



Chemicals Corp.

Technical Data Sheet

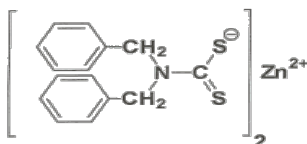
ZBEC

Zinc dibenzyl dithiocarbamate

CAS Number: 14727-36-4

Molecular weight: 610.18

Molecular formula: $C_{30}H_{28}N_2S_4Zn$



PRODUCT INFORMATION

PRODUCT SPECIFICATIONS		GRANULES	OIL POWDER	POWDER
Appearance		White granules	White oil powder	White powder
Initial Melting Point	°C min	180.0	180.0	180.0
Zinc content	%	10.0-12.0	10.0-12.0	10.0-12.0
Loss on drying	% max	0.30	0.40	0.30
Residue on sieve (63 μm)	% max	-	0.50	0.50
Residue on sieve (150μm)	% max	-	0.10	0.10
Oil content	%	-	0.0-2.0	-
<u>Typical properties</u>				
Density	g/cm ³	1.42		
<u>Packaging</u>				
Bag		25kg (55 lbs)		
Pallet		500kg or 600kg (1102 lbs or 1323 lbs)		

FUNCTION

ZBEC is a safe-processing secondary accelerator and can be used as a primary accelerator in latex.

APPLICATIONS AND PROPERTIES

- ZBEC is used as a primary or secondary ultra-accelerator in NR, IR, BR, SBR, NBR, HR, EPDM and their latexes.
- Product has less accelerating effects than ZDMC and ZDEC.
- Effectively used in both natural and synthetic latexes for faster curing under normal (low) temperatures than ZDMC and ZDEC, with less scorching and blooming.
- ZBEC has a high resistance to hydrolysis and low solubility in rubbers.
- Recognized to have low nitrosamine potential.
- Used in sheeting, extrusions and latex.
- Soluble in CS₂, benzene, chloroform, alcohol, diethyl ether.
- Insoluble in water and low concentration alkali.
- ZBEC is regulated for use under the following sections of FDA 21 CFR:
175.105 – Components of Adhesives.
177.2600 – Rubber Articles Intended for Repeated Use in Food Contact.

STORAGE

Material should be stored in a tightly closed container in a cool, dry, well ventilated area. Avoid exposure to direct sunlight. The maximum recommended storage life is 2 years when stored under normal conditions.

HANDLING PRECAUTIONS

For detailed information on toxicological properties and handling precautions, please refer to the current Safety Data Sheet. This information is available by request from **SunBoss Chemicals Corp.**

[Revised: November 6, 2014 by kk]

Safety Data Sheet

ZBEC

1. IDENTIFICATION OF SUBSTANCE / COMPANY INFORMATION

Chemical Name	Zinc dibenzyl dithiocarbamate
Synonyms	Accelerator ZBEC, Bis(Dibenzylthiocarbamate)zinc; Zinc bis[bis(phenylmethyl)carbamo-dithioato-kappa S, kappa S
CAS #	14727-36-4
Formula	C ₃₀ -H ₂₈ -N ₂ -S ₄ -Zn
Chemical Family	Accelerator
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. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS - No</u>	<u>Weight %</u>	<u>UN No.</u>
Zinc Dibenzylthiocarbamate	14726-36-4	> 96	238-778-0
White Mineral Oil (powder only)	8042-47-5	1 - 2	232-455-8
	<u>Symbol(s)</u>	<u>Risk Phrase(s)</u>	
	Xn, N	R22, R43, R36/37/38, R50	

3. HEALTH HAZARDS INFORMATION

EMERGENCY OVERVIEW

Signal Word: WARNING!

Harmful if swallowed!

May cause sensitization by skin contact.

Irritating to skin, eye and respiratory system.

Very toxic to aquatic organisms.

Potential Health Effects

Inhalation

May cause irritation of the respiratory tract. May cause alcohol intolerance.

Ingestion

Harmful if swallowed! May cause alcohol intolerance (Antabuse Effect). May cause headache, dizziness, nausea, vomiting and gastrointestinal irritation.

Skin contact	May cause an allergic skin reaction. May cause a rash and itching of the skin. May cause skin defatting with prolonged exposure.
Eye Contact	May cause eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.

4. EMERGENCY FIRST AID PROCEDURES

Inhalation	Remove person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, get immediate medical attention.
Ingestion	If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person.
Skin	Remove contaminated clothing, wash skin with water, using soap if available. Remove contaminated clothing and launder before reuse. Seek medical attention if irritation persists or toxicity occurs.
Eyes	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes and get 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)

5. FIRE AND EXPLOSION HAZARD MEASURES

Flammability	Not determined
Flash Point	392°F / 200°C
Flash Point Method	Tag Closed Cup (TCC)
DOT Category	Not regulated
Extinguishing Media	Water fog, carbon dioxide, foam, dry chemical.
Auto Ignition Temperature	896°F / 480°C
Flammable Limits	Not determined
Special Fire Fighting Procedures	Fight fire from a safe distance and from a protected location. Use water spray to cool fire exposed surfaces. Decomposition in fire may produce toxic gases. Decomposition in fire may produce toxic gases. Do not allow runoff to enter waterways.
Special Protective Equipment	Fire fighters should wear full protective clothing, including self-contained breathing equipment.
Unusual Fire and Explosion Hazards	Toxic emissions may result if product is involved in a fire. May form flammable air/dust mixtures. Kst=168 bar.m/s. Minimum Ignition Energy (MIE) = <3 mJ.

6. ACCIDENTAL RELEASE MEASURES

Procedures	Wear protective equipment specified. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.
Clean up Methods	Isolate area and remove sources of friction, impact, heat, low level electrical current, and RF energy. Isolate spill and stop leak where safe. Scoop up and remove solids. Do NOT spread spilled product with water.

7. HANDLING AND STORAGE

Handling	Good hygienic practices should be observed. Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded with material. Avoid generating or breathing dust. Avoid contact with eyes, skin and clothing. Close containers of unused product. Wash hands before eating, drinking, and chewing gum, using tobacco or using the toilet. Do not reuse this container.
Storage	Store closed containers in a cool, dry, well-ventilated area. Store away from strong oxidizing materials. Avoid exposure to direct sunlight.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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 limit. Adequate ventilation should be provided to keep dust concentrations below acceptable exposure limits. Discharge from the ventilation system should comply with the applicable air pollutions control regulations. Eliminate ignition sources.
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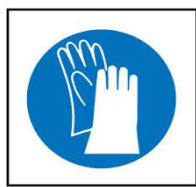
Exposure Limits
Zinc dibenzyl dithiocarbamate

ACGIH (TLV/8Hr)
10 mg/m³ (TWA)

OSHA (PEL/8Hr)
5 mg/m³ (respirable dust)
15 mg/m³ (total dust)
5 mg/m³

White Mineral oil

5 mg/m³



Respiratory

Use in well-ventilated area. Use approved NIOSH respiratory protection if TLV exceeded or if overexposure is likely. Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure.

Eyes

Wear safety glasses or goggles to protect against exposure. Eye protection is not required during typical product use conditions.

Skin

Normal work coveralls. Launder contaminated clothing before reuse.

Gloves

Use gloves as a standard industrial handling procedure. All cleanable impervious glove types are acceptable.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	White powder or granules
Odour	Slight
Specific Gravity	1.42 @ 20°C
Density	1420 kg/m ³ @20°C
Bulk Density	210-250 kg/m ³ ZBEC (powder)
Solubility in water	INSOLUBLE
pH	Not applicable
Other Solubility	Soluble in CS ₂ , benzene, chloroform, alcohol and diethyl ether.
Boiling point	Not determined
Melting Point	180°C
Molecular Weight	610.18
Molecular Formula	C ₃₀ -H ₂₈ -N ₂ -S ₄ -Zn

10. STABILITY AND REACTIVITY

Chemical Stability	Stable when stored at room temperature in closed, original container. Stable under normal conditions of handling, use and transportation.
Conditions to avoid	Keep away from heat, sparks and flame. Avoid contact with strong oxidants such as liquid chlorine and concentrated oxygen.
Incompatibility	Strong oxidizing agents. Acids.
Hazardous Polymerization	Will not occur
Hazardous Decomposition Products	Carbon monoxide, Oxides of nitrogen and sulphur, toxic zinc metal fumes.
Additional Guidelines	None

11. TOXICOLOGICAL INFORMATION

Acute oral LD 50 (mg/kg)	>5300 mg/kg - Rat
Acute Dermal LD 50 (mg/kg)	Not determined
Acute Inhalation LC50 (mg/l)	Not determined
Principle routes of Exposure	Inhalation. Dermal - skin.
Ingestion	May cause alcohol intolerance (Antabuse Effect). May cause headache, dizziness, nausea, vomiting and 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. May cause skin defatting with prolonged exposure.
Inhalation	Exposure to dust particles may cause irritation of the respiratory tract. May cause alcohol intolerance.
Eye Contact	Causes mild eye irritation. Signs/symptoms can include redness, swelling, pain and tearing.
Aggravated Conditions	Alcohol consumption products. Pulmonary disorders. This material or its emissions may cause an allergic or sensitization reaction and thereby aggravate systemic disease.
Carcinogenicity	Negative in Ames tests using bacteria 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. NOTE: may react with nitrosating agents during rubber vulcanization to form nitrosamines. Some nitrosamines are suspect human carcinogens.
Primary Irritation Effect	Practically non-irritating.
Genotoxicity	None.
Reproductive/Developmental Toxicity	Not determined. Similar compounds show no effects in animal studies.

12. ECOLOGICAL INFORMATION

Acute Fish Toxicity	96Hr LC50 Zebra Fish = >10 mg/l
Acute Crustacean Toxicity	Not determined. Similar compounds show at least moderate toxicity to daphnids.
Octonal/Water Coefficient	Not determined
Chemical Fate Information	Not determined. Similar compounds show low to moderate biodegradability.
Other Information	Similar compounds exhibit at least moderate toxicity to aquatic species.

13. DISPOSAL CONSIDERATIONS

Waste Disposal	This material is a non-hazardous waste. Bury in a licensed landfill or burn in an approved incinerator according to federal, state, and local regulations. Disposal requirements are dependent on the hazard classification and will vary by location and the type of disposal selected.
Contaminated Packaging	If empty container retains product residues, all label precautions must be observed. Transport with all closures in place. Return for reuse or dispose according to national or local regulations. Dispose of container according to national or local regulations. Do NOT reuse container.

14. TRANSPORT INFORMATION

<u>DOT</u>	Not regulated
<u>IATA</u> UN/IN No.	3077

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (Zinc dibenzyl dithiocarbamate)
Hazard Class	9
Packing Group	III
IMDG	
UN/IN No.	3077
Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (Zinc dibenzyl dithiocarbamate)
Hazard Class	9
Packing Group	III
Marine Pollutant	Yes
Special Markings	Symbol (fish and tree)
<u>TDG (Canada)</u>	Not regulated

15. REGULATORY INFORMATION

LABELLING ACCORDING TO DIR 67/548 EEC

EC Number:

Classification based on: TESTS



HARMFUL (Xn)



DANGEROUS FOR THE ENVIRONMENT (N)

CLASSIFIED ACCORDING TO DIRECTIVE 199/45/EC

Risk Phrases:

R22 - Harmful if swallowed.
 R36/37/38 – Irritating to skin, eyes and respiratory system.
 R43– May cause sensitisation by skin contact.
 R50– Very toxic to aquatic organisms.

Safety Phrases:

S24/25 – Avoid contact with skin and eyes.
 S36/37 – Wear suitable protective clothing and gloves.
 S60 – This material and its container must be disposed of as a hazardous waste.
 S61 – Avoid release to the environment. Refer to Special Instructions/Safety Data Sheet.

FDA Status 21 CFR

Regulated for use under the following sections of 21 CFR:
 177.2600 Rubber Articles intended for Repeated Use in Food Contact.
 175.105 Components of Adhesives

TSCA

Listed

Canadian DSL

Listed

EINECS/ELINCS

Listed

US Regulations

SARA Section 302

Not Applicable

SARA 311/312 Hazard Categories

Immediate

SARA 313 Chemical
RCRA Status

As "Zinc Compounds", De Minimis concentration =1.0%
Not a RCRA waste

Canadian Regulations

WHMIS Hazard Class



NPRI

D2B TOXIC MATERIALS/Materials Causing other Toxic Effects

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

16. HAZARD RATING SYSTEM

NFPA Rating (Scale 0-4)

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

HEALTH	2
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	2
FIRE	1
REACTIVITY	0

17. 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.

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)
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)

18. REVISION DATE

Revision number: 5

Date of Issue: September 3, 2014

Changes: Number and format of headings changed; Updates to Sections 1: Identification of Substance - EC information added; 2: Health Hazards Information; 8: Specific Personal Protection Equipment - pictograms added; 14: Transport information - pictograms added; 15: Regulatory information - EC information added; 16: Hazard Rating System - table added; 17: Abbreviations and Acronyms added