SAFETY DATA SHEET

Enviro Lead - Lead metal sheet

Lead Sheet is defined as an article according to REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) and as such is not in scope of the legal requirement to provide safety data sheets. This document has been authored in good faith to provide health and safety information to professional users.

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

1.1 Product identifier

Name of Substance: **Lead metal massives (general grade) [particle diameter ≥1mm]**

EC number:	**231-100-4**
EC name:	**Lead**
CAS number (EC inventory):	**7439-92-1**
Registration number	**01-2119513221-59-0077**

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

EnviroWales Limited
Plateaux 1 & 2
Rassau Industrial Estate
Ebbw Vale, Gwent
Tel: +44 (0)1495 356280
Fax. +44 (0)1495 353620
E mail: info@envirowales.com

1.4 Emergency telephone number

In case of emergency **Tel.** +44 (0)1495 356280

SECTION 2: Hazards Identification

2.1 Classification

Not applicable.

2.2 Label elements†

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
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SECTION 3: Composition

3.1 Substances

Not applicable

3.2 Mixtures

Lead sheet

Constituent	EC Number	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	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 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. Show this safety data sheet.

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, including any incompatibilities

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)

Construction industry.

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
EU	0.15 inhalable aerosol	
United Kingdom	0.15	
Ireland	0.15	
Austria	0.1 inhalable aerosol	0.4 inhalable aerosol
Belgium	0.15	
Denmark	0.05 inhalable aerosol	0.10 inhalable aerosol
Finland	0.1	
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	
Latvia	0.005	0.01 (15-min average)
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

Biological action levels, inorganic lead

EU	70 µg/dL
UK	60 µg/dL 30 µg/dL (for woman of reproductive capacity)
Ireland	70 µg/dL
France	40 µg/dL 30 µg/dL µg/dL (for woman of reproductive capacity)
Germany	40 µg/dL 10 µg/dL (for woman of reproductive capacity)
Spain	70 µg/dL

DN(M)ELs for workers:

Exposure pattern	Route	Descriptors	DNEL/DMEL (appropriate unit)	Most sensitive endpoint
Acute - systemic effects	Dermal (mg/kg bw /day)	NA	NA	NA
	Inhalation (mg/m^3)	NA	NA	NA
Acute - local effects	Dermal (mg/cm^2)	NA	NA	NA
	Inhalation (mg/m^3)	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/cm^2)	NA	NA	NA
	Inhalation (mg/m^3)	NA	NA	NA

8.1.2 Ecological toxicity values

The following Predicted No Effect Concentrations were used to determine the environmental risk of lead metal:

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
Terrestrial	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 flammable
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 oxidising 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 lead and 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.

(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; its toxicity is generally considered to be mediated through the lead cation. Although inhalation and ingestion of lead in massive form are unlikely, poor hygiene practices may result in hand to mouth transfer which may be significant over a prolonged period of time. Lead metal may also be used in such a way that inhalable particles may form, resulting in systemic uptake.

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. There is evidence that postnatal exposure to lead is associated with effects on neurobehavioral development in children.

(j) aspiration hazard

Lead metal is a solid and aspiration hazards are not expected to occur.

SECTION 12: Ecological Information

12.1 Toxicity

Lead metal in massive form is not classified as hazardous to the aquatic environment, due to its low solubility and rapid removal from the water column. Lead toxicity is expected to be greater in softer waters.

Reliable acute freshwater aquatic toxicity data (tests conducted with soluble lead salts; all toxicity data reported as dissolved lead):

Test Organisms:	Endpoint	Range of values
Fish: *Pimephales promelas, Oncorhynchus mykiss*	96h-LC_{50}	pH 5.5 – 6.5: 40.8 – 810.0 µg Pb/L pH >6.5 – 7.5: 52.0 – 3,598.0 µg Pb/L pH > 7.5 – 8.5: 113.8 – 3,249.0 µg Pb/L
Invertebrates: *Daphnia magna, Ceriodaphnia dubia*	48h-LC_{50}	pH 5.5 – 6.5: 73.6 – 655.6 µg Pb/L pH >6.5 – 7.5: 28.8 – 1,179.6 µg Pb/L pH > 7.5 – 8.5: 26.4 – 3,115.8 µg Pb/L
Algae: *Pseudokirchneriella subcapitata, Chlorella kesslerii*	72h-ErC_{50} (growth rate)	pH 5.5 – 6.5: 72.0 – 388.0 µg Pb/L pH >6.5 – 7.5: 26.6 – 79.5 µg Pb/L pH > 7.5 – 8.5: 20.5 – 49.6 µg Pb/L

Tests were conducted according to international accepted test guidelines or scientifically acceptable methods.

Reliable chronic toxicity test results (tests conducted with soluble lead salts; all toxicity data reported as dissolved lead):

Test organisms	Range of values (EC_{10}, NOEC)
Aquatic freshwater toxicity data	
Fish: *Oncorhynchus mykiss, Salmo salar, Pimephales promelas, Salvelinus fontinalis, Ictalurus punctatus, Lepomis macrochirus, Salvelinus namaycush, Cyprinus carpio, Acipenser sinensis*	17.8 – 1,558.6 µg Pb/L
Invertebrates: *Hyalella azteca, Lymnaea palustris, Ceriodaphnia dubia, Lymnaea stagnalis, Philodina rapida, Daphnia magna, Alona rectangular, Diaphanosoma birgei, Chironomus tentans, Brachionus calyciflorus, Chironomus riparius, Baetis tricaudatus.*	1.7 – 963.0 µg Pb/L
Algae: *Pseudokirchneriella subcapitata, Chlorella kesslerii, Chlamydomonas reinhardtii.*	6.1 – 190.0 µg Pb/L
Higher plants: *Lemna minor*	85.0 – 1,025.0 µg Pb/L
The most sensitive toxicity endpoint was 1.7 µg Pb/L for *C. dubia* (reproduction) and *L. stagnalis* (growth). Symptoms of toxicity were effects on survival, growth, reproduction, hatching, (population) growth rate and malformation during development. Toxicity of dissolved lead in freshwater is dependent on the physico-chemistry of the freshwater (mainly dissolved organic carbon, pH, hardness).	
Aquatic marine toxicity data	
Fish: *Cyprinodon variegatus*	229.6 – 437.0 µg Pb/L
Invertebrates: *Mytilus trossolus, Americamysis bahia, Mytilus*	9.2 – 1,409.6 µg Pb/L

galloprovincialis, Neanthes arenaceodentata, Strongylocentrotus purpuratus, Paracentrotus lividus, Dendraster excentricus, Tisbe battagliai, Crassotrea gigas	
Algae: *Skeletonema costatum, Phaeodactylum tricornutum, Dunaliella tertiolecta.*	52.9 – 1,234.0 µg Pb/L
Higher plants*: Champia parvula*	11.9 µg Pb/L
The most sensitive toxicity endpoint was 9.2 µg Pb/L for *M. trossulus* (malformation). Symptoms of toxicity include effects on survival, growth, growth rate, reproduction and malformation during development	
Sediment freshwater toxicity data	
Invertebrates: *Tubifex tubifex, Ephoron virgo, Hyalella azteca, Gammarus pulex, Lumbriculus variegatus, Hexagenia limbata, Chironomus tentans*	573.0 – 3,390.0 mg Pb/kg dw
The most sensitive toxicity endpoint was 573.0 mg Pb/kg dw for *T. tubifex* (reproduction). Symptoms of toxicity include effects on survival, growth, and reproduction. Toxicity of lead in freshwater sediment is dependent on the acid volatile sulphide content (AVS) of the freshwater sediment.	
Sediment marine toxicity data	
Invertebrates: *Neanthes arenaceodentata, Leptocheirus plumulosus*	680.0 – 1,291.0 mg Pb/kg dw
The most sensitive toxicity endpoint was 680.0 mg Pb/kg dw for *N. arenaceodentata* (growth). Symptoms of toxicity include effects on survival, growth, and reproduction	
Terrestrial toxicity data (values were determined in different topsoils with contrasting properties and spiked with soluble lead salts):	
Invertebrates: *Folsomia candida*, *Proisotoma minuta, Sinella curviseta, Eisenia fetida, Eisenia andrei, Dendrobaena rubida, Lumbricus rubellus, Aporrectodea caliginosa*	34.0 – 2,445.0 mg Pb/kg dw
Plants: *Hordeum vulgare*, *Zea mays*, *Echinochloa crus-galli*, *Lolium perenne*, *Sorgum bicolor*, *Triticum aestivum*, *Oryza sativa* and *Avena sativa, Raphanus sativus, Lycopersicon esculentum, Lactuca sativa, Cucumis sativus, Picea rubens, Pinus taeda*	57.0 – 6,774.0 mg Pb/kg dw
Micro-organisms: denitrification, N-mineralization, nitrification, basal respiration, substrate-induced respiration	97.0 – 7,880.0 mg Pb/kg dw
The most sensitive toxicity endpoint was 34.0 mg Pb/kg for *F. candida* (reproduction). Symptoms of toxicity include effects on survival, growth, hatching, yield, reproduction, and microbe mediated processes. Toxicity of lead in soils is dependent on 1) the ageing processes and 2) the Cation Exchange Capacity (eCEC) of the soil.	

Tests were conducted according to international accepted test guidelines or scientifically acceptable methods.

Toxicity data for micro-organisms (for STP) (tests conducted with soluble lead salts)*:*

Test Organisms:	Effect	Range of values (EC_{10}, NOEC)
Bacterial populations	Respiration	1.06 – 2.92 mg Pb/L
	Ammonia uptake rate	2.79 – 9.59 mg Pb/L
Protozoan community	Mortality	1.0 – 7.0 mg Pb/L

Tests were conducted according to international accepted test guidelines or scientifically acceptable methods.

For an overview of PNECs for the different compartments, refer to Section 8.1.2.

12.2 Persistence and degradability

Lead is naturally occurring and ubiquitous in the environment. Lead is obviously persistent in the sense that it does not degrade to CO_2, water, and other elements of less environmental concern. In the water compartment, lead is rapidly and strongly bound to the suspended solids of the water column. This binding and subsequent settling to the sediment allows for rapid metal removal of lead from the water column. Insignificant remobilisation of lead from sediment is expected.

12.3 Bio-accumulative potential

Available BCF/BAF data for the aquatic environment show a distinct inverse relationship with the exposure concentration demonstrating that lead is homeostatically regulated by aquatic organisms. A median BAF within environmentally relevant concentrations of 1,552 L/kg_{ww} is observed in aquatic organisms. In the soil compartment no bioaccumulation is expected. The BAFs are not significantly affected by the Pb concentration in the soil. A median BAF value for soil dwelling organisms is 0.10 kg_{dw}/kg_{ww}. Available information on transfer of Pb through the food chain indicates that lead does not biomagnify in aquatic or terrestrial food chains.

12.4 Mobility in soil

Lead metal is sparingly soluble in water and with its relatively high Kd value, is expected to be absorbed onto soils and sediments. Typical log Kd-values of 5.2, 5.7 and 3.8 have been determined for freshwater sediment, marine sediment and soil, respectively.

12.5 Results of PBT and vPvB assessment

The PBT and vPvB criteria of Annex XIII to the Regulation do not apply to inorganic substances, such as lead monoxide The criterion for persistence is not applicable for inorganic Pb. Under conditions of a standard EUSES lake, Pb meets the criteria for rapid removal from the water column (> 70% in 28 days). Bioaccumulation criterion is not applicable to inorganic substances such as Pb. However, Pb is considered to be toxic, since the most sensitive NOECs, HC5-50 and PNEC values are lower than 10 µg Pb/L.

12.6 Other adverse effects
Lead metal is not expected to contribute to ozone depletion, ozone formation, global warming or acidification.

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* Construction and demolition waste (lead)
19 12 03* Mechanical treatment of waste (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	
14.7	Transport in bulk according to Annex II of MARPOL and the IBC Code		Not transported in bulk
14.8	Other information - Segregation Groups 7 and 9 (Voluntary application)		

SECTION 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
Control of Lead at Work Regulations 2002
Restrictions on use: This substance is subject to REACH restrictions according to:

- REACH Annex XVII, Entry No. 63

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/

Revision information:
Revision 6

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
LC_{50}: Lethal Dose, 50%
LD_{50}: Lethal Dose, 50%
MARPOL: 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:

Diamond JM, Koplish DE, McMahon III J and Rost R. (1997). Evaluation of the water-effect ratio procedure for metals in a riverine system. Environmental Toxicology and Chemistry, Vol 16, No 3, pp. 509-520, 1997.

Grosell M, Gerdes R, Brix KV (2006). Influence of Ca, humic acid and pH on lead accumulation and toxicity in the fathead minnow during prolonged water-borne lead exposure. Comparative Biochemistry and Physiology, Part C 143 (2006) 473-483.

Grosell M (2010b). The effects of pH on waterborne lead toxicity in the fathead minnow, Pimephales promelas - 24 February 2010. Testing laboratory: University of Miami, USA.

Davies PH, JP Goettl, JR Sinley and NF Smith (1976). Acute and chronic toxicity of lead to rainbow trout Salmo Gairdneri, in hard and soft water. Water Research, Vol 10, pp 199-206.

Roger JT, Richards JG, Wood CM (2003). Ionoregulatory disruption as the acute toxic mechanism for lead in the rainbow trout (Oncorhynchus mykiss). Aquatic Toxicology 64 (2003) 215-234.

Schubauer-Berigan MK et al. (1993b). pH-dependent toxicity of Cd, Cu, Ni, Pb and Zn to Ceriodaphnia dubia, Pimephales promelas, Hyalella azteca and Lumbriculus variegatus. Environmental Toxicology and Chemistry, Vol 12, pp. 1261-1266, 1993.

Spehar RL, Fiandt JT. (1986). Acute and chronic effects of water quality criteria-based metal mixtures on three aquatic species. Environ Toxicol Chem 5:917-931.

Chronic Toxicity Data:

Aery N C and Jagetiya B L (1997). Relative toxicity of Cadmium, Lead and Zinc on Barley. Commun. Soil Sci. Plant Anal., 28(11&12), 949-960. Testing laboratory: Dept. of Botany, University College of Science, M. L. Sukhaida University, Udaipur, India.

Bengtsson G., Gunnarsson T. and Rundgren S. (1986). Effects of metal pollution on the earthworm Dendrobaena Rubida (Sav.) in Acified soils. Water, Air and Soil Pollution 28 (1986) 361-383. Testing laboratory: University of Lund. Ecology Building, Helgonavagen, Sweden.

Besser JM, Brumbaugh WG, Brunson EL and Ingersoll CG (2005). Acute and chronic toxicity of lead in water and diet to the amphipod Hyalella azteca. Environmental Toxicology and Chemistry, Vol. 24, No. 7, pp. 1807-1815, 2005.

Chang F-H and Broadbent F E (1981). Influence of trace metals on carbon dioxide evolution from a yolo soil. Soil Science, vol 132 No 6, december 1981.

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