



# SAFETY DATA SHEET

**MATERION**

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

### 1.1. Product identifier

**Name of the substance** Lead selenide (PbSe), powder  
**Identification number** 12069-00-0 (CAS number)  
**Synonyms** LEAD SELENIDE \* Lead selenide (PbSe)  
**Issue date** 17-May-2015  
**Version number** 02  
**Revision date** 14-July-2015  
**Supersedes date** 17-May-2015

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

**Identified uses** Not available.  
**Uses advised against** None known.

### 1.3. Details of the supplier of the safety data sheet

#### Supplier

**Company name** Materion Advanced Chemicals Inc.  
**Address** 407 N. 13th Street  
1316 W. St. Paul Avenue  
Milwaukee, WI 53233  
United States  
**Division** Milwaukee  
**Telephone** 414.212.0257  
**e-mail** advancedmaterials@materion.com  
**Contact person** Noreen Atkinson

### 1.4. Emergency telephone number

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

The substance has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

#### Classification according to Directive 67/548/EEC or 1999/45/EC as amended

**Classification** R33, N;R50/53

The full text for all R-phrases is displayed in section 16.

#### Classification according to Regulation (EC) No 1272/2008 as amended

##### Health hazards

Reproductive toxicity	Category 2	H361 - Suspected of damaging fertility or the unborn child.
Specific target organ toxicity - repeated exposure	Category 2	H373 - May cause damage to organs through prolonged or repeated exposure.

##### Environmental hazards

Hazardous to the aquatic environment, acute aquatic hazard	Category 1	H400 - Very toxic to aquatic life.
Hazardous to the aquatic environment, long-term aquatic hazard	Category 1	H410 - Very toxic to aquatic life with long lasting effects.

#### Hazard summary

**Physical hazards** Not classified for physical hazards.  
**Health hazards** Danger of cumulative effects. Occupational exposure to the substance or mixture may cause adverse health effects.  
**Environmental hazards** Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
**Specific hazards** Not available.

### 2.2. Label elements

## Label according to Regulation (EC) No. 1272/2008 as amended

**Contains:** Lead selenide

### Hazard pictograms



**Signal word** Warning

### Hazard statements

H361 Suspected of damaging fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H400 Very toxic to aquatic life.  
H410 Very toxic to aquatic life with long lasting effects.

### Precautionary statements

#### Prevention

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P260 Do not breathe dust/fume/gas/mist/vapors/spray.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.

#### Response

P308 + P313 IF exposed or concerned: Get medical advice/attention.  
P391 Collect spillage.

#### Storage

P405 Store locked up.

#### Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

### Supplemental label information

None.

### 2.3. Other hazards

None known.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

#### General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Lead selenide	100	12069-00-0 235-109-4	-	-	#

**Classification:** **DSD:** R33, N;R50/53

**CLP:** Repr. 2;H361, STOT RE 2;H373, Aquatic Acute 1;H400, Aquatic Chronic 1;H410

#### List of abbreviations and symbols that may be used above

CLP: Regulation No. 1272/2008.

DSD: Directive 67/548/EEC.

M: M-factor

vPvB: very persistent and very bioaccumulative substance.

PBT: persistent, bioaccumulative and toxic substance.

#: This substance has been assigned Community workplace exposure limit(s).

#### Composition comments

The full text for all R- and H-phrases is displayed in section 16.

## SECTION 4: First aid measures

#### General information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention.

#### 4.1. Description of first aid measures

##### Inhalation

Move to fresh air. Call a physician if symptoms develop or persist.

##### Skin contact

Get medical attention if irritation develops and persists.

##### Eye contact

Rinse with water. Get medical attention if irritation develops and persists.

##### Ingestion

Get medical advice/attention if you feel unwell.

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

Prolonged exposure may cause chronic effects.

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

Provide general supportive measures and treat symptomatically. Treat symptomatically.

**SECTION 5: Firefighting measures**

**General fire hazards**

No unusual fire or explosion hazards noted.

**5.1. Extinguishing media**

**Suitable extinguishing media**

Water.

**Unsuitable extinguishing media**

None known.

**5.2. Special hazards arising from the substance or mixture**

Not available.

**5.3. Advice for firefighters**

**Special protective equipment for firefighters**

Wear suitable protective equipment.

**Special firefighting procedures**

In the event of fire, cool tanks with water spray. Water runoff can cause environmental damage.

**Specific methods**

Cool containers exposed to flames with water until well after the fire is out.

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel**

Local authorities should be advised if significant spillages cannot be contained. Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate personal protective equipment. Ensure adequate ventilation.

**For emergency responders**

Keep unnecessary personnel away. Use personal protection recommended in Section 8 of the SDS.

**6.2. Environmental precautions**

Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water. Avoid discharge into drains, water courses or onto the ground.

**6.3. Methods and material for containment and cleaning up**

Stop the flow of material, if this is without risk. Collect spillage. Prevent product from entering drains. Following product recovery, flush area with water.

**6.4. Reference to other sections**

For personal protection, see section 8. For waste disposal, see section 13 of the SDS.

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact during pregnancy/while nursing. Avoid prolonged exposure. Use personal protective equipment as required. When using, do not eat, drink or smoke. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

**7.2. Conditions for safe storage, including any incompatibilities**

Store locked up. Store in a cool, dry place out of direct sunlight.

**7.3. Specific end use(s)**

Not available.

**SECTION 8: Exposure controls/personal protection**

**8.1. Control parameters**

**Occupational exposure limits**

**Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended.**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	TWA	0,2 mg/m3

**Denmark. Exposure Limit Values**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	TLV	0,05 mg/m <sup>3</sup>

**Finland. Workplace Exposure Limits**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	STEL	0,3 mg/m <sup>3</sup>
	TWA	0,1 mg/m <sup>3</sup> 0,1 mg/m <sup>3</sup>

**France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	VME	0,1 mg/m <sup>3</sup>

**Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)**

Material	Type	Value	Form
Lead selenide (CAS 12069-00-0)	TWA	0,02 mg/m <sup>3</sup>	Inhalable fraction.

**Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace**

Material	Type	Value	Form
Lead selenide (CAS 12069-00-0)	AGW	0,05 mg/m <sup>3</sup>	Inhalable fraction.

**Hungary. OELs. Joint Decree on Chemical Safety of Workplaces**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	STEL	0,4 mg/m <sup>3</sup>

**Luxembourg. Binding Occupational exposure limit values (Annex I), Memorial A**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	TWA	0,15 mg/m <sup>3</sup>

**Malta. OELs. Occupational Exposure Limit Values (L.N. 227. of Occupational Health and Safety Authority Act (CAP. 424), Schedules I and V)**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	TWA	0,15 mg/m <sup>3</sup>

**Netherlands. OELs (binding)**

Material	Type	Value	Form
Lead selenide (CAS 12069-00-0)	TWA	0,15 mg/m <sup>3</sup>	Dust and fume.

**Poland. MACs. Minister of Labour and Social Policy Regarding Maximum Allowable Concentrations and Intensities in Working Environment**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	STEL	0,3 mg/m <sup>3</sup>

**Portugal. Decree-Law No. 24/2012, Binding Occupational Exposure Limit Values, Annex I (Diário da República - I.a série - No. 26)**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	TWA	0,15 mg/m <sup>3</sup>

**EU. Directive 98/24/EC: on the protection of workers from the risks related to chemical agents at work, Annex I List of Binding Occupational Exposure Limit Values**

Material	Type	Value
Lead selenide (CAS 12069-00-0)	TWA	0,15 mg/m <sup>3</sup>

## Biological limit values

### Finland. HTP-arvot, App 2., Biological Limit Values, (BRA/BGV) , Social Affairs and Ministry of Health

Material	Value	Determinant	Specimen	Sampling time
Lead selenide (CAS 12069-00-0)	1,4 umol/l	Lead	Blood	*

\* - For sampling details, please see the source document.

### Germany. TRGS 903, BAT List (Biological Limit Values)

Material	Value	Determinant	Specimen	Sampling time
Lead selenide (CAS 12069-00-0)	300 µg/l	Blei	Blood	*

\* - For sampling details, please see the source document.

### Luxembourg. Biological limit values (Annex II), Memorial A, n. 96, p. 1948

Material	Value	Determinant	Specimen
Lead selenide (CAS 12069-00-0)	70 ug/ml	Pb	Blood

### Portugal. Decree-Law No. 24/2012, Binding Biological Limit Values, Annex II (Diário da República - I.a série - No. 26)

Material	Value	Determinant	Specimen
Lead selenide (CAS 12069-00-0)	70 µg/100 ml	Chumbo	Blood

### Slovakia. BLVs (Biological Limit Value). Regulation no. 355/2006 concerning protection of workers exposed to chemical agents, Annex 2

Material	Value	Determinant	Specimen	Sampling time
Lead selenide (CAS 12069-00-0)	100 µg/l	Lead	Blood	*
	4,03 mg/g	δ-Aminolevulinic acid	Creatinine in urine	
	0,2 mg/g	Coproporphyrin	Creatinine in urine	*
	6 mg/l	δ-Aminolevulinic acid		
	0,3 mg/l	Coproporphyrin	Urine	*

\* - For sampling details, please see the source document.

### Spain. Biological Limit Values (VLBs), Occupational Exposure Limits for Chemical Agents, Table 4

Material	Value	Determinant	Specimen	Sampling time
Lead selenide (CAS 12069-00-0)	70 µg/dl	Plomo	Blood	*

\* - For sampling details, please see the source document.

### Switzerland. BAT-Werte (Biological Limit Values in the Workplace as per SUVA)

Material	Value	Determinant	Specimen	Sampling time
Lead selenide (CAS 12069-00-0)	150 µg/l	Selen	Serum	*

\* - For sampling details, please see the source document.

### EU. Directive 98/24/EC: on the protection of workers from the risks related to chemical agents at work, Annex II Binding Biological Limit Values and Health Surveillance Measures

Material	Value	Determinant	Specimen
Lead selenide (CAS 12069-00-0)	70 µg/100 ml	Lead	Blood

**Recommended monitoring procedures** Follow standard monitoring procedures.

**Derived no-effect level (DNEL)** Not available.

**Predicted no effect concentrations (PNECs)** Not available.

## 8.2. Exposure controls

**Appropriate engineering controls** Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** Not normally needed.

**Skin protection**

- **Hand protection** Not normally needed.

- **Other** Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

**Respiratory protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

**Thermal hazards** Not available.

**Hygiene measures** When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practices.

**Environmental exposure controls** Contain spills and prevent releases and observe national regulations on emissions. Environmental manager must be informed of all major releases.

## SECTION 9: Physical and chemical properties

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

#### Appearance

**Physical state** Solid.

**Form** Solid.

**Colour** Not available.

**Odour** Not applicable.

**Odour threshold** Not available.

**pH** Not available.

**Melting point/freezing point** Not available.

**Initial boiling point and boiling range** Not applicable.

**Flash point** Not available.

**Evaporation rate** Not available.

**Flammability (solid, gas)** Not applicable.

#### Upper/lower flammability or explosive limits

**Flammability limit - lower (%)** Not available.

**Flammability limit - upper (%)** Not available.

**Vapour pressure** Not available.

**Vapour density** Not available.

**Relative density** Not available.

#### Solubility(ies)

**Solubility (water)** Not available.

**Solubility (other)** Not available.

**Partition coefficient (n-octanol/water)** Not available.

**Auto-ignition temperature** Not available.

**Decomposition temperature** Not available.

**Viscosity** Not available.

**Explosive properties** Not available.

**Oxidizing properties** Not available.

### 9.2. Other information

**Molecular formula** PbSe

## SECTION 10: Stability and reactivity

**10.1. Reactivity** Not available.

**10.2. Chemical stability** Material is stable under normal conditions.

<b>10.3. Possibility of hazardous reactions</b>	No dangerous reaction known under conditions of normal use.
<b>10.4. Conditions to avoid</b>	None under normal conditions.
<b>10.5. Incompatible materials</b>	None known.
<b>10.6. Hazardous decomposition products</b>	No hazardous decomposition products are known.

## SECTION 11: Toxicological information

**General information** Occupational exposure to the substance or mixture may cause adverse effects.

### Information on likely routes of exposure

<b>Inhalation</b>	Due to lack of data the classification is not possible.
<b>Skin contact</b>	Due to lack of data the classification is not possible.
<b>Eye contact</b>	Due to lack of data the classification is not possible.
<b>Ingestion</b>	Due to lack of data the classification is not possible.
<b>Symptoms</b>	Not available.

### 11.1. Information on toxicological effects

<b>Acute toxicity</b>	No data available.
<b>Skin corrosion/irritation</b>	Due to lack of data the classification is not possible.
<b>Serious eye damage/eye irritation</b>	Due to lack of data the classification is not possible.
<b>Respiratory sensitisation</b>	Due to lack of data the classification is not possible.
<b>Skin sensitisation</b>	Due to lack of data the classification is not possible.
<b>Germ cell mutagenicity</b>	Due to lack of data the classification is not possible.
<b>Carcinogenicity</b>	Due to lack of data the classification is not possible.
<b>Reproductive toxicity</b>	Suspected of damaging fertility or the unborn child.
<b>Specific target organ toxicity - single exposure</b>	Due to lack of data the classification is not possible.
<b>Specific target organ toxicity - repeated exposure</b>	May cause damage to organs through prolonged or repeated exposure.
<b>Aspiration hazard</b>	Due to lack of data the classification is not possible.
<b>Mixture versus substance information</b>	Not available.
<b>Other information</b>	Not available.

## SECTION 12: Ecological information

<b>12.1. Toxicity</b>	Very toxic to aquatic life with long lasting effects. Accumulation in aquatic organisms is expected.
<b>12.2. Persistence and degradability</b>	No data is available on the degradability of this product.
<b>12.3. Bioaccumulative potential</b>	Not available.
<b>Partition coefficient n-octanol/water (log Kow)</b>	Not available.
<b>Bioconcentration factor (BCF)</b>	Not available.
<b>12.4. Mobility in soil</b>	Not available.
<b>12.5. Results of PBT and vPvB assessment</b>	Not a PBT or vPvB substance or mixture.
<b>12.6. Other adverse effects</b>	Not available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

<b>Residual waste</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
<b>Contaminated packaging</b>	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

<b>EU waste code</b>	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
<b>Disposal methods/information</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

## SECTION 14: Transport information

### ADR

<b>14.1. UN number</b>	UN3283
<b>14.2. UN proper shipping name</b>	Selenium compound, solid, n.o.s.
<b>14.3. Transport hazard class(es)</b>	
<b>Class</b>	6.1(PGIII)
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	6.1
<b>Hazard No. (ADR)</b>	Not available.
<b>Tunnel restriction code</b>	Not available.
<b>14.4. Packing group</b>	III
<b>14.5. Environmental hazards</b>	Yes
<b>14.6. Special precautions for user</b>	Not available.

### RID

<b>14.1. UN number</b>	UN3283
<b>14.2. UN proper shipping name</b>	Selenium compound, solid, n.o.s.
<b>14.3. Transport hazard class(es)</b>	
<b>Class</b>	6.1(PGIII)
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	6.1
<b>14.4. Packing group</b>	III
<b>14.5. Environmental hazards</b>	No.
<b>14.6. Special precautions for user</b>	Not available.

### ADN

<b>14.1. UN number</b>	UN3283
<b>14.2. UN proper shipping name</b>	Selenium compound, solid, n.o.s.
<b>14.3. Transport hazard class(es)</b>	
<b>Class</b>	6.1(PGIII)
<b>Subsidiary risk</b>	-
<b>Label(s)</b>	6.1
<b>14.4. Packing group</b>	III
<b>14.5. Environmental hazards</b>	Yes
<b>14.6. Special precautions for user</b>	Not available.

### IATA

<b>14.1. UN number</b>	UN3283
<b>14.2. UN proper shipping name</b>	Selenium compound, solid, n.o.s.
<b>14.3. Transport hazard class(es)</b>	
<b>Class</b>	6.1(PGIII)
<b>Subsidiary risk</b>	-
<b>14.4. Packing group</b>	III
<b>14.5. Environmental hazards</b>	No.
<b>ERG Code</b>	6L
<b>14.6. Special precautions for user</b>	Not available.



## Other information

**Passenger and cargo aircraft** Allowed.  
**Cargo aircraft only** Allowed.

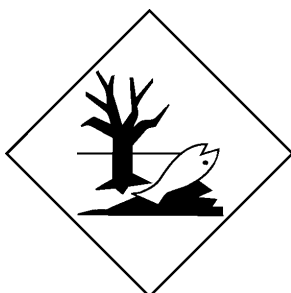
## IMDG

**14.1. UN number** UN3283  
**14.2. UN proper shipping name** SELENIUM COMPOUND, SOLID, N.O.S.  
**14.3. Transport hazard class(es)**  
**Class** 6.1(PGIII)  
**Subsidiary risk** -  
**14.4. Packing group** III  
**14.5. Environmental hazards**  
**Marine pollutant** No.  
**EmS** F-A, S-A  
**14.6. Special precautions for user** Not available.

## ADN; ADR; IATA; IMDG; RID



## Marine pollutant



## SECTION 15: Regulatory information

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

#### EU regulations

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I, as amended**  
Not listed.

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II, as amended**  
Not listed.

**Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I**  
Not listed.

**Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1**  
Not listed.

**Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2**  
Not listed.

**Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3**  
Not listed.

**Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V**  
Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended**  
Lead selenide (CAS 12069-00-0)

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**  
Not listed.

## Authorisations

### Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended

Not listed.

### Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended

Lead selenide (CAS 12069-00-0)

## Restrictions on use

### Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use

Not regulated.

### Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended

Not listed.

### Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended

Not listed.

## Other EU regulations

### Directive 2012/18/EU on major accident hazards involving dangerous substances

Not listed.

### Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended

Not listed.

### Directive 94/33/EC on the protection of young people at work, as amended

Not listed.

## Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006. This product is not in compliance with Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronics equipment (RoHS).

## National regulations

Not available.

### 15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

## SECTION 16: Other information

### List of abbreviations

Not available.

### References

Not available.

### Information on evaluation method leading to the classification of mixture

Not available.

### Full text of any statements or R-phrases and H-statements under Sections 2 to 15

R33 Danger of cumulative effects.  
R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.  
H361 Suspected of damaging fertility or the unborn child.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H400 Very toxic to aquatic life.  
H410 Very toxic to aquatic life with long lasting effects.

## Revision information

None.

## Training information

Not available.

## Disclaimer

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