SAFETY DATA SHEET

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

PRODUCT

Product Name: **Diacetone alcohol**
Product Description: **-**
Chemical Formula: $C_6H_{12}O_2$
Recommended Use: It is also used in lacquer thinners, dopes, wood stains, wood preservatives and printing pastes; in coating compositions for paper and textiles; in making artificial silk and leather; in imitation gold leaf; in celluloid cements; as a preservative for animal tissue etc.

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

This material is hazardous according to UN GHS Criteria. Classification includes all GHS hazard classes. For hazard categories with two cut-off/concentration limits, classification was based on the higher limit.

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

Flammable Liquid	Category 3	H226	Flammable liquid and vapor
Eye Irritation	Category 2	H319	Causes serious eye irritation
Specific Target Organ Toxicity	Category 3	H335	May cause respiratory irritation.

GHS LABEL ELEMENTS:
Pictogram:

Signal Word: Danger

Hazard Statements:

Physical: H226: Flammable liquid and vapor.
Health: H319: Cause serious eye irritation.
H335: May cause respiratory irritation.

Precautionary Statements:

General: P103: Read label before use.
Prevention: P210: Keep away from heat/hot surface/sparks/open flames and other ignition sources/no smoking. P233: Keep container tightly closed. P240: Ground / bond container and receiving equipment. P241: Use explosion-proof electrical, ventilating, and lighting equipment. P242: Use non-sparking tools. P243:Take action to

prevent static discharge. P261: Avoid breathing fume / gas / mist / vapours / spray. P264: Wash hands thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P280: Use protective gloves /eye protection.

Response: P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breath. 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 doctor/physician if you feel unwell. P337 + P331: If eye irritation persists: Get medical advice/attention. P370 + P378: In case of fire: Use CO_2, dry powder, foam or water spray 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 and container in accordance with local regulations.

Contains: DIACETONE ALCOHOL

Other hazard information:
Not a PBT, vPVB substance according to the criteria of REACH regulation

NOTE: This material should not be used for any other purpose than the intended use in Section 1 without expert advice. Health studies have shown that chemical exposure may cause potential human health risks which may vary from person to person.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

This material is defined as a substance.

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

Name	CAS#	Concentration (%)	GHS Hazard Codes
DIACETONE ALCOHOL	123-42-2	99 min	H226, H319, H335

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

SECTION 4 FIRST AID MEASURES

GENERAL INFORMATION
Take off all contaminated clothing immediately.

INHALATION
If inhaled, remove to fresh air. If breathing is difficult, give oxygen.
If unconscious, evaluate the need for artificial respiration. Get immediate medical attention

SKIN CONTACT
Wash off with plenty of water immediately, seek medical advice if necessary.

EYE CONTACT
with plenty of water immediately and seek medical advice.

INGESTION
Do not induce vomiting and seek medical advice immediately.

NOTE TO PHYSICIAN
Treat symptomatically and supportively.

SECTION 5 FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Appropriate Extinguishing Media: CO_2, dry powder, foam or water spray
Inappropriate Extinguishing Media: Water jet

FIRE FIGHTING

Fire Fighting Instructions: Do not expose to high temperature. Danger of bursting and explosion.
Use fine water spray to cool endangered containers. Move undamaged containers from immediate hazard area. Do not allow fire water to penetrate into surface or ground water. Fire residuals and contaminated extinguishing water must be disposed of in accordance with the regulations of the local authorities.

Unusual Fire Hazards: Flammable. Explosive mixtures with air may even form at room temperature. Beware of re-ignition Vapours form potentially explosive mixtures with air. Heavier than air, they proceed at floor level and may back-flash over great distances when ignited. Ignition by hot surfaces, sparks and open flames. May form toxic carbon oxides if case of fire.

FLAMMABILITY PROPERTIES

Flash Point : 58°C (closed up)
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 8.1
Autoignition Temperature: 620°C

SECTION 6 ACCIDENTAL RELEASE MEASURES

PROTECTIVE MEASURES

Remove persons not involved upwind. Wear a self-contained breathing apparatus and chemical protective clothing. Solvent-resistant protective clothing recommended.

Methods and material for containment and cleaning up

In case of spills of large quantities: Dam spills and pump to remove. Explosion protection required.
Absorb leftover product with non-flammable liquid-binding material (e.g. earth, sand, vermiculite or ground sand stone) and place in closed containers for disposal.

Water spill and land spill recommendations are based on the most likely spill scenario for this material; however, geographic conditions, wind, temperature, (and in the case of a water spill) wave and current direction and speed may greatly influence the appropriate action to be taken. For this reason, local experts should be consulted. Note: Local regulations may prescribe or limit action to be taken.

ENVIRONMENTAL PRECAUTIONS

Large Spills: Plug leak if safely possible. Do not allow to enter drains, surface waters, basements or pits.
When released into the environment, alert police and fire brigade.

REFERENCE TO OTHER SECTIONS

Section 8 for information on personal protection equipment.
Section 13 for disposal information

SECTION 7 HANDLING AND STORAGE

HANDLING

Provide adequate ventilation, and local exhaust as needed. Provide room air exhaust at ground level. Concentrated vapours are heavier than air. Avoid the formation of aerosol. Do not breathe vapours.
Use only explosion-protected equipment/instruments. Do not use air pressure..

STORAGE

Keep container dry. Keep container tightly closed in a cool, well-ventilated place. Protect from direct sunlight.
Incompatible products:
Acid catalysts (sulphuric acid, hydrochloric acid, oxalic acid), Iodine, Bases, Acetic anhydride, Hydrogen peroxide (concentrated solutions)
Packaging material: Recommended: Stainless steel, Iron
To be avoided: Plastic materials

Advice on common storage	Observe prohibition against storing together!
Storage class	2 Flammable liquids
Storage stability	Stable under recommended storage conditions
Specific end use(s)	Solvent

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters/Exposure limits: Occupational Exposure Limit 50 ppm, 240 mg/m^3 TWA

ENGINEERING CONTROLS

Explosion protection required. Provide good ventilation and/or an exhaust systemin the work area.

PERSONAL PROTECTION

Respiratory Protection: Respiratory equipment with suitable filter or a self-contained respiratory apparatus.

Eye Protection: Closed goggles, face shield

Skin and Body Protection:

Hand protection	Butyl-rubber 0.5 mm > 480 min
Body protection	Use solvent-resistant protective clothing. Flame-retardant antistatic protective clothing; safety shoes
Thermal hazards	Flammable liquid; do not expose to heat

Industrial hygiene: Do not inhale vapours / 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

Note: Physical and chemical properties are provided for safety, health and environmental considerations only and may not fully represent product specifications. Contact the Supplier for additional information.

GENERAL INFORMATION

Physical State: Liquid
Color: Colorless
Odour: Pleasant
Odour Threshold: 0.28 ppm

IMPORTANT HEALTH, SAFETY, AND ENVIRONMENTAL INFORMATION

Relative Density (at 20ºC): 0.93 – 0.94 [Calculated]
Density : N/A
Flammability (Solid, Gas): flammable
Flash Point: 58°C (Closed cup)
Flammable Limits (Approximate volume % in air): LEL: 1.4 UEL: 8.1
Ignition Temperature: 620°C
Boiling Point / Range: 150°C - 172°C
Decomposition Temperature: N/D
Vapour Density (Air = 1): 4

Vapour Pressure: 1.1 hPa (0.83 mm Hg) at 20°C
Evaporation Rate (n-butyl acetate = 1): 0.15
pH: not determined (does not liberate H ions when dissolved)
Log Pow (n-Octanol/Water Partition Coefficient): -0.09
Solubility in Water: fully miscible at 20°C
Viscosity: [N/D at 40°C] | 2.9 mPa.s at 20°C
Explosive properties No explosive properties.
Formation of explosive air/ vapour mixtures is possible
Oxidizing properties no oxidizing properties

OTHER INFORMATION

Freezing Point: N/D
Melting Point: -44°C
Molecular Weight: 116.16 G/MOLE
Hygroscopic: N/D
Coefficient of Thermal Expansion: N/D
Heat of combustion 28500kJ/kg
Heat of vaporization 377 kJ/kg

SECTION 10 STABILITY AND REACTIVITY

REACTIVITY: Vapours form potentially explosive mixtures with air. Heavier than air, they proceed at floor level and may back-flash over great distances when ignited. May become electrostatically charged.

CHEMICAL STABILITY: Under storage at normal ambient temperatures (-40°C to +40°C), the product is stable.

Possibility of hazardous reactions: No known hazardous reactions if used as directed

CONDITIONS TO AVOID: Flammable. Concentrated vapours are heavier than air. Forms explosive mixtures with air, also in empty, uncleaned containers.

MATERIALS TO AVOID: Acids (sulphuric acid, hydrochloric acid, oxalic acid: Risk of violent reaction. Bases (sensitive reaction), Acetic anhydride, Hydrogen peroxide (conc. solns)

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition products- carbon oxides.

POSSIBILITY OF HAZARDOUS REACTIONS: No known hazardous reactions if used as directed.

SECTION 11 TOXICOLOGICAL INFORMATION

INFORMATION ON TOXICOLOGICAL EFFECTS

Route of Exposure	Conclusion/Remarks
Inhalation	
Toxicity 3 h (Rat): LC0 > 7.6 mg/l	Minimally Toxic.
Ingestion	
Toxicity (Rat): LD50 3002 mg/kg bw	Minimally Toxic. Based on test data for structurally similar materials.
Skin	
Toxicity (Rabbit): LD50 > 2 ml/kg bw	Minimally irritating (rabbit); may be harmful if absorbed through skin
Eye	
Irritation: Data available.	Irritating - 24 h (rabbit). Serious eye irritation

OTHER HEALTH EFFECTS FROM SHORT AND LONG TERM EXPOSURE

Anticipated health effects from sub-chronic, chronic, respiratory or skin sensitization, mutagenicity, reproductive toxicity, carcinogenicity, target organ toxicity (single exposure or repeated exposure), aspiration toxicity and other effects based on human experience and/or experimental data.

For the product itself:

Vapor concentration above recommended exposure levels are irritating to the eyes and the respiratory tract, may cause headaches and dizziness, are anesthetic and may have other central nervous system effects. Prolonged and/or repeated skin contact with low viscosity materials may defat the skin resulting in possible irritation and dermatitis.

Small amounts of liquid aspirated into the lungs during ingestion or from vomiting may cause chemical pneumonitis or pulmonary edema.

DIACETONE ALCOHOL (MEK): Simultaneous exposure to DIACETONE ALCOHOL (MEK) or Methyl Isobutyl Ketone (MIBK) and n-Hexane can potentiate the risk of adverse effects from n-Hexane on the peripheral nervous system.

IARC Classification:

The following ingredients are cited on the lists below: None.

--REGULATORY LISTS SEARCHED--

1 = IARC 1 2 = IARC 2A 3 = IARC 2B

SECTION 12 ECOLOGICAL INFORMATION

The information given is based on data available for the material, the components of the material, and similar materials.

MOBILITY IN SOIL

Material -- log Koc <3; very low potential for geoaccumulation.

PERSISTENCE AND DEGRADABILITY

Biodegradation:

Material -- readily biodegradable (100% in 14days).

Hydrolysis:

Material -- Transformation due to hydrolysis not expected to be significant.

Photolysis:

Material -- Transformation due to photolysis not expected to be significant.

Atmospheric Oxidation:

Material -- Expected to degrade at a moderate rate in air.

OTHER ECOLOGICAL INFORMATION

VOC: N/D

ECOLOGICAL DATA

Ecotoxicity

Test - Aquatic toxicity	Duration	Organism Type	Test Results
Toxicity to fish	96 hour(s)	Oryzias latipes	LC50 > 100 mg/l
Toxicity to aquatic invertebrates	48 hour(s)	Daphnia magna	EC50 > 1000 mg/l
Toxicity to aquatic algae and cyanobacteria	72 hour(s)	Pseudokirchneriella subcapitata	NOEC 1000 mg/l
Toxicity to microorganisms	3 hour(s)	Sewage, domestic	EC50 > 1000 mg/l

SECTION 13 DISPOSAL CONSIDERATIONS

WASTE TREATMENT METHODS

Observe all federal, state, and local environmental regulations.

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Do not dispose in sewage.

SECTION 14 TRANSPORT INFORMATION

LAND – Precautionary Transportation Measures & Conditions:

NOTE: Comply with applicable laws and regulations.

SEA (IMDG):

Proper Shipping Name:	DIACETONE ALCOHOL
Hazard Class & Division:	3
EMS Number:	F-E, S-D
UN Number:	1148
Packing Group:	III
Marine Pollutant:	No
Label(s):	3
Transport Document Name:	UN1148, DIACETONE ALCOHOL, 3, PG III

SEA (MARPOL 73/78 Convention – Annex II)

Product Name:	DIACETONE ALCOHOL
Ship type:	3
Pollution category:	Z

AIR (IATA)

Proper Shipping Name:	DIACETONE ALCOHOL
Hazard Class & Division:	3
UN Number:	1148
Packing Group:	III
Label(s) / Mark(s):	3
Transport Document Name:	UN1148, DIACETONE ALCOHOL, 3, PG III

SECTION 15 REGULATORY INFORMATION

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

Major accident hazard **Seveso III** not applicable

International Chemical Inventory Status

USA (TSCA)	listed
Canada (DSL)	listed
Australia (AICS)	listed
Japan (MITI)	listed
Korea (KECL)	listed
Philippines (PICCS)	listed
China	listed
New Zealand	listed
Taiwan	listed

SECTION 16 OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Further information:

Sections in which changes have been made since the last version are marked with a diamond in the left hand margin.

N/D = Not determined, N/A = Not applicable

KEY TO THE H-CODES CONTAINED IN SECTION 3 OF THIS DOCUMENT (for information only):
H226: Flammable liquid and vapor; Flammable Liquid, Cat 2
H319: Causes serious eye irritation; Serious Eye Damage/Irr, Cat 2A
H335: May cause respiratory irritation; Target Organ Single, Narcotic

Abbreviations and acronyms in English language:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CLP	Classification for Labeling and Packaging
DSL	Domestic Substances List
EC	European Commission
EC50	Half maximal effective concentration
EINECS	European Inventory of Existing Commercial Chemical Substances
GHS	Globally Harmonized System of Classification and Labeling of Chemicals
IATA	International Air Transport Association
IBC	International Bulk Chemical
ICAO	International Civil Aviation Organization
IMDG	International Maritime Code for Dangerous Goods
KECL	Korea Existing Chemicals List
KOC	Soil adsorption coefficient
KOW	Partition Coefficient octanol-water
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
MARPOL	International Convention for the Prevention of Pollution from Ships
MITI	Ministry of International Trade and Industry
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
PBT	Persistent, bioaccumulative and toxic substances
PICCS	Philippine Inventory of Chemicals and Chemical Substances
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
STOT	Specific target organ toxicity
TSCA	Toxic Substances Control Act
UN	United Nations
vPVB	(very) Persistent, (very) Bioaccumulative

Sources
Commission Regulation (EU) 2015/830 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)

ECHA	https://echa.europa.eu/registration-dossier/-/registered-dossier/13357/1
Chemid	https://chem.nlm.nih.gov/chemidplus/rn/123-42-2
HSDB	https://toxnet.nlm.nih.gov/cgi-bin/sis/search2/r?dbs+hsdb:@term+@rn+@rel+123-42-2
Inchem	http://www.inchem.org/documents/sids/sids/123422.pdf
CDC	https://www.cdc.gov/niosh/ipcsneng/neng0647.html
