

**Formamidinium lead trichloride**

Date: 30.08.2024

Revision: -

Page/pages: 1/9

**SECTION 1: Identification of the substance/mixture and of the company/undertaking**
**1.1. Product identifier**

 Formamidinium lead trichloride  
 FAPbCl<sub>3</sub>
**1.2. Relevant identified uses of the substance or mixture and uses advised against**
**Relevant identified uses:** Used for scientific research and development. For professional users only.

**Uses advised against:** Not specified.

**1.3. Details of the supplier of the safety data sheet**
**Supplier:** NANOXO sp. z o.o.

**Address:** Poland; PL 01-224 Warszawa; Marcina Kasprzaka 44/52 Street

**Telephone:** +48 22 378 48 30

**E-mail address** of the person responsible for the SDS: info@nanoxo.eu

**1.4. Emergency telephone number**

112 (emergency call)

**SECTION 2: Hazards identification**
**2.1. Classification of the substance or mixture**
**Classification according to Regulation 1272/2008/EC:**

Acute Tox. 4; H302

Acute Tox. 4; H332

Repr. 1A; H360Df

STOT RE 2; H373

Aquatic Acute 1; H400

Aquatic Chronic 1; H410

**Hazards to man:** Harmful if swallowed. Harmful if inhaled. May damage the unborn child. Suspected of damaging fertility. May cause damage to organs through prolonged or repeated exposure.

**Hazards to environment:** Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

**Hazard from physical and chemical properties:** Does not meet the criteria of classification.

In section 16 stated the meaning of H-phrases and symbols.

**2.2. Label elements**
**Label accordance with Regulation 1272/2008/EC (CLP)**
**Hazard pictograms, signal word:**

**Danger**



## SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended

### Formamidinium lead trichloride

Date: 30.08.2024

Revision: -

Page/pages: 2/9

#### Hazard statements:

H302 - Harmful if swallowed.

H332 - Harmful if inhaled.

H360Df - May damage the unborn child. Suspected of damaging fertility.

H373 - May cause damage to organs through prolonged or repeated exposure.

H410 - Very toxic to aquatic life with long lasting effects.

#### Precautionary statements:

P260 - Do not breathe dust.

P273 - Avoid release to the environment.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P308+P313 - IF exposed or concerned: Get medical advice/attention.

**The names of hazardous ingredients on the label:** Lead dichloride.

#### 2.3. Other hazards

The product does not meet the criteria for PBT or vPvB in accordance with Annex XIII of Regulation 1907/2006 (REACH).

The product does not contain ingredients entered in the list established in accordance with Art. 59 paragraph 1 as having endocrine disrupting properties or components with endocrine disrupting properties in accordance with the criteria set out in Regulation 2017/2100/EU or Regulation 2018/605/EU in a concentration equal to or greater than 0.1 %.

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Not applicable.

#### 3.2. Mixtures

Contains <100%\* Formamidinium chloride [CAS: 6313-33-3, EC: 228-639-2] - substance is not classified in Annex VI, Table 3.1 of Regulation 1272/2008.

<b>Substance name:</b>	<b>Lead dichloride</b>
<b>Concentration [%]:</b>	<100*
<b>CAS Number:</b>	7758-95-4
<b>EC Number:</b>	231-845-5
<b>Index Number:</b>	082-001-00-6
<b>Classification 1272/2008/EC:</b>	Acute Tox. 4; H302 Acute Tox. 4; H332 Repr. 1A; H360Df STOT RE 2; H373 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 Specific Conc. Limits (CLP): Repr. 2; H361f: C ≥ 2,5 % STOT RE 2; H373: C ≥ 0,5 %
<b>The registration number:</b>	Not applicable. The substance does not import more than 1 tonne per year (Article 6 (1) of Regulation 1907/2006 (REACH))



## SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended

### Formamidinium lead trichloride

Date: 30.08.2024

Revision: -

Page/pages: 3/9

\*The total content of the substances is 100 %.

In section 16 stated the meaning of H-phrases and symbols.

#### SECTION 4: First aid measures

##### 4.1. Description of first aid measures

**Inhalation:** Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor.

**Skin contact:** Take off immediately all contaminated clothing. Wash with plenty of water. Immediately call a POISON CENTER/doctor.

**Eye contact:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

**Ingestion:** Rinse mouth. Do NOT induce vomiting. IF SWALLOWED: Immediately call a POISON CENTER/doctor.

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

May damage the unborn child. Suspected of damaging fertility. May cause damage to organs through prolonged or repeated exposure.

**Inhalation:** Harmful if inhaled.

**Skin contact:** May cause skin irritation.

**Eye contact:** May cause eye irritation.

**Ingestion:** Harmful if swallowed.

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

Remove affected person from the environment contaminated by the product. In the event of health problems, consult your doctor or the centre of toxicological concern. Provide the information contained in the SDS. If unconscious, do not give anything by mouth.

#### SECTION 5: Firefighting measures

##### 5.1. Extinguishing media

**Suitable extinguishing media:** Extinguishing media should be adapted to surrounding objects.

**Unsuitable extinguishing media:** Not specified.

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

In case of fire hazardous products may be formed: e.g. carbon oxide. Avoid inhalation of combustion products, because they may pose a health risk.

##### 5.3. Advice for firefighters

Wear full protective equipment and self-contained breathing apparatus with independent air circulation. Containers exposed to fire or high temperature cool with water and if possible remove from the danger zone. Protect drains, surface waters and soil from pollution. Water from fire treated as hazardous pollution and accumulate in separate containers.

#### SECTION 6: Accidental release measures

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

**For non-emergency personnel:** Access of non-emergency personnel to the area of accident should be restricted until the completion of the disposal of the product. Wear appropriate personal protective equipment. Avoid contact with eyes and skin. Avoid breathing dust and fume.

**For emergency responders:** Wear appropriate personal protective equipment. Avoid contact with eyes and skin. Avoid breathing dust and fume.



## SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended

### Formamidinium lead trichloride

Date: 30.08.2024

Revision: -

Page/pages: 4/9

#### 6.2. Environmental precautions

Secure the gullies. Prevent contamination of surface water and ground. In the event of any serious pollution of the environment, notify the appropriate administrative authority, control and rescue services. The used containers should be disposed by delivering to eligible organizations.

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

Secure damaged packaging. Collect mechanically. Prevent dusting. Collected product put in a substitute container and direct to the destruction or re-use.

#### 6.4. Reference to other sections

Disposal - see Section 13. Personal protective equipment - see Section 8.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Do not eat, drink, smoke or take drugs at work. Wash hands before breaks and after working with the product. Wear appropriate personal protective equipment. Take off contaminated clothing and wash before reuse. Ensure adequate ventilation at the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Avoid release to the environment.

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

Keep in properly labelled, factory sealed containers, with a label which complies with current regulations. Keep container tightly closed. Store in a well-ventilated place. Keep container tightly closed.

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

Used for scientific research and development.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

Substance name	TWA	STEL	BLV
Dust	10 mg/m <sup>3</sup> (inhalable dust) 4 mg/m <sup>3</sup> (respirable dust)	-	-

**Legal basis:** Ordinance on maximum permissible concentration and intensity of harmful factors in the work environment in accordance with national limit values.

EH40/2005 Workplace exposure limits, fourth edition, published 2020, ISBN 978 0 7176 6733 8.

**Monitoring procedures:** Use methods described in European Standards.

#### 8.2. Exposure controls

Mandatory general regulations on occupational health. Do not allow to exceed the normative concentrations of hazardous constituents in the workplace. After work, wash the body surface and clean the personal protective equipment. Do not eat, drink, smoke or take drugs at work. Wash hands and face during breaks and after working with the product.



## SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended

### Formamidinium lead trichloride

Date: 30.08.2024

Revision: -

Page/pages: 5/9

**Eye/face protection:** Use appropriate safety glasses according to EN 166.

**Skin Protection:** Use suitable protective gloves in accordance with EN 374.

**Respiratory protection:** If work takes place in insufficient ventilation conditions, use suitable respiratory protection.

**Thermal Hazards:** Usually is not required.

Used personal protective equipment should meet the requirements of local/regional/national laws. The employer must provide personal protective equipment appropriate to the type of work and in accordance with all requirements, including maintenance and cleaning.

Concentrations of hazardous substances in the workplace should be monitored in accordance with acknowledged test methods. Mode, method, type and frequency of testing and measurement of harmful factors in the working environment should meet the requirements of local/regional/national laws.

**Environmental exposure controls:** The large amount of product should not be allowed to penetrate through the ground water, sewage, waste water or soil.

## SECTION 9: Physical and chemical properties

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

<b>Physical state:</b>	Powder
<b>Colour:</b>	Not applicable
<b>Odour:</b>	Not applicable
<b>Melting point/freezing point:</b>	Not applicable
<b>Boiling point or initial boiling point and boiling range:</b>	Not applicable
<b>Flammability:</b>	Not applicable
<b>Lower and upper explosion limit:</b>	Not applicable
<b>Flash point:</b>	Not applicable
<b>Auto-ignition temperature:</b>	Not applicable
<b>Decomposition temperature:</b>	Not applicable
<b>pH:</b>	Not applicable
<b>Kinematic viscosity:</b>	Not applicable
<b>Solubility:</b>	Not applicable
<b>Partition coefficient n-octanol/water (log value):</b>	Not applicable
<b>Vapour pressure:</b>	Not applicable
<b>Density and/or relative density:</b>	Not applicable
<b>Relative vapour density:</b>	Not applicable
<b>Particle characteristics:</b>	Not applicable

### 9.2. Other information

#### 9.2.1. Information with regard to physical hazard classes

Not specified.

#### 9.2.2. Other safety characteristics

Not specified.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Not reactive under normal conditions of use and storage.

**Formamidinium lead trichloride**

Date: 30.08.2024

Revision: -

Page/pages: 6/9

**10.2. Chemical stability**

Stable under normal conditions of storage.

**10.3. Possibility of hazardous reactions**

Not applicable.

**10.4. Conditions to avoid**

Not applicable.

**10.5. Incompatible materials**

Not applicable.

**10.6. Hazardous decomposition products**

None under normal conditions of use and storage.

**SECTION 11: Toxicological information**
**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**
**Acute toxicity:** Harmful if swallowed. Harmful if inhaled.

 $ATE_{mix}$  (oral) > 300 mg/kg b.w. < 2000 mg/kg b.w.

 $ATE_{mix}$  (inhalation) > 1.0 mg/l < 5.0 mg/l

**Lead dichloride** [CAS: 7758-95-4]

 $LD_{50}$  (oral) 2000 mg/kg mg/kg b.w.

 $LD_{50}$  (dermal) 2000 mg/kg mg/kg b.w.

 $LC_{50}$  (inhalation) 5 mg/L

**Skin corrosion/irritation:** Based on available data, the classification criteria are not met.

**Serious eye damage/irritation:** Based on available data, the classification criteria are not met.

**Respiratory or skin sensitization:** Based on available data, the classification criteria are not met.

**Germ cell mutagenicity:** Based on available data, the classification criteria are not met.

**Carcinogenicity:** Based on available data, the classification criteria are not met.

**Reproductive toxicity:** May damage the unborn child. Suspected of damaging fertility.

**STOT - single exposure:** Based on available data, the classification criteria are not met.

**STOT - repeated exposure:** May cause damage to organs through prolonged or repeated exposure.

**Aspiration hazard:** Based on available data, the classification criteria are not met.

**11.2. Information on other hazards**
**11.2.1. Endocrine disrupting properties**

Not applicable.

**11.2.2. Other information**

May damage the unborn child. Suspected of damaging fertility. May cause damage to organs through prolonged or repeated exposure.

**Inhalation:** Harmful if inhaled.

**Skin contact:** May cause skin irritation.

**Eye contact:** May cause eye irritation.

**Ingestion:** Harmful if swallowed.

**SECTION 12: Ecological information**
**12.1. Toxicity**

Very toxic to aquatic life with long lasting effects.



## SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended

### Formamidinium lead trichloride

Date: 30.08.2024

Revision: -

Page/pages: 7/9

**Lead dichloride** [CAS: 7758-95-4]  
EC<sub>50</sub> (*Daphnia magna*) 0.45 mg/l/48 h  
LC<sub>50</sub> (fish) 1.170 µg/l/96 h  
ErC<sub>50</sub> (algae) 20.5 µg/l/ 72 h

#### 12.2. Persistence and degradability

Not specified.

#### 12.3. Bioaccumulative potential

Not specified.

#### 12.4. Mobility in soil

Not applicable.

#### 12.5. Results of PBT and vPvB assessment

Not applicable.

#### 12.6. Endocrine disrupting properties

Not applicable.

#### 12.7. Other adverse effects

Not specified.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

During removal of waste comply with the regional / national laws.

#### Community legislation:

- Directive **2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives as amended.
- European Parliament and Council Directive **94/62/EC** of 20 December 1994 on packaging and packaging waste as amended.

**Disposal methods for the product:** Do not introduce into the environment. Disposal in accordance with the local/national legislation.

**Disposal methods for used packing:** Empty containers give for appropriate rubbish dump or for disposal in accordance with the local/national legislation. Dispose of uncleanable containers like of the product.

### SECTION 14: Transport information

	ADR	RID	AND	IMDG	ICAO TI
<b>14.1. UN number or ID number</b>	UN 2291				
<b>14.2. UN proper shipping name</b>	LEAD COMPOUND, SOLUBLE, N.O.S. (Lead dibromide)		LEAD COMPOUND, SOLUBLE, N.O.S. (Lead dibromide)	Lead compound, soluble, n.o.s. (Lead dibromide)	
<b>14.3. Transport hazard class(es)</b>	6.1				
<b>14.4. Packing group</b>	III				
<b>14.5. Environmental hazards</b>	yes				no





## SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended

### Formamidinium lead trichloride

Date: 30.08.2024

Revision: -

Page/pages: 8/9

<b>14.6. Special precautions for user</b>	Personal protective equipment should be used when handling the load - see section 8.
<b>14.7. Maritime transport in bulk according to IMO instruments</b>	Not specified

## SECTION 15: Regulatory information

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

**Regulation (EC) No 1907/2006** of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC as amended.

**Regulation (EC) No 1272/2008** of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 as amended.

**Commission Regulation (EU) 2020/878** of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

**Directive 2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives as amended.

**European Parliament and Council Directive 94/62/EC** of 20 December 1994 on packaging and packaging waste as amended.

**Commission directive 2000/39/EC** of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.

**Commission directive 2006/15/EC** of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC.

**Commission directive 2009/161/EU** of 17 December 2009 establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC.

**Commission directive (EU) 2017/164** of 31 January 2017 establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU.

**Commission Directive (EU) 2019/1831** of 24 October 2019 establishing a fifth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC and amending Commission Directive 2000/39/EC.

### 15.2. Chemical safety assessment

The Chemical Safety Assessment is not required.

## SECTION 16: Other information

### The full text of H-statements from Sections 2 and 3:

H302 - Harmful if swallowed.

H332 - Harmful if inhaled.

H360Df - May damage the unborn child. Suspected of damaging fertility.

Version 1





## SAFETY DATA SHEET

In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended

### Formamidinium lead trichloride

Date: 30.08.2024

Revision: -

Page/pages: 9/9

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.

#### Key to abbreviations and acronyms:

Acute Tox. 4 - Acute toxicity (oral, inhal.), Hazard Category 4.

ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road.

AND - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways.

Aquatic Acute 1 - Hazardous to the aquatic environment - Acute Hazard, Category 1.

Aquatic Chronic 1 - Hazardous to the aquatic environment - Chronic Hazard, Category 1.

ATE<sub>mix</sub> - Acute Toxicity Estimate for mixture.

BLV - Biological Limit Value.

ICAO TI - Technical Instructions for the Safe Transport of Dangerous Goods by Air.

IMDG - International Maritime Dangerous Goods.

LC<sub>50</sub> - Median lethal concentration.

LD<sub>50</sub> - Median lethal dose.

Repr. 1A - Reproductive toxicity, Hazard Category 1A.

RID - Regulations concerning the International Carriage of Dangerous Goods by Rail.

STEL - Short-Term Exposure Limit.

STOT RE 2 - Specific target organ toxicity - Repeated exposure, Hazard Category 2.

TWA - Time Weighted Average.

**Training advice:** Before use read the SDS.

#### Classification according to Regulation 1272/2008/EC:

##### Classification

Acute Tox. 4; H302

Acute Tox. 4; H332

Repr. 1A; H360Df

STOT RE 2; H373

Aquatic Acute 1; H400

Aquatic Chronic 1; H410

##### Classification procedure:

Calculation method

Calculation method

Calculation method

Specific Conc. Limits (CLP)

Calculation method

Calculation method

##### Sources of key data:

Information provided electronically.

Database of the European Chemicals Agency (ECHA).

The information above is based on a current available data concerning the product, but also on the experience and knowledge in this field of the producer. They are neither a quality description of the product nor a guarantee of particular features. They are also treated as aid to safety in transport, storage and usage of the product. This does not free the user from the responsibility of improper usage of the information above also of improper compliance with the law norms in the field.

Prepared by ISOTOP s.c. Consulting Company; [www.isotop.pl](http://www.isotop.pl); e-mail: [reach@isotop.pl](mailto:reach@isotop.pl)