



SAFETY DATA SHEET

According to EC 1907/2006 (REACH)

Date last verification : 2015-01-21
Revision date : 2012-07-21
Publication date : 2009-01-29

Version number : 2.2

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

SDS : 25278
Product code 12nc : 9898 031 11091
Supplier : MICRO POWER ELECTRONICS, INC.

13955 SW Millikan Way
OR 97005 Beaverton
Oregon
United States of America
TEL:+1 503-693-7600
FAX:+1 503-648-9625

Tradename : FR2+ BATTERY, RECHARGEABLE LI-ION (M3848A) [24 WATT-HOUR]

1.2. Relevant identified uses of the substance or mixture and uses advised against

General description : BATTERY
Use : Various
Uses advised against : Data not available.

1.3. Details of the supplier of the safety data sheet

Supplier safety data sheet : Philips Electronics Nederland B.V., P.O. Box 218, 5600 MD Eindhoven, Tel. +31 (0)40 2747588
Responsible department : dangerous.goods@philips.com

1.4. Emergency telephone number

Emergency telephone number : +31 (0)497-598315

2. Hazards identification

2.1. Classification of the substance or mixture

GHS: (EC) No 1272/2008

Not classified according to GHS classification.

EC: (EC) No 67/548 or 1999/45

Not classified according to EC classification.

2.2. Label elements

GHS: (EC) No 1272/2008

GHS-Label : not applicable

Remarks on GHS-labelling : none

EC: (EC) No 67/548 or 1999/45

EC-Label : not applicable

Remarks on EC-labelling : none

2.3. Other hazards

Data not available.

3. Composition/information on ingredients

Component	CAS-no.	Index No.	Percentage(%)	GHS-Label
	EC-no.	Registration no.		EC-Label
LITHIUM HEXAFLUOROPHOSPHATE	21324-40-3 244-334-7	01-2119962901-34; 01-2119383485-29		GHS05 H314 Skin corr. 1B C;R: 34
ETHYLENE CARBONATE	96-49-1 202-510-0	01-2119540523-46		GHS05 H318 Eye dam. 1 Xi;R: 41
DIETHYL CARBONATE	105-58-8 203-311-1	01-2119943044-45; 01-2119980077-31		GHS02 H226 Flam. liq. 3 R: 10
GRAPHITE (POWDER)	7782-42-5 231-955-3	01-2119486977-12; 01-2119875125-36		GHS02 GHS07 H228 Flam. sol. 1 H319 Eye irrit. 2 H335 STOT SE 3 F,Xi;R: 11 36/37
LITHIUM COMPOUND				

For the full text of the H-sentences, hazard statements and R-sentences mentioned in this section, see section 16.

4. First aid measures

4.1. Description of first aid measures

Skin : Not applicable.
Ingestion : Not applicable.
Inhalation : Not applicable.
Eyes : Not applicable.

4.2. Most important symptoms and effects, both acute and delayed

Skin local : Not applicable.
 Skin general : Not applicable.
 Ingestion local : Not applicable.
 Ingestion general : Not applicable.
 Inhalation local : Not applicable.
 Inhalation general : Not applicable.
 Eyes local : Not applicable.
 Remarks symptoms : None

4.3. Indication of any immediate medical attention and special treatment needed

None

5. Firefighting measures

5.1. Extinguishing media

Suitable fire-extinguisher

determined by surrounding

Unsuitable fire-extinguisher

not traceable

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in fire : carbon monoxide, hydrogen fluoride, lithium oxide, phosphorus oxide

5.3. Advice for firefighters

In the event of fire, wear protective clothing and use breathing apparatus that is independent of the ambient air.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Precautions

Use protective equipment. See section 8.

Emergency procedure

Is not to be expected.

6.2. Environmental precautions

Remainder material has to be incinerated in_a proper installation or dumped on an approved landfill, in accordance with local and national legislation.

6.3. Methods and material for containment and cleaning up

Spillage procedure

not applicable

6.4. Reference to other sections

See section 8 for appropriate personal protection.

See section 13 for additional information on waste treatment.

7. Handling and storage

7.1. Precautions for safe handling

Observe label precautions.

Do not eat, drink or smoke in work areas. Remove contaminated clothing and protective equipment. Wash hands after leaving the work area.

Local exhausting : Under normal circumstances not applicable.

Storage code (on behalf of PGS : M4
15)

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : See also any precautionary statements and S-phrases in section 2.2.
Store product protected from proximity to other sources of heat, dry.

7.3. Specific end use(s)

Data not available.

8. Exposure controls/personal protection

8.1. Control parameters

Exposure limits :

applicable to: The Netherlands (20 °C; 1013 mbar)

No TWA has been laid down.

LITHIUM HEXAFLUOROPHOSPHATE

No TWA has been laid down.

ETHYLENE CARBONATE

No TWA has been laid down.

DIETHYL CARBONATE

TWA(8 hours): 2 mg/m³

GRAPHITE (POWDER)(as respirable dust)

No TWA has been laid down.

LITHIUM COMPOUND

applicable to: Belgium (20 °C; 1013 mbar)

TWA(8 hours): 2.5 mg/m³

LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)

TWA(8 hours): 2 mg/m³

GRAPHITE (POWDER)(as respirable dust)

applicable to: Germany (20 °C; 1013 mbar)

TWA(8 hours): 1 mg/m³ S

LITHIUM HEXAFLUOROPHOSPHATE(as fluorine,
inhalable dust)

TWA(15 minutes): 4 mg/m³ S

LITHIUM HEXAFLUOROPHOSPHATE(as fluorine,
inhalable dust)

TWA(8 hours): 3 mg/m³

GRAPHITE (POWDER)(as respirable dust)

applicable to: United States of America (25 °C; 1013 mbar)

TWA(8 hours):	2.5 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine) - [according to ACGIH]
TWA(8 hours):	2.5 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine) - [according to OSHA]
TWA(8 hours):	2 mg/m3		GRAPHITE (POWDER)(as respirable dust) - [according to ACGIH]
TWA(8 hours):	15 mg/m3		GRAPHITE (POWDER)(as dust) - [according to OSHA]
TWA(8 hours):	5 mg/m3		GRAPHITE (POWDER)(as respirable dust) - [according to OSHA]

applicable to: Sweden (20 °C; 1013 mbar)

TWA(8 hours):	2 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)
TWA(8 hours):	0.02 mg/m3	C	LITHIUM HEXAFLUOROPHOSPHATE(as lithium, inhalable dust)
TWA(8 hours):	5 mg/m3		GRAPHITE (POWDER)(as dust)
TWA(8 hours):	0.02 mg/m3	C	LITHIUM COMPOUND(as lithium, inhalable dust)

applicable to: Switzerland (20 °C; 1013 mbar)

TWA(8 hours):	1 mg/m3	S	LITHIUM HEXAFLUOROPHOSPHATE(as fluorine, inhalable dust)
TWA(15 minutes):	4 mg/m3	S	LITHIUM HEXAFLUOROPHOSPHATE(as fluorine, inhalable dust)
TWA(8 hours):	2.5 mg/m3		GRAPHITE (POWDER)(as respirable dust)
TWA(8 hours):	5 mg/m3		GRAPHITE (POWDER)(as inhalable dust)
TWA(8 hours):	0.2 mg/m3		LITHIUM COMPOUND(as lithium, inhalable dust)
TWA(15 minutes):	0.2 mg/m3		LITHIUM COMPOUND(as lithium, inhalable dust)

applicable to: China (20 °C; 1013 mbar)

TWA(8 hours):	2 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)
TWA(8 hours):	4 mg/m3		GRAPHITE (POWDER)(as dust)
TWA(8 hours):	2 mg/m3		GRAPHITE (POWDER)(as respirable dust)

applicable to: European Union (20 °C; 1013 mbar)

TWA(8 hours):	2.5 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)
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C=Ceiling; S=Skin

Remarks exposure limits :

none

DNEL (Derived No Effect Level)

Data not available.

PNEC (Predicted No Effect Concentration)

Data not available.

8.2. Exposure controls**Advised personal protection :**

Hands	:	not applicable
Breakthrough time	:	not applicable
Eyes	:	not applicable
Inhalation	:	not applicable
Skin	:	none (when used normally)

9. Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Physical state	:	battery
Colour	:	type dependent
Odour	:	odourless
Odour threshold (20°C; 1013 mbar)	:	not traceable
pH	:	not applicable
Melting point/range	:	not traceable
Boiling point/range	:	not traceable
Flash point/range	:	not applicable
Vapor rate/range	:	not applicable
Flammability (solid, gas)	:	data not available
Explosive limits	:	not applicable
Vapour pressure	:	not applicable
Density	:	not traceable
Solubility in water	:	not applicable
Log Po/w	:	-0.34

ETHYLENE CARBONATE

Source : ChemDat (Merck)

1.2 DIETHYL CARBONATE
Autoignition temperature : not applicable
Decomposition temperature : not traceable
Viscosity : not applicable
Dust explosions possible in air : not applicable
Oxidising properties : no

Source : Chemicalcards

9.2. Other information

Solubility in fat : not applicable
Electrostatic chargement : not traceable

10. Stability and reactivity

10.1. Reactivity

See section 10.2 - 10.6.

10.2. Chemical stability

The substance or mixture is stable under normal conditions. See also section 10.4.

10.3. Possibility of hazardous reactions

Reactions with water : no
Other hazardous conditions : Data not available.

10.4. Conditions to avoid

Data not available.

10.5. Incompatible materials

Hazardous reactions with : none

10.6. Hazardous decomposition products

Hazardous decomposition products at heating : none

11. Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity

LD-50: >5 g/kg (ORL-RAT) ETHYLENE CARBONATE
LD-50: >4.9 g/kg (ORL-RAT) DIETHYL CARBONATE
LD-50: >2 g/kg (ORL-RAT) GRAPHITE (POWDER)

Source : ChemDat (Merck)
Source : Chemicalcards
Method : OECD 401
Source : Supplier

Acute dermal toxicity

LD-50: >2 g/kg (SKN-RBT) ETHYLENE CARBONATE

Source : ChemDat (Merck)

Acute inhalation toxicity

There are no data available.

Ames test

negative ETHYLENE CARBONATE

Source : ChemDat (Merck)

Skin corrosion/irritation

The substance or mixture is not classified for skin corrosion/-irritation.

Serious eye damage/irritation

The substance or mixture is not classified for serious eye damage/irritation.

Respiratory or skin sensitisation

The substance or mixture is not classified for respiratory or skin sensitisation.

Germ cell mutagenicity

The substance or mixture is not classified for germ cell mutagenicity.

Carcinogenicity

The substance or mixture is not classified for carcinogenicity.

Reproductive toxicity

The substance or mixture is not classified for reproductive toxicity.

Specific target organ toxicity-single exposure

The substance or mixture is not classified for specific target organ toxicity-single exposure.

Specific target organ toxicity-repeated exposure

The substance or mixture is not classified for specific target organ toxicity-repeated exposure.

Aspiration hazard

The substance or mixture is not classified for aspiration hazard.

Symptoms

Skin	local	:	Not applicable.
	general	:	Not applicable.
Ingestion	local	:	Not applicable.
	general	:	Not applicable.
Inhalation	local	:	Not applicable.
	general	:	Not applicable.
Eyes	local	:	Not applicable.
Remarks symptoms		:	None

12. Ecological information

12.1. Toxicity

Ecotoxicity

LC-50: >1000 mg/l/96H (Fish)

ETHYLENE CARBONATE

Source : ChemDat (Merck)

EC-50: >100 mg/l/48H (Daphnia)

ETHYLENE CARBONATE

Source : ChemDat (Merck)

12.2. Persistence and degradability

Biological oxygen demand : not traceable

Chemical oxygen demand : not traceable

Biological/chemical oxygen demand ratio : not traceable

Degradability : readily
readily

ETHYLENE CARBONATE

DIETHYL CARBONATE

Source : ChemDat (Merck)

12.3. Bioaccumulative potential

Biochemical factor : not traceable

Log Po/w : -0.34

1.2

ETHYLENE CARBONATE

DIETHYL CARBONATE

Source : ChemDat (Merck)

Source : Chemicalcards

12.4. Mobility in soil

Henry Constant : not traceable

12.5. Results of PBT and vPvB assessment

Data not available.

12.6. Other adverse effects

Remarks on ecotoxicity : none

13. Disposal considerations

13.1. Waste treatment methods

Remainder material has to be incinerated in_a proper installation or dumped on an approved landfill, in accordance with local and national legislation.

14. Transport information

14.1. UN number

ADR/RID : 3480

IMDG/IMO : 3480

IATA/ICAO : 3480

Remarks ADR/RID : The product meets the criteria of ADR Special Provision 188, and may be transported as such.
Remarks IMDG/IMO : The product meets the criteria of IMDG Special Provision 188, and may be transported as such.
Remarks IATA/ICAO : The product meets the criteria of IATA PACKING INSTRUCTION 965 - GENERAL REQUIREMENTS. If the package limits of SECTION II are exceeded, the product must be transported in accordance with the regulations of SECTION IB; otherwise the product can be transported in accordance with the regulations of SECTION II.

14.2. UN proper shipping name

ADR/RID : LITHIUM ION BATTERIES
IMDG/IMO : LITHIUM ION BATTERIES
IATA/ICAO : LITHIUM ION BATTERIES

14.3. Transport hazard class(es)

ADR/RID : 9 IMDG/IMO : 9 IATA/ICAO : 9

14.4. Packing group

ADR/RID : none IMDG/IMO : none IATA/ICAO : none

14.5. Environmental hazards

Marine pollutant : no

14.6. Special precautions for user

Hazard identification number (ADR/RID) : none
EmS (IMDG/IMO) : F-A, S-I

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Data not available.

15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- Data not available.

15.2. Chemical safety assessment

- Data not available.

16. Other information

Remarks on SDS : The presence of lithium-batteries gives an enlarged risk of fire.

Overview relevant H-sentences from all components in section 3

H226 Flammable liquid and vapour.
H228 Flammable solid.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Overview relevant hazard statements from all components in section 3

C CORROSIVE
F HIGHLY FLAMMABLE
Xi IRRITANT

Overview relevant R-sentences from all components in section 3

10 Flammable.
11 Highly flammable.
34 Causes burns.
36/37 Irritating to eyes and respiratory system.
41 Risk of serious damage to eyes.

Training advice

Provide adequate information, instruction and training for operators.

A key or legend to abbreviations and acronyms used in the safety data sheet

REACH	Registration, Evaluation and Authorisation of CHemicals
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
CAS	Chemical Abstracts Service
TGG = TWA	Time Weighted Average
LEL	Lower Explosive Limit
UEL	Upper Explosive Limit
ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route
RID	Règlement concernant le transport international ferroviaire des marchandises dangereuses
UN	United Nations
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
EmS	Emergency Schedule

* Point to alterations with regard to the previous version.

The information provided in this Material Safety Data Sheet is correct to the best of the knowledge, information and belief of Philips Electronics Nederland B.V. at the date of its printing.