SECTION 1 : Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Form : Mixture

Product Name : HPA-B01KB

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

Relevant identified uses : Water-based ink for inkjet printer.

Uses advised against : Do not use for the other application. Restricted to professional users

1.3. Details of the supplier of the safety data sheet

Company Name : InkTec Co.,Ltd.

Address : #108, Neungan-ro, Danwon-gu, Ansan-city, Gyeonggi-do, 425-839, Korea

Tel : +82-31-494-0001

Fax : +82-31-492-2041

Website : http://kr.inktec.com/

1.4. Emergency telephone number

Emergency number : Centro Antiveleni (Poisons Centre)

: Dipartimento di Tossicologia Clinica Universita Cattolica del Sacro Cuore Roma

Emergency Telephone Number : +39 06 305 4343

SECTION 2 : Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP) : Acute toxicity,oral : Hazard category 4
Serious eye damage/eye irritation : Hazard category 2B
Specific target organ toxicity, repeated exposure : Hazard category 2

Classification according to Directive 1999/45/EC (DPD) : Xi; R36

2.2. Label elements

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

Hazard symbols :

GHS07 GHS08

Signal word : Warning

Hazard statements : H302 : Harmful if swallowed.
: H320 : Causes eye irritation.
: H373 : May cause damage to organs <or state all organs affected, if known> through prolonged or repeated exposure <state route of exposure if it is conclusively proven that no other routes of exposure cause the hazard>.

Precautionary statements

Precautionary : P260 : Do not breathe dust/fume/gas/mist/vapours/spray.
: P264 : Wash … thoroughly after handling.
: P270 : Do no eat, drink or smoke when using this product.

Countermeasure : P301+P312 : IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
: P305+P351+P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
: P312 : Call a POISON CENTER or doctor/physician if you feel unwell.

: P314 : Get medical advice/attention if you feel unwell.
: P330 : Rinse mouth.
: P337+P313 : If eye irritation persists - Get medical advice/attention.

Storage : No information available.

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

2.3. Other hazards

Other hazards : No information available

SECTION 3 : Composition/information on ingredients

3.1. Substance

Substances : No information available

3.2. Mixture

Ingredients	% By weight	CAS No.	EC No.	EU Classification				Note
				67/548/EEC (DSD)	CLP			
					Hazard class and category codes	Hazard statement codes	Pictogram/ Signal word codes	
Black Pigment	0.1 < C < 6	Proprietary	Proprietary					
Ethane-1,2-diol	5 < C < 15	107-21-1	203-473-3		Acute Tox. 4 STOT Rep. Exp 2	H302 H373	GHS07 GHS08	
2-Pyrrolidone	7 < C < 15	616-45-5	210-483-1	Xi; R36	Eye Irrit. 2	H320	GHS07	
Glycerol, ethoxylated	3 < C < 8	31694-55-0	500-075-4					
Urea	0.1 < C < 6	57-13-6	200-315-5					
Water	62 < C < 67	7732-18-5	231-791-2					

※ Substance is classified in terms of Regulation (EC) No. 1272/2008 Annex VI.
※ Substance with workplace exposure limits.
※ Substance is included in the Candidate List of Substances of Very High Concern for Authorisation.

SECTION 4 : First aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice.

First-aid measures after inhalation : If breathing is difficult, give oxygen.
: Give artificial respiration if not breathing, and get immediate medical attention.
: 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.

First-aid measures after 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.
: If skin is irritated or shows other symptoms, get medical attention.

First-aid measures after eye contact : While lifting upper eyelid, flush eyes with plenty of water for at least 15 minutes and then get immediate medical attention.

First-aid measures after ingestion : Get medical attention.
: Never make an unconscious person vomit or drink fluids.
: 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.

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

The most important known symptoms and effects are described in section 2 and/or in section 11.

4.3. Indication of any immediate medical attention and special treatment needed

Other Information : Treat symptomatically.

SECTION 5 : Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Powder fire extinguishing agent.
: Spray stream.
: Carbon dioxide
: General foam extinguishing agent
: Alcohol resistant foam extinguishing agent
: Water spray.

Unsuitable extinguishing media : No data available.

5.2. Special hazards arising from the substance or mixture

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.

Hazardous combustion products : Discharge of toxic smoke, like carbon oxide, sulfur compounds, acrolein and nitroxide.

5.3. Advice for firefighters

Precautionary measures fire : Exposure to fure/heat : keep upwind.
: Exposure to fure/heat : have neighbourhood close doors and windows
: Move containers from fire area if it can be done without risk.
: Do not approach both ends of the tank
: Withdraw immediately in case of rising sound from safety devices due to the fire or discoloration discoloration of tank.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
: Cool container with flooding quantities of water until well after fire is out.
: 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.

: 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.
: Stay upwind and keep out of low areas.
: Dike for later disposal.
: Use extinguishing agent appropriate for surrounding fire. : Flood with fine water spray.
: The most effect measures would be removing fuel source and suffocating by blocking air supply.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.
: 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.
: Apply water from a protected location or from a safe distance.
: Avoid inhalation of material or combustion by-products.
: Dike for later disposal.

SECTION 6 : Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Protective equipment : Gloves, Protective clothing, see "Material-Handling" to select protective clothing

Emergency procedures : Evacuate unnecessary personnel.

For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area
: 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.
: Place leaked material in an appropriate container to dispose.

6.2. Environmental precautions

Environmental precautions : Prevent entry to sewers and public waters. Store in an area separated from water supply and sewer.
: Notify authorities if liquid enters sewers or public waters Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Cleaning Methods : Collect spillage. Store away from other materials.
: 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.
: Stay upwind and keep out of low areas.

: Dike for later disposal.

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

6.4. Reference to other sections

Other sections
: See Section 7 for information on safe handling.
: See Section 8 for information on personal protection equipment.
: See Section 13 for disposal information.

SECTION 7 : Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling
: Wash hands and other exposed areas with mild soap and water before eating, drinking
: 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.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions
: Keep only in the original container in a cool, well ventilated place away from : Ignition sources, Incompatible materials. Keep container closed when not in use.
: Keep container closed when not in use.
: Store and handle in accordance with all current regulations and standards.

Incompatible products
: Avoid contacting strong oxidizer.

Incompatible materials
: Sources of ignition. Direct sunlight.
: Keep separated from incompatible substances

Heat and ignition sources
: Keep substance away from heat source
: Keep away from sources of ignition.

Prohibitions on mixed storage
: Keep substance away from oxidizing agents
: Avoid contacting halogen or halogen compounds.

Storage area
: Store in a cool, dry place.
: Store at ambient temperature

Special rules on packing
: Special requirements closing, clean, correctly labelled, meet the legal requirements.
: Secure fragile packagings in solid container.

Packaging materials
: Suitable material : No data available
: Material to avoid : No data avaiable

7.3. Specific end use(s)

Specific end use(s)
: No data available

SECTION 8 : Exposure controls/personal protection

8.1. Control parameters

Ingredients	CAS No.	Workplace exposure limit				Notation
		Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		
		ppm	mg/m³	ppm	mg/m³	
-	-	-	-	-	-	-

※ Workplace exposure limits for substances contained in the mixture

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.
Hand protection : Protective gloves are not required.
: Wear appropriate chemical resistant gloves.
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.
Respiratory protection : Consider warning properties before use.
: None required under normal operating conditions.
: None required under normal operating conditions.
: 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
Body protection : Body protection clothing is not required
: Wear appropriate chemical resistant clothing.
Environmental exposure controls : Do not allow to enter sewers, surface and ground water
Other information : Do not eat, drink or smoke during use.

SECTION 9 : Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Data	Properties	Data
Physical state	Liquid	Lower/Upper/ flammability or explosive limits	Less than 32˚F / 0℃
Colour	Black	Vapor pressure	Less than 24mmHg at 77˚F / 25℃
Odor	Odorless or mild odor	Relative Vapor density	Greater than 1 (air=1)
Odor threshold	No data available	Relative density	1.06 at 68˚F / 20℃
pH	9.8 ~ 11.8	Solubility in water	Miscible
Melting point/ Freezing point	Less than 32˚F / 0℃	Partition coefficient n-octanol/water	No data available
Boiling point	Greater than 176˚F / 80℃	Auto ignition temperature	No data available
Flash point	Greater than 203˚F / 95℃	Decomposition temperature	No data available
Evaporation rate	No data available	Viscosity	2.5 ~ 3.5 cP
Flammability (Solid/Liquid/Gas)	No data available	Particle characteristics	Not applicable

9.2. Other information

Information with regard to physical hazard classes : No data available

Other safety characteristics : No data available

SECTION 10 : Stability and reactivity

10.1. Reactivity

Reactivity : No data available

10.2. Chemical stability

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.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions : Stable at room temperature and atmospheric pressure.
: Polymerization will not occur.

10.4. Conditions to avoid

Conditions to avoid : 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

10.5. Incompatible materials

Incompatible materials : acid, base, oxidizing agents, metallic oxide, peroxides, reducing agents, halogen,
: inflammables, mineral salt.

10.6. Hazardous decomposition products

Hazardous decomposition products : Produce carbon oxide and sulfur compounds during thermal decomposition.
: Variety of organic matters, cyanide compounds, ammonia, nitrogen oxide.

SECTION 11 : Toxicological information

11.1. Information on hazerd classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Not classified

Ingredients	CAS No.	Oral	Eye	Inhalation
Ethane-1,2-diol	107-21-1	LD50 4700 ㎎/㎏ Rat	No data available	No data available
2-Pyrrolidone	616-45-5	LD50 3200 ㎎/㎏ Rat	No data available	No data available
Urea	57-13-6	LD50 8471 ㎎/㎏ Rat	No data available	No data available

Skin corrosion/irritation : Skin rabbit, according to skin Irritation test.
Serious eye damage/irritation : According to rabbit tests, it can develop corneal opacity with pain to human, .
: but it was recovered in a few days.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity : It develops lethargy, dizziness, dyspnea, metabolic acidosis, hematuria, or liver disease
(STOT-single exposure) : When it is inhaled, it irritates nose and neck
: It develops repetive respitatory irritation
Specific target organ toxicity : According to animal tests, inhalation can cause toxic effects on blood.

(STOT-repeated exposure)
Aspiration hazard : Not classified

Potential Adverse human health effects and Symptoms : Not classified

11.2. Information on the hazards
Information on the hazards : No data available

SECTION 12 : Ecological information

12.1. Toxicity
Toxicity : No data available

12.2. Persistence and degradability
Persistence and degradability : No data available

12.3. Bioaccumulative potential
Bioaccumulative potential : No data available

12.4. Mobility in soil
Mobility in soil : No data available

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment : No data available

12.6. Endocrine disrupting properties
Endocrine disrupting properties : No data available

12.7. Other adverse effects
Other adverse effects : No data available

SECTION 13 : Disposal considerations

13.1. Waste treatment methods
Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations
: Dispose of. contents/container to hazardous or special waste collection point, in accordance with local,
: regional, national and/or international regulation,
: 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.

Ecology - waste materials : Avoid release to the environment.
: Consider all cautions specified in all applicable regulations of Waste Management Law

SECTION 14 : Transport information

ADR	IMDG	IATA	AND	RID
14.1. UN number or ID number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				

Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available				

14.6. Special precautions for user

Other adverse effects : No data available

14.7. Maritime transport in bulk according to IMO instruments

Maritime transport in bulk according to IMO instruments : Not applicable

SECTION 15 : Regulatory information

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

EU Regulations

Classification according to Regulation (EC) No 1272/2008 (CLP) : The substances in the mixture are not subject to Authorisation under Title VII or Restrictions under Title VIII of Regulation (EC) No. 1907/2006.

: COMMISSION REGULATION (EU) No 830/2015 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Candidate List of Substances of Very High : Not classified

Concern for Authorisation (Annex XVII) : 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
Carcinogen category 1A (Table 3.1)/ carcinogen category 1 (Table 3.2) listed in Appendix 1
Carcinogen category 1B (Table 3.1)/ carcinogen category 2 (Table 3.2) listed in Appendix 2

: 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'.

Authorisation list (Annex XIV) : Not classified

Classification according to Directive 1999/45/EC (DPD) : Not classified

National Regulations

Korea

The Korea Industrial Safety and Health Act :

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

The Enforcement Decree of Toxic Chemicals Control Act : No data available

The Safety Control of Dangerous Substances Act :

Ingredients	CAS No.	Regulations
Ethane-1,2-diol	107-21-1	Class 4 Group 3 petroleum, soluble 4000ℓ

The Waste Management Law

Ingredients	CAS No.	Regulations
Ethane-1,2-diol	107-21-1	Authorized waste

2-Pyrrolidone	616-45-5	Authorized waste
Urea	57-13-6	Authorized waste

Other regulations : No data available

15.2. Chemical safety assessment

Chemical safety assessment : Chemical safety assessment has not been carried out for this mixture

SECTION 16 : Other information

Data of issue : 01.Jul. 2024

Latest Revision and Revision data : [Revision] 1.0 [Date] 01. Jul, 2024

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

Sources of key data used to compile the Safety Data Sheet : 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.

Purpose of SDS : Purpose of this SDS is to provide relevant information for users of product to ensure proper handling and control of risks/hazards.

Classification according to NFPA Rating : National Fire Protection Association

Ingredients	CAS No.	NFPA Classification	NFPA Classification
Ethane-1,2-diol	107-21-1	NFPA 704 Diamond	
		Health hazards	2 (Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury)
		Flammability	1 (Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

Ingredients	CAS No.	NFPA Classification	NFPA Classification
2-Pyrrolidone	616-45-5	NFPA 704 Diamond	
		Health hazards	2 (Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury)
		Flammability	1 (Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

Ingredients	CAS No.	NFPA Classification	NFPA Classification
Urea	57-13-6	NFPA 704 Diamond	
		Health hazards	1 (Exposure would cause irritation with only minor residual injury)
		Flammability	1 (Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

SECTION 1 : Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Form : Mixture

Product Name : HPA-B01KC

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

Relevant identified uses : Water-based ink for inkjet printer.

Uses advised against : Do not use for the other application. Restricted to professional users

1.3. Details of the supplier of the safety data sheet

Company Name : InkTec Co.,Ltd.

Address : #108, Neungan-ro, Danwon-gu, Ansan-city, Gyeonggi-do, 425-839, Korea

Tel : +82-31-494-0001

Fax : +82-31-492-2041

Website : http://kr.inktec.com/

1.4. Emergency telephone number

Emergency number : Centro Antiveleni (Poisons Centre)

: Dipartimento di Tossicologia Clinica Universita Cattolica del Sacro Cuore Roma

Emergency Telephone Number : +39 06 305 4343

SECTION 2 : Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP) : Serious eye damage/eye irritation : Hazard category 2A

Classification according to Directive 1999/45/EC (DPD) : Xi; R36

2.2. Label elements

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

Hazard symbols :

GHS07

Signal word : Warning

Hazard statements : H319 : Causes serious eye irritation

Precautionary statements

Precautionary : P264 : Wash … thoroughly after handling.

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

Countermeasure : P305+P351+P338 : IF IN EYES: Rinse cautiously 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.

Storage : No information available.

Disposal : No information available.

2.3. Other hazards

Other hazards : No information available

SECTION 3 : Composition/information on ingredients

3.1. Substance

Substances : No information available

3.2. Mixture

Ingredients	% By weight	CAS No.	EC No.	EU Classification				Note
				67/548/ EEC (DSD)	CLP			
					Hazard class and category codes	Hazard statement codes	Pictogram/ Signal word codes	
Cyan Pigment	1 < C < 5	Proprietary	Proprietary					
Propylene glycol	10 < C < 20	57-55-6	200-338-0					
DL-hexane-1,2-diol	1 < C < 3	6920-22-5	230-029-6	Xi, R36	Eye Irrit. 2	H319	GHS07	
Glycerol, ethoxylated	1 < C < 5	31694-55-0	500-075-4					
Water	70 < C < 80	7732-18-5	231-791-2					

※ Substance is classified in terms of Regulation (EC) No. 1272/2008 Annex VI.

※ Substance with workplace exposure limits.

※ Substance is included in the Candidate List of Substances of Very High Concern for Authorisation.

SECTION 4 : First aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice.

First-aid measures after inhalation : If breathing is difficult, give oxygen.
: Give artificial respiration if not breathing, and get immediate medical attention.
: 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.

First-aid measures after 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.
: If skin is irritated or shows other symptoms, get medical attention.

First-aid measures after eye contact : While lifting upper eyelid, flush eyes with plenty of water for at least 15 minutes and then get immediate medical attention.

First-aid measures after ingestion : Get medical attention.
: Never make an unconscious person vomit or drink fluids.
: 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.

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

The most important known symptoms and effects are described in section 2 and/or in section 11.

4.3. Indication of any immediate medical attention and special treatment needed

Other Information : Treat symptomatically.

SECTION 5 : Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Powder fire extinguishing agent.
: Spray stream.
: Carbon dioxide
: General foam extinguishing agent
: Alcohol resistant foam extinguishing agent
: Water spray.

Unsuitable extinguishing media : No data available.

5.2. Special hazards arising from the substance or mixture

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.

Hazardous combustion products : Discharge of toxic smoke, like carbon oxide, sulfur compounds, acrolein and nitroxide.

5.3. Advice for firefighters

Precautionary measures fire : Exposure to fure/heat : keep upwind.
: Exposure to fure/heat : have neighbourhood close doors and windows
: Move containers from fire area if it can be done without risk.
: Do not approach both ends of the tank
: Withdraw immediately in case of rising sound from safety devices due to the fire or discoloration
discoloration of tank.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
: Cool container with flooding quantities of water until well after fire is out.
: 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.
: 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.
: Stay upwind and keep out of low areas.
: Dike for later disposal.
: Use extinguishing agent appropriate for surrounding fire. : Flood with fine water spray.
: The most effect measures would be removing fuel source and suffocating by blocking air supply.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.
: 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.
: Apply water from a protected location or from a safe distance.
: Avoid inhalation of material or combustion by-products.

: Dike for later disposal.

SECTION 6 : Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Protective equipment : Gloves, Protective clothing, see "Material-Handling" to select protective clothing

Emergency procedures : Evacuate unnecessary personnel.

For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area

: 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.

: Place leaked material in an appropriate container to dispose.

6.2. Environmental precautions

Environmental precautions : Prevent entry to sewers and public waters. Store in an area separated from water supply and sewer.

: Notify authorities if liquid enters sewers or public waters Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Cleaning Methods : Collect spillage. Store away from other materials.

: 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.

: Stay upwind and keep out of low areas.

: Dike for later disposal.

Containment : 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..

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

6.4. Reference to other sections

Other sections : See Section 7 for information on safe handling.

: See Section 8 for information on personal protection equipment.

: See Section 13 for disposal information.

SECTION 7 : Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking

: 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.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Ignition sources, Incompatible materials. Keep container closed when not in use.
: Keep container closed when not in use.
: Store and handle in accordance with all current regulations and standards.

Incompatible products : Avoid contacting strong oxidizer.

Incompatible materials : Sources of ignition. Direct sunlight.
: Keep separated from incompatible substances

Heat and ignition sources : Keep substance away from heat source
: Keep away from sources of ignition.

Prohibitions on mixed storage : Keep substance away from oxidizing agents
: Avoid contacting halogen or halogen compounds.

Storage area : Store in a cool, dry place.
: Store at ambient temperature

Special rules on packing : Special requirements closing, clean, correctly labelled, meet the legal requirements.
: Secure fragile packagings in solid container.

Packaging materials : Suitable material : No data available
: Material to avoid : No data avaiable

7.3. Specific end use(s)

Specific end use(s) : No data available

SECTION 8 : Exposure controls/personal protection

8.1. Control parameters

Ingredients	CAS No.	Workplace exposure limit				Notation
		Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		
		ppm	mg/m³	ppm	mg/m³	
-	-	-	-	-	-	-

※ Workplace exposure limits for substances contained in the mixture

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.
Hand protection : Protective gloves are not required.
: Wear appropriate chemical resistant gloves.
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.
Respiratory protection : Consider warning properties before use.
: None required under normal operating conditions.
: None required under normal operating conditions.
: 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
Body protection : Body protection clothing is not required
: Wear appropriate chemical resistant clothing.
Environmental exposure controls : Do not allow to enter sewers, surface and ground water
Other information : Do not eat, drink or smoke during use.

SECTION 9 : Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Data	Properties	Data
Physical state	Liquid	Lower/Upper/ flammability or explosive limits	No data available
Colour	Cyan	Vapor pressure	No data available
Odor	Odorless or mild odor	Relative Vapor density	Greater than 1 (air=1)
Odor threshold	No data available	Relative density	1.03 at 68˚F / 20℃
pH	8.8 ~ 9.8	Solubility in water	Miscible
Melting point/ Freezing point	Less than 32˚F / 0℃	Partition coefficient n-octanol/water	No data available
Boiling point	Greater than 212˚F / 100℃	Auto ignition temperature	No data available
Flash point	Greater than 230˚F / 110℃	Decomposition temperature	No data available
Evaporation rate	No data available	Viscosity	2.5 ~ 3.5 cP
Flammability (Solid/Liquid/Gas)	No data available	Particle characteristics	Not applicable

9.2. Other information

Information with regard to physical hazard classes : No data available

Other safety characteristics : No data available

SECTION 10 : Stability and reactivity

10.1. Reactivity

Reactivity : No data available

10.2. Chemical stability

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.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions : Stable at room temperature and atmospheric pressure.
: Polymerization will not occur.

10.4. Conditions to avoid

Conditions to avoid : 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

10.5. Incompatible materials

Incompatible materials : acid, base, oxidizing agents, metallic oxide, peroxides, reducing agents, halogen,
: inflammables, mineral salt.

10.6. Hazardous decomposition products

Hazardous decomposition products : Produce carbon oxide and sulfur compounds during thermal decomposition.
: Variety of organic matters, cyanide compounds, ammonia, nitrogen oxide.

SECTION 11 : Toxicological information

11.1. Information on hazerd classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Not classified

Ingredients	CAS No.	Oral	Eye	Inhalation
Propylene glycol	57-55-6	LD50 20000 mg/kg Rat	No data available	No data available
DL-hexane-1,2-diol	6920-22-5	LD50 6166 mg/kg Rat	No data available	No data available

Skin corrosion/irritation : Skin rabbit, according to skin Irritation test.
Serious eye damage/irritation : According to rabbit tests, it can develop corneal opacity with pain to human, .
: but it was recovered in a few days.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity : It develops lethargy, dizziness, dyspnea, metabolic acidosis, hematuria, or liver disease
(STOT-single exposure) : When it is inhaled, it irritates nose and neck
: It develops repetive respitatory irritation
Specific target organ toxicity : According to animal tests, inhalation can cause toxic effects on blood.
(STOT-repeated exposure)
Aspiration hazard : Not classified

Potential Adverse human health effects and Symptoms : Not classified

11.2. Information on the hazards

Information on the hazards : No data available

SECTION 12 : Ecological information

12.1. Toxicity

Toxicity : No data available

12.2. Persistence and degradability
Persistence and degradability : No data available

12.3. Bioaccumulative potential
Bioaccumulative potential : No data available

12.4. Mobility in soil
Mobility in soil : No data available

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment : No data available

12.6. Endocrine disrupting properties
Endocrine disrupting properties : No data available

12.7. Other adverse effects
Other adverse effects : No data available

SECTION 13 : Disposal considerations

13.1. Waste treatment methods
Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations
: Dispose of. contents/container to hazardous or special waste collection point, in accordance with local,
: regional, national and/or international regulation,
: 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.

Ecology - waste materials : Avoid release to the environment.
: Consider all cautions specified in all applicable regulations of Waste Management Law

SECTION 14 : Transport information

ADR	IMDG	IATA	AND	RID
14.1. UN number or ID number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available				

14.6. Special precautions for user
Other adverse effects : No data available

14.7. Maritime transport in bulk according to IMO instruments
Maritime transport in bulk according to IMO instruments : Not applicable

SECTION 15 : Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
EU Regulations

Classification according to Regulation (EC) No 1272/2008 (CLP) : The substances in the mixture are not subject to Authorisation under Title VII or Restrictions under Title VIII of Regulation (EC) No. 1907/2006.

: COMMISSION REGULATION (EU) No 830/2015 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Candidate List of Substances of Very High Concern for Authorisation (Annex XVII) : Not classified

: 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
Carcinogen category 1A (Table 3.1)/ carcinogen category 1 (Table 3.2) listed in Appendix 1
Carcinogen category 1B (Table 3.1)/ carcinogen category 2 (Table 3.2) listed in Appendix 2

: 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'.

Authorisation list (Annex XIV) : Not classified

Classification according to Directive 1999/45/EC (DPD) : Not classified

National Regulations

Korea

The Korea Industrial Safety and Health Act : No data available

The Enforcement Decree of Toxic Chemicals Control Act : No data available

The Safety Control of Dangerous Substances Act :

Ingredients	CAS No.	Regulations
DL-hexane-1,2-diol	6920-22-5	Class 4 Group 3 petroleum, soluble 4000ℓ

The Waste Management Law : No data available

Other regulations : No data available

15.2. Chemical safety assessment

Chemical safety assessment : Chemical safety assessment has not been carried out for this mixture

SECTION 16 : Other information

Data of issue : 01.Jul. 2024

Latest Revision and Revision data : [Revision] 1.0 [Date] 01.Jul. 2024

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

Sources of key data used to compile the Safety Data Sheet : 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.

Purpose of SDS : Purpose of this SDS is to provide relevant information for users of product to ensure proper handling and control of risks/hazards.

Classification according to : National Fire Protection Association

NFPA Rating

Ingredients	CAS No.	NFPA Classification	NFPA Classification
Propylene glycol	57-55-6	NFPA 704 Diamond	
		Health hazards	0 (Poses no health hazard, no precautions necessary and would offer no hazard beyond that of ordinary combustible materials)
		Flammability	1 (Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

Ingredients	CAS No.	NFPA Classification	NFPA Classification
DL-hexane-1,2-diol	6920-22-5	NFPA 704 Diamond	
		Health hazards	0 (Poses no health hazard, no precautions necessary and would offer no hazard beyond that of ordinary combustible materials)
		Flammability	2 (Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur (e.g. diesel fuel, paper, sulfur) and multiple finely divided suspended solids that do not require heating before ignition can occur.)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

SECTION 1 : Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Form : Mixture

Product Name : HPA-B01KM

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

Relevant identified uses : Water-based ink for inkjet printer.

Uses advised against : Do not use for the other application. Restricted to professional users

1.3. Details of the supplier of the safety data sheet

Company Name : InkTec Co.,Ltd.

Address : #108, Neungan-ro, Danwon-gu, Ansan-city, Gyeonggi-do, 425-839, Korea

Tel : +82-31-494-0001

Fax : +82-31-492-2041

Website : http://kr.inktec.com/

1.4. Emergency telephone number

Emergency number : Centro Antiveleni (Poisons Centre)

: Dipartimento di Tossicologia Clinica Universita Cattolica del Sacro Cuore Roma

Emergency Telephone Number : +39 06 305 4343

SECTION 2 : Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP) : Serious eye damage/eye irritation : Hazard category 2A, 2B

: Reproductive toxicity : Hazard Category 2

Classification according to Directive 1999/45/EC (DPD) : Xi; R36

2.2. Label elements

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

Hazard symbols :

GHS07

Signal word : Warning

Hazard statements : H319 : Causes serious eye irritation

: H320 : Causes eye irritation.

: H361 : Suspected of causing genetic defects.

Precautionary statements

Precautionary : P201 : Obtain special instructions before use.

: P202 : Do not handle until all safety precautions have been read and understood.

: P264 : Wash … thoroughly after handling.

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

: P281 : Use personal protective equipment as required.

Countermeasure : 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+P313 : IF exposed or concerned: Get medical advice/attention.

: P337+P313 : If eye irritation persists: Get medical advice/attention.

Storage : P405 : Store locked up.

Disposal : P501 : Dispose of contents/container to …

..in accordance with local/regional/national/international regulation(to be specified).

2.3. Other hazards

Other hazards : No information available

SECTION 3 : Composition/information on ingredients

3.1. Substance

Substances : No information available

3.2. Mixture

Ingredients	% By weight	CAS No.	EC No.	EU Classification				Note
				67/548/ EEC (DSD)	CLP			
					Hazard class and category codes	Hazard statement codes	Pictogram/ Signal word codes	
Magenta Pigment	1 < C < 7	Proprietary	Proprietary					
2-Pyrrolidone	5 < C < 15	616-45-5	210-483-1	Xi; R36	Eye Irrit. 2	H320	GHS07	
Triethylene glycol	1 < C < 7	112-27-6	203-953-2		Repr. 2	H361	GHS07	
DL-hexane-1,2-diol	1 < C < 3	6920-22-5	230-029-6	Xi, R36	Eye Irrit. 2	H319	GHS07	
Glycerol, ethoxylated	1 < C < 5	31694-55-0	500-075-4					
Water	70 < C < 80	7732-18-5	231-791-2					

※ Substance is classified in terms of Regulation (EC) No. 1272/2008 Annex VI.

※ Substance with workplace exposure limits.

※ Substance is included in the Candidate List of Substances of Very High Concern for Authorisation.

SECTION 4 : First aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice.

First-aid measures after inhalation : If breathing is difficult, give oxygen.
: Give artificial respiration if not breathing, and get immediate medical attention.
: 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.

First-aid measures after 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.
: If skin is irritated or shows other symptoms, get medical attention.

First-aid measures after eye contact : While lifting upper eyelid, flush eyes with plenty of water for at least 15 minutes and then get immediate medical attention.

First-aid measures after ingestion : Get medical attention.

: Never make an unconscious person vomit or drink fluids.
: 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.

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

The most important known symptoms and effects are described in section 2 and/or in section 11.

4.3. Indication of any immediate medical attention and special treatment needed

Other Information : Treat symptomatically.

SECTION 5 : Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Powder fire extinguishing agent.
: Spray stream.
: Carbon dioxide
: General foam extinguishing agent
: Alcohol resistant foam extinguishing agent
: Water spray.

Unsuitable extinguishing media : No data available.

5.2. Special hazards arising from the substance or mixture

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.

Hazardous combustion products : Discharge of toxic smoke, like carbon oxide, sulfur compounds, acrolein and nitroxide.

5.3. Advice for firefighters

Precautionary measures fire : Exposure to fure/heat : keep upwind.
: Exposure to fure/heat : have neighbourhood close doors and windows
: Move containers from fire area if it can be done without risk.
: Do not approach both ends of the tank
: Withdraw immediately in case of rising sound from safety devices due to the fire or discoloration
discoloration of tank.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
: Cool container with flooding quantities of water until well after fire is out.
: 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.
: 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.
: Stay upwind and keep out of low areas.
: Dike for later disposal.
: Use extinguishing agent appropriate for surrounding fire. : Flood with fine water spray.
: The most effect measures would be removing fuel source and suffocating by blocking air supply.

Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.
	: 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.
	: Apply water from a protected location or from a safe distance.
	: Avoid inhalation of material or combustion by-products.
	: Dike for later disposal.

SECTION 6 : Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Protective equipment	: Gloves, Protective clothing, see "Material-Handling" to select protective clothing
Emergency procedures	: Evacuate unnecessary personnel.

For emergency responders

Protective equipment	: Equip cleanup crew with proper protection.
Emergency procedures	: Ventilate area
	: 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.
	: Place leaked material in an appropriate container to dispose.

6.2. Environmental precautions

Environmental precautions	: Prevent entry to sewers and public waters. Store in an area separated from water supply and sewer.
	: Notify authorities if liquid enters sewers or public waters Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Cleaning Methods	: Collect spillage. Store away from other materials.
	: 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.
	: Stay upwind and keep out of low areas.
	: Dike for later disposal.
Containment	: 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..
	: Keep unnecessary people away, isolate hazard area and deny entry.

6.4. Reference to other sections

Other sections	: See Section 7 for information on safe handling.
	: See Section 8 for information on personal protection equipment.

: See Section 13 for disposal information.

SECTION 7 : Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling
: Wash hands and other exposed areas with mild soap and water before eating, drinking
: 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.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions
: Keep only in the original container in a cool, well ventilated place away from : Ignition sources, Incompatible materials. Keep container closed when not in use.
: Keep container closed when not in use.
: Store and handle in accordance with all current regulations and standards.

Incompatible products
: Avoid contacting strong oxidizer.

Incompatible materials
: Sources of ignition. Direct sunlight.
: Keep separated from incompatible substances

Heat and ignition sources
: Keep substance away from heat source
: Keep away from sources of ignition.

Prohibitions on mixed storage
: Keep substance away from oxidizing agents
: Avoid contacting halogen or halogen compounds.

Storage area
: Store in a cool, dry place.
: Store at ambient temperature

Special rules on packing
: Special requirements closing, clean, correctly labelled, meet the legal requirements.
: Secure fragile packagings in solid container.

Packaging materials
: Suitable material : No data available
: Material to avoid : No data avaiable

7.3. Specific end use(s)

Specific end use(s)
: No data available

SECTION 8 : Exposure controls/personal protection

8.1. Control parameters

Ingredients	CAS No.	Workplace exposure limit				Notation
		Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		
		ppm	mg/m³	ppm	mg/m³	
-	-	-	-	-	-	-

※ Workplace exposure limits for substances contained in the mixture

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.
Hand protection : Protective gloves are not required.
: Wear appropriate chemical resistant gloves.
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.
Respiratory protection : Consider warning properties before use.
: None required under normal operating conditions.
: None required under normal operating conditions.
: 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
Body protection : Body protection clothing is not required
: Wear appropriate chemical resistant clothing.
Environmental exposure controls : Do not allow to enter sewers, surface and ground water
Other information : Do not eat, drink or smoke during use.

SECTION 9 : Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Data	Properties	Data
Physical state	Liquid	Lower/Upper/ flammability or explosive limits	No data available
Colour	Magenta	Vapor pressure	No data available
Odor	Odorless or mild odor	Relative Vapor density	Greater than 1 (air=1)
Odor threshold	No data available	Relative density	1.04 at 68˚F / 20℃
pH	8.5 ~ 10.5	Solubility in water	Miscible
Melting point/ Freezing point	Less than 32˚F / 0℃	Partition coefficient n-octanol/water	No data available
Boiling point	Greater than 212˚F / 100℃	Auto ignition temperature	No data available
Flash point	Greater than 230˚F / 110℃	Decomposition temperature	No data available
Evaporation rate	No data available	Viscosity	2.5 ~ 3.5 cP
Flammability (Solid/Liquid/Gas)	No data available	Particle characteristics	Not applicable

9.2. Other information

Information with regard to physical hazard classes : No data available

Other safety characteristics : No data available

SECTION 10 : Stability and reactivity

10.1. Reactivity

Reactivity : No data available

10.2. Chemical stability

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.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions : Stable at room temperature and atmospheric pressure.
: Polymerization will not occur.

10.4. Conditions to avoid

Conditions to avoid : 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

10.5. Incompatible materials

Incompatible materials : acid, base, oxidizing agents, metallic oxide, peroxides, reducing agents, halogen,
: inflammables, mineral salt.

10.6. Hazardous decomposition products

Hazardous decomposition products : Produce carbon oxide and sulfur compounds during thermal decomposition.
: Variety of organic matters, cyanide compounds, ammonia, nitrogen oxide.

SECTION 11 : Toxicological information

11.1. Information on hazerd classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Not classified

Ingredients	CAS No.	Oral	Eye	Inhalation
2-Pyrrolidone	616-45-5	LD50 3200 ㎎/㎏ Rat	No data available	No data available
Triethylene glycol	112-27-6	LD50 17000 ㎎/㎏ Rat	No data available	No data available
DL-hexane-1,2-diol	6920-22-5	LD50 6166 ㎎/㎏ Rat	No data available	No data available

Skin corrosion/irritation : Skin rabbit, according to skin Irritation test.
Serious eye damage/irritation : According to rabbit tests, it can develop corneal opacity with pain to human, .
: but it was recovered in a few days.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity : It develops lethargy, dizziness, dyspnea, metabolic acidosis, hematuria, or liver disease
(STOT-single exposure) : When it is inhaled, it irritates nose and neck
: It develops repetive respitatory irritation
Specific target organ toxicity : According to animal tests, inhalation can cause toxic effects on blood.
(STOT-repeated exposure)
Aspiration hazard : Not classified

Potential Adverse human health effects and Symptoms : Not classified

11.2. Information on the hazards

Information on the hazards : No data available

SECTION 12 : Ecological information

12.1. Toxicity
Toxicity : No data available

12.2. Persistence and degradability
Persistence and degradability : No data available

12.3. Bioaccumulative potential
Bioaccumulative potential : No data available

12.4. Mobility in soil
Mobility in soil : No data available

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment : No data available

12.6. Endocrine disrupting properties
Endocrine disrupting properties : No data available

12.7. Other adverse effects
Other adverse effects : No data available

SECTION 13 : Disposal considerations

13.1. Waste treatment methods
Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations
: Dispose of. contents/container to hazardous or special waste collection point, in accordance with local,
: regional, national and/or international regulation,
: 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.

Ecology - waste materials : Avoid release to the environment.
: Consider all cautions specified in all applicable regulations of Waste Management Law

SECTION 14 : Transport information

ADR	IMDG	IATA	AND	RID
14.1. UN number or ID number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available				

14.6. Special precautions for user
Other adverse effects : No data available

14.7. Maritime transport in bulk according to IMO instruments
Maritime transport in bulk according to IMO instruments : Not applicable

SECTION 15 : Regulatory information

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

EU Regulations

Classification according to Regulation (EC) No 1272/2008 (CLP) : The substances in the mixture are not subject to Authorisation under Title VII or Restrictions under Title VIII of Regulation (EC) No. 1907/2006.

: COMMISSION REGULATION (EU) No 830/2015 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Candidate List of Substances of Very High : Not classified

Concern for Authorisation (Annex XVII) : 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
Carcinogen category 1A (Table 3.1)/ carcinogen category 1 (Table 3.2) listed in Appendix 1
Carcinogen category 1B (Table 3.1)/ carcinogen category 2 (Table 3.2) listed in Appendix 2

: 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'.

Authorisation list (Annex XIV) : Not classified

Classification according to Directive 1999/45/EC (DPD) : Not classified

National Regulations

Korea

The Korea Industrial Safety and Health Act : No data available

The Enforcement Decree of Toxic Chemicals Control Act : No data available

The Safety Control of Dangerous Substances Act :

Ingredients	CAS No.	Regulations
Triethylene glycol	112-27-6	Class 4 Group 3 petroleum, soluble 4000ℓ
DL-hexane-1,2-diol	6920-22-5	Class 4 Group 3 petroleum, soluble 4000ℓ

The Waste Management Law : No data available

Ingredients	CAS No.	Regulations
2-Pyrrolidone	616-45-5	Authorized waste
Triethylene glycol	112-27-6	Authorized waste

Other regulations : No data available

15.2. Chemical safety assessment

Chemical safety assessment : Chemical safety assessment has not been carried out for this mixture

SECTION 16 : Other information

Data of issue : 01.Jul. 2024

Latest Revision and Revision data : [Revision] 1.0 [Date] 01.Jul. 2024

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

Sources of key data used to compile the Safety Data Sheet : 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.

Purpose of SDS : Purpose of this SDS is to provide relevant information for users of product to ensure proper handling and control of risks/hazards.

Classification according to NFPA Rating : National Fire Protection Association

Ingredients	CAS No.	NFPA Classification	NFPA Classification
2-Pyrrolidone	616-45-5	NFPA 704 Diamond	
		Health hazards	2 (Intense or continued but not chronic exposure could cause temporary incapacitation or possible residual injury)
		Flammability	1 (Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

Ingredients	CAS No.	NFPA Classification	NFPA Classification
Triethylene glycol	112-27-6	NFPA 704 Diamond	
		Health hazards	1 (Exposure would cause irritation with only minor residual injury)
		Flammability	1 (Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

Ingredients	CAS No.	NFPA Classification	NFPA Classification
DL-hexane-1,2-diol	6920-22-5	NFPA 704 Diamond	
		Health hazards	0 (Poses no health hazard, no precautions necessary and would offer no hazard beyond that of ordinary combustible materials)
		Flammability	2 (Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur (e.g. diesel fuel, paper, sulfur) and multiple finely divided suspended solids that do not require heating before ignition can occur.)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

SECTION 1 : Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product Form : Mixture

Product Name : HPA-B01KY

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

Relevant identified uses : Water-based ink for inkjet printer.

Uses advised against : Do not use for the other application. Restricted to professional users

1.3. Details of the supplier of the safety data sheet

Company Name : InkTec Co.,Ltd.

Address : #108, Neungan-ro, Danwon-gu, Ansan-city, Gyeonggi-do, 425-839, Korea

Tel : +82-31-494-0001

Fax : +82-31-492-2041

Website : http://kr.inktec.com/

1.4. Emergency telephone number

Emergency number : Centro Antiveleni (Poisons Centre)

: Dipartimento di Tossicologia Clinica Universita Cattolica del Sacro Cuore Roma

Emergency Telephone Number : +39 06 305 4343

SECTION 2 : Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP) : Serious eye damage/eye irritation : Hazard category 2A

Classification according to Directive 1999/45/EC (DPD) : Xi; R36

2.2. Label elements

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

Hazard symbols :

GHS07

Signal word : Warning

Hazard statements : H319 : Causes serious eye irritation

Precautionary statements

Precautionary : P264 : Wash … thoroughly after handling.

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

Countermeasure : P305+P351+P338 : IF IN EYES: Rinse cautiously 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.

Storage : No information available.

Disposal : No information available.

2.3. Other hazards

Other hazards : No information available

SECTION 3 : Composition/information on ingredients

3.1. Substance

Substances : No information available

3.2. Mixture

Ingredients	% By weight	CAS No.	EC No.	EU Classification				Note
				67/548/ EEC (DSD)	CLP			
					Hazard class and category codes	Hazard statement codes	Pictogram/ Signal word codes	
Yellow Pigment	1 < C < 5	Proprietary	Proprietary					
Propylene glycol	10 < C < 20	57-55-6	200-338-0					
DL-hexane-1,2-diol	1 < C < 3	6920-22-5	230-029-6	Xi, R36	Eye Irrit. 2	H319	GHS07	
Glycerol, ethoxylated	1 < C < 5	31694-55-0	500-075-4					
Water	70 < C < 80	7732-18-5	231-791-2					

※ Substance is classified in terms of Regulation (EC) No. 1272/2008 Annex VI.

※ Substance with workplace exposure limits.

※ Substance is included in the Candidate List of Substances of Very High Concern for Authorisation.

SECTION 4 : First aid measures

4.1. Description of first aid measures

First-aid measures general : If you feel unwell, seek medical advice.

First-aid measures after inhalation : If breathing is difficult, give oxygen.
: Give artificial respiration if not breathing, and get immediate medical attention.
: 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.

First-aid measures after 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.
: If skin is irritated or shows other symptoms, get medical attention.

First-aid measures after eye contact : While lifting upper eyelid, flush eyes with plenty of water for at least 15 minutes and then get immediate medical attention.

First-aid measures after ingestion : Get medical attention.
: Never make an unconscious person vomit or drink fluids.
: 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.

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

The most important known symptoms and effects are described in section 2 and/or in section 11.

4.3. Indication of any immediate medical attention and special treatment needed

Other Information : Treat symptomatically.

SECTION 5 : Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Powder fire extinguishing agent.
: Spray stream.
: Carbon dioxide
: General foam extinguishing agent
: Alcohol resistant foam extinguishing agent
: Water spray.

Unsuitable extinguishing media : No data available.

5.2. Special hazards arising from the substance or mixture

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.

Hazardous combustion products : Discharge of toxic smoke, like carbon oxide, sulfur compounds, acrolein and nitroxide.

5.3. Advice for firefighters

Precautionary measures fire : Exposure to fure/heat : keep upwind.
: Exposure to fure/heat : have neighbourhood close doors and windows
: Move containers from fire area if it can be done without risk.
: Do not approach both ends of the tank
: Withdraw immediately in case of rising sound from safety devices due to the fire or discoloration
discoloration of tank.

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.
: Cool container with flooding quantities of water until well after fire is out.
: 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.
: 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.
: Stay upwind and keep out of low areas.
: Dike for later disposal.
: Use extinguishing agent appropriate for surrounding fire. : Flood with fine water spray.
: The most effect measures would be removing fuel source and suffocating by blocking air supply.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.
: 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.
: Apply water from a protected location or from a safe distance.
: Avoid inhalation of material or combustion by-products.

: Dike for later disposal.

SECTION 6 : Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Protective equipment : Gloves, Protective clothing, see "Material-Handling" to select protective clothing

Emergency procedures : Evacuate unnecessary personnel.

For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area

: 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.

: Place leaked material in an appropriate container to dispose.

6.2. Environmental precautions

Environmental precautions : Prevent entry to sewers and public waters. Store in an area separated from water supply and sewer.

: Notify authorities if liquid enters sewers or public waters Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Cleaning Methods : Collect spillage. Store away from other materials.

: 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.

: Stay upwind and keep out of low areas.

: Dike for later disposal.

Containment : 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..

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

6.4. Reference to other sections

Other sections : See Section 7 for information on safe handling.

: See Section 8 for information on personal protection equipment.

: See Section 13 for disposal information.

SECTION 7 : Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking

: 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.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : Ignition sources, Incompatible materials. Keep container closed when not in use.
: Keep container closed when not in use.
: Store and handle in accordance with all current regulations and standards.

Incompatible products : Avoid contacting strong oxidizer.

Incompatible materials : Sources of ignition. Direct sunlight.
: Keep separated from incompatible substances

Heat and ignition sources : Keep substance away from heat source
: Keep away from sources of ignition.

Prohibitions on mixed storage : Keep substance away from oxidizing agents
: Avoid contacting halogen or halogen compounds.

Storage area : Store in a cool, dry place.
: Store at ambient temperature

Special rules on packing : Special requirements closing, clean, correctly labelled, meet the legal requirements.
: Secure fragile packagings in solid container.

Packaging materials : Suitable material : No data available
: Material to avoid : No data avaiable

7.3. Specific end use(s)

Specific end use(s) : No data available

SECTION 8 : Exposure controls/personal protection

8.1. Control parameters

Ingredients	CAS No.	Workplace exposure limit				Notation
		Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute reference period)		
		ppm	mg/m³	ppm	mg/m³	
-	-	-	-	-	-	-

※ Workplace exposure limits for substances contained in the mixture

8.2. Exposure controls

Personal protective equipment : Avoid all unnecessary exposure.
Hand protection : Protective gloves are not required.
: Wear appropriate chemical resistant gloves.
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.
Respiratory protection : Consider warning properties before use.
: None required under normal operating conditions.
: None required under normal operating conditions.
: 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
Body protection : Body protection clothing is not required
: Wear appropriate chemical resistant clothing.
Environmental exposure controls : Do not allow to enter sewers, surface and ground water
Other information : Do not eat, drink or smoke during use.

SECTION 9 : Physical and chemical properties

9.1. Information on basic physical and chemical properties

Properties	Data	Properties	Data
Physical state	Liquid	Lower/Upper/ flammability or explosive limits	No data available
Colour	Yellow	Vapor pressure	No data available
Odor	Odorless or mild odor	Relative Vapor density	Greater than 1 (air=1)
Odor threshold	No data available	Relative density	1.03 at 68˚F / 20℃
pH	8.5 ~ 9.5	Solubility in water	Miscible
Melting point/ Freezing point	Less than 32˚F / 0℃	Partition coefficient n-octanol/water	No data available
Boiling point	Greater than 212˚F / 100℃	Auto ignition temperature	No data available
Flash point	Greater than 230˚F / 110℃	Decomposition temperature	No data available
Evaporation rate	No data available	Viscosity	2.5 ~ 3.5 cP
Flammability (Solid/Gas)	No data available	Particle characteristics	Not applicable

9.2. Other information

Information with regard to physical hazard classes : No data available

Other safety characteristics : No data available

SECTION 10 : Stability and reactivity

10.1. Reactivity

Reactivity : No data available

10.2. Chemical stability

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.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions : Stable at room temperature and atmospheric pressure.
: Polymerization will not occur.

10.4. Conditions to avoid

Conditions to avoid : 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

10.5. Incompatible materials

Incompatible materials : acid, base, oxidizing agents, metallic oxide, peroxides, reducing agents, halogen,
: inflammables, mineral salt.

10.6. Hazardous decomposition products

Hazardous decomposition products : Produce carbon oxide and sulfur compounds during thermal decomposition.
: Variety of organic matters, cyanide compounds, ammonia, nitrogen oxide.

SECTION 11 : Toxicological information

11.1. Information on hazerd classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Not classified

Ingredients	CAS No.	Oral	Eye	Inhalation
Propylene glycol	57-55-6	LD50 20000 mg/kg Rat	No data available	No data available
DL-hexane-1,2-diol	6920-22-5	LD50 6166 mg/kg Rat	No data available	No data available

Skin corrosion/irritation : Skin rabbit, according to skin Irritation test.
Serious eye damage/irritation : According to rabbit tests, it can develop corneal opacity with pain to human, .
: but it was recovered in a few days.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity : It develops lethargy, dizziness, dyspnea, metabolic acidosis, hematuria, or liver disease
(STOT-single exposure) : When it is inhaled, it irritates nose and neck
: It develops repetive respitatory irritation
Specific target organ toxicity : According to animal tests, inhalation can cause toxic effects on blood.
(STOT-repeated exposure)
Aspiration hazard : Not classified

Potential Adverse human health effects and Symptoms : Not classified

11.2. Information on the hazards

Information on the hazards : No data available

SECTION 12 : Ecological information

12.1. Toxicity

Toxicity : No data available

12.2. Persistence and degradability
Persistence and degradability : No data available

12.3. Bioaccumulative potential
Bioaccumulative potential : No data available

12.4. Mobility in soil
Mobility in soil : No data available

12.5. Results of PBT and vPvB assessment
Results of PBT and vPvB assessment : No data available

12.6. Endocrine disrupting properties
Endocrine disrupting properties : No data available

12.7. Other adverse effects
Other adverse effects : No data available

SECTION 13 : Disposal considerations

13.1. Waste treatment methods
Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations
: Dispose of. contents/container to hazardous or special waste collection point, in accordance with local,
: regional, national and/or international regulation,
: 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.

Ecology - waste materials : Avoid release to the environment.
: Consider all cautions specified in all applicable regulations of Waste Management Law

SECTION 14 : Transport information

ADR	IMDG	IATA	AND	RID
14.1. UN number or ID number				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.2. UN proper shipping name				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available				

14.6. Special precautions for user
Other adverse effects : No data available

14.7. Maritime transport in bulk according to IMO instruments
Maritime transport in bulk according to IMO instruments : Not applicable

SECTION 15 : Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
EU Regulations

Classification according to Regulation (EC) No 1272/2008 (CLP) : The substances in the mixture are not subject to Authorisation under Title VII or Restrictions under Title VIII of Regulation (EC) No. 1907/2006.

: COMMISSION REGULATION (EU) No 830/2015 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Candidate List of Substances of Very High Concern for Authorisation (Annex XVII) : Not classified

: 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
Carcinogen category 1A (Table 3.1)/ carcinogen category 1 (Table 3.2) listed in Appendix 1
Carcinogen category 1B (Table 3.1)/ carcinogen category 2 (Table 3.2) listed in Appendix 2

: 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'.

Authorisation list (Annex XIV) : Not classified

Classification according to Directive 1999/45/EC (DPD) : Not classified

National Regulations

Korea

The Korea Industrial Safety and Health Act : No data available

The Enforcement Decree of Toxic Chemicals Control Act : No data available

The Safety Control of Dangerous Substances Act :

Ingredients	CAS No.	Regulations
DL-hexane-1,2-diol	6920-22-5	Class 4 Group 3 petroleum, soluble 4000ℓ

The Waste Management Law : No data available

Other regulations : No data available

15.2. Chemical safety assessment

Chemical safety assessment : Chemical safety assessment has not been carried out for this mixture

SECTION 16 : Other information

Data of issue : 01.Jul. 2024

Latest Revision and Revision data : [Revision] 1.0 [Date] 01.Jul. 2024

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

Sources of key data used to compile the Safety Data Sheet : 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.

Purpose of SDS : Purpose of this SDS is to provide relevant information for users of product to ensure proper handling and control of risks/hazards.

Classification according to : National Fire Protection Association

NFPA Rating

Ingredients	CAS No.	NFPA Classification	NFPA Classification
Propylene glycol	57-55-6	NFPA 704 Diamond	
		Health hazards	0 (Poses no health hazard, no precautions necessary and would offer no hazard beyond that of ordinary combustible materials)
		Flammability	1 (Materials that require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available

Ingredients	CAS No.	NFPA Classification	NFPA Classification
DL-hexane-1,2-diol	6920-22-5	NFPA 704 Diamond	
		Health hazards	0 (Poses no health hazard, no precautions necessary and would offer no hazard beyond that of ordinary combustible materials)
		Flammability	2 (Must be moderately heated or exposed to relatively high ambient temperature before ignition can occur (e.g. diesel fuel, paper, sulfur) and multiple finely divided suspended solids that do not require heating before ignition can occur.)
		Instability/Reactivity	0 (Normally stable, even under fire exposure conditions, and is not reactive with water)
		Special notice	No data available