

Safety Data Sheet

1. Identification of the Substance/Mixture and of the Company/Undertaking:

- 1.1 **Product Identifier:** Lithium Methoxide In Methanol
 1.1.1 **Substances** Not applicable
 1.1.2 **Mixture name:** Lithium Methoxide In Methanol
 1.2 **Relevant Identified Uses of the Substance or Mixture and Uses Advised Against:**
 Industrial Manufacturing
 Only to be supplied for industrial uses
 For use only as a chemical intermediate under Strictly Controlled Conditions

1.3 **Details of the Supplier of the Safety Data Sheet**

North America
 FMC Corporation
 2801 Yorkmont Road, Suite 300
 Charlotte, NC 28208
 Phone: +1.704.426.5300
 Fax: +1.704.426.5370
 1.888.lithium

Europe
 FMC Chemicals
 Commercial Road
 Bromborough, Merseyside
 CH62 3NL, England
 Phone: +44.151.334.8085
 Fax: +44.151.482.7361

Asia Pacific
 FMC Asia Innovation Center
 No 3 Building No. 4560
 Jinke Road
 Shanghai, China 201203
 T: +86.21.2067.5888

Email: lithium.info@fmc.com
 Web: www.fmclithium.com

1.4 **Emergency Telephone Number:**

North America
CHEMTREC: +1.800.424.9300
 +1.703.527.3887
Plant: +1.704.629.5361
Medical: +1.303.595.9048

Europe
24 hr Specialist advice number:
CHEMTREC: +44 870 8200418

Asia Pacific
 Phone: +86.21.2067.5888

2. Hazards Identification

2.1 **Classification of the Mixture:**

2.1.1 GHS Classification [EC Regulation No 1272/2008 and US OSHA regulations]

Skin corrosive; Category 1B
 Eye damage; Category 1
 Flammable liquid; Category 2
 Acute Toxicity; Category 3 (inhalation)
 Acute Toxicity; Category 3 (skin contact)
 Acute Toxicity; Category 3 (ingestion)
 Specific target organ systemic toxicity – SE Category 1

2.2.2 EC: Classification according to 67/548/EEC or 1999/45/EC [DSD/DPD]

F, R11 C, R34; T, R23/24/25, R39/23/24/25

2.2 **Label Elements:**

2.2.3 Hazard Pictograms:



2.2.4 Signal Word:
Hazard Statement(s):

Danger
 Highly flammable liquid and vapour.

H225

Causes severe skin burns and eye damage. H314
Toxic if swallowed, in contact with skin or if inhaled. H301 +
H311 +
H331
Causes damage to organs H370

Precautionary Statement(s):

Keep away from heat/sparks/open flames/hot surfaces. – No smoking. P210
Wear protective gloves/protective clothing/eye protection/ face protection. P280
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P301 + P330 +
P331
IF ON SKIN (or hair): Remove / Take off immediately all contaminated P303 + P361 +
clothing. Rinse skin with water / shower. P353
If INHALED: Remove victim to fresh air and keep at rest in a position P304 + P340
comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact P305 + P351 +
lenses, if present and easy to do. Continue rinsing. P338
Immediately call a POISON Center or doctor/physician. P310
In case of fire: Use dry chemical for extinction. P370 + P378

Additional Precautionary Statement(s):

Keep container tightly closed. P233
Ground/bond container and receiving equipment. P240
Use explosion-proof electrical/ventilating/lighting/.../equipment. P241
Use only non-sparkling tools. P242
Take precautionary measures against static discharge. P243
Do not breathe dust/fume/gas/mist/vapours/spray. P260
Wash hands thoroughly after handling. P264
Do not eat, drink or smoke when using this product. P270
Use only outdoors or in a well-ventilated area. P271
If skin irritation or rash occurs: Get medical advice/attention. P333 + P313
Wash contaminated clothing before reuse. P363
Store in a well-ventilated place. Keep cool. P403 + P235
Store locked up. P405
Dispose of contents/ container to an approved waste disposal plant. P501

2.3 Other Hazards
None

3. Composition / Information on Ingredients

3.1 Substances Not applicable.

3.2 Mixtures

3.1.1 GHS Classification [EC: Regulation No 1272/2008; US: OSHA regulations]

Chemical Name	CAS #	EC No	EC Index No	REACH Reg No	Wt.%	Classification, Hazard Statement Codes
Lithium methoxide	865-34-9	212-737-7	None	None	1-15	Self-heat 1 H251 Skin Corr. 1B H314
methanol	67-56-1	200-659-6	603-001-00-X	Not available	85-99	Flam. Liq. 2 H225 Acute tox 3 (oral) H301 Acute tox 3 (dermal) H311 Acute tox 3 (inhal.) H331 STOT SE H370

3.1.2 EC: Classification according to 67/548/EEC or 1999/45/EC [DSD/DPD]

Chemical Name	CAS #	EC No	Wt.%	Symbols	R-phrases
Lithium methoxide	865-34-9	212-737-7	1- 15	C	R34
Methanol	67-56-1	200-659-6	85-99	F; R11 T;	R11 R23/24/25- 39/23/24/25

(See Section 16 for R-phrase text)

4. First Aid Measures

4.1 Description of First Aid Measures

- EYES:** Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.
- SKIN:** Immediately flush with plenty of water while removing contaminated clothing and/or shoes, and thoroughly wash with soap and water. Obtain immediate medical attention. Contact a medical doctor if necessary.
- INGESTION:** Quickly wipe material from the mouth and rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.
- INHALATION:** Remove to fresh air. If breathing discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

4.2 Most Important Symptoms and effects, both acute and delayed

Symptoms of over-exposure will typically be a result of the corrosive nature of the substance with discomfort to skin and if swallowed, local effects with discomfort to the mouth and GI tract. Inhalation of solvent vapours may lead to dizziness and impairment of normal functions.

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

Notes to medical doctor:

Product is highly alkaline and is corrosive to the eyes, skin and mucous membranes. Consideration should be given to careful endoscopy as stomach or esophageal burns, perforations or strictures may occur. Careful gastric lavage with an endotracheal tube in place should be considered. Observation may be warranted. Treatment is controlled removal of exposure followed by symptomatic and supportive care.

5. Fire-Fighting Measures

- 5.1 **Extinguishing media** DO NOT USE WATER OR CARBON DIOXIDE. Use dry chemical.
- 5.2 **Special hazards arising from the substance or mixture**
- Hazardous combustion products** Lithium hydroxide, formaldehyde, carbon dioxide, carbon monoxide.
- General Hazard** Flammable liquid. Reacts violently with water to give off flammable fumes and corrosive dust.
- Properties contributing to**
- Flammability** Water reactivity of product, and volatility of solvents.
- Flashpoint** Estimated: 12°C, Closed Cup (methanol)
- Flammable limits in air** Not available. For methanol (approximate): Upper: 36% Lower: 6%
- Auto ignition temperature** Not available for formulation. Reported values for methanol vary: 385 °C, also 464-470 °C
- Sensitivity to static discharge** Yes
- Sensitivity to static impact** Not applicable
- 5.3 **Advice for fire-fighters**
- Wear full protective clothing and self-contained breathing apparatus (SCBA) approved for fire fighting. This is necessary to protect against the hazards of heat, products of combustion and oxygen deficiency. Do not breathe smoke, gases or vapors generated.

COMMENTS:

(See Section 10, Stability and Reactivity)

6. Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Before cleanup measures begin, review the entire SDS with particular attention to Section 2, Hazards Identification; and Section 8, Exposure Controls/Personal Protection. Remove all sources of ignition. Spilled material can catch fire spontaneously on contact with air, moisture, acids or oxidizing materials.

6.2 Environmental precautions

Contain spill. Do not wash into drains. Dispose of at qualified waste disposal facility.

6.3 Methods and material for containment and cleaning up

Remove all sources of ignition. Spilled material can catch fire spontaneously on contact with air, moisture, acids or oxidizing materials. Cover spill with dry extinguishant. DO NOT USE WATER OR CARBON DIOXIDE. Contain spill with absorbant. Expose to air until solvent has dissipated. Sweep up and place in approved transport container. Dispose of waste according to local and Federal laws and

regulations.

6.4 Reference to other sections

Before cleanup measures begin, review the entire SDS with particular attention to Section 2, Hazards Identification; and Section 8, Exposure Controls/Personal Protection.

6.5 Additional information

Not specified.

7. Handling and Storage

7.1 Precautions for safe handling

Use in a closed system under argon or nitrogen. Do not get in eyes, on skin or clothing. Do not breathe vapors or mist.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool place. Keep container closed. Keep away from sources of ignition, water, air, acids and oxidizing agents.

7.3 Specific end use(s)

For use only as a chemical intermediate under Strictly Controlled Conditions

8. Exposure Controls / Personal Protection

8.1 Control parameters

DNEL:

Long-term exposure, systemic, inhalation Not available
 Long-term exposure, systemic, dermal Not available

PNEC:

Not available

EXPOSURE LIMITS

Chemical Name	EU		EH40 (UK WEL)		USA (ACGIH)		USA (OSHA)	
	TWA	STEL	TWA	STEL	TWA	STEL/Ceiling	PEL	STEL/Ceiling
methanol	200 ppm		200 ppm	250 ppm	200 ppm	250 ppm	200 ppm	250 ppm

8.2 Exposure controls

Engineering controls:

Use in closed system under argon or nitrogen. If personal contact can occur, use local exhaust ventilation (explosion-proof), to keep airborne concentrations below exposure limits.

Personal protective equipment

Eyes and Face:

Chemical splash goggles with a face shield.

Respiratory:

Wear a respirator approved for protection against organic vapours and mists when adequate ventilation is not available
 US: NIOSH or MSHA approved
 Europe: CEN Class A type

Protective Clothing:

Gloves: Nitrile (typical permeation breakthrough time >480 minutes)
 These glove recommendations should not be used as the absolute basis for glove selection. Actual in-use conditions may vary glove performance from the controlled conditions of laboratory tests. Factors such as concentration and temperature, glove thickness and glove reuse, may affect performance. Other glove requirements, such as length, dexterity, cut, abrasion, puncture and snag resistance, or glove grip need to be considered in making your final selection. For flammable products, the recommended gloves provide chemical but not fire protection

Other: Rubber clothing.

Work Hygienic Practices:

Quick-drench eyewash and safety shower.

9. Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

<u>Appearance:</u>	Liquid, clear colorless
<u>Odor:</u>	That of an alcohol
<u>Odor threshold:</u>	100 ppm, (methanol)
<u>pH:</u>	Reacts exothermically with water giving mixture with pH >12
<u>Melting point:</u>	-97.8 °C (methanol)
<u>Boiling point:</u>	64.7 °C (methanol)
<u>Flash point:</u>	12°C, Closed Cup (methanol)
<u>Evaporation rate(butyl acetate = 1):</u>	2.1 (methanol, approximate)
<u>Flammability:</u>	Water reactive material in flammable liquid solvent
<u>Flammable limits:</u>	Not applicable for formulation. For methanol (approximate): Upper: 36% Lower: 6%
<u>Vapor pressure:</u>	92 mm Hg @ 20°C, (methanol, estimate)
<u>Vapor density (air = 1):</u>	3.5 (heptane)
<u>Specific gravity:</u>	0.8 g/ml
<u>Solubility in water:</u>	Reacts exothermically with water
<u>Partition coefficient n-octanol/ water:</u>	Not available
<u>Autoignition temperature:</u>	Not available for formulation. 385 °C, (methanol)
<u>Decomposition temperature:</u>	Not available
<u>Viscosity:</u>	Not available
<u>Explosive properties:</u>	Not explosive
<u>Oxidizing properties:</u>	Not an oxidizer

9.2 Other information

<u>Self-reactive properties</u>	Does not meet classification criteria.
<u>Pyrophoric properties</u>	Does not meet classification criteria.
<u>Self-heating properties</u>	Does not meet classification criteria.
<u>Water reactive properties</u>	Does not meet classification criteria.
<u>Corrosive to metals</u>	Does not meet classification criteria.
<u>Molecular weight:</u>	37.97

10. Stability and Reactivity

10.1 <u>Reactivity</u>	Reactive with water and damp air
10.2 <u>Chemical stability</u>	Stable if kept away from air and moisture.
10.3 <u>Possibility of hazardous reaction</u>	Reaction with water, air, oxidizers, acids to form lithium hydroxide, lithium hydride, methanol
10.4 <u>Conditions to avoid</u>	Open air. Heat, sparks or flames
10.5 <u>Incompatible materials</u>	Heat, fire, air, water, acids and oxidizing chemicals
10.6 <u>Hazardous decomposition products</u>	None

11. Toxicological Information

11.1 Information on toxicological effects

The mixture has not been tested, but properties can be predicted based on the properties of the two components

(a) acute toxicity	Lithium methoxide in methanol: Corrosive Corrositex In-Vitro Skin Corrosion Assay Methanol: Methanol: Oral LD50 = 5600 mg/kg (rat) [RTECS] Inhalation LC50 = 64000 ppm/4H (rat) [RTECS] Methanol is more acutely toxic to humans than to animals.
(b) skin corrosion/irritation	Classified as corrosive on the basis of lithium methoxide
(c) serious eye damage/irritation	Classified as corrosive on the basis of lithium methoxide
(d) respiratory/skin sensitisation	No components are considered to be potential sensitizing agents.
(e) germ cell mutagenicity	None of the components considered to be mutagenic.
(f) carcinogenicity	None on the components considered to be carcinogenic
(g) reproductive toxicity	Classified as not a reproductive toxin based on lithium methoxide and methanol
(h) STOT-single exposure	STOT Single Exp. 1

- (i) STOT-repeated exposure Affected organs: Optic nerve (nervus opticus), central nervous system
Classified as not causing organ damage based on lithium t-amoxide
and heptanes.
- (j) aspiration hazard None of the components are an aspiration hazard

Acute Effects From Overexposure:

No data available for the formulation. This product contains an alkali alkoxide compound which is extremely reactive and corrosive to the skin, eyes (may cause blindness), nose, throat and stomach.

Methanol: Contains methanol which is toxic if inhaled or swallowed. Methanol can very readily form extremely high vapor concentrations at room temperature. Target organ effects from methanol, including nervous system effects and vision disturbances. Methanol is more acutely toxic to humans than to animals.

Chronic Effects From Overexposure:

No data available for product.

Methanol: Effects of chronic poisoning from repeated exposure to methanol vapor include conjunctivitis, headache, giddiness, insomnia, gastric disturbance and failure of vision. In animal experiments, methanol has caused fetotoxic or teratogenic effects, in the absence of maternal toxicity. Methanol produced negative results in one animal test for skin sensitization.

Carcinogenicity Listings

Eh40: Not listed.

IARC: Not listed.

NTP: Not listed.

OSHA: Not considered a carcinogen under OSHA.

ACGIH: Not listed.

12. Ecological Information

12.1 Toxicity:

The mixture has not been tested, but properties can be predicted based on the properties of the two components

Environmental toxicity testing of the product has not been carried out.

Methanol:

96 hour LC50 = 20,100 mg/L (rainbow trout)

96 hour LC50 = 29,400 mg/L (fathead minnow)

96 hour LC50 = 15,400 mg/L (bluegill)

24 hour EC50 > 10,000 mg/L (daphnia magna straus)

96 hour IC50 = 12,000 mg/L (shrimp)

[Handbook of Env. Data Organic Chem. 4th ed.]

12.2 Persistence and degradability

Lithium methoxide is expected to react violently with water or moisture, producing methanol and lithium hydroxide.

Methanol: Methanol is likely to volatilize rapidly into the air because of its high vapor pressure. Methanol will dissolve rapidly in water. It is poorly absorbed onto soils or sediments. Methanol is biodegradable and not expected to bioaccumulate through food chains in the environment

12.3 Bioaccumulative potential

Not available.

12.4 Mobility in soil

Not available.

12.5 Results of PBT and vPvB assessment

A PBT and vPvB assessment has been undertaken for REACH and none of the components are considered to be of concern.

12.6 Other adverse effects

Due to the nature of the material and the specialist applications, this product is not considered to be a risk to the environment.

13. Disposal Considerations

13.1 Waste treatment methods

Disposal method:

Do not discharge to waste water systems.
Spent solvent may be sent for recovery or used as fuel if permitted under local regulations
Dispose of waste according to local and national laws and regulations.

14. Transport Information

14.1	<u>UN Number</u>	UN3274
14.2	<u>UN proper shipping name (IMDG, ICAO, ADR, DOT)</u>	Alcoholates, solution, N.O.S. (lithium methoxide in methanol)
14.3	<u>Transport hazard class(es) (IMDG, ICAO, ADR, DOT)</u>	3, Flammable liquid, (8, Corrosive)
14.4	<u>Packing group (IMDG, ICAO, ADR, DOT)</u>	II
14.5	<u>Environmental hazards</u>	No
14.6	<u>Special precautions for user</u>	None
14.7	<u>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code</u>	None

15. Regulatory Information

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

EUROPEAN UNION:

German Wassergefährdungsklasse (water hazard class)

lithium methoxide	not listed
methanol	1

UNITED STATES:

Section 311 Hazard Category (40 CFR 370):

Immediate (acute) health hazard, delayed (chronic) health hazard, fire hazard, reactive

Section 313 Reportable Ingredients (40 CFR 372):

This product contains methanol which is subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986.

This information must be included in all MSDS's that are copied and distributed for this material.

Section 302 Extremely Hazardous

Substances (40 CFR 355):

Not listed

CERCLA Hazardous Substance (40 CFR 302.4):

Methanol is listed. The reportable quantity is 5000 pounds.

TSCA Sec 12b Export Notification:

This product is not subject to TSCA 12 (b) Export Notification Requirements.

NFPA Rating:

Health: 3 Flammability: 3 Reactivity: 2 Special: W

INTERNATIONAL INVENTORY STATUS:

<u>Inventory/Country</u>	<u>Product Status</u>
EINECS (EU)	Listed
TSCA (US)	Listed
ECL (Korea)	Listed
DSL (Canada)	Not listed

15.2 Chemical Safety Assessment

Not available.

16. Other Information

European Union:

R Phrases:

Highly flammable.
Causes burns
Toxic by inhalation, in contact with skin and if swallowed
Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed

R11
R34
R23/24/25
R39/23/24/25

List of Abbreviations used in this SDS:

PBT Persistent, Bioaccumulative and Toxic
vPvB very Persistent, very Bioaccumulative
PEC Predicted environmental concentration
PNEC Predicted no effect concentration
DNEL Derived no effect level

Specific uses identified for Exposure Scenarios

Not available

REVISION SUMMARY: Revision # 0. All new SDS.

This SDS has been prepared to meet U. S. OSHA Hazard Communication Standard requirements.
type 2c

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