformities were more obvious with age. These malformed animals also exhibited fused ribs and shortened nasal, parietal, and/or frontal bones of the skull. When pups from the high-dose group were raised to adulthood (with continued exposure to ethylene glycol) and mated, they exhibited decreased mating and fertility indices relative to controls handled in the same manner. However, there were no effects on litter size, pup weight or sex ratio. The authors deemed ethylene glycol a “weak reproductive toxicant, but a potential teratogen.

(j) Aspiration hazard: not tested
No Data is available for the mixture.

Component wise data
Ethylene glycol
No data available

Other information: None

12. ECOLOGICAL INFORMATION

12.1. Toxicity
No data is available for the mixture.

Component wise data
Ethylene glycol

Short term fish		
LC50 = 72860 mg/	96 h	Pimephales promelas
Long term fish		
NOEC = 32000 mg/L	7 d	Pimephales promelas
Toxicity to aquatic algae and cyanobacteria		
other: TGK= > 10000 mg/L	8 d	Scenedesmus quadricauda

12.2. Persistence and degradability

Abiotic Degradation: No data available for the mixture
Physical- and photo-chemical elimination: No data available for the mixture
Biodegradation: no data available.

Component wise data
Ethylene glycol
Readily biodegradable

12.3. Bioaccumulative potential

Bioconcentration factor (BCF): No data available for the mixture

Component wise data
Ethylene glycol
No data available

12.4. Mobility in soil

Distribution to environmental compartments: No data available for the mixture
Adsorption/ Desorption: No data available for the mixture

Component wise data
Ethylene glycol
log Koc= 0

12.5. Results of PBT and vPvB assessment

No data available for this mixture

Component wise data
Ethylene glycol
This substance is not PBT / vPvB

12.6. Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

Refer to local, regional, or national regulations if applicable.

14. TRANSPORT INFORMATION

Note: For the best performance of the inks for the application, it is advisable to store and transport between 10 deg C to 35 deg C.

Land transport (ADR / RID / GGVSE)

14.1 UN number	Not applicable	14.4 Packing group	Not applicable	
14.2 UN proper shipping name	Not dangerous goods	14.5 Environmental hazard	No relevant data	
14.3 Transport hazard class(es)	Not applicable	14.6 Special precautions for user	Hazard identification (Kemler)	Not applicable

Air transport (ICAO-IATA / DGR)

14.1 UN number	Not applicable	14.4 Packing group	Not applicable
14.2 UN proper shipping name	Not dangerous goods	14.5 Environmental hazard	No relevant data
14.3 Transport hazard class(es)	Not applicable	14.6 Special precautions for user	No data available

Inland waterways transport (ADNR / River Rhine)

14.1 UN number	None	
14.2 UN proper shipping name	None	
14.3 Transport hazard class(es)	None	
14.4 Packing group	None	
14.5 Environmental hazards	None	
14.6 Special precautions for user	Classification	None
	Code	None
	Equipment	None
	Fire cones	None

Sea Transport (IMDG code-GGVSee)

14.1 UN number	None	14.4 Packing group	None	
14.2 UN proper shipping name	None	14.5 Environmental hazard	None	
14.3 Transport hazard class(es)	None	14.6 Special precautions for user	EMS Number	None

14.7. Transport in bulk according to Annex II of MARPOL 73 / 78 and the IBC code
Not applicable

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific to the substance or mixture

15.1.1. EU-Regulations

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC

Not regulated

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer

Not regulated

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals

Not regulated

Substances of very high concern (SVHC)
This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of ≥ 0.1 % (w/w).

Directive 2000/39/EC - indicative occupational exposure limit values
Ethylene glycol

15.2. Chemical safety assessment
CSA has been performed on Ethylene Glycol

16. OTHER INFORMATION

16.1 Key literature references and sources for data

The procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Category	Method of classifications
Skin Sens.	1	Bridging Principle
STOT Rep. Exp.	2	Bridging Principle
Acute Tox.	4	Bridging Principle

LEGEND
ACGIH = American Conference of Governmental Industrial Hygienists
DNEL= Derived No-Effect Level
EC= European Commission
LC= Lethal Concentration
OSHA = Occupational Safety and Health Administration (U.S.A.)
PBT= Persistent bioaccumulative toxic
PNEC= Predicted No Effect Concentration
REACH= Registration, Evaluation, Authorization and Restriction of Chemicals
STEL = Short-Term Exposure Limit
STOT= SPECIFIC TARGET ORGAN SYSTEMIC
TWA = Time-weighted Average
UN= United Nation
vPVB = very persistent very Bioaccumulative
WEL= Workplace Exposure Limits

SOURCE
- REACH registered chemicals, *http://echa.europa.eu/chem_data_en.asp*
- CLP details, *http://echa.europa.eu/clp-2015*
- Toxnet, *http://toxnet.nlm.nih.gov*

16.2 List of relevant hazard statements and risk phrases

Hazard statements:
H302: Harmful if swallowed
H317: May cause an allergic skin reaction
H373: May cause damage to organs through prolonged or repeated exposure

EU208: May produce an allergic reaction

Precautionary statements:
P201: Obtain special instructions before use.
P260: Do not breathe mist/vapours
P264: Wash hands/ area of contact thoroughly after handling.
P270: Do not eat, drink, or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/ protective clothing/ protective eye and face protection
P281: Use personal protective equipment as required
P302+P350: IF ON SKIN: Wash with plenty of soap and water
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P305+P351+P338 IF IN EYES: Rinse immediately with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P302+ P352: Wash with plenty of soap and water
P333+P313: If skin irritation or rash occurs: Get medical advice /attention
P314: Get medical attention if you feel unwell.
P405: Store locked up.
P501: Dispose of contents/container in accordance with local/regional/national/ international regulations.

16.3 Other

This product should be stored, handled, and used according to good industrial hygiene practices and conform to any legal regulation. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. The scale of use, frequency of use and current or available engineering controls must be considered.
For detailed advice on Personal Protective Equipment, refer to the following EUCEN Standards:
EN 16 Personal eye – protection
EN 340 Protective clothing
EN 374 Protective gloves against chemicals and microorganisms
EN 13832 Footwear protecting against chemicals
EN 133 Respiratory protective devices.

16.4 HMIS Ratings

Health	: 1
Flammability	: 1
Reactivity	: 0
Personal Protection	: B

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. Therefore, it should not be construed as guaranteeing any specific product property. M&R Printing Equipment, Inc. assumes no responsibility for injury from the use of the product described herein.