



# SAFETY DATA SHEET

According to EC 1907/2006 (REACH)

Date last verification : 2016-05-04  
Revision date : 2015-10-30  
Publication date : 2005-06-17

Version number : 3.1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

SDS : 22606  
Product code 12nc : 9898 031 21381  
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 : HS1/FRX LIMNO2 BATTERY (M5070A) (453564141462) : LITHIUM METAL BATTERIES [5.04 G LITHIUM]

### 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

## SECTION 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

If applicable: see section 6.1 and section 7.1.

## SECTION 3: Composition/information on ingredients

Component	CAS-no. EC-no.	Index No. Registration no.	Percentage(%)	GHS-Label EC-Label
LITHIUM	7439-93-2 231-102-5	003-001-00-4 01-2119966143-38		GHS02 GHS05 H260 Water-react. 1 H314 Skin corr. 1B EUH014 F,C;R: 14/15 34
MANGANESE DIOXIDE	1313-13-9 215-202-6	025-001-00-3 01-2119452801-43		GHS07 GHS08 H302 Acute tox. 4 H332 Acute tox. 4 H361fd Repr. 2 Xn;R: 62 63 20/22 Repr.Cat. 3
LITHIUM TRIFLUOROMETHANESULPHONATE	33454-82-9 251-528-5			GHS07 H315 Skin irrit. 2 H319 Eye irrit. 2 H335 STOT SE 3 Xi;R: 36/37/38
PROPYLENE CARBONATE	108-32-7 203-572-1	607-194-00-1 01-2119537232-48		GHS07 H319 Eye irrit. 2 Xi;R: 36
DIMETHOXYETHANE, 1,2-	110-71-4 203-794-9	603-031-00-3 01-2119485981-24		GHS02 GHS07 GHS08 H225 Flam. liq. 2 H332 Acute tox. 4 H360FD Repr. 1B EUH019 F,T;R: 60 61 11 19 20 Repr.Cat. 2

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

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

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

None

## SECTION 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 : lithium oxide, manganese oxides, carbon monoxide, hydrogen fluoride, sulphur oxides

## 5.3. Advice for firefighters

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

# SECTION 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

\* 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.

# SECTION 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.

# SECTION 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.

TWA(8 hours): 1 mg/m<sup>3</sup>

TWA(15 minutes): 3 mg/m<sup>3</sup>

No TWA has been laid down.

No TWA has been laid down.

No TWA has been laid down.

LITHIUM

MANGANESE DIOXIDE(as manganese)

MANGANESE DIOXIDE(as manganese)

LITHIUM TRIFLUOROMETHANESULPHONATE

PROPYLENE CARBONATE

DIMETHOXYETHANE, 1,2-

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

TWA(8 hours): 0.2 mg/m<sup>3</sup>

MANGANESE DIOXIDE(as manganese)

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

TWA(8 hours): 0.5 mg/m<sup>3</sup>

MANGANESE DIOXIDE(as manganese, inhalable dust)

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

TWA(8 hours): 0.02 mg/m<sup>3</sup>

MANGANESE DIOXIDE(as manganese, respirable dust) -  
[according to ACGIH]

TWA(8 hours): 0.1 mg/m<sup>3</sup>

MANGANESE DIOXIDE(as manganese, inhalable dust) -  
[according to ACGIH]

TWA(8 hours): 5 mg/m<sup>3</sup> C

MANGANESE DIOXIDE(as manganese) - [according to  
OSHA]

<b>applicable to:</b>	<b>Sweden (20 °C; 1013 mbar)</b>		
TWA(8 hours):	0.02 mg/m3	C	LITHIUM(as inhalable dust)
TWA(8 hours):	0.2 mg/m3		MANGANESE DIOXIDE(as manganese, dust)
TWA(8 hours):	0.1 mg/m3		MANGANESE DIOXIDE(as manganese, respirable dust)
TWA(8 hours):	0.02 mg/m3	C	LITHIUM TRIFLUOROMETHANESULPHONATE(as lithium, inhalable dust)
<b>applicable to:</b>	<b>Switzerland (20 °C; 1013 mbar)</b>		
TWA(8 hours):	0.5 mg/m3		MANGANESE DIOXIDE(as manganese, inhalable dust)
<b>applicable to:</b>	<b>China (20 °C; 1013 mbar)</b>		
TWA(8 hours):	0.15 mg/m3		MANGANESE DIOXIDE

C=Ceiling; S=Skin

**Remarks exposure limits :**  
none

**DNEL (Derived No Effect Level)**

Worker - Inhalation - Long term exposure - Systemic effects: 4.2 mg/m3	LITHIUM	Source	: Chemicalcards
Worker - Dermal - Long term exposure - Systemic effects: 12 mg/kg bw/day	LITHIUM	Source	: Chemicalcards
Worker - Inhalation - Long term exposure - Systemic effects: 0.2 mg/m3	MANGANESE DIOXIDE	Source	: Chemicalcards
Worker - Dermal - Long term exposure - Systemic effects: 0.0041 mg/kg bw/day	MANGANESE DIOXIDE	Source	: Chemicalcards
Worker - Inhalation - Long term exposure - Systemic effects: 3.1 mg/m3	DIMETHOXYETHANE, 1,2-	Source	: Chemicalcards
Worker - Dermal - Long term exposure - Systemic effects: 1.1 mg/kg bw/day	DIMETHOXYETHANE, 1,2-	Source	: Chemicalcards

**PNEC (Predicted No Effect Concentration)**

Fresh water: 1.7 mg/l	LITHIUM	Source	: Chemicalcards
Marine water: 0.17 mg/l	LITHIUM	Source	: Chemicalcards
Intermittent releases: 1.7 mg/l	LITHIUM	Source	: Chemicalcards
Fresh water: 0.00014 mg/l	MANGANESE DIOXIDE	Source	: Chemicalcards
Marine water: 0.000014 mg/l	MANGANESE DIOXIDE	Source	: Chemicalcards
Intermittent releases: 0.00074 mg/l	MANGANESE DIOXIDE	Source	: Chemicalcards
Fresh water: 6.4 mg/l	DIMETHOXYETHANE, 1,2-	Source	: Chemicalcards
Marine water: 0.64 mg/l	DIMETHOXYETHANE, 1,2-	Source	: Chemicalcards
Intermittent releases: 40 mg/l	DIMETHOXYETHANE, 1,2-	Source	: Chemicalcards

**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)

**SECTION 9: Physical and chemical properties**

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

<b>Physical state</b>	:	battery		
<b>Colour</b>	:	type dependent		
<b>Odour</b>	:	odourless		
<b>Odour threshold (20°C; 1013 mbar)</b>	:	not traceable		
<b>pH</b>	:	not applicable		
<b>Melting point/range</b>	:	not traceable		
<b>Boiling point/range</b>	:	not traceable		
<b>Flash point/range</b>	:	not applicable		
<b>Vapor rate/range</b>	:	not applicable		
<b>Flammability (solid, gas)</b>	:	data not available		
<b>Explosive limits</b>	:	not applicable		
<b>Vapour pressure</b>	:	not applicable		
<b>Density</b>	:	not traceable		
<b>Solubility in water</b>	:	not applicable		
<b>Log Po/w</b>	:	<0	MANGANESE DIOXIDE	Source : IUCLID
		-0.49	LITHIUM TRIFLUOROMETHANESULPHONATE	Source : Easi View
		-0.48	PROPYLENE CARBONATE	Source : IUCLID
		-0.21	DIMETHOXYETHANE, 1,2-	Source : ChemDat (Merck)
<b>Autoignition temperature</b>	:	not applicable		
<b>Decomposition temperature</b>	:	not traceable		
<b>Viscosity</b>	:	not applicable		
<b>Dust explosions possible in air</b>	:	not applicable		
<b>Oxidising properties</b>	:	no		

**9.2. Other information**

Solubility in fat : not applicable  
Electrostatic charge : not traceable

## SECTION 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

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

#### Acute oral toxicity

LD-50: >3.478 g/kg (ORL-RAT)	MANGANESE DIOXIDE	Source	: ChemDat (Merck)
LD-50: 29 g/kg (ORL-RAT)	PROPYLENE CARBONATE	Source	: IUCLID
LD-50: 5.37 mg/kg (ORL-RAT)	DIMETHOXYETHANE, 1,2-	Source	: ChemDat (Merck)
LD-50: 3.2 g/kg (ORL-MUS)	DIMETHOXYETHANE, 1,2-	Source	: Sigma-Aldrich

#### Acute dermal toxicity

LD-50: >5 g/kg (SKN-RAT)	DIMETHOXYETHANE, 1,2-	Source	: ChemDat (Merck)
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#### Acute inhalation toxicity

There are no data available.

#### Ames test

negative	PROPYLENE CARBONATE	Source	: IUCLID
negative	DIMETHOXYETHANE, 1,2-	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.

#### Additional information regarding carcinogenicity (NTP, IARC, OSHA)

NTP: no	IARC: no	OSHA: no	LITHIUM
NTP: no	IARC: no	OSHA: no	MANGANESE DIOXIDE
NTP: no	IARC: no	OSHA: no	LITHIUM TRIFLUOROMETHANESULPHONATE
NTP: no	IARC: no	OSHA: no	PROPYLENE CARBONATE
NTP: no	IARC: no	OSHA: no	DIMETHOXYETHANE, 1,2-

#### 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

## SECTION 12: Ecological information

### 12.1. Toxicity

#### Ecotoxicity

LC-50: 5300 mg/l/96H (Fish)	PROPYLENE CARBONATE	Source	: IUCLID
EC-50: >500 mg/l/48H (Daphnia)	PROPYLENE CARBONATE	Source	: IUCLID
IC-50: >500 mg/l/72H (Algae)	PROPYLENE CARBONATE	Source	: IUCLID
LC-50: >500 mg/l/96H (Fish)	DIMETHOXYETHANE, 1,2-	Source	: ACROS

### 12.2. Persistence and degradability

Biological oxygen demand (5)	: 0.025 g/g	PROPYLENE CARBONATE	Source	: IUCLID
Chemical oxygen demand	: 1.29 g/g	PROPYLENE CARBONATE	Source	: IUCLID
Biological(5)/chemical oxygen demand ratio	: 0.019	PROPYLENE CARBONATE		
Degradability	: not readily	MANGANESE DIOXIDE	Source	: ACROS
		PROPYLENE CARBONATE	Source	: IUCLID

### 12.3. Bioaccumulative potential

Bioconcentration factor (BCF)	: not traceable			
Log Po/w	: <0	MANGANESE DIOXIDE	Source	: IUCLID
	-0.49	LITHIUM TRIFLUOROMETHANESULPHONATE	Source	: Easi View
	-0.48	PROPYLENE CARBONATE	Source	: IUCLID
	-0.21	DIMETHOXYETHANE, 1,2-	Source	: ChemDat (Merck)

### 12.4. Mobility in soil

Henry Constant	: 9.92E-8 atm m3/mol	LITHIUM TRIFLUOROMETHANESULPHONATE	Source	: Easi View
	3.63E-4 atm m3/mol	PROPYLENE CARBONATE	Source	: Easi View

### 12.5. Results of PBT and vPvB assessment

Data not available.

### 12.6. Other adverse effects

Remarks on ecotoxicity : none

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

\* In accordance with local and national legislation.

## SECTION 14: Transport information

### 14.1. UN number

ADR/RID	: 3090
IMDG/IMO	: 3090
IATA/ICAO	: 3090

Remarks IATA/ICAO : The product must be transported in accordance with the regulations of IATA PACKING INSTRUCTION 968 - SECTION IA (Meets the GENERAL REQUIREMENTS of IATA PACKING INSTRUCTION 968). The batteries meet the requirements of each test of the "UN Manual of Tests and Criteria, Part III, subsection 38.3".

### 14.2. UN proper shipping name

ADR/RID : LITHIUM METAL BATTERIES

IMDG/IMO : LITHIUM METAL BATTERIES  
IATA/ICAO : LITHIUM METAL 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.

## SECTION 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.

## SECTION 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

H225 Highly flammable liquid and vapour.  
H260 In contact with water releases flammable gases which may ignite spontaneously.  
H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H332 Harmful if inhaled.  
H335 May cause respiratory irritation.  
H360FD May damage fertility. May damage the unborn child.  
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.  
EUH014 Reacts violently with water.  
EUH019 May form explosive peroxides.

#### Overview relevant hazard statements from all components in section 3

C CORROSIVE  
F HIGHLY FLAMMABLE  
T TOXIC  
Xi IRRITANT  
Xn HARMFUL

#### Overview relevant R-sentences from all components in section 3

11 Highly flammable.  
14/15 Reacts violently with water, liberating extremely flammable gases.  
19 May form explosive peroxides.  
20 Harmful by inhalation.  
20/22 Harmful by inhalation and if swallowed.  
34 Causes burns.  
36 Irritating to eyes.  
36/37/38 Irritating to eyes, respiratory system and skin.  
60 May impair fertility.  
61 May cause harm to the unborn child.  
62 Possible risk of impaired fertility.  
63 Possible risk of harm to the unborn child.

#### 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
NTP	National Toxicology Program
KHC	Known Human Carcinogen
RAHC	Reasonably Anticipated Human Carcinogen
IARC	International Agency for Research on Cancer
OSHA	Occupational Safety & Health Administration
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

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\* Point to alterations with regard to the previous version.

The information provided in this Safety Data Sheet is believed to be correct as of the date issued. Philips Electronics Nederland B.V. makes no warranty as to its contents, nor as to its fitness for any particular purpose or use.