

46700090-5

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name XALT™ Superior Lithium Polymer Battery (SLPB)
Version # 04
Issue date 06-28-2012
Revision date 12-22-2012
Supersedes date 06-28-2012
Product use Rechargeable type battery
Manufacturer/Supplier Dow Kokam LLC
2125 Ridgewood Drive
Midland, MI 48642 US
Phone Number: (989) 486 8558
Emergency +760-476-3962
Access code 333447

2. Hazards Identification

Physical state Solid.
Appearance Pouch battery.
Emergency overview Under normal conditions of processing and use, exposure to the chemical constituents in this product is unlikely. The battery should not be opened or burned. Exposure to the ingredients contained within or their combustion products could be harmful.
OSHA regulatory status This product is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard.
Potential health effects
Routes of exposure Inhalation. Skin contact. Eye contact.
Eyes Not dangerous with normal use. Eye contact with contents of an open battery can cause severe irritation or burns to the eye.
Skin Not dangerous with normal use. Skin contact with contents of an open battery can cause severe irritation or burns to the skin.
Inhalation Inhalation of materials from a sealed battery is not an expected route of exposure. Material emitted from a ruptured battery may cause respiratory irritation.
Ingestion Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.
Target organs Eyes. Skin.
Signs and symptoms Irritation of eyes and mucous membranes. Irritating to mouth, throat, and stomach. Skin irritation. Sensitization. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects. Corrosive effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision.
Potential environmental effects Ecological injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Cobalt Lithium Manganese Nickel Oxide	182442-95-1	25 - 35
Graphite	7782-42-5	15 - 20
Copper	7440-50-8	10 - 20
Aluminium	7429-90-5	5 - 15
Ethyl Methyl Carbonate	623-53-0	5 - 10
Ethylene Carbonate	96-49-1	5 - 10
1,1-Difluoroethene homopolymer, poly(vinylene fluoride)	24937-79-9	1 - 5

Components	CAS #	Percent
Carbon black	1333-86-4	1 - 5
Lithium Hexafluorophosphate (1-)	21324-40-3	1 - 5
Polyethylene	9002-88-4	1 - 5
Other components below reportable levels		3.98

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

4. First Aid Measures

First aid procedures

Eye contact

If eye comes in contact with contents of an open or damaged cell or battery, immediately flush the contaminated eye(s) with lukewarm water for at least 30 minutes. Get medical attention immediately. Rinse eye with calcium gluconate solution (1%) until arrival of doctor. Continue rinsing.

Skin contact

If skin contact with contents of an open battery occurs, immediately flush with lukewarm water for at least 30 minutes. Thoroughly wash (or discard) clothing and shoes before reuse.

Inhalation

If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Seek medical advice.

Ingestion

If ingestion of contents of an open battery occurs, rinse mouth thoroughly with water. DO NOT induce vomiting. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head lower than the hips to help prevent aspiration. Call a physician or poison control center immediately.

Notes to physician

In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

General advice

First aid personnel must be aware of own risk during rescue.

5. Fire Fighting Measures

Flammable properties

Under normal use, the battery does not exhibit flammable properties. In the event that the battery is abused and disassembly of the battery occurs resulting in exposure of internal components, the exposed solution, may be flammable and/or corrosive. Exposure to excessive heat may lead to venting or rupture of the sealed battery, exposing the internal components which may be corrosive and/or flammable. Vented gas would be flammable when in sufficient concentration.

Extinguishing media

Suitable extinguishing media

Extinguish with water spray, carbon dioxide, dry chemical, fire blanket or material appropriate for the surrounding fire.

Unsuitable extinguishing media

In the event that a battery is ruptured and the internal components are exposed, DO NOT USE WATER.

Protection of firefighters

Protective equipment and precautions for firefighters

Wear suitable protective equipment.

Fire fighting equipment/instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Water runoff can cause environmental damage. Fight fire from a protected location.

Specific methods

In the event of fire and/or smoke do not breathe fumes.

Hazardous combustion products

Carbon oxides. Metal oxides.

6. Accidental Release Measures

Personal precautions

None under normal use conditions. In the event of damage resulting in a leak or exposed materials, avoid contact with contents of an open or damaged cell or battery. Wear protective clothing as described in Section 8 of this safety data sheet.

Environmental precautions

Avoid allowing material from exposed battery to contaminate soil, sanitary sewers, or waterways.

Methods for containment

Stop the flow of material, if this is without risk. Collect spillage. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Contain spillage from a damaged or open cell or battery with sand or earth.

Methods for cleaning up

Suitable PPE shall be utilized as described in section 8. Collect any released materials with absorbent, non-combustible material into suitable containers. Do not use water to clean or rinse contaminated area. Wipe area clean with MEK or alcohol soaked cloth. Dispose of contaminated materials according to appropriate laws and regulations.

7. Handling and Storage

Handling

Do not open, disassemble, crush or burn battery. Do not expose battery to extreme heat or fire. Elevated temperatures can result in reduced battery service life. Precautions shall be taken to prevent electrical short between cell or battery terminals. Precautions shall be taken to prevent damage which may result in physical damage to the pouch.

Storage

Store in a cool, dry place. Keep at room temperature. Keep out of reach of children.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Carbon black (CAS 1333-86-4)	TWA	3 mg/m3	Inhalable fraction.
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Graphite (CAS 7782-42-5)	TWA	2 mg/m3	Respirable fraction.

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	PEL	5 mg/m3	Respirable dust.
		15 mg/m3	Total dust.
Carbon black (CAS 1333-86-4)	PEL	3.5 mg/m3	
Copper (CAS 7440-50-8)	PEL	1 mg/m3	Dust and mist.
		0.1 mg/m3	Fume.
Graphite (CAS 7782-42-5)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Type	Value
Graphite (CAS 7782-42-5)	TWA	15 mppcf

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3	Pyrophoric powder.
		10 mg/m3	Dust.
Carbon black (CAS 1333-86-4)	TWA	3.5 mg/m3	
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Graphite (CAS 7782-42-5)	TWA	2 mg/m3	Respirable.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable.
Carbon black (CAS 1333-86-4)	TWA	3 mg/m3	Inhalable
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Graphite (CAS 7782-42-5)	TWA	2 mg/m3	Respirable.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m3	Respirable fraction.
Carbon black (CAS 1333-86-4)	TWA	3.5 mg/m3	
Copper (CAS 7440-50-8)	TWA	0.2 mg/m3	Fume.
Graphite (CAS 7782-42-5)	TWA	2 mg/m3	Respirable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3 10 mg/m3	Welding fume.
Carbon black (CAS 1333-86-4)	TWA	3.5 mg/m3	
Copper (CAS 7440-50-8)	TWA	1 mg/m3 0.2 mg/m3	Dust and mist. Fume.
Graphite (CAS 7782-42-5)	TWA	2 mg/m3	Respirable dust.

Mexico. Occupational Exposure Limit Values

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3 5 mg/m3 10 mg/m3	Welding fume. Pyrophoric powder. Dust.
Carbon black (CAS 1333-86-4)	STEL	7 mg/m3	
Copper (CAS 7440-50-8)	TWA STEL	3.5 mg/m3 2 mg/m3	Fume.
		2 mg/m3	Dust and mist.
	TWA	1 mg/m3	Dust and mist.
		0.2 mg/m3	Fume.
Graphite (CAS 7782-42-5)	TWA	10 mg/m3	

Exposure guidelines

The OELs listed above are only applicable if the internal components of the battery cell are released. Follow standard monitoring procedures.

Engineering controls

If user operations generate dust, fumes, or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal protective equipment

Eye / face protection

Not necessary under normal conditions. Wear chemical goggles if handling an open or leaking battery.

Skin protection

Not necessary under normal conditions. Wear chemical resistant gloves if handling an open or leaking battery.

Respiratory protection

Not necessary under normal conditions.

General hygiene considerations

Do not store food, drink and tobacco near the product. Practice good housekeeping.

9. Physical & Chemical Properties

Appearance	Pouch battery.
Physical state	Solid.
Form	Solid.
Color	Silver
Odor	Odorless.
Odor threshold	Not available.
pH	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Boiling point	Not available.
Melting point/Freezing point	Not available.

Solubility (water)	Not available.
Specific gravity	Not available.
Flash point	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Auto-ignition temperature	Not available.

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions.
Conditions to avoid	Heat, sparks, flames, elevated temperatures.
Incompatible materials	Not available.
Hazardous decomposition products	Irritating and/or toxic fumes and gases may be emitted upon the products decomposition.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Sensitization	Risk of sensitization only occurs if the cell is mechanically, thermally, or electrically abused to the point of compromising the enclosure. If this occurs, battery contains ingredients may cause sensitization.
Acute effects	No toxicological impacts are expected under normal use conditions. Risk of irritation occurs only if the cell is mechanically, thermally, or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.
Carcinogenicity	Under normal handling and storage conditions, the exposure to carcinogenic components is not expected. Risk of adverse effects occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure.

ACGIH Carcinogens

Aluminium (CAS 7429-90-5)	A4 Not classifiable as a human carcinogen.
Carbon black (CAS 1333-86-4)	A3 Confirmed animal carcinogen with unknown relevance to humans.

IARC Monographs. Overall Evaluation of Carcinogenicity

Carbon black (CAS 1333-86-4)	2B Possibly carcinogenic to humans.
Polyethylene (CAS 9002-88-4)	3 Not classifiable as to carcinogenicity to humans.

Epidemiology	No data available.
Mutagenicity	No data available.
Neurological effects	No data available.
Reproductive effects	Not assigned.
Teratogenicity	No data available.

12. Ecological Information

Ecotoxicological data

Components	Species		Test Results
Carbon black (CAS 1333-86-4)			
Aquatic			
Crustacea	EC50	Daphnia	5600 mg/l, OECD 202
Ecotoxicity	No ecological impacts expected under normal use conditions.		
Environmental effects	No environmental effects are expected under normal use conditions. Exposure to internal components may be toxic to aquatic life.		
Aquatic toxicity	No environmental effects are expected under normal use conditions. Exposure to internal components may be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.		
Persistence and degradability	No data available.		
Bioaccumulation / Accumulation	No data available.		

Mobility in environmental media No data available.

13. Disposal Considerations

Disposal instructions Do not dispose in fire. Dispose waste and residues in accordance with applicable federal, state, and local regulations.

14. Transport Information

DOT

Basic shipping requirements:

UN number	UN3480
Proper shipping name	Lithium batteries
Hazard class	9
Packing group	II
Additional information:	
Packaging exceptions	185
Packaging non bulk	185
Packaging bulk	None

IATA

UN number	UN3480
UN proper shipping name	Lithium batteries
Transport hazard class(es)	9
Packing group	II
Labels required	9

IMDG

UN number	UN3480
UN proper shipping name	Lithium batteries
Transport hazard class(es)	9
Packing group	II
Labels required	9

TDG

Proper shipping name	Lithium batteries
Hazard class	9
UN number	UN3480
Packing group	II
Labels required	9
Packaging exceptions	185
Packaging non bulk	185
Packaging bulk	None

15. Regulatory Information

US federal regulations This product is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard.
All components are on the U.S. EPA TSCA Inventory List.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

CERCLA (Superfund) reportable quantity (lbs) (40 CFR 302.4)

Copper: 5000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
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Section 302 extremely hazardous substance (40 CFR 355, Appendix A)	No
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Section 311/312 (40 CFR 370)	No
Drug Enforcement Administration (DEA) (21 CFR 1308.11-15)	Not controlled
Canadian regulations	This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.
WHMIS status	Exempt

State regulations

US - California Hazardous Substances (Director's): Listed substance

Aluminium (CAS 7429-90-5)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Copper (CAS 7440-50-8)	Listed.

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Carbon black (CAS 1333-86-4)	Listed.
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US - California Proposition 65 - CRT: Listed date/Carcinogenic substance

Carbon black (CAS 1333-86-4)	Listed: February 21, 2003 Carcinogenic.
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US - New Jersey RTK - Substances: Listed substance

Aluminium (CAS 7429-90-5)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Copper (CAS 7440-50-8)	Listed.

US - Pennsylvania RTK - Hazardous Substances: All compounds of this substance are considered environmental hazards

Copper (CAS 7440-50-8)	LISTED
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US. Massachusetts RTK - Substance List

Aluminium (CAS 7429-90-5)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Copper (CAS 7440-50-8)	Listed.
Ethylene Carbonate (CAS 96-49-1)	Listed.

US. New Jersey Worker and Community Right-to-Know Act

Aluminium (CAS 7429-90-5)	500 LBS
Copper (CAS 7440-50-8)	500 LBS

US. Pennsylvania RTK - Hazardous Substances

Aluminium (CAS 7429-90-5)	Listed.
Carbon black (CAS 1333-86-4)	Listed.
Copper (CAS 7440-50-8)	Listed.
Ethylene Carbonate (CAS 96-49-1)	Listed.

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings Health: 0
Flammability: 0
Physical hazard: 0

NFPA ratings Health: 0
Flammability: 0
Instability: 0

Disclaimer The information in the sheet was written based on the best knowledge and experience currently available.