

Safety Data Sheet

ZDMC

1. IDENTIFICATION

Chemical Name	Zinc dimethyldithiocarbamate
Trade Name	Rubber Accelerator ZDMC
Synonyms	Zinc N,N-dimethyldithiocarbamate; Ziram F4, PZ
Recommended use	Rubber vulcanization accelerator for synthetic rubber
Restrictions	None
Supplier	SunBoss Chemicals Corp.
Address	8-110 West Beaver Creek Road Richmond Hill, ON L4B 1J9
Telephone	905-707-3433
Fax	905-707-7393

Emergency Information

After normal hours call Chemtrec at 1-800-424-9300

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Target Organs:	Respiratory and Pulmonary (Lungs) Systems, Skin, Eyes
GHS Classification:	ACUTE TOXICITY – INHALATION – Category 2 ACUTE TOXICITY – ORAL – Category 4 SPECIFIC TARGET ORGAN TOXICITY (Repeated Exposure) - Category 2 SPECIFIC TARGET ORGAN TOXICITY (Single Exposure) - Category 3 EYE DAMAGE – Category 1 SENSITIZATION – SKIN – Category 1 HAZARDOUS TO THE AQUATIC ENVIRONMENT, ACUTE, Category 1 HAZARDOUS TO THE AQUATIC ENVIRONMENT, CHRONIC, Category 1

GHS Label elements

Pictogram(s):



Signal word:

DANGER!

Hazard Statement(s):

Fatal if inhaled
 Harmful if swallowed
 May cause damage to organs
 May cause respiratory irritation
 Causes serious eye damage
 May cause an allergic skin reaction
 Very toxic to aquatic life with long lasting effects

Precautionary Statement(s):

Do not breathe dust.
 Use only outdoors or in a well-ventilated area.
 Wear respiratory protection (see section 8 of this safety Data Sheet).
 Wash hands thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Wear protective gloves/protective clothing/eye protection/face protection.
 Contaminated work clothing must not be allowed out of the workplace.
 Avoid Release to the Environment.

Supplemental Hazard information

No information available

Supplemental label elements for certain mixtures

No information available

WHMIS:

D1A VERY TOXIC MATERIALS. D2A VERY TOXIC MATERIALS. D2B TOXIC MATERIALS/Materials Causing Other Toxic Effects.

Potential Health Effects:

Inhalation

May be fatal if inhaled. Exposure to dust particles generated from this material may cause irritation of the respiratory tract. Inhalation may cause alcohol intolerance.

Ingestion

May cause alcohol intolerance (Antabuse Effect). May cause headache, dizziness, nausea, vomiting or gastrointestinal irritation.

Skin contact

May cause an allergic skin reaction. May be absorbed through the skin and produce effects similar to those caused by inhalation and/or ingestion.

Eye Contact

Causes eye burns. Signs/symptoms can include redness, swelling, pain, tearing.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Component	Common Names and Synonyms	Concentration %
Zinc Dimethyl dithiocarbamate CAS Number: 137-30-4 EINECS Number: 205-288-3	Accelerator ZDMC PZ, Ziram; Methyl zimate Zinc N,N-dimethyldithiocarbamate; Methyl Ziram; Accelerator L; Thiuram E;	96-99
White Mineral Oil (powder only) CAS Number: 8042-47-5 EINECS Number: 232-455-8	None	1-2

4. FIRST AID PROCEDURES

Inhalation	Seek immediate medical attention! May be fatal if inhaled! Move person to fresh air. Have trained personnel administer oxygen.
Ingestion	If swallowed, call a physician immediately. Give plenty of water to drink. DO NOT induce vomiting. Never give anything by mouth to an unconscious person.
Skin	Remove contaminated clothing, wash skin with water, using soap if available. Launder clothing before reuse. Get medical attention if signs of toxicity occur or if irritation persists.
Eyes	Immediately flush eyes with plenty of water for at least 15 minutes, lifting the upper and lower eyelids. Seek medical attention if irritation persists.
Note to Physician	Provide symptomatic/supportive care as necessary. Exposure by ingestion, inhalation or skin absorption may cause alcohol intolerance (Antabuse Effect). Monitor respiratory system function. Observe for signs of respiratory distress.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical.
Unsuitable Extinguishing Media	No limitations are given.
Specific Hazards/Hazardous Combustion Products	Combustible. Substance emits irritating or toxic fumes (gases) in a fire; sulphur dioxide (SO ₂); nitrous gases (NO _x). Finely dispersed particles form explosive mixtures in the air.
Special Fire Fighting Procedures	Fight fire from a safe distance and from a protected location. Use water spray to cool fire exposed surfaces. Do not allow runoff to enter waterways.
Special Protective Equipment	Fire fighters should wear full protective clothing, including self-contained breathing equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Wear protective equipment specified. P3 filter respirator for toxic particles. Avoid the generation of dust. Avoid breathing dust. Ensure adequate ventilation. Evacuate personnel to safe areas.
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.
Clean up Methods	Isolate area and remove sources of friction, impact, heat, low level electrical current, and RF energy. Remove ignition sources and work with non-sparking tools. Carefully scoop up spilled substance; if appropriate moisten first to prevent dusting. Remove to a safe place.

7. HANDLING AND STORAGE

Handling	Avoid direct physical contact. Use appropriate, approved safety equipment. Untrained individuals should not handle this chemical or its container. Handling should occur in a chemical fume hood. Normal measure for prevention of fire.
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Storage

Store closed containers in a cool, dry, well-ventilated area. Avoid exposure to direct sunlight. Store away from strong oxidizing materials, ignition sources and untrained individuals. Secure and label area. Protect containers from physical damage.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS	AGCIH (TLV)	OSHA (PEL)
Zinc Dimethyl dithiocarbamate	Not established	Not established
White Mineral Oil	8Hr TWA-5 mg/m ³	8Hr TWA-5 mg/m ³

Engineering Controls

Avoid dust generation. Ensure good ventilation and local exhaustion of the working area as necessary to control any air contaminants to within their exposure limits. Discharge from the ventilation system should comply with the applicable air pollutions control regulations. Eliminate ignition sources.



Respiratory

Use in well-ventilated area. Use respirators in accordance with the code of federal regulations, labour part 1910.134 and reduce occupational exposure to the lowest achievable limits. Particle filter P2 or P3, colour code white.

Eyes

Wear chemical safety goggles to protect against exposure.

Skin

Wear dust tight protective clothing. Pay attention to skin care.

Gloves

Use protective gloves. The glove material must be sufficiently impermeable and resistant to the substance. Check tightness before wear. Gloves should be well cleaned before being removed, then stored in a well-ventilated location. Textile or leather gloves are completely unsuitable. The following materials are suitable: Polyvinyl chloride – PVC or rubber.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White powder or granules
Odour	Odourless
pH	No data available
Melting Point	250°C (OECD Guide-line 102)
Boiling Point	Not applicable (decomposition from ca. 250°C)
Flash Point	Not applicable (solid)
Evaporation Rate	Not available

Flammability	Not Flammable
Exposure Limits	Not available
Vapour Pressure	≤0.0000024 hPa at 25°C (OECD Guide-line 104)
Vapour Density (Air=1)	Not available
Relative Density	1.66 g/cm ³
Bulk Density	355-395 kg/m ³ @20°C
Solubility in water	65 mg/l at 25°C, of very low solubility in water
Partition Coefficient: n-octonal/water	Log Pow = 1.086 at 20°C (OECD Guide-line 107)
Decomposition Temperature	Not determined
Viscosity	Not applicable
Specific Gravity	1.66 @ 20°C
Molecular Weight	305.4
Molecular Formula	C ₆ H ₁₂ N ₂ S ₄ Zn

10. STABILITY AND REACTIVITY

Reactivity	No specific data available
Chemical Stability	Stable when stored at room temperature in closed, original container. Stable under normal conditions of handling, use and transportation.
Possible Hazardous Reactions	The substance decomposes on heating and on burning, producing toxic and irritating fumes. The substance decomposes on contact with acids.
Conditions to avoid	Keep away from heat, sparks and flame. Avoid contact with strong oxidants such as liquid chlorine and concentrated oxygen.
Incompatibility	Incompatible with acids, peroxides and acid halides. Corrosive to iron and copper. Incompatible with strong oxidising agents and acids. Incompatible with mercury.
Hazardous Polymerization	Will not occur
Hazardous Decomposition Products	Carbon oxides. Oxides of nitrogen and sulphur. Toxic zinc metal fumes.

11. TOXICOLOGICAL INFORMATION

Toxicokinetics, metabolism and distribution:

Water-soluble metabolites were found in the blood, kidneys, liver, ovaries, spleen and thyroid of female rats 24 hours after oral administration of radiolabelled ziram; unchanged ziram was excreted in the feces. (HSDB)

Acute toxicity

Acute Oral toxicity	LD ₅₀ = 320 mg/kg (rat)
Acute Dermal toxicity	LD ₅₀ = > 2000 mg/kg (rabbit)
Acute Inhalation LC50 (mg/l)	LC ₅₀ = 0.07 mg/l/4h (rat)
Principle routes of Exposure	Inhalation. Eyes. Dermal
Ingestion	May cause alcohol intolerance (Antabuse Effect). May cause headache, dizziness, nausea, vomiting or gastrointestinal irritation.
Skin corrosion/irritation	Skin, rabbit: not irritating
Inhalation	Exposure to dust particles generated from this material may cause irritation of the respiratory tract. Inhalation may cause alcohol intolerance.
Serious eye damage/irritation	Eyes: rabbit: highly irritating, risk of serious damage to eyes
Aggravated Conditions	Alcohol consumption problems. Pulmonary disorders. This material or its emissions may cause an allergic or sensitization reaction and thereby aggravate systemic disease.
Carcinogenicity	Both negative and positive results in standard tests using animals, animal and bacterial cells. This product or one of its ingredients present 0.1% or more is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC, or OSHA. Carcinogenic: Category 3 NOTE: May react with nitrosating agents during rubber vulcanization to form nitrosamines. Some nitrosamines are suspected human carcinogens.
Primary Irritation Effect	Moderately irritating. Possible sensitizer.
Genotoxicity	Animal studies have shown possible birth defects.
Reproductive/Developmental Toxicity	Animal studies show adverse effects in both males and females.

12. ECOLOGICAL INFORMATION

Acute toxicity to fish	LC ₅₀ = 0.0097 mg/l/96h (<i>Lepomis machrochirus</i>)
Acute toxicity to daphnia	EC ₅₀ = 0.048 mg/l/48h (<i>Daphnia Magna</i>)
Acute toxicity to algae	EC ₅₀ = 1.2 mg/l/96h (<i>Chlorella pyrenoidosa</i>)
Bioaccumulation	No bioaccumulation expected in water organisms (log Pow <3)
Persistence and Degradability	AEROBIC: Ziram ionizes to form dimethyldithiocarbamate ions that biodegrade in soil, releasing carbon disulfide and forming dimethylamine. A %CO ₂ evolution of 68-79 after 49 days has been reported. However, ziram possesses antibacterial properties, particularly for gram positive organisms, and this would hinder biodegradation under many situations. (HSDB)
Mobility in Soil	Using soil thin layer chromatography experiments, an R _f range of 0.33-0.62, retardation factors defined as distance moved by pesticide in relation to the water front, was measured for ziram. According to a classification scheme, this R _f value range indicates that ziram is expected to have slight to moderate mobility in suspended solids and sediment. However, the compound was

immobile in other experiments using black clay and red sandy loam soil.
(HSDB)

Other Adverse Effects

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

13. DISPOSAL CONSIDERATIONS

Waste Disposal

This material is a HAZARDOUS WASTE. Incineration recommended in approved incinerator according to federal, state, and local regulations. Dissolve or mix with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Treatment, storage, reuse and disposal of the waste material must conform to all applicable federal, state and local laws and regulations.

Contaminated Packaging

This bag may contain residue of a hazardous material. Some authorities may regulate such containers as hazardous waste. Dispose of the container according to national and local regulation. Do NOT reuse container.

14. TRANSPORT INFORMATION

DOT



UN/ID No.
Proper Shipping Name
Hazard Class
Packing Group
Reportable Quantity (lbs)

UN 2811
TOXIC SOLID, ORGANIC, N.O.S., (Zinc dimethyl dithiocarbamate)
6.1
II
1001

IATA



UN/ID No.
Proper Shipping Name
Hazard Class
Packing Group
Note:

UN 2811
TOXIC SOLID, ORGANIC, N.O.S., (Zinc dimethyl dithiocarbamate)
6.1
II
Passengers: Packaging instruction 619 (100 kg max by package),
Cargo: Packaging instruction 619 (200 kg net max by package)

IMDG



UN/ID No.

UN 2811

Proper Shipping Name	TOXIC SOLID, ORGANIC, N.O.S., (Zinc dimethyl dithiocarbamate)
Hazard Class	6.1
Packing Group	II
Note:	UN Nr (IMDG): 6280-6, labeling: 6.1, Safety sheet: 6.1-04
Marine Pollutant	No
<u>TDG (Canada)</u>	See DOT

15. REGULATORY INFORMATION

USA - TSCA	This substance is listed in the inventory
Canada - DSL	This substance is listed in the inventory
EINECS/ELINCS	This substance is listed in the inventory
Australia – AICS	This substance is listed in the inventory
Korea - ECL	This substance is listed in the inventory
Japan - ENCS	This substance is listed in the inventory
China - IECSC	This substance is listed in the inventory

US Regulations

SARA Section 302	None Found
SARA 311/312 Hazard Categories	Immediate
SARA 313 Chemical	As "Zinc Compounds", De Minimis concentration =1.0%
RCRA Status	P205 – ACUTELY HAZARDOUS WASTE

Other regulations:

California Proposition 65: None of the components are listed

New Jersey Right-to-know List: Listed under the category "Zinc"

Pennsylvania Right-to-Know List: Listed under the category "Zinc Compounds".

Minnesota Right-to-Know List: None of the components are listed.

Massachusetts Right-to-Know Law: Listed under the category "Zinc dimethyldithiocarbamate"

FDA Status 21 CFR:

Regulated for use under the following sections of 21 CFR:

175.105 - Components of adhesives.

177.2600 - Rubber articles intended for repeated use in food contact.

178.3120 - De-foaming agent for use in animal glue.

Canadian Regulations

WHMIS Hazard Class



D1A VERY TOXIC MATERIALS. D2A VERY TOXIC MATERIALS. D2B TOXIC MATERIALS/Materials Causing Other Toxic Effects.

NPRI

Listed under the category "Zinc and its Compounds", NPRI, Part 1, Group 1, ID#231 [Canada]. Minimum concentration to report = 1%

NFPA Rating (Scale 0-4)

- 0 - Minimal Hazard
- 1 - Slight Hazard
- 2 - Moderate Hazard
- 3 - Serious Hazard
- 4 - Severe Hazard

HEALTH	4
FIRE	1
REACTIVITY	0

HMIS Classification (Scale 0-4)

- 0 - Minimal Hazard
- 1 - Slight Hazard
- 2 - Moderate Hazard
- 3 - Serious Hazard
- 4 - Severe Hazard

HEALTH	4
FIRE	1
REACTIVITY	0

16. OTHER INFORMATION

Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. SunBoss Chemicals Corp. extends no warranty and assumes no responsibility for the accuracy or sufficiency of the content and expressly disclaims all liability for reliance thereon. This material safety data sheet provides guidelines for the safe handling of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required. It is the responsibility of the user to comply with all Federal, State and local laws and regulations. Individuals exposed to this product should read and understand this information and be provided pertinent training prior to working with this product.

Abbreviations and Acronyms

- ACGIH: American Conference of Governmental Industrial Hygienists Inc.
- CAS: Chemical Abstracts Service (Division of American Chemical Society)
- DOT: Department of Transportation (USA)
- EINECS: European Inventory of Existing Commercial Chemical Substances
- HMIS: Hazardous Materials Identification System (USA)
- HSDB: Hazardous Substances Data Bank
- IARC: Internal Agency for Research on Cancer
- IATA: International Air Transport Association
- IMDG: International Marine Code for Dangerous Goods
- LD50: Lethal Dose Medium
- LC50: Lethal Concentration Medium
- EC50: Effective Concentration Medium
- NIOSH: National Institute for Occupational Safety and Health
- NFPA: National Fire Protection Association (USA)
- NPRI: National Pollutant Release Inventory (Canada)
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration (USA)
- PEL: Permissible Exposure Limits
- TDG: Transportation of Dangerous Goods (Canada)
- TLV: Threshold Limit Value
- TWA: Time Weighted Average
- WHMIS: Workplace Hazardous Materials Information Systems (Canada)

17. REVISION DATE

Revision number: 3

Date of Issue: November 14, 2014

Changes: Reformatted and updated according to Global Harmonized System (GHS)