1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

1.1 Product identifier

Product name **LEAD**
Synonym(s) EMBEDDED LEAD

1.2 Uses and uses advised against

Use(s) Lead contained in manufactured articles.

1.3 Details of the supplier of the safety data sheet

Supplier name **DEFENCE MATERIEL ORGANISATION**
Address Russell Offices, ACT, Australia, 2600
Telephone (02) 6266 7054 (Mon-Fri 0800-1700)
Fax (02) 6266 7646
Email dmo.hazchem@defence.gov.au
Website Not supplied

1.4 Emergency telephone number(s)

Emergency 13 11 26 (24Hrs)

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

GHS Classification(s) Acute Toxicity: Oral: Category 4
Acute Toxicity: Inhalation: Category 4
Toxic to Reproduction: Category 1A
Specific Target Organ Systemic Toxicity (Repeated Exposure): Category 2
Aquatic Toxicity (Chronic): Category 1

2.2 Label elements

Signal word **DANGER**

Pictograms

Hazard statement(s)

H302 Harmful if swallowed.
H332 Harmful if inhaled.
H360 May damage fertility or the unborn child.
H373 May cause damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

Prevention statement(s)

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/vapours/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment. This statement does not apply where this is the intended use.
P281 Use personal protective equipment as required.

Response statement(s)

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

Product name **LEAD**

P308 + P313	IF exposed or concerned: Get medical advice/ attention.
P314	Get medical advice/attention if you feel unwell.
P330	Rinse mouth.
P391	Collect spillage.

Storage statement(s)

P405	Store locked up.

Disposal statement(s)

P501	Dispose of contents/container in accordance with relevant regulations.

2.3 Other Hazards

No information provided.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substances / Mixtures

Ingredient	CAS number	EC number	Content
LEAD	7439-92-1	231-100-4	>99%

4. FIRST AID MEASURES

4.1 Description of first aid measures

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.

Skin If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water. Continue flushing with water until advised to stop by a Poisons Information Centre or a doctor.

Ingestion For advice, contact a Poison Information Centre on 13 11 26 (Australia Wide) or a doctor (at once). If swallowed, do not induce vomiting. Rinse mouth with water.

First aid facilities No information provided.

4.2 Most important symptoms and effects, both acute and delayed

Lead is a cumulative poison and may cause kidney, central nervous system and blood damage with chronic exposure.

4.3 Immediate medical attention and special treatment needed

Treat symptomatically.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Use an extinguishing agent suitable for the surrounding fire.

5.2 Special hazards arising from the substance or mixture

Non flammable. May evolve toxic gases (lead oxides) when heated to decomposition.

5.3 Advice for firefighters

Treat as per requirements for surrounding fires. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Use waterfog to cool intact containers and nearby storage areas.

5.4 Hazchem code

None allocated

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in section 8 of the SDS. Clear area of all unprotected personnel. Contact emergency services where appropriate.

6.2 Environmental precautions

Prevent product from entering drains and waterways.

6.3 Methods of cleaning up

Contain spillage, then collect and place in suitable containers for reuse, treatment and/or disposal. Avoid generating dust.

6.4 Reference to other sections

See Sections 8 and 13 for exposure controls and disposal.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, dry, well ventilated area, removed from incompatible substances and foodstuffs. Ensure containers are adequately labelled and tightly closed when not in use.

7.3 Specific end use(s)

No information provided.

8. EXPOSURE CONTROLS/ PERSONAL PROTECTION

8.1 Control parameters

Exposure standards

Substance	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Lead, inorganic dusts & fumes (as Pb)	SWA (AUS)	--	0.15	--	--

Biological limits

Ingredient	Reference	Determinant	Sampling time	BEI
LEAD	ACGIH BEI	Lead in blood	Not critical	30 ug/100 ml

8.2 Exposure controls

Engineering Controls Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain dust levels below the recommended exposure standard.

PPE

Eye/Face Wear dust-proof goggles.

Hand Wear PVC or rubber gloves.

Body Wear coveralls.

Respiratory Where an inhalation risk exists, wear a Class P2 (Particulate) respirator. At high dust levels, wear a Powered Air Purifying Respirator (PAPR) with Class P3 (Particulate) filter or an Air-line respirator.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance SOFT GREY SOLID
Odour SLIGHT ODOUR
Odour Threshold NOT AVAILABLE

Product name **LEAD**

pH	NOT AVAILABLE
Melting Point	327.4°C
Boiling Point	NOT AVAILABLE
Flash Point	NOT RELEVANT
Evaporation Rate	NOT AVAILABLE
Flammability	NON FLAMMABLE
Upper Explosion Limit	NOT RELEVANT
Lower Explosion Limit	NOT RELEVANT
Vapour Pressure	NOT AVAILABLE
Vapour Density	NOT AVAILABLE
Solubility (water)	INSOLUBLE
Partition Coefficient	NOT AVAILABLE
Autoignition Temperature	NOT AVAILABLE
Decomposition Temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Explosive Properties	NOT AVAILABLE
Oxidising Properties	NOT AVAILABLE
Specific Gravity	11.3

9.2 Other information

No information provided.

10. STABILITY AND REACTIVITY

10.1 Reactivity

Carefully review all information in sections 10.2 to 10.6.

10.2 Chemical stability

Stable under recommended conditions of storage.

10.3 Possibility of hazardous reactions

Polymerization will not occur.

10.4 Conditions to avoid

Avoid contact with incompatible substances.

10.5 Incompatible materials

Incompatible with oxidising agents (e.g. hypochlorites) and acids (e.g. nitric acid). Store removed from hydrogen peroxide and active metals (eg. sodium).

10.6 Hazardous decomposition products

May evolve toxic gases (lead oxides) when heated to decomposition.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Health hazard summary	Harmful. Use safe work practices to avoid dust inhalation and hand to mouth transference. Lead is a cumulative poison, and symptoms are often delayed. Chronic exposure may result in blood, kidney and central nervous system/brain damage. Lead compounds (inorganic) are classified as probably carcinogenic to humans (IARC Group 2A). Due to the product form (solid), the potential for an inhalation hazard is reduced. Early symptoms of lead intoxication include persistent metallic taste, anorexia, constipation and severe abdominal pain. Continued exposures result in muscle weakness and fatigue, degenerative changes in motor neurons, pallor of face, anemia and liver damage, headache and insomnia. Causes chromosomal aberrations.
Eye	Due to product form and nature of use, the potential for exposure is reduced. Product may only present a hazard if dust is generated. Contact may result in mechanical irritation.

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Inhalation	Due to product form and nature of use, the potential for exposure is reduced. An inhalation hazard is not anticipated unless cut, drilled or sanded with dust generation, which may result in severe headache, abdominal muscle pain, irritability, nausea and constipation. Chronic exposure may result in anaemia, weight loss, mood changes, memory loss, kidney and CNS damage.
Skin	Irritant. Contact may result in irritation, redness, rash and dermatitis. Inorganic lead is poorly absorbed through the skin.
Ingestion	Harmful. Ingestion via hand to mouth transfer may result in lead poisoning. Lead is a cumulative poison and may cause kidney, central nervous system and blood damage with chronic exposure.
Toxicity data	LEAD (7439-92-1) LD50 (Ingestion): 50 - 600 mg/kg (calf)

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Lead is potentially toxic to all aquatic organisms, with organic lead compounds tending to be more toxic than inorganic lead compounds. Lead becomes more toxic to fish as dissolved oxygen levels decrease. Toxicity to aquatic organisms increases in acidic or soft water.

12.2 Persistence and degradability

Inorganic lead does not degrade.

12.3 Bioaccumulative potential

Lead bioconcentrates and bioaccumulates in both aquatic and terrestrial organisms.

12.4 Mobility in soil

Lead is sparingly soluble and is expected to be adsorbed onto soils and sediments. Mobility is expected to be low.

12.5 Results of PBT and vPvB assessment

No information provided.

12.6 Other adverse effects

Soluble lead compounds are more environmentally hazardous than insoluble compounds. SOIL: Lead may accumulate in the soil as an insoluble salt and not leach to water. WATER: Highly toxic to aquatic organisms (LC50 for juvenile rainbow trout: 0.14 ppm/96 hours). Toxic to livestock above 0.05 ppm and to irrigable plants above 0.005 ppm. May bioconcentrate.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal	Environmental pollutant. Convert small quantities to insoluble sulphide. Convert to nitrates with a minimum of nitric acid. Evaporate in a fume cupboard to a thin paste and saturate with hydrogen sulphide. Filter precipitate and dispose of to hazardous waste landfill. Destroy excess sulphide with sodium hypochlorite. Neutralise solution before flushing to sewer. Contact the manufacturer/supplier for additional information (if required).
Legislation	Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE, IMDG OR IATA

	Land Transport (ADG)	Sea Transport (IMDG/IMO)	Air Transport (IATA/ICAO)
14.1 UN number	None Allocated	None Allocated	None Allocated
14.2 UN proper shipping name	None Allocated	None Allocated	None Allocated

Product name **LEAD**

14.3 Transport hazard classes			
DG Class	None Allocated	None Allocated	None Allocated
Subsidiary risk(s)	None Allocated	None Allocated	None Allocated
14.4 Packing group	None Allocated	None Allocated	None Allocated
14.5 Environmental hazards		None Allocated	
14.6 Special precautions for user			
Hazchem Code	None Allocated		

15. REGULATORY INFORMATION

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

Poison schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications
N - Dangerous for the environment
Repr. - Reproductive toxin
Xn - Harmful

Risk phrases

R20/22:	Harmful by inhalation and if swallowed.
R33:	Danger of cumulative effects.
R50/53:	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R61:	May cause harm to the unborn child.
R62:	Possible risk of impaired fertility.

Safety phrases

S45:	In case of accident or if you feel unwell seek medical advice immediately (show the label where possible).
S53:	Avoid exposure - obtain special instructions before use.
S60:	This material and its container must be disposed of as hazardous waste.
S61:	Avoid release to the environment. Refer to special instructions/safety data sheets.

Inventory listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

15.2 Chemical safety assessment

No information provided.

16. OTHER INFORMATION

Additional information LEAD: Lead compounds are concentrated in the food chain. Biological half-life for inorganic lead in human bones: 10 yrs. Lake sediment microorganisms are able to directly methylate certain inorganic compounds. Under specific conditions, dissolution due to anaerobic microbial action may be significant in subsurface environments. Aquatic plants and animals have been shown to bioconcentrate lead at levels greater than in water, and sometimes similar to those in sediments. Lead levels decrease with increasing trophic (nourishment) levels within aquatic systems.

EXPOSURE STANDARDS - TIME WEIGHTED AVERAGES: Exposure standards are established on the premise of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced: Strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

IARC GROUP 2A - PROBABLE HUMAN CARCINOGEN. This product contains an ingredient which has been classified by the International Agency for Research into Cancer (IARC) as a probable human carcinogen and whose use should be strictly monitored and controlled.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used

and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

COLOUR RATING SYSTEM: RMT has assigned all ChemAlert reports a colour rating of Green, Amber or Red for the sole purpose of providing users with a quick and easy means of determining the hazardous nature of a product. Safe handling recommendations are provided in all ChemAlert reports so as to clearly identify how users can control the hazards and thereby reduce the risk (or likelihood) of adverse effects. As a general guideline, a Green colour rating indicates a low hazard, an Amber colour rating indicates a moderate hazard and a Red colour rating indicates a high hazard.

While all due care has been taken by RMT in the preparation of the Colour Rating System, it is intended as a guide only and RMT does not provide any warranty in relation to the accuracy of the Colour Rating System. As far as is lawfully possible, RMT accepts no liability or responsibility whatsoever for the actions or omissions of any person in reliance on the Colour Rating System.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
EMS	Emergency Schedules (Emergency Procedures for Ships Carrying Dangerous Goods)
GHS	Globally Harmonized System
GTEPG	Group Text Emergency Procedure Guide
IARC	International Agency for Research on Cancer
LC50	Lethal Concentration, 50% / Median Lethal Concentration
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m³	Milligrams per Cubic Metre
OEL	Occupational Exposure Limit
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL	Short-Term Exposure Limit
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
SWA	Safe Work Australia
TLV	Threshold Limit Value
TWA	Time Weighted Average

Report Status

This ChemAlert report has been independently compiled by RMT's scientific department utilising the original Safety Data Sheet ('SDS') for the product provided to RMT by the manufacturer. The information is based on the latest chemical and toxicological research and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. It is an independent collation by RMT of information obtained from the original SDS for this product. Its content has not been authorised or verified by the manufacturer / distributor of the chemical to which it relates.

This ChemAlert report does not constitute the manufacturer's original SDS and is not intended to be a replacement for same. It is provided to subscribers of ChemAlert as a reference tool only, is not all-inclusive and does not represent any guarantee as to the properties of the product. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this ChemAlert report, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this ChemAlert report.

Product name **LEAD**

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End of Report