
1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Lithium Foil with Copper Current Collector
CHEMICAL FAMILY: Alkali Metals
MOLECULAR FORMULA: Li
ALTERNATE TRADE NAME(S): Lectro[®] Max 210 Anode Material
GENERAL USE: Industrial Manufacturing

MANUFACTURER
FMC CORPORATION
Lithium Division
P.O. Box 795
Bessemer City, NC 28016-0795
General Information: (704) 868-5300

Emergency Telephone Numbers:
CHEMTREC (800) 424-9300
Emergency Phone (704) 629-5361 (Plant) Call Collect 24 Hr/Day
Emergency Phone (303) 595-9048 (Medical) Call Collect

2. HAZARDS IDENTIFICATION

CLASSIFICATION: Substances and mixtures, which on contact with water, emit flammable gases; Category 1
Corrosive to skin; Category 1A

LABELING:

SYMBOLS:	Flame , Corrosion
SIGNAL WORD:	Danger
HAZARD STATEMENTS:	In contact with water releases flammable gases, which may ignite spontaneously Causes severe skin burns and eye damage

PRECAUTIONARY STATEMENTS:

Prevention:
Keep from any possible contact with water, because of violent reaction and possible flash fire.
Protect from moisture.
Handle under inert gas, or alternatively may be handled in open atmosphere at room temperature, either coated with mineral oil or where relative humidity is maintained below 50%. To maintain best quality, humidity levels of less than 2% are recommended.
Wear safety glasses or goggles for general use. Full flame-resistant face shield required if metal is in a molten state.
Wear dry rubber gloves for general use. Wear full flame-resistant clothing if the metal is handled or used in a molten state.
Do not breathe dusts or mists.
Wash thoroughly after handling.

Response
In case of fire DO NOT USE WATER, SAND OR CARBON DIOXIDE.
Use graphite, copper powder, Lith-X (Ansul). If not available, dry sodium chloride, dry (anhydrous) calcium oxide or dry lithium chloride can be used.
Wash contaminated clothing before reuse.

First Aid
See Section 4 of the MSDS.

Storage
See Section 7 of the MSDS.

Disposal
See Section 13 of the MSDS.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS #</u>	<u>EC No.</u>	<u>Wt. %</u>	<u>Classification, Hazard Statement Codes</u>	
Lithium metal	7439-93-2	231-102-5	67	Water-react. Cat. 1	H260
				Skin Corr. Cat 1A	H314
Copper metal	7440-50-8	231-159-6	33	Skin Irrit. Cat 3	H316

4. FIRST AID MEASURES

<u>EYES:</u>	Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.
<u>SKIN:</u>	Quickly wipe off as much as possible, then immediately flush with plenty of water while removing contaminated clothing and/or shoes. Thoroughly wash with soap and water. Obtain immediate medical attention. Contact a medical doctor if necessary.
<u>INGESTION:</u>	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.
<u>INHALATION:</u>	Remove to fresh air. If breathing difficulty or discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

NOTES TO MEDICAL DOCTOR:

This product is corrosive and reacts violently with water. Treatment should first remove as much of the material as possible as quickly as possible, then flush with very large quantities of water. Ingestion presents a singular problem as emesis may produce esophageal damage and/or aspiration damage; dilution with water or other water-containing materials may produce a reaction that exacerbates the corrosive activity. Consideration may be given to gastric lavage with a large diameter tube for removal of material and then dilution with large amounts of water. Esophagoscopy may be of assistance in this procedure and to assess extent of damage. Treatment is otherwise symptomatic and supportive.

5. FIRE FIGHTING MEASURES

<u>FLAMMABLE LIMITS:</u>	Upper: Not available Lower: Not available.
<u>GENERAL HAZARD:</u>	Flammable solid. Water reactive.
<u>EXTINGUISHING MEDIA:</u>	DO NOT USE WATER, SAND OR CARBON DIOXIDE. Use graphite, copper powder, Lith-X (Ansul). If not available, dry sodium chloride, dry (anhydrous) calcium oxide or dry lithium chloride can be used.
<u>HAZARDOUS COMBUSTION PRODUCTS:</u>	Lithium oxide, lithium hydroxide.
<u>FIRE FIGHTING PROCEDURES:</u>	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.
	Lithium fires can throw off molten lithium metal particles. Burning lithium releases corrosive lithium oxide dust and fumes. Lithium metal can reignite after fire is initially extinguished. Never leave extinguished fire unattended. After all material has apparently burned

and cooled, carefully turn over remaining residue and be prepared to reextinguish should reaction occur. Carefully place residue in steel drum, using a long-handled shovel, and cover with extinguishing media.

For additional fire fighting information, see National Fire Protection Assn. Standard NFPA 485.

179°C (lithium metal)

Water reactivity and flammability of solid.

AUTOIGNITION TEMPERATURE:
PROPERTIES CONTRIBUTING TO

FLAMMABILITY:

FLASH POINT:

SENSITIVITY TO STATIC DISCHARGE:

SENSITIVITY TO IMPACT:

Not applicable

Not applicable

Not applicable

COMMENTS:

(See Section 10, Stability and Reactivity)

6. ACCIDENTAL RELEASE MEASURES

RELEASE NOTES:

Remove all sources of ignition. To prevent ignition, cover with mineral oil (or kerosene), soaking thoroughly, and place in oiled steel drums which are approved for transport. Keep water and moisture away from spilled material. Dispose of waste according to local and Federal laws and regulations.

Before cleanup measures begin, review the entire MSDS with particular attention to Section 3, Emergency Overview and Potential Health Effects; and Section 8, Recommended Personal Protective Equipment.

7. HANDLING AND STORAGE

HANDLING:

Can be handled in open atmosphere at room temperature, either coated with mineral oil or where relative humidity is maintained below 50%. To maintain best quality, humidity levels of less than 2% are recommended. Wear safety glasses or goggles and dry rubber gloves.

STORAGE:

Store in original unopened shipping container. Once opened, store in argon atmosphere or mineral oil. Keep away from water, humid air, acids and oxidizing materials. Keep away from heat, sparks and flame.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE LIMITS

Chemical Name

TWA
(ACGIH)

STEL/Ceiling
(ACGIH)

PEL
(OSHA)

STEL/Ceiling
(OSHA)

Copper - as fume only

0.2 mg/m³

0.1 mg/m³

ENGINEERING CONTROLS:

Use local exhaust ventilation to keep airborne concentrations below exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes And Face:

Safety glasses or goggles for general use. Full flame-resistant face shield required if metal is in a molten state.

<u>Respiratory:</u>	None
<u>Protective Clothing:</u>	Dry rubber gloves for general use. Wear a full flame-resistant face shield if the metal is handled or used in a molten state.
<u>Work Hygienic Practices:</u>	Quick-drench eyewash and safety shower.

9. PHYSICAL AND CHEMICAL PROPERTIES

<u>ODOR:</u>	Odorless
<u>APPEARANCE:</u>	Silvery-white soft metal solid
<u>pH:</u>	(1% solution) @ 25°C: >12
<u>PERCENT VOLATILE:</u>	Not applicable
<u>VAPOR PRESSURE:</u>	Not applicable
<u>VAPOR DENSITY:</u>	Not applicable
<u>BOILING POINT:</u>	1317°C (2400°F) (Li metal with 1% Na)
<u>MELTING POINT:</u>	180.5°C (357°F) (Li metal with 1% Na)
<u>SOLUBILITY IN WATER:</u>	Reacts violently with water (lithium metal)
<u>EVAPORATION RATE(Butyl Acetate = 1):</u>	Not applicable
<u>SPECIFIC GRAVITY:</u>	0.5 g/cc (lithium metal)
<u>MOLECULAR WEIGHT:</u>	6.94 (lithium metal)
<u>COEFF. OIL/WATER:</u>	Not applicable
<u>ODOR THRESHOLD:</u>	Not applicable
<u>FLAMMABLE LIMITS:</u>	Upper: Not available Lower: Not available.
<u>FLASH POINT:</u>	Not applicable
<u>AUTOIGNITION TEMPERATURE:</u>	179°C (lithium metal)
<u>VISCOSITY:</u>	Not applicable
<u>FLAMMABILITY:</u>	Reacts with water to produce hydrogen, a flammable gas.
<u>DECOMPOSITION TEMPERATURE:</u>	Not available
<u>EXPLOSIVE PROPERTIES:</u>	Not explosive
<u>OXIDIZING PROPERTIES:</u>	Not an oxidizer

10. STABILITY AND REACTIVITY

<u>CONDITIONS TO AVOID:</u>	Temperatures above the melting point (180.5°C/357°F), and contact with water, moisture or humid air.
<u>STABILITY:</u>	Stable
<u>POLYMERIZATION:</u>	Will not occur
<u>HAZARDOUS DECOMPOSITION PRODUCTS:</u>	Lithium is an element and does not decompose. However, it is highly reactive in contact with many other substances, releasing large quantities of heat and/or hazardous products. It can react violently with water, the humidity in air, and the moisture in other substances, releasing hydrogen gas, which may catch fire explosively. Corrosive fumes of lithium oxide and/or lithium hydroxide are also released.
<u>INCOMPATIBLE MATERIALS:</u>	Acids, oxidizers, oxygen, nitrogen, or carbon dioxide

11. TOXICOLOGICAL INFORMATION

<u>Eye Contact:</u>	No data available for the product. Corrosive.
<u>Skin Contact:</u>	No data available for the product. Corrosive.
<u>Skin Absorption:</u>	No data available for the product. Corrosive.
<u>Ingestion:</u>	No data available for the product. Corrosive.

Inhalation: No data available for the product.
Corrosive.

Acute Effects From Overexposure:

This product is extremely reactive with body moisture and is corrosive to skin, nose, throat, stomach and eyes (may cause blindness). Copper dusts and fumes cause irritation of the skin, eyes, respiratory and gastrointestinal tracts.

Chronic Effects From Overexposure:

No data available for the product.

Sensitization:

No

Carcinogenicity:

EH40: Not listed.

IARC: Not listed.

NTP: Not listed.

OSHA: Not considered a carcinogen under OSHA.

ACGIH: Not listed

Mutagenicity:

No

Reproductive Toxicity:

No

12. ECOLOGICAL INFORMATION

Ecotoxicological Information:

No data available for the product.

Chemical Fate Information:

Lithium metal reacts violently with water. The hydrolysis products consist of hydrogen gas and lithium hydroxide. The hydroxide ion may affect the pH of the water.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:

Dispose of waste according to local and Federal laws and regulations.

14. TRANSPORT INFORMATION

UN NUMBER:

UN1415

PROPER SHIPPING NAME:

Lithium, mixture

CLASSIFICATION:

4.3, Dangerous when wet

LABELS:

Dangerous when wet

PACKING GROUP:

I

PACKING GROUP:

I

CUSTOM TARIFF NO:

2805.19.9000

MARINE POLLUTANT:

No

PIH:

Not designated Poison Inhalation Hazard bu US DOT.

15. REGULATORY INFORMATION

UNITED STATES

SECTION 311 HAZARD CATEGORY (40 CFR 370):

Reactive, fire hazard, immediate (acute) health hazard.

SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):

This product contains copper which is a substance 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):
CERCLA HAZARDOUS SUBSTANCE (40 CFR 302.4):

Not listed

Copper is listed and the RQ is 5000 lbs. No reporting of releases of the solid form is required if the mean diameter of the pieces of the solid metal released is greater than 100 micrometers (0.004 inches).

TSCA SEC 12B EXPORT NOTIFICATION:

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

TSCA INVENTORY STATUS (40 CFR 710):

Listed

CANADA WHMIS:

Product Identification No.: 1415
Hazard Classification: Class B, Div. 6 (Reactive Flammable Materials)
Class E (Corrosive)
Ingredient Disclosure List: Not listed

16. OTHER INFORMATION

REVISION SUMMARY: Revision #8: Regular review completed. Sections 2, 3, 9, 14 & 16 revised.

NFPA RATING

HEALTH: 3
FLAMMABILITY: 3
REACTIVITY: 2
SPECIAL: ~~W~~

This MSDS has been prepared to meet U. S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.
type 5a

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