Safety Data Sheet

According to Regulation (EU) 2015/830

Ecobat Resources Rolled Lead Sheet

SECTION 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 PRODUCT IDENTIFIER

Name of Substance: LEAD METAL (SHEET)

EC Number	EC Name	CAS Number (EC inventory)	Registration Number
231-100-4	Lead	7439-92-1	

1.2 RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST

No specific uses advised against have been identified, other than legal restrictions on the use of lead.

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEET

Ecobat Resources
Peartree Lane
Welwyn Garden City
Hertfordshire AL7 3UB
Tel: +44 01707 324595
Fax +44 01707 328941
Email: barryr@britishlead.co.uk

1.4 EMERGENCY TELEPHONE NUMBER

In case of emergency **Tel. 01707 324595 (Mon - Fri, 0800hrs - 1700hrs)**

SECTION 2: Hazards Identification

2.1 CLASSIFICATION

Dangerous Substances Directive 67/548/EEC – Lead sheet is an article and not in scope of the EU Dangerous Substances Directive.

Classification Labelling and Packaging Regulation EC 1272/2008 – Lead sheet is an article and not in scope of the EU Dangerous Substances Directive.

2.2 LABELLING

Classification Labelling and Packaging Regulation EC 1272/2008 – None required.

2.3 OTHER HAZARDS

Lead in sheet or massive form is not a significant health hazard.

However, melting or operations generating lead dust, fume or vapour can result in sufficient lead entering your body to be hazardous to your health.

Oxidation products (including lead compounds) may also form on the surface of metallic lead.

Lead is heavy and care should be taken when lifting and handling.

See section 11 for more information on the health hazards of lead compounds.

SECTION 3: Composition

3.1 SUBSTANCES

Not applicable.

3.2 MIXTURES

Lead Sheet:

Substance	EC Number	REACH registration number (if applicable)	Concentration (% w/w)	Hazard Classification
Lead	231-100-4		>99	**Repr. 1A**; H360FD: May damage fertility. May damage the unborn child. **Lact.; H362**: May cause harm to breast-fed children. **STOT RE1; H372**: Causes damage to organs through prolonged or repeated exposure.
Copper	231-159-6		0.03 - 0.06	None
Non-hazardous impurities	n/a	n/a	remainder	None

SECTION 4: First Aid Measures

The measures below are unlikely to be relevant whilst lead is in its solid metallic state. However, they are relevant in the event of exposure to fumes, vapour or dust or oxidation products that may form on the surface of lead sheet.

4.1 DESCRIPTION OF FIRST AID MEASURES

Eye Contact: Ensure that contact lenses are removed before rinsing eyes. Separate eyelids, wash the eyes thoroughly with water (15 min). Seek medical attention if irritation persists.

Inhalation: Move person to fresh air. Seek medical attention.

Skin Contact: Remove contaminated clothing. Wash skin immediately with soap and water. Seek medical attention if irritation persists.

Ingestion: Rinse out mouth and give plenty of water to drink. Seek medical attention.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

Clinical manifestations of lead poisoning include weakness, irritability, asthenia, nausea, abdominal pain with constipation, and anaemia.

4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENTS NEEDED

Symptoms of poisoning may occur after several hours; seek medical attention.

SECTION 5: Firefighting Measures

5.1 EXTINGUISHING MEDIA

Water spray jet; Dry sand. Extinguishing media that must not be used for safety reasons: Full water jet; Foam.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

In case of fires, hazardous combustion gases are formed: Lead fumes; Lead oxide.

5.3 ADVICE FOR FIRE FIGHTERS

Appropriate breathing apparatus may be required. Wear protective clothing.

SECTION 6: Accidental Release Measures

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Ensure adequate ventilation. Avoid dust formation. Avoid contact with skin, eyes and clothing.
See section 8 for further details.

6.2 ENVIRONMENTAL PRECAUTIONS

Do not discharge into the drains/surface waters/groundwater. In case of entry into waterways, soil or drains, inform the responsible authorities.

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEARING UP

Collect mechanically (preferably in dry condition). Send in suitable containers for recovery or disposal.
When picked up, treat material as prescribed under heading “Disposal considerations”.

6.4 REFERENCES TO OTHER SECTIONS

See sections 8 and 13 for further advice.

SECTION 7: Handling and Storage

7.1 PRECAUTIONS FOR SAFE HANDLING

Provide good ventilation of working area (local exhaust ventilation, if necessary). The product is not combustible.

7.2 CONDITIONS FOR SAFE STORAGE, INLUDING ANY IMCOMPATIBILITIES

No special measures required. Do not store together with foodstuffs. Do not store together with animal feedstocks.
Do not store with acids or alkalis. Do not store with combustible materials.

7.3 SPECIFIC END USES(S)

Specific Exposure Scenarios are included in an Annex to Section 16.

SECTION 8: Exposure Controls/Personal Protection

8.1 CONTROL PARAMETERS

8.1.1 HUMAN TOXICITY VALUES

OELs - Lead and inorganic compounds (as Pb):

	Limit Values - 8 Hours mg/m³	Limit Values - Short Term mg/m³
European Union	0.15 inhalable aerosol	
Austria	0.1 inhalable aerosol	0.4 inhalable aerosol
Belgium	0.15	
Denmark	0.05 inhalable aerosol	0.10 inhalable aerosol
France	0.1 inhalable aerosol	
Germany (AGS)	0.1 inhalable aerosol	
Hungary	0.15 inhalable aerosol 0.05 respirable aerosol	0.60 inhalable aerosol 0.2 respirable aerosol
Italy	0.15 inhalable aerosol	
Ireland	0.15	
Poland	0.05	
Spain	0.15 inhalable aerosol	
Sweden	0.1 inhalable aerosol 0.15 respirable aerosol	
Switzerland	0.1 inhalable aerosol	0.8 inhalable aerosol
United Kingdom	0.15	

Biological action levels (inorganic lead):

EU	70 µg/dL (Binding Limit Value)
Germany	40 µg/dL 0 µg/dL (for woman, age below 45 year's) [Suspended]
UK	60 µg/dL 30 µg/dL (for woman of reproductive capacity)
France	40 µg/dL 30 µg/dL (for woman of reproductive capacity)
Ireland	70 µg/dL
Spain	70 µg/dL

DN(M)ELs for workers (inorganic lead):

Exposure Pattern	Route	Descriptors	DNEL/DMEL (appropriate unit)	Most Sensitive Endpoint
Acute - systemic effects	Dermal (mg/kg bw /day)	NA	NA	NA
	Inhalation (mg/m³)	NA	NA	NA
Acute - local effects	Dermal (mg/cm²)	NA	NA	NA
	Inhalation (mg/cm³)	NA	NA	NA
Long-term - systemic effects	Systemic (µg lead / dL blood)	NOAEL = 40 µg/dL NOAEL = 10 µg/dL	40 µg/dL 10 µg/dL	Adult neurological function Developmental effect on foetus of pregnant women
Long-term – local effects	Dermal (mg/cm²)	NA	NA	NA
	Inhalation (mg/m³)	NA	NA	NA

8.1.2 ECOLOGICAL TOXICITY VALUES

Reliable acute aquatic toxicity test results (tests conducted with soluble lead salts):

Test Organism	Species	Endpoint	Value
Algae	*Pseudokirchneriella subcapitata*	72h EC50 (pH>6.5-7.5) 72h EC50 (pH<7.5-8.5)	52.0 µg Pb/L 233.1 µg Pb/L
Invertebrates	*Daphnia magna* *Ceriodaphnia dubia*	48h EC50 (pH>7.5-8.5) 48h EC50 (pH>5.5-8.5)	107.5 µg Pb/L 73.6 µg Pb/L
Fish	*Oncorhynchus mykiss* *Pimephales promelas*	96h LC50 (pH>6.5-8.5) 96h LC50 (pH>5.5-8.5)	107.0 µg Pb/L 194.2 µg Pb/L

Listed values are for tests performed at most sensitive pH. Other organisms have also been evaluated in the chemical safety report. References are listed in section 16.

Reliable chronic toxicity test results (tests conducted with soluble lead salts):

Compartment	Species	Value (EC10, NOEC)
Freshwater	*Hyalella azteca* (42d, mortality)	8.2 µg Pb/L (dissolved lead)
Marine water	*Mytilus trossolus* (48h, developmental abnormalities)	9.2 µg Pb/L (dissolved lead)
Freshwater sediment	*Tubifex tubifex* (28d, reproduction)	573 mg Pb/kg dw
Marine sediment	*Neanthes arenaneodentata* (28d, growth)	680 mg Pb/kg dw
Terrestrial (plants)	*Hordeum vulgare* (yield based on root)	57 mg Pb/kg dw
STP Micro-organisms (Protozoa)	Protozoan community (24h-LC10)	1.0 mg Pb/L

Listed reports are for most sensitive organisms. References are listed in section 16.

The following Predicted No Effect Concentrations (inorganic lead) have been derived for the above environmental compartments:

Compartment	PNEC Value
Freshwater	3.1 µg Pb/L (dissolved lead)
Marine water	3.5 µg Pb/L (dissolved lead)
Freshwater sediment (with/without bioavailability correction)	41.0/174.0 mg Pb/kg dw
Marine Water sediment	164.2 mg Pb/kg dw
Soil	212.0 mg Pb/kg dw
STP Micro-organisms	0.1 mg Pb/L

8.2 EXPOSURE CONTROLS

8.2.1 ORGANISATIONAL MEASURES

Personal Hygiene: Ensure workers follow simple hygiene rules (e.g. do not bite nails and keep them cut short, avoid touching or scratching face with dirty hands or gloves); Ensure workers do not wipe away sweat with hands or arms; Ensure workers use disposable tissues rather than a handkerchief; Prohibit drinking, eating and smoking in production areas, or access to eating and non-production areas in working clothes; Ensure workers wash hands, arms, faces and mouths (but preferably shower) and change into clean clothing before entering eating areas; For high exposure workplaces, separate rooms for cleaning hands, removal of clothes, showers and clean clothes may be necessary; Ensure workers handle dirty working clothes with care; Allow no personal belongings to be taken into production areas, or items that have been used in production areas to be taken home. Ensure general shop cleanliness is maintained by frequent washing/vacuuming. Clean every workplace at the end of every shift.

Blood Lead Monitoring: Set in place a certified monitoring regime which covers all site activities; Define a policy for submitting workers to regular blood lead monitoring, including increased frequency for workers undertaking high-risk jobs and workers with elevated blood lead levels; Ensure all workers have a blood test prior to working on site. Set an “action level” that is typically 5 µg/dL below the exposure limit deemed to be safe. If the action level is exceeded, appropriate measures are to be taken, to prevent further increases in blood lead. If the safe threshold is exceeded, continue or begin ban on overtime, ensure strict hygiene procedures are followed, undertake detailed inspections to ensure correct use of personal protective equipment, undertake detailed inspections to ensure recommended workplace procedures are followed, move employee to workplace where exposure is expected to be lower or remove from lead environment altogether, further increase blood lead sampling frequency, and continue frequent sampling until results are below the first action level.

8.2.2 PERSONAL PROTECTION EQUIPMENT

Respiratory Protection: Suitable respiratory protective device recommended if work activity is likely to result in formation of lead fumes, vapours or dust. In case of brief or low level exposure use dust mask or half mask with particle filter P2. Assess the need to wear respiratory protective equipment in production areas. Consider use effective masks accompanied by a compliance policy (ensure proper shaving; ensure workers do not remove RPE in production areas in order to communicate). Where masks are used, employ formal mask cleaning and filter changing strategies.

Hand Protection: Protective gloves. Material of gloves: Neoprene or Leather.

Eye Protection: Safety glasses.

Skin Protection: Wear protective work clothing. For workers in areas of significant exposure, provide sufficient working clothes to enable daily change into clean clothes. In such cases all work clothing should be cleaned by the employer on a daily basis and is not permitted to leave the work site.

8.2.3 ENVIRONMENTAL PROTECTION

One or more of the following measures may if necessary be taken to reduce emissions to water:

- Chemical precipitation: used primarily to remove the metal ions
- Sedimentation
- Filtration: used as final clarification step
- Electrolysis: for low metal concentration
- Reverse osmosis: extensively used for the removal of dissolved metals
- Ion exchange: final cleaning step in the removal of heavy metal from process wastewater

One or more of the following measures may if necessary be taken to reduce emissions to air:

- Electrostatic precipitators using wide electrode spacing: Wet electrostatic precipitators:
- Cyclones, but as primary collector Fabric or bag filters: high efficiency in controlling fine particulate (melting): achieve emission values Membrane filtration techniques can achieve
- Ceramic and metal mesh filters. PM10 particles are removed
- Wet scrubbers

Lead removal from treatment works should be at least the minimum default 84% removal used in the CSR. Solid material collected from on-site treatment must be sent for metal recovery or treated as hazardous waste. Waste water treatment sludge must be recycled, incinerated or landfilled and not used as agricultural fertiliser.

SECTION 9: Physical and Chemical Properties

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Grey-blue solid
Odour:	None
Odour threshold:	Not applicable
pH:	Not applicable
Melting point:	326°C
Boiling point:	> 600°C
Flashpoint:	Not applicable
Evaporation rate:	Not applicable
Flammability:	Not applicable
Upper/lower flammability limits:	Not applicable
Vapour pressure:	Not applicable
Vapour density:	Not applicable
Relative density:	11.45
Solubility in water:	185 mg/L at 20°C
Solubility in other solvents:	Not applicable
Partition coefficient (log Kow):	Not applicable
Autoignition temperature:	Not applicable
Decomposition temperature:	Not applicable
Viscosity:	Not applicable
Explosive properties:	Not explosive
Oxidising properties:	Not oxidising

9.2 OTHER INFORMATION

None.

SECTION 10: Stability and Reactivity

10.1 REACTIVITY

Lead is not a reactive substance and no reactive hazards are expected.

10.2 CHEMICAL STABILITY

Expected to be stable under normal conditions of use.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

No hazardous reactions expected under normal conditions of use.

10.4 CONDITIONS TO AVOID

Not applicable.

10.5 INCOMPATIBLE MATERIALS

Strong oxidizing agents.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS

No decomposition if used as directed.

SECTION 11: Toxicological Information

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

Lead in massive or sheet form is not a significant health hazard. However the following information is relevant if you swallow any lead or breathe in lead dust, fume or vapour.

Toxicokinetic assessment	Lead is slowly absorbed by ingestion and inhalation and poorly absorbed through the skin. If absorbed, it will accumulate in the body with low rates of excretion, leading to long-term build up. Part of risk management is to take worker blood samples for analysis to ensure that exposure levels are acceptable.
(a) acute toxicity	Lead massive metal is not considered to be acutely toxic. It is not easily inhaled or ingested, and if it is accidentally ingested normally passes through the gastrointestinal system without significant absorption into the body. Lead is not easily absorbed through the skin.
(b) skin corrosion/irritation	Studies have shown that sparingly soluble inorganic lead compounds are not corrosive or irritating to skin, and this lack of effect is expected also for metallic lead. This conclusion is supported by the lack of reports of irritant effects from occupational settings.
(c) serious eye damage/irritation	Studies have shown that sparingly soluble inorganic lead compounds are not corrosive or irritating to eyes, and this lack of effect is expected also for metallic lead. This conclusion is supported by the lack of reports of irritant effects from occupational settings.
(d) respiratory/skin sensitisation	There is no evidence that lead causes respiratory or skin sensitisation.
(e) germ cell mutagenicity	The evidence for genotoxic effects of highly soluble inorganic lead compounds is contradictory, with numerous studies reporting both positive and negative effects. Responses appear to be induced by indirect mechanisms, mostly at very high concentrations that lack physiological relevance.
(f) carcinogenicity	There is some evidence that inorganic lead compounds may have a carcinogenic effect, and they have been classified by IARC as probably carcinogenic to humans (Group 2A). However, it is considered that this classification does not apply to lead in articles, given the very low bioavailability of metallic lead. Carcinogenicity studies of lead metal powder have been negative. Epidemiology studies of workers exposed to inorganic lead compounds have found a limited association with stomach cancer. IARC has concluded that lead metal is possibly carcinogenic to humans (Group aB).
(g) reproductive toxicity	Exposure to high levels of inorganic lead compounds may cause adverse effects on male and female fertility, including adverse effects on sperm quality. Prenatal exposure to inorganic lead compounds is also associated with adverse effects on the development of the unborn child. There is evidence that neurobehavioral development in children is affected by exposure to lead.
(h) STOT-single exposure	Inorganic lead compounds have generally been found to be of relatively low acute toxicity by ingestion, in contact with skin, and by inhalation, with no evidence of any local or systemic toxicity from such exposures. The bioavailability of lead metal is low and acute lead exposure is not expected to result in acute toxicity effects.
(i) STOT-repeated exposure	Lead is a cumulative poison and may be absorbed into the body through ingestion or inhalation. Although inhalation and ingestion of lead in massive form are unlikely, poor hygiene practises may result in hand to mouth transfer which maybe significant over a prolonged period of time. Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haemotopoetic (blood) system, kidney function, reproductive function and the central nervous system.
(j) aspiration hazard	Lead metal is a solid and aspiration hazards are not expected to occur.

SECTION 12: Ecological Information

The environmental effects have been assessed using read-across from studies with similar inorganic lead compounds.

12.1 TOXICITY

Lead massive metal is not classified as hazardous to the aquatic environment, due to its low solubility and rapid removal from the water column. Inorganic lead compounds are considered to be acutely toxic in the environment and also to present a long term hazard to aquatic organisms. Toxicity will depend on the level of free lead ion in solution, which in turn is affected by pH, water hardness, salinity, etc. Lead toxicity is expected to be greater in softer waters.

12.2 PERSISTENCE AND DEGRADABILITY

Lead is rapidly removed from the water column and binds to suspended solid and sediment. Lead is an inorganic substance and does not degrade. It is persistent in the environment. Biodegradation is not relevant for inorganic substances.

12.3 BIOACCUMULATIVE POTENTIAL

Inorganic lead is considered to be bioaccumulating in the environment, and may accumulate in aquatic and terrestrial plants and animals.

12.4 MOBILITY IN SOIL

Lead metal has very low solubility and is expected to be adsorbed onto soils and sediments. Mobility is expected to be low.

12.5 RESULTS OF PBT AND VPVB ASSESSMENT

The PBT and vPvB criteria in Annex XIII of the REACH Regulation do not apply to inorganic substances.

12.6 OTHER ADVERSE EFFECTS

No information available.

SECTION 13: Disposal Considerations

13.1 WASTE TREATMENT METHODS

Should be recycled or disposed as hazardous waste. Do not allow product to reach sewage system. Different Pb-bearing wastes resulting from the processes described above are generated in the form of dross, flue dust and slag. These waste products are mainly recycled in the production process or landfilled.

European waste catalogue:

17 04 03 Lead

SECTION 14: Transport Information

Not classified as dangerous for transport.

14.1	UN Number	Not applicable
14.2	UN Proper shipping name	Not applicable
14.3	Transport hazard class(es)	Not applicable
14.4	Packing group	Not applicable
14.5	Environmental hazards	Not applicable
14.6	Special precautions for user	None

SECTION 15: Regulatory Information

15.1 SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE SUBSTANCE OR MIXTURE

15.2 CHEMICAL SAFETY ASSESSMENT

A Chemical Safety Assessment has been carried out for this product (available on request)

SECTION 16: Other Information

H Statements used in Section 3

Repr. 1A; H360FD: May damage fertility. May damage the unborn child.

Lact.; H362: May cause harm to breast-fed children.

STOT RE1; H372: Causes damage to organs through prolonged or repeated exposure.

Additional Safety Information for Handling Lead Sheet

Health and Safety Information on precautions to take when handling lead sheet is available from the European Lead Sheet Industry Association (ELSIA) at http://elsia.org.uk/product-stewardship/health-safety/

Revised Information

BLM_eSDS_003

Legal Statement

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create any warranty, express or implied. It is the responsibility of the user to determine the applicability of this information and the suitability of the material or product for any particular purpose.

List of Abbreviations

Acute Tox.: Acute Toxicity
CAS No: CAS Registry Numbers
Carc.: Carcinogenic
CLP: Classification, Labeling and Packaging of chemicals
DN(M)EL: Derived No-Effect Level or Derived Minimal Effect Level
DW: Dry weight
EC No: European Commission number
EC Name: European Commission Name
EHS: Environmentally hazardous substance
IARC: International Agency for Research on Cancer
IBC: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50: Lethal Dose, 50%
LD50: Lethal Dose, 50%
MARPOL 73/78: International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978 NOAEL: No observed adverse effect level.
NOEC: No Observed Effect Concentration
OELs: Occupational Exposure Limits
P Statement: Precautionary statement
PNEC: Predicted No-Effect Level
PBT: Persistent, bio-accumulative, toxic
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
Repr.: Reprotoxic
STOT: Single Target Organ Toxicity
SDS: Safety Data Sheet
vPvB: Very Toxic Very Bio-accumulative
WW: Wet weight

REFERENCES FROM SECTION 8.1.2

Acute Toxicity Data

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Madoni P, Davoli D, Gorbi G, Vescovi L (1996). Toxic effect of heavy metals on the activated sludge protozoan community. Water Research, 30 (1), 135-141. Testing laboratory: Istituto di Ecologica, Universita di Parma, Italy.

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Nguyen LTH, Roman Y, Zoetardt H, Janssen CR. (2003). Ecotoxicity of lead to the tubificid oligochaete Tubifex tubifex tested in natural freshwater sediments. Draft final report to the International Lead Zinc Research Organization. Laboratory of Environmental Toxicology and Aquatic Ecology, Ghent University, Belgium.

Wood C. M. & Nadella S. (2010). Effects of salinity and DOC on Pb Toxicity to Marine Organisms. Testing laboratory: Dept. of Biology, McMaster University, Hamilton, Canada L8S 4K1. Report date: 2010-01-01.