





# SAFETY DATA SHEET

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Unsuitable extinguishing media : Avoid using water.  
Special hazards arising from the substance or mixture :  
Hazardous combustion products : Lead portion of battery will likely produce toxic metal fume, vapor or dust.  
Advice for fire-fighters : Keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries.  
Wear positive pressure self-contained breathing apparatus (SCBA).  
Structural firefighters' protective clothing will only provide limited protection.  
Additional information : Material itself is non-combustible although in fire situations will likely produce toxic metal fume, vapor or dust.

## 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

No special precautions expected to be necessary if material is used under ordinary conditions and as recommended. Avoid contact of lead with skin.

For non-emergency personnel : Wear chemical gloves.

Protective equipment :

For emergency responders : No emergency procedures are expected to be necessary if material is used under ordinary conditions as recommended. Use normal clean up procedures.

Personal protective equipment:

Wear chemical gloves, goggles, acid resistant clothing and boots, respirator if insufficient ventilation.

Environmental precautions : Prevent entry into waterways, sewers, basements or confined areas. Runoff from fire control and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

Methods and material for containment and cleaning up :

For containment : Lead dust should be vacuumed or wet swept into a D.O.T. approved container. Use controls that minimize fugitive emissions. Do not use compressed air.

For cleaning up : Contact local and/or state officials for proper disposal requirements.

## 7. HANDLING AND STORAGE

Precautions for safe handling

Protective measures : components. Wear protective clothing when filling or handling batteries. Follow manufacturer's instructions for installation and service. Do not allow conductive material to touch the battery terminals. Short circuit may occur and cause battery failure and fire.

Advice on general occupational hygiene : Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Eyewash stations and safety showers should be provided with unlimited water supply. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities : nitrate, permanganate, peroxides, nascent hydrogen, reducing agents and water.

Technical measures and storage conditions:

Store in a cool/low-temperature, well-ventilated place away from heat and ignition sources. Batteries should be stored under roof for protection against adverse weather conditions. Place cardboard between layers of stacked batteries to avoid damage and short circuits. Store batteries on an impervious surface.

Storage class:

Class 13: Non-flammable solids in non-flammable package



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## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters :

Occupational exposure limits :

Substance name	EC-No	CAS-No	Limit value
Arsenic		7440-38-2	0.01 mg/m <sup>3</sup>
Tin	231-141-8	7440-31-5	2 mg/m <sup>3</sup>
Antimony	231-146-5	7440-36-0	0.1 mg/m <sup>3</sup>
Lead	231-100-4	7439-92-1	0.1 mg/m <sup>3</sup>

Exposure controls

Appropriate engineering controls : Store and charge in a well-ventilated area. General dilution ventilation is acceptable.

Personal protective equipment:

Eye/Face protection : Wear protective eyewear (goggles, face shield or safety glasses with side shields).

Skin protection : Wear appropriate gloves.

No skin protection is ordinarily required under normal conditions of use. In accordance with industrial hygiene practices, if contact with leaking battery is expected precautions should be taken to avoid skin contact. Under severe exposure or emergency conditions, wear acid-resistant clothing and boots.

Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance

Physical state : Solid      Color : Bluish gray metal      Odor : Odorless      Odor threshold : No. Data

Safety relevant basic data

pH (20°C) :	No data
Melting point / range (°C) :	252.2222-360
Initial boiling point / range (°C) :	1380
Decomposition temperature (°C) :	No data
Ignition temperature (°C) :	No data
Vapor pressure (hPa) :	No Data
Vapor density (air = 1) :	No Data
Density (g/cm <sup>3</sup> ) :	599.3267-705.4575 lbs/ft <sup>3</sup>
Bulk density (kg/m <sup>3</sup> ) :	No Data
Specific Gravity/Relative Density (Water=1) :	9.6-11.3
Water solubility (20°C in g/l) :	No Data
Solubility(ies) :	No Data
Partition coefficient :	No Data
N-Octanol/Water (log Po/w) :	No Data
Viscosity, dynamic (mPa s) :	No Data

Other safety information :

Properties of explosive atmospheres (mixtures) : Gases and vapors : No Data  
Dusts: No Data

Physical chemical properties of nanoparticles : No Data

Limiting oxygen concentration : No Data

Bulk density : No Data

Solubility in different media : No Data

Stability in organic solvents and identity of relevant degradation products : No Data

Evaporation rate : No Data

Conductivity : No Data



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Surface tension : No Data  
 Dissociation constant in water (pKa) : No Data  
 Oxidation-reduction Potential : No Data  
 Fat solubility (solvent – oil to be specified) : No Data  
 Critical temperature : No Data

## 10. STABILITY AND REACTIVITY

Reactivity : Not reactive  
 Chemical stability : Stable under normal temperatures and pressures  
 Possibility of hazardous reactions : Hazardous polymerization will not occur.  
 Conditions to avoid : Prolonged overcharge, sources of ignition.  
 Incompatible materials : Avoid contact with strong bases, acids, combustible organic materials, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, reducing agents and water.  
 Hazardous decomposition products : Lead compounds exposed to high temperatures will likely produce toxic metal fume, vapor or dust; contact with strong acid/base or presence of nascent hydrogen may generate highly toxic arsine gas.

## 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects:

Lead (7439-92-1)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	155 mg/kg	Human	LDLo	
Acute oral toxicity	1050 ug/kg	Rat	TDLo	30 Weeks(int.)
Acute inhalative toxicity (dust/mist)	0.011 mg/m3	Human	LCLo	26 Weeks (int.)
Mutagen	23 ug/m3	Rat	Inhalation	16 Weeks
Reproductive	790 mg/kg	Rat	TDLo (Oral)	
Reproductive	3 mg/m3	Rat	TCLo (Inhalation)	1-21 Days preg.
Antimony (7440-36-0)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	100 mg/kg	Rat	LD50	
Acute inhalative toxicity (dust/mist)	13.5 mg/m3	Human	LCLo	4 Hours
Tumorigen/Carcinogen	50 mg/m3	Rat	TCLo	7 hours 52 weeks (int.)
Arsenic (7440-38-2)	Effect dose / Concentration	Species	Method	Time
Acute oral toxicity	763 mg/kg	Rat	LD50	
Acute oral toxicity	5 mg/kg	Rat	LDLo	
Mutagen	0.211 mg/L	Human	Oral	15 Years
Reproductive	605 ug/kg	Rat	TDLo	35 weeks preg.

Other information :

Carcinogenic Effects : Material is an article. No health effects are expected related to normal use of this product as sold. Material does contain components that exhibit carcinogenic effects.

Carcinogenic Effects			
	CAS	IARC	NTP
Lead	7439-92-1	Croup 2A-Probable Carcinogen	Reasonably anticipated to be human carcinogen

Routes of exposure :

In case of ingestion :

Acute (Immediate) : Under normal conditions of use, no health effects are expected. Lead ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping.

Chronic (Delayed) : No data available

In case of skin contact :

Acute (Immediate) : Under normal conditions of use, no health effects are expected.



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Chronic (Delayed) :	No data available
In case of inhalation :	
Acute (Immediate) :	Under normal conditions of use, no health effects are expected. Contents of an open battery can cause respiratory irritation.
Chronic (Delayed) :	Repeated and prolonged exposure may cause irritation.
In case of eye contact :	
Acute (Immediate) :	Under normal conditions of use, no health effects are expected. Exposure to dust may cause irritation.
Chronic (Delayed) :	No data available

## 12. ECOLOGICAL INFORMATION

Toxicity :	Aquatic toxicity
Substances	
Acute (short-term) toxicity :	No Data
Persistence/Degradability :	Lead is persistent in soils and sediments.

## 13. DISPOSAL CONSIDERATIONS

Waste treatment methods	
Product/packaging disposal :	Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
Waste codes/waste designations according to EWC/AVV :	16 06 05
Additional information :	Any waste marked with an asterisk (*) is considered as a hazardous waste pursuant to Directive 91/689/EEC on hazardous waste, and subject to the provisions of that Directive unless Article 1(5) of that Directive applies.

## 14. TRANSPORT INFORMATION

<u>U.S. DOT</u> :	The transportation of dry batteries ( those batteries that contain no electrolyte or residue ) are not regulated by the U.S. DOT as a hazardous material.
<u>IATA</u> :	The international transportation of dry batteries is not regulated by the International Air Transport Association ( IATA ) as a hazardous material.
<u>IMDG</u> :	The international transportation of dry batteries is not regulated by the International Maritime Dangerous Goods code ( IMDG ) as a hazardous material.

## 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the mixture

National regulations(Canada) :

WHMIS Classification : This product does not meet the classification criteria of the Controlled Products Regulations.  
*This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the Controlled Products Regulations.*

Canada DSL : The following substances are listed on the Canadian DSL:  
Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

Canada NDSL : None of the components on this SDS are listed on the Canadian NDSL :

WHMIS : Ingredient Disclosure List

Ingredient Disclosure List Substance	CAS No.	Wt %	Disclosure Limit %
Calcium	7440-70-2	0.1%	Not Listed
Lead and Lead compounds	7439-92-1	70-80%	0.1%
Tin	7440-31-5	0.6%	1%
Antimony	7440-36-0	0.2%	1%
Arsenic	7440-38-2	0.003%	0.1%



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**CEPA : Priority Substances List**

Substance	CAS No.	Wt %	Status
Calcium	7440-70-2	0.1%	Not Listed
Lead and Lead compounds	7439-92-1	70-80%	Not Listed
Tin	7440-31-5	0.6%	Not Listed
Antimony	7440-36-0	0.2%	Not Listed
Arsenic	7440-38-2	0.003%	Not Listed

**National regulations(European Union)**

Classification : Xi

Risk Phrases : R36, R38

Safety Phrases : S1/2, S26, S30, S45

The following components are listed on the EU  
Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2);  
Calcium (7440-70-2)

EINECS :

None of the above mentioned components are listed on the EU ELNICS.

**CLP (1272/2008) Concentration Limits**

Substance	CAS No.	Wt %	Concentration Limit
Calcium	7440-70-2	0.1%	Not Listed
Lead and Lead compounds	7439-92-1	70-80%	Not Listed
Tin	7440-31-5	0.6%	Not Listed
Antimony	7440-36-0	0.2%	Not Listed
Arsenic	7440-38-2	0.003%	Not Listed

**National regulations(United States) :**

The following substances are on the MA, NJ, and PA Right To Know Lists :

Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

The following substances are on the TSCA inventory :

Lead (7439-92-1); Antimony (7440-36-0); Tin (7440-31-5); Arsenic (7440-38-2); Calcium (7440-70-2)

OSHA : Specifically Regulated Chemicals

Substance	CAS	WT %	Limit
Calcium	7440-70-2	0.1%	Not Listed
Lead and Lead compounds	7439-92-1	70-80%	30 µg/m <sup>3</sup> Action Level (Poison, See 29 CFR 1910.1025); 50 µg/m <sup>3</sup> TWA
Tin	7440-31-5	0.6%	Not Listed
Antimony	7440-36-0	0.2%	Not Listed
Arsenic	7440-38-2	0.003%	Not Listed

**CAA: 1990 Hazardous Air Pollutants**

Substance	CAS	WT %	Limit
Calcium	7440-70-2	0.1%	Not Listed
Lead and Lead compounds	7439-92-1	70-80%	Not Listed
Tin	7440-31-5	0.6%	Not Listed
Antimony	7440-36-0	0.2%	Not Listed
Arsenic	7440-38-2	0.003%	Not Listed

**CERCLA/SARA : Hazardous Substances and Their Reportable Quantities**

Substance	CAS	WT %	Reportable Quantity
Calcium	7440-70-2	0.1%	Not Listed
Lead and Lead compounds	7439-92-1	70-80%	10 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 4.54 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal



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			released is larger than 100 micrometers)
Tin	7440-31-5	0.6%	Not Listed
Antimony	7440-36-0	0.2%	5000 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 2270 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)
Arsenic	7440-38-2	0.003%	1 lb final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers); 0.454 kg final RQ (no reporting of releases of this hazardous substance is required if the diameter of the pieces of the solid metal released is larger than 100 micrometers)

RCRA : Basis for Listing: Appendix VII

Substance	CAS	WT %	Basis
Calcium	7440-70-2	0.1%	Not Listed
Lead and Lead compounds	7439-92-1	70-80%	Included in waste streams: F035, F037, F038, F039, K002, K003, K005, K046, K048, K049, K051, K052, K061, K062, K064, K065, K066, K069, K086, K100, K176
Tin	7440-31-5	0.6%	Not Listed
Antimony	7440-36-0	0.2%	Included in waste streams: F039, K021, K161, K177
Antimony as Antimony compounds		0.2%	Not Listed
Arsenic	7440-38-2	0.003%	Included in waste streams: F032, F034, F035, F039, K031, K060, K084, K101, K102, K161, K171, K172, K176

## 16. OTHER INFORMATION

Relevant R-, H- and EUH-phrases (number and full text):

### Hazard Abbreviations:

Xi: Irritant

Xn: Harmful

N: Dangerous for the environment

T: Toxic

F: Highly Flammable

### Risk Phrases:

R15: Contact with water liberates extremely flammable gases

R20/22: Harmful by inhalation and if swallowed

R23/25: Toxic by inhalation and if swallowed

R33: Danger of cumulative effects

R36: Irritating to eyes

R38: Irritating to skin

R50: Very toxic to aquatic organisms

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

R53: May cause long-term adverse effects in the aquatic environment


R61: May cause harm to the unborn child

R62: Possible risk of impaired fertility

### Safety Phrases:

S1/2: Keep locked up and out of the reach of children



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- S2: Keep out of the reach of children  
S8: Keep container dry  
S20/21: When using do not eat, drink, or smoke  
S24/25: Avoid contact with skin and eyes  
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice  
S28: After contact with skin, wash immediately with plenty of water  
S30: Never add water to this product  
S43: In case of fire use CO2, dry chemical, or foam. Never use water  
S45: In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)  
S53: Avoid exposure – obtain special instructions before use  
S60: This material and its container must be disposed of as hazardous waste  
S61: Avoid release to the environment. Refer to special instructions/safety data sheet

**Hazard statements:**

- H313: May be harmful in contact with skin  
H315: Causes skin irritation  
H335: May cause respiratory irritation  
EUH201A: Warning! Contains lead

**Precautionary statements:**

- P102: Keep out of reach of children.  
P233: Keep containers tightly closed.  
P210: Keep away from heat, sparks, and open flame while charging batteries.

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