



**CRESLOW INVESTMENTS (Pty) Ltd
CRESLOW ENERGY SOLUTIONS**

42 CRESLOW ESTATE
DULCIE CLOSE, LONEHILL
SANDTON, 2191
SOUTH AFRICA

contactus@energysolution.co.za
support@energysolution.co.za

**MATERIAL SAFETY DATA
SHEET**

**CRESLOW ENERGY
SOLUTIONS**

Advanced battery technology

**CRESLOW ENERGY SOLUTIONS reserves the right to final
interpretation**

Creation date: 2023/02



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1 Identification of chemical and supplier

Product Identifier

Lithium phosphate Rechargeable battery

Chemical type: LiFePO₄

Product Name	AUTOSMART, SOLARSMART & SOLARSMART HV
Type	12.8V, 25.6V, 38.4V, 51.2V & 512V

Company Identifier

Name	CRESLOW INVESTMENTS (PTY) LTD t/a CRESLOW ENERGY SOLUTIONS
Address	UNIT 02, VAN ZYL STREET, WITBANK, EMALAHLENI
Postal code	1035
Telephone number	083 655 2066 / 082 459 0499


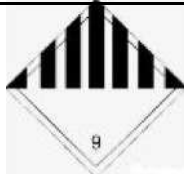


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2 Hazards Identification

Hazard	<p>GB6944 9th Goods</p>   <p>These chemicals are contained in a sealed unit. Risk of exposure occurs only if the battery is mechanically or electrically abused. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.</p>
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Hazard Statements

Description	Not classified as dangerous or hazardous with normal use. Risk of exposure occurs only if the cell is mechanically, thermally, or electrically abused. If this occurs, it may cause electrolyte leakage. Electrolyte is flammable, in case of electrolyte leakage, remove the battery from fire immediately
Hazard	It may cause electrolyte leakage and vapor generated from burning batteries, may make eyes, skin and throat irritate.

Inhalation	Not classified as dangerous or hazardous with normal use. Vapors or mists from a ruptured cell may cause respiratory irritation. Not classified as dangerous or hazardous with normal use.
Ingestion	Swallowing the contents of an open cell can cause serious chemical burns of mouth and esophagus.
Skin contact	Not classified as dangerous or hazardous with normal use. Skin contact with contents of an open cell can cause severe irritation or burns to the skin.
Eye contact	Not classified as dangerous or hazardous with normal use. Eye contact with contents of an open cell can cause severe irritation or burns to the eye.



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Response

Inhalation	Remove to fresh air immediately. Seek medical treatment
Ingestion	Induce vomiting unless patient is unconscious. Seek medical treatment
Skin contact	Wash the affected contact area immediately with lots of water and soap. Seek medical treatment.
Eye contact	Rinse eyes with lots of water immediately. Keep your eyes in the water for at least 15 minutes to flush the eyes out. Seek medical treatment

3 Composition/ Information on Ingredients

Component	Chemical Formula	CAS No.	WT%
Phosphoric acid, iron(2+) lithium salt(1:1:1)	LiFePO ₄	(CAS-No.)15365-14-7, (EC-No.)476-700-9;604-917-2	49%
Phosphate(1), hexafluoro, lithium	LiPF ₆	(CAS-No.)21324-40-3, (EC-No.)244-334-7	3%
Graphite	C	(CAS-No.)7782-42-5, (EC-No.)231-955-3	24%
Aluminum	Al	(CAS-No.)7429-90-5, (EC-No.)231-072-3, (EC Index-No.)013-002-00-1	6%
Copper	Cu	(CAS-No.)7440-50-8, (EC-No.)231-159-6	13%
Polypropylene	PP	(CAS-No.) 9003-07-0, (EC-No.)618-352-4	5%



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4 Firefighting Measures

Extinguishing Fire

Small Fire	Dry powder, sand, Carbon Dioxide (CO ₂), Water spray
Large Fire	Water spray, Fire emergency call to local fire department

Fire Precautions and Protective Measures

Flammable Properties	Lithium phosphate batteries contain flammable electrolyte that may vent, ignite, and produce sparks when subjected to high temperature ($C > 150^{\circ}C$), when damaged or abused, mechanical damage or electrical overcharge. Burning cells can ignite other batteries in proximity
Explosion Data	Extreme mechanical abuse will result in rupture of the batteries.
Protective Equipment for Firefighters	In the event of a fire, wear full protective clothing and self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode
NFPA	Health: 0 Flammability: 1 Instability: 0



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5 Accidental Release Measures

Personal Precautions

1	Remove personnel from area until dissipate
2	Use personal protective equipment. Avoid contact with skin and eyes.

Environmental Precautions

1	Prevent Further leakage or spillage if safe to do so
2	Do not allow material to contaminate groundwater system
3	Do not throw out into the environment

Methods for material contamination cleanup

1	The leaked solid is moved to a container. The leaked place is fully flushed with water
2	Absorb spilled material with inert absorbent (dry sand or earth)
3	Collect all contaminated wash water and absorbent for proper disposal.



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6 Accidental Release Measures

Precautions for Handling

Technical Measures	Prevention of user exposure; not necessary under normal circumstance
Prevention of fire	Not necessary under normal use. Do not damage or remove external shell
Temperature	Never expose battery to fire or high temperature above 60 degrees Celsius
Water	Do not soak battery in water or seawater or spray directly with water
Oxidizers	Do not expose battery to strong oxidizers
Drop	Do not drop or a give mechanical shock. Never disassemble, modify, or deform
Short Circuit	Do not connect positive and negative terminal with electrically conductive material

Precautions for Storage

1	Avoid direct sunlight, high temperatures and high humidity. Designed for internal use unless otherwise stipulated
2	Store in a cool, dry place (temp: 20~45C, humidity: 45~85%)
3	Incompatible products: conductive material, water, seawater, strong oxidizers and acids
4	Insulated packing material and tear proof, waterproof materials are recommended



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7 Exposure Controls/Personal protection

Engineering Controls

1	Use local exhaust ventilation or other engineering control sources used to manage dust, mist, fumes, and vapors
2	Ensure that the eyewash stations and safety showers are closed to the workstation location.
3	Airborne exposure to hazardous substances is not expected when product is used for its intended purpose.

Personal Protection

Respiratory protection	Not necessary under normal conditions; wear safety respirator if handling an open or leaking cell
Eye protection	Not necessary under normal conditions; wear safety glasses if handling an open or leaking cell
Skin protection	Not necessary under normal conditions; wear neoprene or natural rubber gloves if handling an open or leaking cell
Hygiene Measures	Do not eat, drink, or smoke in work areas



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8 Stability and Reactivity

Stability	Stable under proper operation and storage conditions
Conditions to avoid	Fire, high temperatures. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse
Incompatible materials	Seawater and other high conductivity liquids, strong oxidizers and acids
Hazardous decomposition products	When overheated the battery may emit acid or harmful fumes

9 Transport information

UN number	UN3480
UN shipping name	Lithium phosphate battery (LiFePO4 Battery)
Packing group	II
Marine pollutant	No
Land transport (ADR/RID)	Class 9
Sea transport (CIMDG)	Class 9
Air transport (ICAO-TI/IATA DGR)	Class 9
National Regulations	This battery type is classified as dangerous goods for transport, because the watt-hour rating of the battery exceeds 100 Wh. This battery type meets the requirements of each applicable test in the UN Manual of Tests and Criteria, Part III, sub-section 38.3.



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10 Regulatory Information

Personal Protection

1	Recommended for transport of dangerous goods (TOG)
2	International Maritime Organization (IMO) International maritime dangerous goods code
3	International Air Transport Association Dangerous Goods Regulations {IATA-DGR}
4	International Civil Aviation Organization Technical Instructions on the Safe Transport of Dangerous Goods by Air {ICAO-TI}
5	Provision of the civil aviation administration of China on the administration of transport of dangerous goods by air
6	Recommendations for the transport of dangerous goods, the UN Manual of Tests and Criteria, Part III, Sub-section 38.3
7	Safety Code for inspection of packaging of dangerous goods transported by air (GB19433-2009)
8	Standard for transport of lithium batteries by air (MH/T 1020-2013)

11 Other Information

Disclaimer

The material safety data sheet is furnished to every manufacturer as a reference to secure the safe handling of chemical. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.