1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	**Lead (II) nitrate, Enriched Lead**
Synonyms	Lead (II) nitrate (1:1); lead dinitrate; nitric acid, lead (2+)
Chemical Formula	$Pb(NO_3)_2$
Molecular Weight	331.23
CAS No.	10099-74-8
Supplier Address*	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Telephone	+1 415-440-4433
Fax	+1 415-563-4433
Emergency Phone Number (both supplier and manufacturer)	Infotrac/ +1 800-535-5053 *May include subsidiaries or affiliate companies/divisions
Email	iusa@isoflex.com
Website	www.isoflex.com
Preparation Information	ISOFLEX USA Product Safety +1 415-440-4433

2. HAZARDS IDENTIFICATION

Emergency Overview Poison! Danger! Strong oxidizer. Contact with other material may cause fire. May be fatal if swallowed or inhaled. Causes irritation to skin, eyes and respiratory tract. Neurotoxin. Affects the gum tissue, central nervous system, kidneys, blood and reproductive system.

NFPA Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 **Flammability = 0** **Reactivity = 2**

HMIS Ratings: (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health Hazard = 2 **Flammability = 0** **Physical Hazard = 2**

HEALTH HAZARD	2
FLAMMABILITY	0
PHYSICAL HAZARD	2
PERSONAL PROTECTION	

Potential Health Effects

Inhalation	Lead can be absorbed through the respiratory system. Local irritation of bronchia and lungs can occur and, in cases of acute exposure, symptoms such as metallic taste, chest and abdominal pain, and increased lead blood levels may follow. See also Ingestion.
Ingestion	POISON! The symptoms of lead poisoning include abdominal pain and spasms, nausea, vomiting, headache. Acute poisoning can lead to muscle weakness, “lead line” on the gums, metallic taste, definite loss of appetite, insomnia, dizziness, high lead levels in blood and urine with shock, coma and death in extreme cases. Nitrates entering the body by any route (ingestion, inhalation, or absorption) can cause headache, vomiting, dizziness, cyanosis, decreased blood pressure, and possibly respiratory paralysis.
Skin Contact	Lead and lead compounds may be absorbed through the skin on prolonged exposure; symptoms of lead poisoning described for ingestion exposure may occur. Contact over short periods may cause local irritation, redness and pain.
Eye Contact	Absorption can occur through eye tissues, but the more common hazards are local irritation or abrasion.
Chronic Exposure	Lead is a cumulative poison, and exposure even to small amounts can raise the body’s content to toxic levels. The symptoms of chronic exposure are like those of ingestion poisoning: restlessness, irritability, visual disturbances, hypertension and gray facial color may also be noted.
Aggravation of Pre-existing Conditions	Persons with pre-existing kidney, nerve or circulatory disorders or with skin or eye problems may be more susceptible to the effects of this substance.

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3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name:	Lead (II) Nitrate
CAS No.:	10099-74-8
Chemical Formula:	$Pb(NO_3)_2$
Molecular Weight:	331.23

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4. FIRST AID MEASURES

Inhalation Exposure	Remove patient to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Oral Exposure	Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Dermal Exposure	Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.
Eye Exposure	Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. FIREFIGHTING MEASURES

Fire	Not combustible but a hazardous oxidizing material. In contact with easily oxidizable substances it may cause ignition, violent combustion or explosion. Increases the flammability of combustible materials.
Explosion	Strong oxidants may explode when shocked, or if exposed to heat, flame, or friction. Also may act as initiation source for dust or vapor explosions.
Suitable Extinguishing Media	Use any means suitable for extinguishing surrounding fire. Do not allow water runoff to enter sewers or waterways.
Special Information	In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure-demand or other positive-pressure mode. Lead nitrate can decompose to form toxic oxides of nitrogen and lead in fire situations.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Avoid dust formation. Avoid breathing vapors, mist or gas.
Environmental Precautions	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Methods for Cleaning Up	Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. HANDLING AND STORAGE

Handling	Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition. NO SMOKING. Keep away from heat and sources of ignition.
Storage	Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Isolate from incompatible substances. Areas in which exposure to lead metal or lead compounds may occur should be identified by signs or appropriate means, and access to the area should be limited to authorized persons. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Airborne Exposure Limits:

For lead, metal and inorganic dusts and fumes, as Pb:

OSHA Permissible: 0.05 mg/m^3 (TWA)

Exposure Limit (PEL)

For lead, elemental and inorganic compounds, as Pb:
ACGIH Threshold: 0.05 mg/m^3 (TWA), A3 animal carcinogen
Limit Value (TLV)
ACGIH Biological: 30 ug/100ml, notation B (see actual Indices for more *Exposure Indices (BEI)* information).

For lead, inorganic:
NIOSH-Recommended Exposure Limit (REL): 0.1 mg/m^3 (TWA)

Personal Protective Equipment

Ventilation System	A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH-Approved)	If the exposure limit is exceeded and engineering controls are not feasible, a half-face high efficiency particulate respirator (NIOSH-type N100 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece high-efficiency particulate respirator (NIOSH-type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH-type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
Eye Protection	Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye-wash fountain and quick-drench facilities in work area.
Other Control Measures	Eating, drinking and smoking should not be permitted in areas where solids or liquids containing lead compounds are handled, processed or stored. See OSHA substance-specific standard for more information on personal protective equipment, engineering and work practice controls, medical surveillance, record keeping, and reporting requirements. (29 CFR 1910.1025).

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	Crystals
Color	Colorless
Odor	Odorless

Safety Data

Solubility: 50 gm in 100 gm of water	Specific Gravity: 4.53
pH: 3.0 - 4.0 (20% aqueous solution)	% Volatiles by volume @ 21 °C (70 °F): 0
Boiling Point: N/A	Melting Point: 470 °C (878 °F)
Vapor Density (Air = 1): 11.0	Vapor Pressure (mm Hg): N/A

10. STABILITY AND REACTIVITY

Stability	Stable under ordinary conditions of use and storage
Hazardous Decomposition Products	Toxic metal fumes may form when heated to decomposition.
Hazardous Polymerization	Will not occur
Incompatible Materials	Ammonium thiocyanate, powdered carbon, lead hypophosphite, hydrogen peroxide, combustibles and organic materials
Conditions to Avoid	Heat, flames, ignition sources and incompatibles

11. TOXICOLOGICAL INFORMATION

Toxicological Data	Investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity	Lead and other smelter emissions are human reproductive hazards. (*Chemical Council on Environmental Quality; Chemical Hazards to Human Reproduction*, 1981).
Carcinogenicity	For lead and inorganic lead compounds: EPA / IRIS classification: Group B2 - Probable human carcinogen, sufficient animal evidence.

NTP Carcinogen

Ingredient	Lead Nitrate
Known	No
Anticipated	No
IARC Category	2B

12. ECOLOGICAL INFORMATION

Environmental Fate	For lead and inorganic lead compounds: When released into the soil, this material is not expected to leach into groundwater. This material may bioaccumulate to some extent.
Environmental Toxicity	No information found

Toxicity

Toxicity to Fish	LC50 - *Oncorhynchus mykiss* (rainbow trout) - 1.5 mg/l - 96.0 h LC50 - *Cyprinus carpio* (Carp) - 0.4 - 1.3 mg/l - 96.0 h
Toxicity to Daphnia and other Aquatic Invertebrates	EC50 - *Daphnia magna* (Water flea) - 0.5 - 2.0 mg/l - 48 h
Persistence and Degradability	No data available
Bioaccumulative Potential	No data available
Mobility in Soil	No data available
PBT and vPvB Assessment	No data available
Other Adverse Effects	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life, with long-lasting effects. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Product	Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA-approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations.
Contaminated Packaging	Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name	RQ, Lead Nitrate
Hazard Class	5.1, 6.1
UN/NA	UN1469
Packing Group	II
Information Reported for Product/Size	100 KG

International (Water, I.M.O.)

Proper Shipping Name	LEAD NITRATE
Hazard Class	5.1, 6.1
UN/NA	UN1469
Packing Group	II
Information Reported for Product/Size	100 KG

15. REGULATORY INFORMATION

Labelling According to EC Directives

EC Label

Hazard Symbols O - Oxidizing; T - Toxic; N - Dangerous for the environment

R-phrase(s)

R61 - May cause harm to the unborn child.

R8 - Contact with combustible material may cause fire.

R20/22 - Also harmful by inhalation and if swallowed.

R33 - Danger of cumulative effects.

R62 - Possible risk of impaired fertility.

R50/53 - Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s)

S53 - Avoid exposure - obtain special instructions before use.

S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label if possible).

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. Restricted to professional users.

OSHA Hazards	**O**xidizer, Carcinogen, Target Organ Effect, Toxic by inhalation; Harmful by ingestion; Irritant, Teratogen
SARA 302 Components	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components	The following components are subject to reporting levels established by SARA Title III, Section 313: Lead nitrate / *CAS No.* 10099-74-8 / *Revision Date* 1993-04-24
SARA 311/312 Hazards	Reactivity Hazard, Acute Health Hazard, Chronic Health Hazard
Massachusetts Right to Know Components	*Lead nitrate / CAS No.* 10099-74-8 / *Revision Date* 1993-04-24
Pennsylvania Right to Know Components	*Lead nitrate / CAS No.* 10099-74-8 / *Revision Date* 1993-04-24
New Jersey Right to Know Components	*Lead nitrate / CAS No.* 10099-74-8 / *Revision Date* 1993-04-24
California Prop. 65 Components	WARNING! This product contains a chemical known to the State of California to cause cancer: *Lead nitrate / CAS No.* 10099-74-8 / *Revision Date* 1993-04-24

16. OTHER INFORMATION

Prepared By	ISOFLEX USA PO Box 29475 San Francisco CA 94129 United States
Issuing Date	January 16, 2015
Revision Date	August 1, 2021
Revision Number	3
Revision Note	Required review and update

ISOFLEX USA's Commonly Used Abbreviations and Acronyms*

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	European Agreement Concerning the International Carriage of Dangerous Goods by Road
AICS	Australian Inventory of Chemical Substances
ALARA	As Low As Is Reasonably Achievable
AMU	Atomic Mass Unit
ANSI	American National Standards Institute
BLS	Basic Life Support
BOD5	Biochemical Oxygen Demand
CAM	Continuous Air Monitor
CAS	Chemical Abstracts Service (division of the American Chemical Society)
CEN	European Committee for Standardization
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLP	Classification, Labelling and Packaging (European Union)
COD	Chemical Oxygen Demand
CPR	Controlled Products Regulations (Canada)
CWA	Clean Water Act (USA)
DAC	Derived Air Concentration (USA)
DOE	United States Department of Energy (USA)
DOT	United States Department of Transportation (USA)
DSL	Domestic Substances List (Canada)

EC50	Half Maximal Effective Concentration
ECL	Korean Existing Chemicals List
EINECS	European Inventory of Existing Commercial Chemical Substances
EHS	Environmentally Hazardous Substance
ELINCS	European List of Notified Chemical Substances
EMS	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency (USA)
EPCRA	Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986
GHS	Globally Harmonized System
HMIS	Hazardous Materials Identification System (USA)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Containers
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life or Health
IECSC	Inventory of Existing Chemical Substances Produced or Imported in China
IMDG	International Maritime Code for Dangerous Goods
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
LDLO	Lethal Dose Low
LOEC	Lowest-Observed-Effective Concentration
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety and Health Administration (USA)
NCRP	National Council on Radiation Protection & Measurements (USA)
NDSL	Non-Domestic Substances List (Canada)
NFPA	National Fire Protection Association (USA)
NIOSH	National Institute for Occupational Safety and Health (USA)
NOEC	No Observed Effect Concentration
N.O.S.	Not Otherwise Specified
NRC	Nuclear Regulatory Commission (USA)
NTP	National Toxicology Program (USA)
OSHA	Occupational Safety and Health Administration (USA)
PBT	Persistent Bioaccumulative and Toxic Chemical
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory of Chemicals and Chemical Substances
PIH	Poisonous by Inhalation Hazard
RCRA	Resource Conservation and Recovery Act (USA)
RCT	Radiation Control Technician
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals (Europe)
RID	Regulations Concerning the International Transport of Dangerous Goods by Rail
RQ	Reportable Quantity
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act (USA)
SNUR	Significant New Use Rule (TSCA)
TDG	Transportation of Dangerous Goods (Canada)
TIH	Toxic by Inhalation Hazard
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average
UN	United Nations (Number)
VOC	Volatile Organic Compound
vPvB	Very Persistent Very Bioaccumulative Chemical
WGK	Wassergefährdungsklassen (Germany: Water Hazard Classes)
WHMIS	Workplace Hazardous Materials Information System

*One or more of the above-listed items may not appear in this document.

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