SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name:	**Isophorone**
Trade name	VESTASOL® IP
Product Description:	-
CAS No.	78-59-1
EC No.	201-126-0
Molecular Formula:	$C_9H_{14}O$
Recommended Use:	Solvents for binding agents, resins and other chemical products High-boiling solvents in the paint and ink industry
Preparation:	Solvents for crop protectants Raw material for further chemical syntheses

COMPANY IDENTIFICATION

Supplier:	**UNION PETROCHEMICAL PUBLIC COMPANY LIMITED** 728 Union House Building, Baromratchonnani Rd., Bangbumru, Bangplad, Bangkok 10700
Supplier General Contact:	+662 881 8288

This (M)SDS is a generic document with no country specific information included.

SECTION 2 HAZARDS IDENTIFICATION

Hazard class and label elements of the product according to GHS (the seventh revised edition):

GHS CLASSIFICATION:

Flammable liquid:	Category 4
Acute toxicity (oral):	Category 4
Acute toxicity (inhalation):	Category 4
Acute toxicity (dermal):	Category 4
Carcinogenicity:	Category 2
Serious eye Damage/Irritation:	Category 2A
Specific Target Organ Toxicity (Single Exposure):	Category 3

GHS LABEL ELEMENTS:
Pictogram:

Signal Word: Warning

Hazard Statements:

Physical:	H227: Combustible liquid.
Health:	H302: Harmful if swallowed.
	H333: May be harmful if inhaled.

H319: Causes serious eye irritation.
H351: Suspected of causing cancer.
H335: May cause respiratory irritation.

Precautionary Statements:

Prevention: P201 - Obtain special instructions before use.P202 - Do not handle until all safety precautions have been read and understood. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.P264a - Wash skin thoroughly after handling.P270 - Do not eat, drink or smoke when using this product.P271 - Use only outdoors or in a well-ventilated area.P280 - Wear protective gloves/protective clothing/eye protection/face protection.

Response: P301 + P312 - IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap.P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.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.P330 - Rinse mouth.P337 - If eye irritation persists:P313 - Get medical advice/attention. P362 + P364 - Take off contaminated clothing and wash it before reuse.P370 + P378 - In case of fire: Use water spray, foam, CO2, dry powder to extinguish.

Storage: P403 + P233 - Store in a well-ventilated place. Keep container tightly closed. P403 + P235 - Store in a well-ventilated place. Keep cool.P405 - Store locked up.

Disposal: P501: Dispose of contents/container in accordance with local/regional/national/international regulations.

Other Hazard

Explosiveness: Not to be expected in view of the structure.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Substance(s) or Complex Substance(s) required for disclosure

Name	CAS No.	Concentration*	EC No.
Isophorone	78-59-1	<= 100 Wt%	201-126-0

SECTION 4 FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES

General Advice

Pay attention to self-protection. Remove victims from hazardous area. Keep warm, position comfortably, and cover well. Do not leave affected persons unattended.

Eye Contact

With eye held open, thoroughly rinse immediately with plenty of water for at least 10 minutes. Consult an ophthalmologist immediately if the symptoms persist.

Skin Contact

Wash off affected area immediately with plenty of water. Continue decontamination with polyethylene glycol 400 after initial rinsing with water and then wash with water and soap. If symptoms persist, consult a physician for treatment.

Ingestion

Rinse out mouth. Immediately give large quantities of water to drink. Consult a physician immediately.

Inhalation

Seek medical advice immediately. Employ artificial respiration if breathing ceases.

MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

No information available

INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED

After accidental absorption in the body, the pathology and clinical findings are dependent on the kinetics of the noxious substance (quantity of absorbed substance, the absorption time, and the effectiveness of early elimination measures (first aid)/ excretion - metabolism). Continue with first aid measures. Depending on the pathology and clinical findings, patient monitoring and symptomatic treatment are necessary.

SECTION 5 FIRE FIGHTING MEASURES

Suitable Extinguishing Media

water spray, foam, CO2, dry powder

Special protective equipment for fire-fighters

May be released in case of fire: carbon monoxide, carbon dioxide, organic products of decomposition. Under certain fire conditions, traces of other toxic products may occur. Cool closed containers exposed to fire with water spray. Closed container may rupture if strongly heated. In case of fire: wear a self-contained respiratory apparatus.

Explosiveness

Not to be expected in view of the structure

SECTION 6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Do not inhale vapors / aerosols. Avoid contact with skin and eyes.

ENVIRONMENTAL PRECAUTIONS

Do not flush into surface water or sanitary sewer system.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

Take up mechanically or with an absorbent material. Fill into marked, sealable containers.
Suitable binder: sand, diatomaceous earth, universal absorbent

SECTION 7 HANDLING AND STORAGE

HANDLING

Precautions for safe handling

If possible, use material transfer/filling, metering and blending plants that are closed. Avoid contact with skin and eyes.

Advice on protection against for and explosion

Normal measures for preventive fire protection.

STORAGE

Condition for safe storage, including any incompatibilities

Keep container tightly closed. Keep in a well-ventilated place.

Further information

Observe prohibition against storing together.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

CONTROL PARAMETERS

Occupational Exposure Limit for Hazardous Agents in the Workplace (GBZ 2-2007)

Substance Name	CAS-No.	Control parameter	
Isophorone	78-59-1	30 mg/m^3	Highest allowable concentration (MAC):(CNOEL)

ENGINEERING MEASURES

If possible, use material transfer/filling, metering and blending plants that are closed.

PERSONAL PROTECTION EQUIPMENT

Eye Protection Close-fitting protective goggles (e.g. closed goggles)

Hand Protection

Glove material: butyl-rubber
Material thickness: 0.5 mm
Break through time : > 480 min
Method: Source: GloSaDa (Glove Safety Database)

Glove material: Polychloroprene (PCP)
Material thickness: 0.5 mm
Break through time : 110 min
Method: Source: GloSaDa (Glove Safety Database)

Respiratory protection In case of leakage or if TLV is exceeded wear respiratory equipment with suitable filter or a self-contained respiratory apparatus.

Skin and Body Protection Use protective clothing / face shield if necessary.

Hygiene measures Do not inhale vapors / aerosols. Avoid contact with skin and eyes. Remove immediately all contaminated clothing. Use disposable clothing if appropriate. Smoking, eating and drinking should be prohibited in the application area.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: liquid
Odor Threshold: No information available
Melting Point/Freezing Point Range (℃): -8.1
Flash Point (℃) (Closed Cup): 85
Flammability: No information available

Vapor Pressure (hPa) at 20℃ : 0.4
Dynamic Viscosity (mPa.s): 2.6
n-Octanol/Water Partition Coefficient: 1.67

Odor: peppermint
pH: neutral
Initial Boiling Point and Boiling Range (℃): 215.3
Evaporation Rate: No information available
Upper/lower explosive limits[%(v/v)]:
Upper limit：3.8；Lower limit：0.8
Density (g/cm^3) at 20 ℃: 0.92
Water Solubility (g/l) at 20 ℃: 14.5
Ignition Temperature (℃): 470

Thermal Decomposition: Distills without decomposition at atmospheric pressure.
Oxidizing properties: The substance or mixture is not classified as oxidizing.
Explosiveness: Not to be expected in view of the structure.
Peroxides: The substance or mixture is not classified as organic peroxide.
Particle characteristics: Not applicable

SECTION 10 STABILITY AND REACTIVITY

Possibility of Hazardous Reactions: No decomposition if used as directed.
Conditions to Avoid: Keep away from heat and sources of ignition.

Decomposition products: Decomposition products in combustion and thermal decomposition Carbon monoxide, carbon dioxide

SECTION 11 TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

Component	CAS No.	LD_{50} (Oral)	LD_{50} (Dermal)	LC_{50} (Inhalation, 4 h)
Isophorone	78-59-1	1500 mg/kg (Rat) Method: analogy OECD	1200 mg/kg (Rabbit) Method: analogy OECD	7 mg/l (Rat)/ Aerosol Method: analogy OECD

INFORMATION ON TOXICOLOGICAL EFFECTS

Skin irritation Rabbit / 4 h
No skin irritation
Method: OECD Test Guideline 404

Eye irritation Rabbit / 24 h
Irritating to eyes.
Method: Draize Test

Sensitization (Magnusson-Kligman test) guinea pig: Did not cause sensitization on laboratory animals.
Method: OECD Test Guideline 406
sensitizing to the respiratory tract: No data available

STOT-SINGLE EXPOSURE

The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT-REPEATED EXPOSURE

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

ASPIRATION HAZARD

No Aspiration toxicity classification

CMR ASSESMENT

Carcinogenicity Limited evidence of a carcinogenic effect.
Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Teratogenicity no evidence of teratogenic properties

Toxicity to reproduction No toxicity to reproduction

SECTION 12 ECOLOGICAL INFORMATION

PERSISTENCE AND DEGRADABILITY

Biodegradation:

inoculum: Activated sludge.
Exposure time: 28 d
Result: 95 % Readily biodegradable.
Method: Directive 92/69/EEC C.4-A

BEHAVIOUR IN ENVIRMONETAL COMPARTMENTS

Bioaccumulation

Species: Lepomis macrochirus
Bioconcentration factor (BCF): 7

Method: flow-through test

Mobility

The soil mobility of the substance is only minimally affected by adsorption to soil components.
The substance will occur mainly in bodies of water due to its environmental distribution characteristics.
The effects of light decompose the substance rapidly in the atmosphere.

ECOTOXICITY EFFECTS

Toxicity to fish

LC50 Pimephales promelas (fathead minnow): 228 mg/l / 96 h

Toxicity in aquatic invertebrates

EC50 Daphnia magna: 120 mg/l / 48 h

Toxicity to bacteria

EC50 Pseudomonas putida: 100 mg/l / 3 h

Toxicity to algae

EC50 scenedesmus subspicatus: 475 mg/l / 72 h
Method: procedure proposed by the UBA 2/84 (Federal German Environmental Agency)

Chronic toxicity in fish

NOEC Pimephales promelas: 11 mg/l / 35 d

Results of PBT and vPvB Assessment Not a PBT, vPvB substance according to the criteria of the REACH Regulation.

SECTION 13 DISPOSAL CONSIDERATIONS

Product With respect to local regulations, e.g. dispose of to suitable waste incineration plant.

SECTION 14 TRANSPORT INFORMATION

LOADING INSTRUCTIONS/REMARKS

IMDG Not classified as hazardous sea cargo (IMDG code)

IATA_P Not hazardous freight in air traffic (ICAO-TI / IATA-DGR).

IATA_C Not hazardous freight in air traffic (ICAO-TI / IATA-DGR).

IMDG For USA only; packaging size more than 450 l: COMBUSTIBLE LIQUID, N.O.S. (Isophorone), NA 1993, III, flash point 85°C

CHINA_ROAD Not classified as dangerous for conveyance in the meaning of the Carriage of Dangerous Goods by Road and Rail (ADR / RID).

CHINA_RAIL Not classified as dangerous for conveyance in the meaning of the Carriage of Dangerous Goods by Road and Rail (ADR / RID).

SECTION 15 REGULATORY INFORMATION

NATIONAL REGULATIONS

All ingredients contained in this product accord with:
MEP: Inventory of Existing Chemical Substance in China (IECSC) listed/registered

INTERNATIONAL REGULATIONS

No information available

SECTION 16 OTHER INFORMATION

TEXTS OF THE H-PHRASES

Isophorone:

H227: Combustible liquid.
H302: Harmful if swallowed.
H333: May be harmful if inhaled.
H312: Harmful in contact with skin.
H319: Causes serious eye irritation.
H351: Suspected of causing cancer.
H335: May cause respiratory irritation.

ADMINISTRARIVE INFORMATION

Revision Date: 05/20/2014
Made By: S-ESHQ,Evonik China
Approved By: Evonik Industries AG
Reference: MEP: Inventory of Existing Chemical Substance in China (IECSC)
SAWS:Hyper toxic chemical inventory(2002)
SAWS:Inventory of dangerous chemical(2002)
Differentiation of great danger source (GB18218-2000)
MEP: Inventory of Dangerous Waste
MOH:Inventory of highly hazardous substance (2003)
State department: Regulation on management of precursor of narcotic chemicals(2005)
Occupational Exposure Limit for Hazardous Agents in the Workplace GBZ 2-2002
GB12268 List of dangerous goods
MEP, Customs: Catalogue of Toxic Chemicals Prohibited or Strictly Controlled to Import or Export

---
