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Section 1. Identification of the Mixture and of the Company/Undertaking

Product Identifier

Product Name	Potassium Methoxide Solution
Product State	Liquid Mixture
Product Form	Potassium Methoxide Solution
Product Number	Li.KMO.01

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Use of the Substance or Mixture	Organic synthesis
	The potassium methoxide is prepared by reacting potassium hydroxide with methanol in the presence of oxide as a dehydrating agent and a surfactant abroad.
	Potassium methylate is used in biodiesel and personal care applications in its solution in methanol with a weight content of 30-33%. The resulting aqueous solution is fundamental and has a corrosive effect.

Details of the supplier of the safety data sheet

Company	Lian Chemical Development Co.
Emergency Telephone	+98 21 86053488
WhatsApp	+98 9945710873
Address	Unit3, No15, Masoumi St., 5 th East St., Seoul St., Tehran, Iran.

Section 2. Hazards Identification

Classification

Flam. Liq. 3	3	Flammable liquids
Met. Corr. 1	1	Corrosive to metals
Acute Tox.	3 (Inhalation - vapor)	Acute toxicity
Acute Tox.	3 (oral)	Acute toxicity
Acute Tox.	3 (dermal)	Acute toxicity
Skin Corr./Irritation.	1B	Skin corrosion/irritation
Eye Dam. / Irritation.	1	Serious eye damage/eye irritation
STOT SE	1	Specific target organ toxicity — single exposure

GHS-US labeling

Hazard Pictogram:



Signal Word:

Danger

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Hazard Statement:

H226	Flammable liquid and vapor.
H290	May be corrosive to metals.
H311	Toxic in contact with skin.
H331	Toxic if inhaled.
H301	Toxic if swallowed.
H370	Causes damage to organs (Central nervous system, Optic nerve).
H314	H314 Causes severe skin burns and eye damage.

Precautionary Statements (Prevention):

P280	Wear protective gloves, protective clothing and eye protection or face protection.
P271	Use only outdoors or in a well-ventilated area.
P261	P261 Avoid breathing vapors.
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust/gas/mist/vapors.
P243	Take action to prevent static discharges.
P241	Use explosion-proof electrical, ventilating and lighting equipment.
P270	Do not eat, drink or smoke when using this product.
P264	Wash contaminated body parts thoroughly after handling.
P234	Keep only in original packaging.
P240	Ground and bond container and receiving equipment.
P242	Use only non-sparking tools.

Precautionary Statements (Response):

P310	Immediately call a POISON CENTER or physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353	IF ON SKIN (or hair): Remove or Take off immediately all contaminated clothing. Rinse skin with water or shower.
P361 + P364	Take off immediately all contaminated clothing and wash it before reuse.
P301	IF SWALLOWED:
P330	Rinse mouth
P331	Do NOT induce vomiting.
P390	Absorb spillage to prevent material damage.
P370 + P378	In case of fire: Use foam, dry powder or dry sand for extinction.

Precautionary Statements (Storage):

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

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P406 Store in a corrosion-resistant container with a resistant inner liner.

Precautionary Statements (Disposal):

P501 Dispose of contents and container to hazardous or special waste collection point.

Other Hazard: Water Reactive
OSHA Hazard: This Material is Considered Hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 3. Composition/ Information on Ingredient

Hazardous Ingredients

Chemical Name	Methanol	Potassium Methylate
Concentration	≥75% - ≤85%	≥25% - ≤35%
Cas-No.	57-56-1	865-33-8

Section 4. First Aid Measures

In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious

General advice	Immediately remove contaminated clothing. Avoid contact with the skin, eyes and clothing.
Eye Contact	Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing. Seek medical attention.
Skin Contact	Rinse skin immediately with plenty of water for 15 - 20 minutes. Remove contaminated clothing. Immediate medical attention required.
If inhaled	Keep patient calm, remove to fresh air, seek medical attention.
If swallowed	Immediately rinse mouth and then drink 200 - 300 ml water, do not induce vomiting, seek medical attention. Administer 50 ml of pure ethanol in a drinkable concentration. Seek medical attention.
Most important symptoms and effects, both acute and delayed	Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11., skin corrosion, irritates the eyes and respiratory tract, blindness, (Further) symptoms and / Or effects are not known so far
Indication of any immediate medical attention and special treatment needed	Symptomatic treatment (decontamination, vital functions)

Section 5. Fire Fighting Measures

Extinguishing Media

Suitable Extinguishing Media Dry powder, Dry sand, Alcohol-resistant foam.

Unsuitable Extinguishing Media Water, Carbon dioxide.

Special Hazard Arising from the Substance or Mixture Risk of exothermic reaction. May release highly flammable and/or corrosive gases/vapors.

Advice for Fire-Fighting Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further Information Vapors are heavier than air and may accumulate in low areas and travel a considerable distance up to the source of ignition.

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Section 6. Accidental Release Measure

Personal precautions, protective equipment and emergency procedures	Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.
Environmental precautions	Do not let product enter drains. Risk of explosion.
Methods and materials for containment and cleaning up	Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.
Reference to other sections	For disposal see section 13.

Section 7. Handling and Storage

Precautions for safe handling	
Advice on safe handling	Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols. Keep workplace dry. Do not allow product to come into contact with water.
Advice on protection against fire and explosion	Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.
Hygiene measures	Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2. Store under inert gas. Air sensitive.
Conditions for safe storage, including any incompatibilities	
Storage conditions	Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons. only to qualified or authorized persons. Never allow product to get in contact with water during storage.
Storage class	Storage class (TRGS 510): 3: Flammable liquids
Specific end use(s)	Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

Section 8. Exposure Controls/ Personal Protection

Control Parameter	
Ingredients with workplace control parameters	
Exposure controls	
Personal protective equipment	
Eye/face protection	Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles.
Skin protection	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

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Full contact
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 30 min
Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

Respiratory protection

Flame retardant antistatic protective clothing.
required when vapors/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: Filter type ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

Section 9. Physical and Chemical Properties

Information on basic physicochemical properties

Physical state	liquid
Color	Colorless to yellowish
Odor	Perceptible, of methanol
Solidification temperature	-24.1°C
Flash point	11°C
Boiling point	Approx. 92°C (1,013 mbar)
Vapor pressure	Approx. 36 mbar (20 °C) Approx. 180 mbar (50°C) Approx. 205 mbar (55°C)
Autoignition temperature	455°C
Thermal decomposition	The substance or mixture is not classified as self-heating. It is not a self-decomposable substance.

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pH	approx. 11 The products resulting from hydrolysis reacts strongly alkaline.
Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: 18 mPa.S (20°C)
Water solubility	(20°C) Hydrolyzes
Partition coefficient n-octanol/water	-0.77 (20°C) Literature data.
Density	0.98 g/cm ³ (20°C) 0.975 g/cm ³ (50°C) 0.9687 g/cm ³ (55°C)
Relative vapor density	No data available
Particle characteristics	No data available
Explosive properties	Not classified as explosive.
Oxidizing properties	None
Other safety information	No data available

Section 10. Stability and Reactivity

Reactivity	Vapors may form explosive mixture with air. Reacts violently with water.
Chemical stability	sensitive to moisture
Possibility of hazardous reactions	No data available
Conditions to avoid	Do not allow water to enter container. Warming. Moisture.
Incompatible materials	Reducing agents, Light metals, Metals
Hazardous decomposition products	In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects

Primary routes of exposure	Routes of entry for solids and liquids are ingestion and inhalation, but may include eye or skin contact. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquefied gases.
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Acute Toxicity/Effects

Acute toxicity	Assessment of acute toxicity: Toxic in contact with skin. Toxic by inhalation. Toxic if swallowed.
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Information on: Methanol

Assessment of acute toxicity: Of high toxicity after single ingestion. Of high toxicity after short-term inhalation. Of high toxicity after short-term skin contact.

Oral	The product has not been tested. The statement has been derived from the properties of the individual components.
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Type of value: ATE
Value: 145 mg/kg

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Inhalation

Information on: Methanol
Type of value: LC50
Species: rat (male/female)
Value: 128 mg/l (BASF-Test)
Exposure time: 4 h
The vapor was tested.

Dermal

Information on: Methanol
Type of value: LD50
Species: rabbit
Value: 17100 mg/kg (other)

Irritation / corrosion

Assessment of irritating effects: Causes severe burns. Risk of serious damage to eyes.
The break through time determined in the in-vitro membrane barrier test indicates that the test substance is expected to cause skin necrosis in vivo within 14 days after a 1-hour exposure.

Skin

Result: Corrosive.
Method: OECD Guideline 435

Sensitization

Assessment of sensitization: As the substance is corrosive, conducting sensitization studies are not feasible.
Toxic if swallowed.

Aspiration Hazard

Chronic Toxicity/Effects

Repeated dose toxicity

Information on: Methanol
Assessment of repeated dose toxicity: The substance may cause blindness after repeated ingestion.
The substance may cause blindness after repeated inhalation.

Genetic toxicity

Assessment of mutagenicity: Based on the ingredients, there is no suspicion of a mutagenic effect.

Information on: Potassium Methoxide

Assessment of mutagenicity: The substance was not mutagenic in bacteria. The substance was not mutagenic in mammalian cell culture. The substance was not mutagenic in a test with mammals. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Information on: Methanol

Assessment of mutagenicity: In the majority of studies performed with microorganisms and in mammalian cell culture, a mutagenic effect was not found. A mutagenic effect was also not observed in in vivo tests.

Carcinogenicity

Assessment of carcinogenicity: Based on the ingredients there is no suspicion of a carcinogenic effect in humans.

Information on: Methanol

Assessment of carcinogenicity: In long-term studies in rats and mice in which the substance was given by inhalation, a carcinogenic effect was not observed. In long-term animal studies in which the substance was given in the drinking water in high concentrations, a carcinogenic effect was

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Reproductive toxicity

observed. These effects are not relevant to humans at occupational levels of exposure.

Assessment of reproduction toxicity: Based on the ingredients, there is no suspicion of a toxic effect on reproduction.

Information on: Methanol

Assessment of reproduction toxicity: The results of animal studies gave no indication of a fertility impairing effect.

Teratogenicity

Assessment of teratogenicity: Based on the ingredients, there is no suspicion of a teratogenic effect.

Information on: Methanol

Assessment of teratogenicity: Indications of possible developmental toxicity/teratogenicity were seen in animal studies.

Section 12. Ecological Information

Toxicity

Aquatic toxicity

Assessment of aquatic toxicity:

The product has not been tested. The statement has been derived from the properties of the hydrolysis products.

Aquatic toxicity

Information on: Potassium hydroxide

Assessment of aquatic toxicity:

At the present state of knowledge, no negative ecological effects are expected.

The product gives rise to pH shifts. Study scientifically not justified.

Information on: Methanol

Assessment of aquatic toxicity:

There is a high probability that the product is not acutely harmful to aquatic organisms.

The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Toxicity to fish

Information on: Methanol

LC50 (96 h) 15,400 mg/l, *Lepomis macrochirus* (other, Flow through.)

Aquatic invertebrates

Information on: Methanol

EC50 (48 h) 18,260 mg/l, *Daphnia magna* (OECD Guideline 202, part 1, semi static)

Aquatic plants

Information on: Methanol

EC₅₀ (96 h, growth rate) ≈ 22,000 mg/L, *Selenastrum capricornutum*

Microorganisms/Effect on activated sludge

Toxicity to microorganisms

Information on: Methanol

OECD Guideline 209 aquatic

Activated sludge of a predominantly domestic sewage/EC50 (3 h): > 1,000 mg/l

Inhibition of nitrification aquatic

Bacteria/EC50 (24 h): 880 mg/l

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Persistence and degradability

Assessment biodegradation and elimination (H2O)

The product is unstable in water. The elimination data also refer to products of hydrolysis. The organic component of the product is biodegradable.

Assessment biodegradation and elimination (H2O)

Information on: Potassium hydroxide

Not applicable for inorganic substances.

Information on: Methanol

Readily biodegradable (according to OECD criteria).

Elimination information

Information on: Methanol

95 % BOD of the ThOD (20 d) (OECD 301D; EEC 92/69, C.4-E) (aerobic, activated sludge, domestic, non-adapted) Readily biodegradable (according to OECD criteria).

Bio accumulative potential

Assessment bioaccumulation potential

Information on: Methanol

Significant accumulation in organisms is not to be expected.

Information on: Potassium hydroxide

Accumulation in organisms is not to be expected.

Mobility in soil

Assessment transport between environmental compartments

Adsorption to solid soil phase is not expected.

Additional information

Other ecotoxicological advice

Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations. Do not release untreated into natural waters.

Section 13. Disposal Considerations

Waste disposal of substance

Do not discharge into drains/surface waters/groundwater. Dispose of in accordance with national, state and local regulations.

Container disposal

Contaminated packaging should be emptied as far as possible and disposed of in the same manner as the substance/product.

Section 14. Transport Information

Land transport

TDG

Hazard class: 8

Packing group: II

ID number: UN 2920

Hazard label: 8, 3

Proper shipping name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (contains

Sea transport

IMDG

Hazard class: 8

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Packing group: II
ID number: UN 2920
Hazard label: 8, 3
Marine pollutant: NO
Proper shipping name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (contains

Air transport IATA/ICAO

Hazard class: 8
Packing group: II
ID number: UN 2920
Hazard label: 8, 3
Proper shipping name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (contains POTASSIUM METHANOLATE, METHANOL) SOLUTION

Section 15. Regulatory Information

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

The product is not affected by the Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer. See annex I of the Directive 96/82/EC of 9 December 1996 on the control of major-accident hazards involving dangerous substances and the Regulation (EC) No 689/2008 of the European parliament and of the council of 17 June 2008 concerning the export and import of dangerous chemicals and its subsequent updates. Product classification according to Annex I of Directive 2012/18/EU (SEVESO III): P5b.

The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.

The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

Chemical safety assessment

There has been no evaluation a chemical safety assessment of the product.

Section 16. Other Information

Full Text of H-Statements Under Section 2 and 3

H225 Highly flammable liquid and vapor.
H251 Self-heating; may catch fire.
H301 Toxic if swallowed.
H311 Toxic in contact with skin.
H314 Causes severe skin burns and eye damage.
H331 Toxic if inhaled.

Relevant changes since previous version Fire-fighting measures