Section 1. Identification

Product Identity Trade Names and Synonyms: Product Use

Restrictions on Use

Manufacturer/Supplier Name

Red Dog Zinc Concentrate None Zinc concentrate is used in the production of zinc metal and zinc alloys. None

Teck Alaska Incorporated Red Dog Mine P.O. Box 1230 Kotzebue, Alaska 99752

24-hour Emergency Telephone No.

+1 250 425 4214

Section 2. Hazard(s) identification

Classification of the substance or mixture under US OSHA's Hazard Communication Standard (1910.1200) revised 2024 and Canadian Hazardous Products Regulations (SOR/2015-17) (GHS revision 7)

Carcinogen, category 1A;H350 Reproductive toxicity, category 1A;H360 Specific target organ toxicity, repeated exposure category 2;H373 Aquatic toxicity (acute), category 2;H401 Aquatic toxicity (chronic), category 2;H401 Carcinogen, category 1A;H350 Reproductive toxicity, category 1A;H360 Label elements May cause cancer.

May damage fertility or the unborn child.

May cause damage to organs through prolonged or repeated exposure. Specific Target Organs: (lungs)

Toxic to aquatic life.

Toxic to aquatic life with long lasting effects

May cause cancer.

May damage fertility or the unborn child.



Danger

May cause cancer. May damage fertility or the unborn child. May cause damage to organs through prolonged or repeated exposure.

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust, fume, mist, vapors or spray. Avoid release to the environment. Wear protective gloves, eye protection, and face protection.

Hazard Phrases

Precautionary Phrases Prevention

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Response	IF exposed or concerned: Get medical advice or attention. Get Medical advice or attention if you feel unwell. Collect spillage.
Storage	Store locked up.
Disposal	Dispose of contents or container in accordance with local and national regulations.
Other hazards	This product contains no PBT/vPvB chemicals. This product contains no endocrine disrupting chemicals.
Emergency Overview	This product is not flammable or combustible under normal conditions of transport and storage. However, when heated strongly in air it will burn, releasing toxic and irritating sulphur dioxide gas, as well as possible lead and zinc oxide fumes. Contact with strong acids will generate flammable and highly toxic hydrogen sulphide gas (H2S).
Potential Health Effects:	Concentrate dust may be irritating to the nose, throat and respiratory tract. Inhalation or ingestion of concentrate dust may result in lead and cadmium absorption and possible lead intoxication. Prolonged exposure may also cause central nervous system damage, gastrointestinal disturbances, anemia, kidney dysfunction and possible reproductive effects. Pregnant women should be protected from excessive exposure to prevent lead crossing the placental barrier and causing infant neurological disorders.
Potential Environmental Effects	Lead concentrate will likely have minimal direct environmental effects, since its constituent metals have low solubility, and are therefore not highly bioavailable. However, when the product is processed or resides in the environment for extended periods, lead and zinc compounds may form which may be toxic to aquatic and terrestrial organisms

Section 3. Composition/information on ingredients

Ingredient	Synonym	CAS Number	Weight %
Zinc Sulfide	Zinc Sulphide	1314-98-3	79 - 85
Iron sulfide (FeS)	Iron sulphide (FeS)	1317-37-9	9 - 13
Lead sulfide (PbS)	Iron sulphide (FeS)	1317-37-9	6 – 11
Lead sulfide (PbS)	Lead sulphide	1314-87-0	3 – 5
Crystalline Silica - Quartz (respirable)	Crystalline Silica - Quartz	14808-60-7	3 – 4.5
Cadmium sulfide	Cadmium sulphide	1306-23-6	0.3 - 0.6



Section 4. First aid measures

General	In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.	
Inhalation	Remove to fresh air, keep patient warm and at rest. If breathing is irregular or stopped, give artificial respiration. If unconscious, place in the recovery position and obtain immediate medical attention. Give nothing by mouth.	
Eyes	Irrigate copiously with clean water for at least 15 minutes, holding the eyelids apart and seek medical attention.	
Skin	Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser.	
Ingestion	If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.	
Most important symptoms and effects, both acute and delayed Overview		
	No specific symptom data is available.	
	Possible cancer hazard. Contains an ingredient which may cause cancer	
	based on animal data (See Section 3 and Section 15 for each ingredient). Risk of cancer depends on duration and level of exposure. Treat symptomatically. See section 2 for further details.	

Section 5. Fire-fighting measures

Extinguishing media Special hazards Hazardous	Use any means of extinction appropriate for surrounding fire conditions such as water spray, carbon dioxide, dry chemical, or foam. The handling, shipment, storage and processing of this material requires appropriate controls and care to prevent spillage or gradual accumulation in the terrestrial and aquatic environments. Spilled material should be promptly cleaned up. Do not breathe dust, fume, mist, vapours or spray. May release highly toxic and flammable hydrogen sulphide gas on contact with strong acids.
decomposition:	I his material can decompose at high temperatures forming toxic and irritating sulphur dioxide gas as well as lead, zinc and cadmium oxides
Advice for fire- fighters	As with all fires, wear positive pressure, self-contained breathing apparatus, (SCBA) with a full face piece and protective clothing. Persons without respiratory protection should leave area. Wear SCBA during clean-up immediately after fire. No smoking.
	Toxic fumes of sulphur dioxide will result from combustion. Fire fighters must be fully trained and wear full protective clothing including an approved, self-contained breathing apparatus which supplies a positive air pressure within a full face piece mask. Product is not considered a fire or explosion hazard. However, concentrate will burn if heated strongly in a fire situation, releasing toxic and irritating sulphur dioxide gas (SO2). Contact with strong acids will generate flammable and highly toxic hydrogen sulphide gas (H2S). The ignition temperature of lead concentrate is approximately 700 – 800°C.
ERG Guide No.	171



Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Put on appropriate personal protective equipment (see section 8).
Environmental precautions	The handling, shipment, storage and processing of this material requires appropriate controls and care to prevent spillage or gradual accumulation in the terrestrial and aquatic environments. Spilled material should be promptly cleaned up. Do not allow spills to enter drains or waterways. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.
Methods for Containment	Control source of spillage if possible to do so safely. Restrict access to the area until completion of clean-up. Clean up spilled material immediately, observing precautions in Section 8, Personal Protection and using methods that will minimize dust generation (e.g., vacuum solids, dampen material and shovel or wet sweep). Return uncontaminated spilled material to the process if possible. Place contaminated material in suitable labeled containers for recovery or disposal. Treat or dispose of waste material in accordance with all local, regional, and national requirements.

Section 7. Handling and storage



Section 8. Exposure controls / personal protection

Control parameters

CAS No.	Ingredient	Source	Value
1306-23-6 Cadmium sulfi	Cadmium sulfide	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
1314-87-0	Lead sulfide (PbS)	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
1314-98-3 Zinc Sulfide	Zinc Sulfide	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
1317-37-9 Iron sulfide (FeS)	Iron sulfide (FeS)	OSHA	No Established Limit
		ACGIH	No Established Limit
		NIOSH	No Established Limit
14808-60-7	Crystalline silica (Quartz) (respirable)	OSHA	PEL 50 μg/m3
		ACGIH	TWA: 0.025 mg/m ³
		NIOSH	0.05 mg/m ³ TWA (respirable)

Exposure controls



Respiratory	If workers are exposed to dust at concentrations above the exposure limit, they must use the appropriate, certified respirators. use appropriate NIOSH-approved respiratory protection equipment (Class N, R or P-100 particulate filter cartridge).
Eyes	Protective safety glasses recommended. Close-fitting safety goggles should be worn to prevent eye contact if excessive dust is generated.
Skin	Coveralls or other work clothing and gloves are recommended. Wash exposed skin immediately when contaminated and at the end of each work shift.
Engineering Controls	Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and any vapour below occupational exposure limits suitable respiratory protection must be worn.
Other Work Practices	Avoid breathing dust. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse.
See section 2 for further	details.

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Section 9. Physical and chemical properties

Information on basic physical and chemical properties **Physical State** Solid Color Dark grey-brown, fine-grained powder Odor Weak organic odour from entrained flotation reagents Melting point / freezing point Will burn first unless in an inert atmosphere Initial boiling point and boiling range Not Available Flammability (solid, gas) Non-combustible solid Lower Explosive Limit: Not Available Upper Explosive Limit: Not Available Flash Point Not Available Auto-ignition temperature Not Available **Decomposition temperature** >1000°C pН Not Available Viscosity (cSt) Not Available Solubility in Water Insoluble Partition coefficient n-octanol/water Not Available (Log Kow) Vapor pressure (Pa) Negligible at 20°C **Relative Density** (Water = 1): 2.0 (Bulk Sp. Gr.) Vapor Densitv Not Available Evaporation rate (Ether = 1) Not Available **VOC Content** Not Available Percent Volatile 8.4% @ 100°C (moisture) **Particle Size** <40 µm, with 80% <20 µm Flammability Non-combustible solid. Other information No other relevant information.

Section 10. Stability and reactivity

Chemical stability	Stable under normal circumstances.
Possibility of hazardous reactions	No data available
Conditions to avoid Incompatible materials	No data available Reacts violently with iodine pentachloride. Incompatible with iodine monochloride, hydrogen peroxide, strong oxidizers, and strong acids
Hazardous decomposition products	May release highly toxic and flammable hydrogen sulphide gas on contact with strong acids. This material can decompose at high temperatures forming toxic and irritating sulphur dioxide gas as well as lead, zinc and cadmium oxides.



Section 11. Toxicological information

Acute toxicity

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

Section 12. Ecological information

Toxicity

Toxic to aquatic life with long lasting effects. Concern of heavy metal accumulation.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/L	48 hr EC50 crustacea, mg/L	ErC50 algae, mg/L
Zinc Sulfide - (1314-98-3)	No data available.	No data available.	No data available.
Iron sulfide (FeS) - (1317-37-9)	No data available.	No data available.	No data available.
Lead sulfide (PbS) - (1314-87-0)	No data available.	No data available.	No data available.
Crystalline silica (Quartz) (respirable) - (14808-60-7)	No data available.	No data available.	No data available.
Cadmium sulfide - (1306-23-6)	748.00, Carassius auratus	1,820.00, Daphnia magna	120.00, Pseudokirchneriella subcapitata

Persistence and degradability	There is no data available on the preparation itself.
Bioaccumulative potential	Not Available
Mobility in soil	No data available.
PBT and vPvB assessment Other adverse effects	This product contains no PBT/vPvB chemicals. No data available.

Section 13. Disposal considerations

Waste treatment	Waste should not be released to sewers. Observe all federal, provincial, and local
methods	regulations when disposing of this substance.



Section 14. Transport information

DOT (Domestic Surface Transportation)

UN number	UN3077
UN proper shipping name	Environmentally Hazardous Substance, Solid, n.o.s. (contains lead sulphide)
Transport hazard class(es)	9 Sub Class: Not Applicable
Packing group	111
Environmental hazards	Marine Pollutant: No
U.S. DOT RQ	Lead sulphide 10 lbs.
Special precautions for	user
U. Th Ma co su Ris tra Re Co	S. classification applies to shipments under U.S. domestic regulations only. is material has been tested under the United Nations Transport of Dangerous Goods anual of Tests and Criteria, Fifth Revised Edition (2009). Test results indicate that the ncentrate qualifies neither as a flammable solid under Class 4.1 nor a self-heating bstance under Class 4.2. sks: This material may liquefy if shipped at moisture content in excess of its insportable moisture limit (TML). It may also present chemical hazards. ccommendations set out in Appendix 1 of the International Marine Solid Bulk Cargo ode should be observed.
IMO / IMDG (Ocean Tra	nsportation)
Transport hazard class(es)	MHB - Materials Hazardous Only in Bulk, Group A and B

IMO MARPOL V Not Harmful to the Marine Environment.

Section 15. Regulatory information

Regulatory OverviewThe regulatory data in Section 15 is not intended to be all-inclusive, only selected
regulations are represented.
This product has been classified in accordance with US OSHA's Hazard
Communication Standard (1910.1200) revised 2024 and Canadian Hazardous
Products Regulations (SOR/2015-17) (GHS revision 7)



Toxic Substance Control Act (TSCA)

Cadmium sulfide Crystalline silica (Quartz) (respirable) (Present) Iron sulfide (FeS) Lead sulfide (PbS) Zinc Sulfide

EPCRA 302 Extremely Hazardous:

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

EPCRA 313 Toxic Chemicals:

Crystalline silica (Quartz) (respirable)

Lead sulfide (PbS)

Zinc Sulfide

Canadian Domestic Substance List (DSL):

Cadmium sulfide Crystalline silica (Quartz) (respirable) Iron sulfide (FeS) Lead sulfide (PbS) Zinc Sulfide

Canadian Non-Domestic Substance List (NDSL):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Cadmium sulfide

Crystalline silica (Quartz) (respirable)

Lead sulfide (PbS)

Pennsylvania RTK Substances (>1%):

Cadmium sulfide

Crystalline silica (Quartz) (respirable)

Lead sulfide (PbS)

Proposition 65 - Carcinogens (>0.0%):

Cadmium sulfide

Crystalline silica (Quartz) (respirable)

Lead sulfide (PbS)

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 Label Warning:



WARNING: This product can expose you to chemicals including [Cadmium sulfide, Crystalline silica (Quartz) (respirable), Lead sulfide (PbS)], which are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.



Section 16. Other information

ACGIH	American Conference of Governmental Industrial Hygienists
С	Celsius, F: Fahrenheit
CAS	Chemical Abstracts Service
CEPA	Canadian Environmental Protection Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOT	Department of Transport
EHS	Extremely Hazardous Substances
EPCRA	Emergency Planning and Community Right-to-Know Act
IARC	International Agency for Research on Cancer
ICAO/IATA	International Civil Aviation Organizations/ International Air Transport Association
IMO/IMDG	International Maritime Organization/ International Maritime Dangerous Goods Code
LD50 LC50	Lethal Dose 50%, Lethal Concentration 50%
NIOSH	National Institute for Occupational Safety and Health
NTP	National Institute for Occupational Safety and Health
MSHA	Mine Safety and Health Administration
OSHA	Occupational Safety and Health Administration
RCRA	Resource Conservation and Recovery Act
SARA	Superfund Amendments and Reauthorization Act
TSCA	Toxic Substances Control Act
WHMIS	Workplace Hazardous Materials Information System
mg	milligram
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Date of Preparation of SDS:	August 21, 2024
Version:	18.0
SDS Prepared for:	Teck Metals Ltd. Suite 3300 – 550 Burrard Street Vancouver, British Columbia V6C 0B3 End of Document