

# SAFETY DATA SHEET

According to EC 1907/2006 (REACH)

Date last verification : 2013-01-22  
Revision date : 2012-07-21  
Publication date : 2009-01-14

Version number : 2.1

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

### 1.1. Product identifier

MSDS : 25253  
Product code 12nc : 9898 031 29011  
Supplier : E-ONE MOLI ENERGY  
20000 Stewart Crescent  
V2X 9E7 Maple Ridge  
British Columbia  
Canada  
TEL:1-604-466-6654  
FAX:1-604-466-6600

Tradename : LITHIUM ION BATTERY MODULE (M3538A) [99 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 COBALT OXIDE / LITHIUM MANGANESE OXIDE				GHS08 H361fd Repr. 2 Xn;R: 62 63 Repr.Cat. 3
POLYVINYLIDENE FLUORIDE	24937-79-9			
GRAPHITE (POWDER)	7782-42-5 231-955-3			GHS02 GHS07 H228 Flam. sol. 1 H319 Eye irrit. 2 H335 STOT SE 3 F,Xi;R: 11 36/37
LITHIUM HEXAFLUOROPHOSPHATE	21324-40-3 244-334-7			GHS05 H314 Skin corr. 1B C;R: 34
ORGANIC SOLVENT				

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.  
 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

## 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, cobalt oxide, carbon monoxide, hydrogen fluoride, manganese oxides, 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** : Store product dry, protected from proximity to other sources of heat.

**Storage temperature** : <25 °C

### 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)

TWA(8 hours): 1 mg/m<sup>3</sup> LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese)

TWA(15 minutes): 3 mg/m<sup>3</sup> LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese)

No TWA has been laid down. POLYVINYLIDENE FLUORIDE

TWA(8 hours): 2 mg/m<sup>3</sup> GRAPHITE (POWDER)(as respirable dust)

No TWA has been laid down. LITHIUM HEXAFLUOROPHOSPHATE

No TWA has been laid down. ORGANIC SOLVENT

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

TWA(8 hours): 0.2 mg/m<sup>3</sup> LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese)

TWA(8 hours): 2 mg/m<sup>3</sup> GRAPHITE (POWDER)(as respirable dust)

TWA(8 hours): 2.5 mg/m<sup>3</sup> LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)

<b>applicable to: Germany (20 °C; 1013 mbar)</b>			
TWA(8 hours):	0.5 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese, inhalable dust)
TWA(8 hours):	3 mg/m3		GRAPHITE (POWDER)(as respirable dust)
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)
<b>applicable to: United States of America (25 °C; 1013 mbar)</b>			
TWA(8 hours):	0.2 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese)
TWA(8 hours):	0.02 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as cobalt)
TWA(8 hours):	2 mg/m3		GRAPHITE (POWDER)(as respirable dust)
TWA(8 hours):	2.5 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)
<b>applicable to: Sweden (20 °C; 1013 mbar)</b>			
TWA(8 hours):	0.05 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as cobalt, dust)
TWA(8 hours):	0.2 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese, dust)
TWA(8 hours):	0.1 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese, respirable dust)
TWA(8 hours):	5 mg/m3		GRAPHITE (POWDER)(as dust)
TWA(8 hours):	2 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)
<b>applicable to: Switzerland (20 °C; 1013 mbar)</b>			
TWA(8 hours):	0.5 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese, inhalable dust)
TWA(8 hours):	0.05 mg/m3	S	LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as cobalt, 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):	1 mg/m3	S	LITHIUM HEXAFLUOROPHOSPHATE(as fluorine, inhalable dust)
TWA(15 minutes):	4 mg/m3	S	LITHIUM HEXAFLUOROPHOSPHATE(as fluorine, inhalable dust)
<b>applicable to: China (20 °C; 1013 mbar)</b>			
TWA(8 hours):	0.15 mg/m3		LITHIUM COBALT OXIDE / LITHIUM MANGANESE OXIDE(as manganese)
TWA(8 hours):	4 mg/m3		GRAPHITE (POWDER)(as dust)
TWA(8 hours):	2 mg/m3		GRAPHITE (POWDER)(as respirable dust)
TWA(8 hours):	2 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)
<b>applicable to: European Union (20 °C; 1013 mbar)</b>			
TWA(8 hours):	2.5 mg/m3		LITHIUM HEXAFLUOROPHOSPHATE(as fluorine)

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

<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

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

## 9.2. Other information

Solubility in fat	: not applicable
Electrostatic chagement	: 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
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### 10.6. Hazardous decomposition products

Hazardous decomposition products at heating	: none
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## 11. Toxicological information

### 11.1. Information on toxicological effects

<b>Acute oral toxicity</b>		
LD-50: >2 g/kg (ORL-RAT)	GRAPHITE (POWDER)	<b>Method</b> : OECD 401
		<b>Source</b> : Supplier

**Acute dermal toxicity**  
There are no data available.

**Acute inhalation toxicity**  
There are no data available.

**Ames test**  
not traceable

**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**

not traceable

### 12.2. Persistence and degradability

<b>Biological oxygen demand</b>	: not traceable
<b>Chemical oxygen demand</b>	: not traceable
<b>Biological/chemical oxygen demand ratio</b>	: not traceable
<b>Degradability</b>	: not traceable

### 12.3. Bioaccumulative potential

<b>Biochemical factor</b>	: not traceable
<b>Log Po/w</b>	: not traceable

### 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 : II                      IMDG/IMO : II                      IATA/ICAO : II

## 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 MARPOL73/78 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 MSDS : The presence of lithium-batteries gives an enlarged risk of fire.

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

H228 Flammable solid.  
H314 Causes severe skin burns and eye damage.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.

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

C CORROSIVE  
F HIGHLY FLAMMABLE  
Xi IRRITANT  
Xn HARMFUL

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

11 Highly flammable.

34	Causes burns.
36/37	Irritating to eyes and respiratory system.
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
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 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.