Lifos 105 (v1) MSDS (Material Safety Data Sheet)

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Name of chemistry	Lithium Iron Phospahte Battery
Manufacturer	Solar Technology International Ltd
Manufacturer address	Unit 6, Station Drive, Bredon, Tewkesbury, Gloucestershire GL20 7HH, UK
Inspection according to	EEC Directive 93/112/EC; UN 'Recommendations on the TRANSPORT OF DANGEROUS GOODS'
Emergency telephone	+44 (0)1684 774000

2. COMPOSITION INFORMATION

Chemical Composition	Chemical Formula	CAS No.	Weight (%)
Lithium iron phosphate	LiFePO4	15365-14-7	30.00
Ni	Ni	7440-02-0	0.60
Benzene,ethenyl-polymer with 1,3-butadiene	CH2=CH-CH=CH2	9003-55-8	0.80
Fe	Fe	439-89-6	22.50
CU	CU	7440-50-8	8.20
Al	Al	7429-90-5	4.50
Graphite	C	7440-44-0	21.30
Polyethylene	(C2H4)n	9002-88-4	6.10
Lithium hexafluorophosphate	LiPF6	21324-40-3	3.00
Poly(vinylidenefluoride)	-(CH2CF2)n-	24937-79-9	0.80
Polypropylene	(C3H6)n	9003-07-0	0.90
Poly(oxyethyleneoxyterephthaloyl)	C9H6O4X2	25038-59-9	0.90
Cellulose carboxymethyl ether sodium salt	C8H16NaO8	9004-32-4	0.40
Carbon black	C	1333-86-4	2.00

3. HAZARDS IDENTIFICATION

Explosive risk	Not Applicable	**Toxic risk**	Not Applicable
Flammable risk	Not Applicable	**Radioactive risk**	Not Applicable
Oxidation risk	Not Applicable	**Mordant risk**	Not Applicable

4. FIRST AID MEASURES

Eye	Flush eye with clean water continuously for 15 minutes ensuring water covers under the upper and lower eyelid – seek medical attention if symptoms persist.
Skin	Remove contaminated cloths and rinse affected area with clean water for 15 minutes – seek medical attention if symptoms persist.
Inhalation	Move away from exposed contamination to an area with fresh air – seek medical attention if symptoms persist.
Ingestion	Drink two large glasses of milk or water and induce vomiting unless the affected person is unconscious – in all cases seek medical attention.

5. FIRE-FIGHTING MEASURES

Flash point	N/A	**Special fire-fighting procedures**	Self-contained breathing apparatus
Auto-ignition temperature	N/A	**Unusual fire and explosion hazards**	Cell may vent when subjected to excessive heat – exposing battery contents
Extinguishing media	Water, CO2	**Hazardous combustion products**	Carbon monoxide, carbon dioxide, lithium oxide fumes

6. ACCIDENTAL RELEASE MEASURES

Steps to be taken in case material is released or spilled
If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can. The preferred response is to leave the area and allow the battery to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent material and incinerate.

7. HANDLING AND STORAGE

The battery should not be opened, destroyed or incinerated. This may result in a leak or rupture and release the content of the hermetically sealed container to the environment. Do not short circuit terminals, over charge the battery, forced over-discharge or throw into fire. Do not crush or puncture the battery or immerse in liquids.

Precautions to be taken in handling and storing
Avoid mechanical or electrical abuse. Storage preferably in cool, dry and ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided. Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other precautions
The battery may explode or cause burns if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection	In case of the battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory protection is not necessary under conditions of normal use
Ventilation	Not necessary under conditions of normal use
Protective gloves	Not necessary under conditions of normal use
Other protective clothing or equipment	Not necessary under conditions of normal use
Personal protection is recommended for venting battery	Respiratory protection, protective gloves, protective clothing and safety glasses with side shields

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Quadrate shape	**Flammability**	Not applicable unless individual components are exposed
Ref. No.	RZUN2015-1498	**Relative density**	Not applicable unless individual components are exposed
Odour	If leaking, smells of medical ether	**Solubility (water)**	Not applicable unless individual components are exposed
PH	Not applicable as supplied	**Solubility (other)**	Not applicable unless individual components are exposed
Flash point	Not applicable unless individual components are exposed		

10. STABILITY AND REACTIVITY

Stability	Product is stable under conditions described in Section 7.
Conditions to avoid	Heat above 70°C or incinerate, deform, damage, crush, disassemble, overcharge, short circuit, expose over a long period to humid conditions.
Materials to avoid	Oxidising agents, alkalis, water.
Hazardous decomposition products	Toxic fumes and may form peroxides.
Hazardous polymerization	If there is a leak, direct skin contact must be avoided as strong oxidisers, mineral acids, strong alkalis, halogenated hydrocarbons may be present.

11. TOXICOLOGICAL INFORMATION

Signs and symptoms	None, unless battery ruptures. In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.			**Medical conditions generally aggravated by exposure**	In the event of exposure to internal contents, moderate to servere irritation, burning and dryness of the skin may occur, target organs nerves, liver and kidneys.
Inhalation	Lung irritant	**Eye contact**	Eye irritant		
Skin contact	Skin irritant	**Ingestion**	Poisoning if swallowed		

12. ECOLOGICAL INFORMATION

Mammalian effects	None known at present	**Bioaccumulation potential**	Slowly Bio-degradable
Eco-toxicity	None known at present	**Environmental fate**	None known environmental hazards at present

13. DISPOSAL CONSIDERATION

We recommend using the battery until it no longer functions and then take the battery to one of the recommended lithium waste disposal sites / recycling centres – **see www.lifos.co.uk** or / and comply with local authority guide lines. In all circumstances do not incinerate or crush / compact or otherwise create a condition where the battery housing could be split.

14. TRANSPORT INFORMATION

Label for conveyance	Lithium battery label	**Packaging group**	N/A	**Marine pollutant**	No
Class or division	9	**EmS No**	F-A, S-I	**Proper shipping name**	LiFePO4 batteries
UN Number	UN3480				
Hazard classification	The goods shall be complied with the requirements of Section IA of Packing Instructions 965 of 60th DGR Manual of IATA (2019 edition) or special provision 188 of IMDG CODE (Amdt. 39-18) 2018 Edition, including the passing of the UN38.3 test.				

15. REGULATION INFORMATION

- Law information
- Toxic Substance Control Act (TSCA)
- Dangerous Goods Regulations
- Consumer Product Safety Act (CPSA)
- Technical Instructions for the Safe Transport of Dangerous Goods
- Recommendations on the Transport of Dangerou Goods Model Regulations
- Superfund Amendments and Reauthorization Act Title (302/311/312/313) (SARA)
- Federal Environmental Pollution Control Act (FEPCA)
- International Maritime Dangerous Goods
- The Oil Pollution Act (OPA)
- Resource Conservation and Recovery Act (RCRA)
- Classification and code of dangerous goods
- Safety Drinking Water Act (CWA)
- Occupational Safety and Health Act (OSHA)
- California Proposition 65
- Code of Federal Regulations (CFR)

16. OTHER INFORMATION

This MSDS should only be used in conjunction with the Lifos 68 battery. The manufacturer, Solar Technology International Ltd, validates the accuracy of the information provided and recommends that users read the information provided along with the Data Sheet document. The manufacturer will not accept responsibility for any damage caused if the given advice is not adhered to or the product is misused.