SECTION 1: Identification of the substance /mixture and of the company/undertaking

1.1. Product identifier

Product Name	Rubber Accelerator ZMBT (MZ)
Substance Name	Zinc 2-mercaptobenzothiazole
Synonym	zinc di(benzothiazol-2-yl) disulphide
CAS No.	155-04-4
EC No.	205-840-3
REACHregistration number	01-2119493020-50-****

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use	Used as vulcanization accelerator in rubber goods manufacture
Uses advised against	No information available

1.3. Details of the supplier of the safety data sheet

Only representative	REACH24H CONSULTING GROUP
Address	Paramount Court, Corrig Road, Sandyford, Dublin 18, Ireland
E-mail	reach@reach24h.com
Supplier	Willing New Materials Technology Co.,Ltd.
Address	Chemical Industry-Intensive Area, Puyang, Henan, China
Postal Code	457163
Phone	+86-393-4840366
FAX	+86-393-4840346
E-mail	kuber@willingchem.com
Importer	
Address	
Postal Code	
Phone	
FAX	
E-mail	

1.4. Emergency telephone number

In China: +86-393-4840366 (Office hours available)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin sensitisation, Category 1B- H317
Hazardous to the aquatic environment — Acute Hazard, Category 1 - H400 (M=1)
Hazardous to the aquatic environment — Chronic Hazard, Category 1 - H410 (M=1)

2.2. Label elements

Symbols/Pictograms



Signal word	Warning
Hazard Statements	H317 - May cause an allergic skin reaction H410 - Very toxic to aquatic life with long lasting effects
Precautionary Statements	P262: Do not get in eyes, on skin, or on clothing. P261: Avoid breathing dust / fume / gas / mist / vapors / spray. P280: Wear protective gloves/protective clothing/eye protection/face protection. P273: Avoid release to the environment. P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P333 + P313: If skin irritation or rash occurs: Get medical advice / attention. P363: Wash contaminated clothing before reuse. P405:Store locked up. P501 - Dispose of contents/ container in accordance with local/regional/ national/international regulation.
EU Specific Hazard Statements	None

2.3. Other hazards

This substance does not meet the PBT criteria of REACH regulation, annex XIII
This substance does not meet the vPvB criteria of REACH regulation, annex XIII
The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: Composition/information on ingredients

3.1 Substance

Chemical Name	EC No	CAS No	Weight-%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Zinc 2-mercaptobenzothiazole (ZMBT)	205-840-3	155-04-4	⩾85.0	Skin Sens. 1B(H317) Aquatic Acute 1(H400)(M=1) Aquatic Chronic 1(H410)(M=1)
Benzothiazole-2-thiol	205-736-8	149-30-4	⩽15.0	Skin Sens. 1 (H317) Aquatic Acute 1 (H400) (M=1) Aquatic Chronic 1 (H410)(M=1)

Remark: Zinc content is 15 - 22%.

3.2 Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice

Instantly remove any clothing soiled by the product. In all cases of doubt, or when symptoms persist, seek medical attention.

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.

Skin Contact
Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash contaminated clothing before reuse. If skin irritation persists, call a physician.

Eye contact
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion
Rinse mouth. Get medical attention. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed
May cause an allergic skin reaction.

4.3. Indication of any immediate medical attention and special treatment needed
Treat symptomatically.
Persons with pre-existing skin, eye, or respiratory disease may be at increased risk from the irritant or allergic properties of this material. Attending physician should treat exposed patients symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media Water spray (fog). Foam. Dry chemical. Carbon dioxide (CO_2).

Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture
Thermal decomposition can lead to release of irritating and toxic gases and vapors, such as carbon oxides, sulfur oxides, nitrogen oxides, hydrogen cyanide, zinc oxides.

5.3. Advice for firefighters
Fight fire from a safe distance and from a protected location. Flammable dust when in finely divided and highly suspended state. Use water spray to cool fire exposed surfaces. Do not allow runoff to enter waterways. Fire fighters should wear full protective clothing, including self-contained breathing equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate personnel to safe areas. Ensure adequate ventilation, especially in confined areas. Remove all sources of ignition. Do not touch or walk through spilled material. Avoid contact with skin, eyes or clothing. Avoid generation of dust. Avoid breathing dust/fume/gas/mist/vapors/spray. Use personal protection recommended in Section 8.

6.2. Environmental precautions
Local authorities should be advised if significant spillages cannot be contained. Prevent entry into waterways, sewers, basements or confined areas.

6.3. Methods and material for containment and cleaning up
Spill Procedures: Wear protective equipment specified. Avoid the generation of dust. Sweep, vacuum, or shovel and place into closable container for disposal.
Procedure for Cleaning/Absorption: Isolate area and remove sources of friction, impact, heat, low level electrical current, and RF energy. Isolate spill and stop leak where safe. Remove ignition sources and work with non-sparking tools. Scoop up and remove. Do NOT spread spilled product with water.

6.4. Reference to other sections

See Section 7 for more information
See section 8 for more information
See section 13 for more information

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. Avoid contact with skin, eyes or clothing. Wash contaminated clothing before reuse. Take precautionary measures against static discharges. Avoid generation of dust. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Use personal protection recommended in Section 8.

7.2. Conditions for safe storage, including any incompatibilities

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat. Store away from strong oxidizing materials. Avoid exposure to direct sunlight. Keep locked up and out of reach of children. Keep away from food, drink and animal feeding stuffs. Store in accordance with local regulations.

7.3. Specific end use(s)

Apart from the uses mentioned in SECTION 1.2 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical Name	Netherlands-MAC	France	US-TLV	Germany	Italy
Zinc 2-mercaptobenzothiazole(CAS #: 149-30-4)	4 mg/m^3	-	3 mg/m^3	TWA: 4 mg/m^3 Skin	-

The mixture: Nuisance Dust.
OSHA PEL/8Hr-TWA = 15 mg/m^3 (Total Dust).
OSHA PEL/8-Hr TWA = 5 mg/m^3 (Respirable Dust).
ACGIH TLV/8-Hr TWA = 10 mg/m^3.

Derived No Effect Level (DNEL)

Zinc di(benzothiazol-2-yl) disulphide (CAS #: 155-04-4):
Workers
Inhalation, Systemic effects, Long term: 5.9 mg/m³
Dermal, Systemic effects, Long term: 3.3 mg/kg bw/day
General Population
Inhalation, Systemic effects, Long term: 1 mg/m³
Dermal, Systemic effects, Long term: 1.2 mg/kg bw/day
Oral, Systemic effects, Long term: 0.6 mg/kg bw/day

Benzothiazole-2-thiol (CAS #: 149-30-4):
Workers
Inhalation, Systemic effects, Long term: 8.8 mg/m³
Inhalation, Systemic effects, Acute/short term: 70.4 mg/m³
Dermal, Systemic effects, Long term: 5 mg/kg bw/day
Dermal, Systemic effects, Acute/short term: 40 mg/kg bw/day
General Population
Inhalation, Systemic effects, Long term: 2.2 mg/m³
Inhalation, Systemic effects, Acute/short term: 17.6 mg/m³
Dermal, Systemic effects, Long term: 2.5 mg/kg bw/day
Dermal, Systemic effects, Acute/short term: 20 mg/kg bw/day
Oral, Systemic effects, Long term: 1.25 mg/kg bw/day
Oral, Systemic effects, Acute/short term: 10 mg/kg bw/day

Predicted No Effect Concentration (PNEC)
Zinc di(benzothiazol-2-yl) disulphide (CAS #: 155-04-4):
PNEC aqua (freshwater): 0.004 mg/L
PNEC aqua (marine water): 0.0004 mg/L
PNEC aqua (intermittent, freshwater): 0.005 mg/l
PNEC STP: 0.3 mg/L
PNEC sediment (freshwater): 0.147 mg/kg sediment dw
PNEC sediment (marine water): 0.0147 mg/kg sediment dw
PNEC soil: 0.027 mg/kg soil dw

Benzothiazole-2-thiol (CAS #: 149-30-4):
PNEC aqua (freshwater): 0.0041 mg/L
PNEC aqua (marine water): 0.00041 mg/L
PNEC aqua (intermittent, freshwater): 0.005 mg/l
PNEC STP: 0.3 mg/L
PNEC sediment (freshwater): 0.147 mg/kg sediment dw
PNEC sediment (marine water): 0.0147 mg/kg sediment dw
PNEC soil: 0.027 mg/kg soil dw

8.2. Exposure controls
Engineering Controls
Ensure adequate ventilation, especially in confined areas. Showers. Eyewash stations. Remove all sources of ignition.

Personal protective equipment

Eye/face protection	Wear safety glasses or goggles to protect against exposure. Eye protection is not required during typical product use conditions.
Hand Protection	Wear protective gloves.
Skin and body protection	Use gloves as a standard industrial handling procedure. All cleanable impervious glove types are acceptable.

Respiratory protection	Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure. Firefighting; use a Positive Pressure Demand Full Face Self Contained Breathing Apparatus.
Thermal hazards	No information available.

Environmental exposure controls
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid (20°C and 101.3 kPa); powder or granule
Color	Light yellow
Odor	Slight odor
Odor Threshold	Not determined
pH	Not determined
Melting point/freezing point	300 °C at 101.3 kPa
Boiling point/boiling range	Decomposes before boiling
Flammability	Not flammable
Explosive limits	Not applicable
Flash point	Not applicable
Auto-ignition temperature	405°C at 1013 hPa
Decomposition temperature	Not determined
Viscosity, kinematic	Not applicable
Solubility	Water: 20.6mg/L at 20°C
Partition coefficient n-octanol/water (LogPow)	155-04-4: 2.42 at 20°C
Vapor Pressure	Not determined
Density/relative density	1.63 at 20°C
Relative Vapor density	Not applicable
Particle characteristics	D50 = 16 µm
Explosive properties	Non explosive
Oxidizing properties	Non oxidising

9.2. Other information

Information with regard to physical hazard classes
No data available

Other safety characteristics

Loss on drying	0.50% max
Residues on 63 µm sieve	0.50% max
Zinc content	15 - 22% max
Volatile by Volume	0.5 - 2.6% (3 hrs at 60 °C)
Dissociation constant	pKa at 20°C: 7.03
Oil content	0 - 2.0% (Upon buyer's request)

SECTION 10: Stability and reactivity

10.1. Reactivity
Stable under recommended storage and handling conditions (see section 7).

10.2. Chemical stability
Stable when stored at room temperature in closed, original container.
Stable under normal conditions of handling, use and transportation.

10.3. Possibility of hazardous reactions
No hazardous reactions known. Hazardous polymerization will not occur.

10.4. Conditions to avoid
Dust formation. Heat, flames and sparks. Incompatible materials.

10.5. Incompatible materials
Strong oxidizing agents. Strong acids.

10.6. Hazardous decomposition products
Carbon oxides, sulfur oxides, nitrogen oxides, hydrogen cyanide, zinc oxides.

SECTION 11: Toxicological information

11.1.Information on hazard classes as defined in Regulation (EC) No 1272/2008
Acute toxicity
Not classified.

Zinc 2-mercaptobenzothiazole (CAS #: 155-04-4)	
LD50 oral rat	7500 mg/kg
LD50 dermal rabbit	> 7940 mg/kg
Benzothiazole-2-thiol (149-30-4)	
LD50 oral rat	3800 mg/kg
LD50 dermal rabbit	> 7940 mg/kg
LC50 Inhalation - Rat	> 1270 mg/l air

Skin corrosion/irritation
Skin, rabbit: not irritating.

Serious eye damage/eye irritation
Eyes, rabbit: not irritating.

Sensitization
May cause an allergic skin reaction, mouse, guinea pig.

Germ cell mutagenicity
Negative.

Carcinogenicity
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. Negative in standard tests using bacteria and yeast cells.

Reproductive toxicity
For component MBT: A National Toxicology Program (NTP) 2-year study on rats and mice concluded that there was "some evidence of carcinogenic activity" in treated rats.

STOT - single exposure
Not classified.

STOT - repeated exposure
Via oral route - systemic effects
(NOAEL): (50mg/kg bw/day)

Aspiration hazard
Not classified.

11.2. Information on other hazards

Endocrine disrupting properties

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

Other information

No information available.

SECTION 12: Ecological information

12.1. Toxicity

Very toxic to aquatic life with long lasting effects.

Zinc 2-mercaptobenzothiazole (CAS #: 155-04-4)	
LC50 96h - Fish	0.73 mg/l Oncorhynchus mykiss (previous name: Salmo gairdneri)
EC50 48h - Crustacea	0.71 mg/l Daphnia magna
EC50 72h - Algae	0.5 mg/l Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
NOEC chronic Crustacea	0.08 mg/l Daphnia magna
NOEC chronic fish	0.041 mg/l Oncorhynchus mykiss (previous name: Salmo gairdneri)
NOEC chronic algae	0.066 mg/l Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
Benzothiazole-2-thiol (149-30-4)	
LC50 96h - Fish	0.73 mg/l Oncorhynchus mykiss (previous name: Salmo gairdneri)
LC50 96h - Fish	0.42 mg/l Oncorhynchus mykiss [static]
EC50 48h - Crustacea	8.5 mg/l Daphnia magna
EC50 48h- Crustacea	16.1 mg/l Daphnia magna
EC50 48h - Crustacea	0.71 mg/l Daphnia magna
EC50 72h - Algae	0.5 mg/l Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)
EC50 96h - Algae	0.25 mg/l Pseudokirchneriella subcapitata
NOEC chronic Crustacea	0.08 mg/l Daphnia magna
NOEC chronic fish	0.041 mg/l Oncorhynchus mykiss (previous name: Salmo gairdneri)
NOEC chronic algae	0.066 mg/l Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum)

12.2. Persistence and degradability

Not readily biodegradable.

12.3. Bioaccumulative potential

Chemical Name	Bioconcentration factor (BCF)
Benzothiazole-2-thiol (CAS #: 149-30-4)	<0.8
Zinc 2-mercaptobenzothiazole (CAS #: 155-04-4)	0.8

12.4. Mobility in soil

Zinc 2-mercaptobenzothiazole(CAS #: 155-04-4)	
Log Koc	3.7

12.5. Results of PBT and vPvB assessment

The components are not considered to be persistent, bioaccumulating nor toxic (PBT) and very persistent nor very bioaccumulating (vPvB).

12.6. Endocrine disrupting properties

The substance is not included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605

12.7. Other adverse effects

No information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14: Transport information

14.1 UN number or ID number	3077
14.2. UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc 2-mercaptobenzothiazole)
14.3. Transport hazard class(es)	9
14.4. Packing group	Ⅲ
14.5. Environmental hazards	Marine pollutant
14.6. Special precautions for user	No information available
14.7 Maritime transport in bulk according to IMO instruments	Not applicable

SECTION 15: Regulatory information

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

EU-Regulations

No REACH Annex XVII restrictions
Not on the REACH Candidate List
Not on the REACH Annex XIV List
Not subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 july 2012 concerning the export and import of hazardous chemicals.
Not subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

National regulations

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Canadian DSL (Domestic Substances List)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on KECL/KECI (Korean Existing Chemicals Inventory)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on the TCSI (Taiwan Chemical Substance Inventory)

Germany
Water hazard class (WGK) WGK 2, Significantly hazardous to water (Classification according to AwSV)

15.2. Chemical safety assessment
A chemical safety assessment has been carried out

SECTION 16: Other information
This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Data sources	LOLI, ECHA
Issue Date	15-Feb-2016
Revision date	08-July-2024

Key or legend to abbreviations and acronyms used in the safety data sheet
TWA - TWA (time-weighted average)
STEL - STEL (Short Term Exposure Limit)
Ceiling - Maximum limit value
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Full text of H-Statements referred to under section 3
H317 - May cause an allergic skin reaction
H400 - Very toxic to aquatic life
H410 - Very toxic to aquatic life with long lasting effects

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

-------- End of Safety Data Sheet --------