

Legal Disclaimer

With few regional exceptions, safety data sheets are only required for certain substances and mixtures, but not for batteries, which are classified as "articles". Therefore, the battery modules listed under 1.1 of this SDS are not within the scope of most regulations on chemicals.

Therefore, the information in the following chapters is provided for three cases as far as applicable:

1. Undamaged battery modules without release of cell ingredients The battery ingredients have no hazard potential as long as the cells remain sealed. The sealed cells are protected by the continuous casting aluminium battery enclosure and the battery management system. The battery as a product passed comprehensive safety tests in accredited test laboratories and is designed to make a release of its chemical components as unlikely as possible. In an intact state, the information for storage (unclassified), transport (classified as dangerous goods) and disposal (classified as batteries and dangerous goods UN3480) is relevant.
2. Damaged battery modules with an accidental release of ingredients In case of massive mechanical, thermal, electrical or chemical external influences, misuse, disassembling etc. (e.g. fire from outside), hereinafter also referred as "mistreatment", ingredients of the Li-ion cells could be released.
3. Special cases because of the electrical charge of damaged and undamaged batteries Different to chemical substances, the cells within a Li-ion battery have an electrical charge (usually 2.50 - 3.65 V per cell) and can cause an electrolysis if the battery module is filled with e.g. flood water, which can form hydrogen. The electrical charge can also produce heat. Note: Voltage cannot be measured directly at the terminals of the Battery vision pack, since the battery module will only be switched on once it has been installed in the Battery vision storage system.

For all countries:

The information provided in this document is correct to the best of our knowledge and experiences at the publication date of this document. The information does not represent any contractual warranties of product properties. The information is not considered as a warranty or quality specification.

European Union (EU):

According to the Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), the batteries mentioned in this document are neither substances nor mixtures. Batteries are considered as "articles". Thus, the products mentioned under 1.1 of this SDS are not within the scope of this regulation and the obligation to provide a SDS according to Article 31 of the regulation does not apply. This SDS is a voluntary service for our customers.

1 Identification of the product and the manufacturer

1.1 Product

Trade name:	SOLARWATT Battery vision		
Electrochemical classification:	Li-ion with carbon based negative anode and metal oxide based positive cathode)		
Model names:	SOLARWATT Battery vision top pack 2.0 (4.3 kWh) SOLARWATT Battery vision pack 2.0 (4.3 kWh)		
Total mass:	Battery vision top pack: 48 kg	Battery vision pack: 44 kg	
Energy capacity (gross):	4.8 kWh		
Energy capacity (net):	4.3 kWh		

1.2 Relevant identified uses

Li-ion battery module (battery module) for use within SOLARWATT Battery vision storage systems.

1.3 Details of the supplier

Manufacturer:	Solarwatt GmbH Maria-Reiche-Str. 2a 01109 Dresden Germany	Contact: Thomas Richter Phone: +49 351 4676 1600
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1.4 Emergency number

Operational Standby Service (24 h): 0049 (0) 700 24 112 112
Fire and Rescue Service: 112

2 Potential hazards

2.1 Classification -not applicable-

2.2 Labelling elements in accordance with Regulation (EC) No 1272/2008 --not applicable--

2.3 Other hazards

Case 1: The ingredients have no hazard potential as long as the cells remain sealed. The battery module consists of hermetically sealed Li-ion cells, which are protected by a Battery Management System (BMS) and a robust aluminium enclosure, which has passed mechanical tests (crush, vibration, shock, drop, ingress) according to IEC 62619, IEC 60529, sub-section 38.3 of the "UN Manual of Tests and Criteria" and other standards.

Case 2: In case of cell rupture, massive battery mistreatment, external fire etc.:
The cell ingredients will be released out of the cells. Depending on the temperature and the kind of mistreatment, the electrolyte or a mixture of flammable and non-flammable gases may be released out of the battery::

- The flammable gas can be hot and can ignite at hot surfaces, flames or sparks.
- The gaseous or liquid electrolyte is harmful by inhalation, in contact with skin and if swallowed. It is also corrosive and can cause burns of eyes, skin and mucous membranes.
- In special cases, e.g. if the battery is exposed to external fire or is misused, it can heat up by the contained energy and cause burns.

Case 3: In case of fluid immersion into the battery (e.g. if the battery is submerged, exposed to flood water etc.), but not in cases of drip water (battery fulfils IP54 according to IEC 60529) or condensation within expected limits:

- The cells remain sealed and do not release their ingredients.
- An electrolysis can produce gas, e.g. hydrogen (extremely flammable), which can accumulate in unventilated areas and which can form explosive mixtures with air.
- If cells already have a breach of their sealing, additional reactions (e.g. electrolysis at electrode materials, reactions with lithium etc.) can occur.

3 Composition / Information on ingredients

The information in Table 1, including the mass fractions, relates exclusively to the lithium-ion cells in the battery modules.

The table contains information on substances within the cells which may exhibit hazardous properties in the event of release, fire or thermal decomposition.

Under normal conditions of use, these substances are contained within sealed cells and are not released.

Total mass of the cells contained in the Battery vision pack or Battery vision top pack: 27.8 kg ± 0.6 kg

Table 1:

Substance / Component	Molecular formula	CAS No.	Mass fraction in the cells
Lithium iron phosphate	LiFePO ₄	15365-14-7	40,28 %
Graphite	C	7782-42-5	20,16 %
Ethylene carbonate	C ₃ H ₄ O ₃	96-49-1	4,74 %
Ethyl methyl carbonate	C ₄ H ₈ O ₃	623-53-0	7,19 %
Diethyl carbonate	C ₆ H ₁₀ O ₃	105-58-8	1,18 %
Propylene carbonate	C ₄ H ₆ O ₃	108-32-7	1,18 %
Dimethyl carbonate	C ₃ H ₈ O ₃	616-38-6	2,37 %
Lithium hexafluorophosphate	LiPF ₆	21324-40-3	2,76 %
Carbon black	C	1333-86-4	0,62 %
Polyvinylidene fluoride (PVDF)	(C ₂ H ₂ F ₂) _n	24937-79-9	0,79 %
Cellulose carboxymethyl ether	Polymer, variable composition	9000-11-7	0,04 %
Polyethylene	(C ₂ H ₄) _n	9002-88-4	2,45 %
Copper	CU	7440-50-8	6,86 %
Aluminium	AL	7429-90-5	4,43 %
Other	--		4,95 %

Remainder (w/o cells): Aluminium battery enclosure and inert materials

4 First aid measures

General information:

First aid is upon rupture of sealed cells of the battery. The following information is for case where substances are accidentally released. In some cases, the electrical charge of the cell and/or chemical decomposition can cause a hot surface of the battery and/or increase the temperature of vented gas, which include the danger of burns.

After inhalation:

Move to fresh air. If symptoms persist, seek for medical assistance. Administer oxygen if breathing is difficult and you are trained. If breathing has stopped, contact emergency medical services immediately.

After skin contact:

Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. If skin irritation persists, seek for medical assistance.

After eye contact:

Rinse immediately with plenty of water (also under the eyelids), for at least 15 minutes. Seek for medical assistance immediately.

After swallowing:

(Not an expected route of exposure) Seek for medical assistance immediately. Clean mouth with water and afterwards drink plenty of water. Do not induce vomiting without medical advice.

Notes to physician and first-aiders:

Released Li-ion cell ingredients include corrosive substances or can form them with e.g. water, air moisture, moisture of the mucous membranes etc. For your own protection use personal protective equipment. Avoid contact with skin, eyes and clothing.

5 Firefighting measures

5.1 Extinguishing media

Suitable are metal fire extinguishing powder, dry sand. Water shall be used only in large amounts. Small amounts of water can have an adverse effect in contact with electrode material or released electrolyte.

5.2 Special hazards

An explosion of the battery module is not likely, because the enclosure has sufficient openings to release gas pressure. But leaked flammable gas can accumulate in an unvented room to critical amounts. Leaked electrolyte (liquid or gaseous) can form small amounts of hydrofluoric acid if it gets in touch with water or moisture.

5.3 Guidance on firefighting

Flammable properties:

The battery modules contain flammable electrolytes and other substances (see table 1) and therefore can cause a fire hazard if ruptured. Thermal decomposition of the cell electrode material can lead to release of irritating gases and vapours. In case of fire and/or explosion do not breathe fumes.

External fire:

In case of external fire, which can heat up the battery up to critical temperatures, also other extinguishing and cooling media are sufficient: Carbon dioxide (CO₂) or other extinguishing gas, water or extinguishing foam. If the extinguishing medium has a cooling effect, the battery should be cooled simultaneously to the fire extinguishing if possible.

Water protection:

Used extinguishing media may be contaminated and shall not get into canalization, surface or groundwater. If necessary thicken or absorb the used media and dispose it properly according to national regulations.

6 Accidental release measures

6.1 Personal precautions, protective equipment and procedures to be followed in emergencies

Use personal protective equipment. Avoid contact with skin, eyes and clothing.

6.2 Environmental precautions

Spraying water can reduce vapours. Sprayed water or other extinguishing media may be contaminated after use and shall not get into canalization, surface or groundwater. Thicken or absorb released ingredients with powder (rock salt, sand, foam) and dispose.

6.3 Methods and materials for cleaning and retention

Cleaning: Pick up and transfer to properly labelled containers. In case of rupture: Take up with sand or other non-combustible absorbent material and place into containers for later disposal. Clean surfaces, floor etc. with water if necessary. Prevent leaked substances and washings from entering canalization, surface or groundwater due to high toxicity to aquatic organisms.

Containment: Further leaks or spills must be prevented where it is safe to do so. The collection container must be properly labelled. For the transport of defective battery modules, the collection container must comply with the requirements of the applicable special provision(s) of the Dangerous Goods Regulations (see also 14. Transport information).

7 Handling and storage

7.1 Safety precautions for safe handling

Undamaged batteries

The battery modules are electrically charged upon delivery. Voltage cannot be measured directly at the terminals of the Battery vision pack, since the battery module will only be switched on once it has been installed in the Battery vision storage system. Improper charging or discharging may cause gas emissions from the battery module and flammable gas mixtures may escape. By using the batteries with compatible inverters, proper charging and discharging is done automatically. Inspect the battery terminals and pressure equalizing membrane of the battery module for damage. Do not open or disassemble the battery module! Failure to observe these instructions can cause escape of battery contents and decomposition products, leading to reactions which may be harmful to health, property and environment. Do not expose the battery module to great heat or fire. This could cause irreversible damage to the battery. Do not damage the battery module. Do not short-circuit batteries. Do not tamper with the battery module's communication interface.

Damaged batteries

For damaged batteries, whether or not the cells have ruptured: see 5. Measures to be taken in the event of accidental release. In the event of a tear: Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Do not inhale vapours/dust.

7.2 Conditions for safe storage

Undamaged batteries

The ambient temperatures relevant to the transport, storage and operation of the Battery vision pack must be observed (see the data sheet for details). Store battery modules out of the reach of children. Keep battery modules clean and dry. Dirty battery terminals can be cleaned with a clean, dry cloth. Do not use chemical cleaning agents on the Battery vision pack. Use battery modules only for their intended purpose (installation with a compatible inverter).

Storage of large quantities: In addition to the storage requirements set out above, please observe the further recommendations of the German Insurance Association (GDV e.V.) VDS 3103:2016-05:2019-06 (03):

- No direct or prolonged exposure to high temperatures or heat sources (e.g. direct sunlight).
- Use of automatic fire-extinguishing systems.
Maintain a structural or spatial distance of at least 2.5 m from other combustible materials in areas not protected by automatic fire-extinguishing systems.
- Keep production areas and temporary storage at a safe distance or in a separate, fire-protected area until disposal.

Damaged batteries

Store the container tightly sealed in a dry and well-ventilated place. Follow section 6: Accidental release – measures and clean-up methods. .

7.3 Specific end-use applications --not applicable--

8 Exposure control and monitoring / Personal protection under normal conditions

8.1 Parameters to be monitored --not applicable--

8.2 Exposure control and monitoring / Personal protection under normal conditions

Under normal condition (storage, operation according to intended use), proper transport etc., the battery module releases no ingredients. No special protective equipment is required.

The following information is for cases of rupture, unauthorized dismantling etc. where ingredients may leak.

Engineering measures: Showers, eyewash stations, ventilation systems

Personal protective equipment:

- Eye/face protection: wear tightly fitting safety goggles.

- Skin and body protection: wear protective gloves/clothing.
- Respiratory protection: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn.

Hygiene measures: Act in accordance with good industrial hygiene and safety practice.

9 Physical and chemical properties

9.1 Information on the basic physical and chemical properties *-not fully applicable-*

Under normal condition (storage, operation according to intended use), proper transport etc. not fully applicable.

Water solubility: insoluble in water

Physical state: solid

9.2 Other information *--not applicable--*

10 Stability and reactivity

10.1 Reactivity

Non-reactive under the specified handling and storage conditions.

10.2 Chemical Stability

Stable under the specified handling and storage conditions.

10.3 Risk of hazardous reactions

Stable under the specified handling and storage conditions.

No hazardous polymerisation takes place..

10.4 Conditions to avoid

Exposure to air or moisture over prolonged periods.

Exposure to corrosive atmosphere over prolonged periods

Exposure to temperatures > 150 °C (302 °F)

10.5 Incompatible materials

Do not flood the battery module with water, because electrolysis will form hydrogen.

Exception: Only in consultation with the manufacturer and under agreed conditions, a damaged battery module can be submerged in water in a ventilated area to discharge slowly the electrical charge of each cell.

10.6 Hazardous decomposition processes

None under normal use. Thermal decomposition may lead to the release of irritant gases, vapours of aluminium or aluminium oxide, nickel oxides and hydrofluoric acid.

11 Toxicological information

11.1 Information on hazard classes within the meaning of Regulation (EC) No 1272/2008 *--not applicable--*

11.2 Information on other hazards

Under normal condition (storage, operation according to intended use), proper transport etc., the battery modules release no ingredients.

Accidental release: In case of an accidental release of ingredients, refer to the chapters
 2. Hazards identification
 3. Composition / information on ingredients
 4. First aid measures

12 Ecological information

Under normal condition (storage, operation according to intended use), proper transport etc., the battery modules release no ingredients.

European Union (EU): Solarwatt battery modules do not contain heavy metals listed in the 2006/66/EC (Battery Directive). In most countries, Li-ion batteries are collected and recycled properly so that none of the ingredients will be hazardous waste.
 The outside material of the battery module is aluminium, which is considered as ignitable only in certain forms (e.g. powder), but not in the form of the battery enclosure made out of continuous casting aluminium with sufficient wall strength to avoid ignition (tested

in battery abuse tests with temperatures above 730 °C). In case of an accidental release of ingredients, refer to chapter 3. Composition / information on ingredients.

13 Disposal information

13.1 Waste disposal method

The battery module shall not be released into the environment. The battery module must not be disposed of with household waste. The applicable disposal regulations in the respective country must be observed. The battery module is labelled properly with symbols and information according to national regulations in order to collect and dispose/recycle them accordingly. The product manual contains according information.

European Union (EU): Manufacturing, handling and disposal is regulated in the directive 2006/66/EC. Refer to the product manual for the disposal in different EU countries.

Outside EU: Consider the local laws and regulations as well as the waste disposal methods mentioned above.

Undamaged batteries:

Also the transport for the disposal/recycling must follow the regulations for dangerous goods. Depending on national regulation, the packing instruction may differ from the instruction for new batteries, see next chapter.

Damaged batteries:

Damaged lithium-ion batteries must be transported in accordance with stricter regulations and in packaging that complies with national dangerous goods regulations (see the next chapter).

14 Transport information

In accordance with the regulations on the transport of dangerous goods, undamaged battery modules are classified as follows:

14.1 UN-Number or ID-Number

UN-No: 3480

14.2 Formally correct UN shipping name

LI-ION BATTERIES

14.3 Transport hazard classes

Dangerous goods class: 9a

Tunnel Restriction Code: E

14.4 Packaging Group *-only partially applicable-*

when dispatched by Solarwatt: 4G

14.5 Environmental hazards

14.6 Special precautions for users

14.7 Carriage of bulk cargo by sea in accordance with IMO instruments *--not applicable--*

14.8. Other information

Classification: The battery modules are classified as dangerous good: UN No. 3480 (Li-ion battery), see also next chapter. The battery modules are type proved according to subsection 38.3 of the "UN Manual of Tests and Criteria" and fulfil the additional requirements (short circuit protection, venting device, fuse, manufacturing QM) in order to be compliant with special provision 230 of:

- ADR (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
- IMDG (International Maritime Code for Dangerous Goods)
- UN Model Regulations (Recommendation on the Transport of Dangerous Goods)

Air freight: Undamaged battery modules and the carton box fulfil IATA DGR packing instruction 965, but air freight regulations for Li-ion batteries may change on short notice. Contact the manufacturer.
For damaged battery modules or battery modules in a damaged packaging, special provisions apply.

Packaging:	The cardboard box is tested as packaging group II and can be used for the transport of new or undamaged Battery vision pack. The packaging of the battery module shall not be damaged during the transport. Do not overheat the battery module during the transport. The preferred transport temperature range is -20 °C to 55 °C. Frequent temperature changes should be avoided.
Damaged batteries:	Next to visual damage (e.g. crushed enclosure), a battery module is also damaged if a) one or more cells released ingredients or b) one or more cells were overheated. The damaged battery module does not longer meet the requirements according to sub-section 38.3 of the "UN Manual of Tests and Criteria". In these cases, the original carton box is no longer sufficient for the transport. Special provisions for damaged batteries of the dangerous goods regulations mentioned above do apply.

15 Regulatory information

Marking:	According to the product safety laws and directive, the battery modules are tested, labelled, marked and delivered with the necessary documentation. The CE marking, electrical ratings and environmental conditions (temperature e, humidity).according to the EU directives 2001/95/EC, 2014/35/EU and 2014/30/EU and harmonized standards. The watt-hour rating is according to the requirements for dangerous goods UN No. 3480. The crossed bin symbol is according to EU directive 2006/66/EC. The recycling symbol follows the regulations in several countries outside the EU.
Water hazard:	Germany: The regulations of the Federal Water Management Act in Germany are not applicable to Li-ion batteries as articles

16 Other information

Date:	The edition/version/issuing or validity date of the laws, directives, regulations and Standards in this document is according to its issuing date.
Issued by:	Solarwatt GmbH
Issuing date:	May 2026
Contact:	solarwatt.com/contact
Note:	This safety data sheet provides information for safety and health in a unified structure related to the battery modules listed under chapter 1.1. This data sheet is not sufficient for the installation, operation or other topics, which are provided in the product data sheets, installation instructions, handling instructions or other documents provided for the battery modules and related Solarwatt storage system components. For these topics, refer to the related documents, which are available under solarwatt.com.

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