



# MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90

Safety Data Sheet AKM528

Date of issue: 05/18/2016

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Version: 1.1

## SECTION 1: Identification

### 1.1. Identification

Product name	: MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90
Product code	: AKM528
Product form	: Substance
Physical state	: Solid
Formula	: C <sub>4</sub> H <sub>6</sub> MnN <sub>2</sub> S <sub>4</sub>
Synonyms	: 1,2-ETANEDIYLBIS(CARBAMADODITHIOIC ACID), MANGANESE 2+ SALT; [ETHYLENE(DITHIOCARBAMATO-KAPPA(2)S,S')(DITHIOCARBAMATO)]MANGANESE; MANGANESE N,N-ETHYLENEBIS(DITHIOCARBAMATE); MANEB
Chemical family	: METAL COMPOUND

### 1.2. Recommended use and restrictions on use

Recommended use	: Chemical intermediate
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### 1.3. Supplier

#### GELEST, INC.

11 East Steel Road  
Morrisville, PA 19067

#### USA

T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST

[info@gelest.com](mailto:info@gelest.com) - [www.gelest.com](http://www.gelest.com)

### 1.4. Emergency telephone number

Emergency number	: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)
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## SECTION 2: Hazard(s) identification

### 2.1. Classification of the substance or mixture

#### GHS-US classification

Substances and mixtures which in contact with water emit flammable gases Category 3	H261 In contact with water releases flammable gas
Serious eye damage/eye irritation Category 2A	H319 Causes serious eye irritation
Reproductive toxicity Category 2	H361 Suspected of damaging fertility or the unborn child
Hazardous to the aquatic environment - Acute Hazard Category 1	H400 Very toxic to aquatic life
Full text of H statements : see section 16	

### 2.2. GHS Label elements, including precautionary statements

#### GHS US labeling

Hazard pictograms (GHS US)



Signal word (GHS US)

: Warning

Hazard statements (GHS US)

: H261 - In contact with water releases flammable gas  
H319 - Causes serious eye irritation  
H361 - Suspected of damaging fertility or the unborn child  
H400 - Very toxic to aquatic life

Precautionary statements (GHS US)

: P201 - Obtain special instructions before use.  
P202 - Do not handle until all safety precautions have been read and understood.  
P280 - Wear protective gloves/protective clothing/eye protection/face protection.  
P231+P232 - Handle under inert gas. Protect from moisture  
P264 - Wash hands thoroughly after handling.  
P273 - Avoid release to the environment.  
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
P337+P313 - If eye irritation persists: Get medical advice/attention.  
P370+P378 - In case of fire: Use media other than water to extinguish.  
P391 - Collect spillage.  
P402+P404 - Store in a dry place. Store in a closed container.  
P405 - Store locked up.  
P501 - Dispose of contents/container to licensed waste disposal facility.

### 2.3. Hazards not otherwise classified (HNOC)

No additional information available

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### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Substance type : Mono-constituent  
Name : MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90  
CAS-No. : 12427-38-2

Name	Product identifier	%	GHS-US classification
Manganese(II) ethylenebis(dithiocarbamate)	(CAS-No.) 12427-38-2	90 - 100	Water-react. 3, H261 Eye Irrit. 2A, H319 Repr. 2, H361 Aquatic Acute 1, H400

Full text of hazard classes and H-statements : see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact : Wash with plenty of soap and water. Get medical advice/attention.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion : Never give anything by mouth to an unconscious person. Get medical advice/attention.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Suspected of damaging fertility or the unborn child.

Symptoms/effects after inhalation : May be harmful if inhaled. May cause irritation to the respiratory tract.

Symptoms/effects after skin contact : May cause mild skin irritation. May cause sensitization.

Symptoms/effects after eye contact : Causes serious eye irritation.

Symptoms/effects after ingestion : May be harmful if swallowed.

### 4.3. Immediate medical attention and special treatment, if necessary

No additional information available

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Dry chemical.

Unsuitable extinguishing media : Do not use straight streams.

### 5.2. Specific hazards arising from the chemical

Fire hazard : In contact with water releases flammable gas. May ignite if heated in air. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

### 5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid contact with skin and eyes. Do not breathe dust.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment as described in Section 8.

Emergency procedures : Evacuate unnecessary personnel.

#### 6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

### 6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters. Avoid release to the environment.

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### 6.3. Methods and material for containment and cleaning up

- For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
- Methods for cleaning up : Collect spillage. Sweep or shovel spills into appropriate container for disposal.

### 6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid contact with skin and eyes. Do not breathe dust. Avoid dust formation. Handle under inert gas. Protect from moisture. Use only outdoors or in a well-ventilated area.
- Hygiene measures : Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

### 7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Keep container tightly closed. Store locked up. Store in a dry place. Store in a closed container.
- Incompatible materials : Strong oxidizing agents.
- Storage area : Store in a well-ventilated place. Store away from heat.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)		
ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> as Mn
OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> as Mn

### 8.2. Appropriate engineering controls

- Appropriate engineering controls : Handle in an enclosing hood with exhaust ventilation.

### 8.3. Individual protection measures/Personal protective equipment

#### Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

#### Hand protection:

Neoprene or nitrile rubber gloves

#### Eye protection:

Chemical goggles. Contact lenses should not be worn

#### Skin and body protection:

Wear suitable protective clothing

#### Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified dust and mist (teal cartridge) respirator.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

- Physical state : Solid
- Appearance : Powder.
- Molecular mass : 265.28 g/mol
- Color : Yellow.
- Odor : Odorless.
- Odor threshold : No data available
- Refractive index : No data available
- pH : No data available
- Relative evaporation rate (butyl acetate=1) : No data available
- Melting point : 131 °C decomposes
- Freezing point : No data available

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Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: In contact with water releases flammable gas
Vapor pressure	: < 0.1 mm Hg @ 25°C
Relative vapor density at 20 °C	: No data available
Relative density	: > 1
% Volatiles	: < 3 %
Solubility	: Slightly. Soluble in water.
Log Pow	: No data available
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosion limits	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No additional information available

### 10.2. Chemical stability

Slowly oxidizes to Mn+3 compound in air at room temperature.

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

Do not heat in air.

### 10.5. Incompatible materials

Strong oxidizing agents.

### 10.6. Hazardous decomposition products

Organic acid vapors. Manganese oxide fumes.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity : Not classified

#### MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90 (12427-38-2)

Toxicity information	RTECS Number: OP0700000
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#### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

LD50 oral rat	3000 mg/kg
LD50 oral mouse	2600 mg/kg
LD50 dermal rat	> 5000 mg/kg
ATE US (oral)	3000 mg/kg body weight

Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified

#### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

IARC group	3 - Not classifiable
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Reproductive toxicity	: Suspected of damaging fertility or the unborn child. oral, rat: TDLo: 770 mg/kg (11D preg) Specific Developmental Abnormalities: Eye, ear; Specific Developmental Abnormalities: Craniofacial (including nose and tongue); Specific Developmental Abnormalities: Musculoskeletal system oral, rat TDLo: 770 mg/kg (11D preg) Effects on Fertility: Post-implantation mortality (e.g, dead and/or resorbed implants per total number of implants); Specific Developmental Abnormalities: Body wall; Specific Developmental Abnormalities: Central nervous system
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Chronic Toxicity: Experimental teratogenic and reproductive effects reported. Men exposed to manganese compound dusts showed a decrease in fertility. Chronic manganese poisoning primarily involves the central nervous system. Early symptoms include languor, sleepiness and weakness in the legs. Emotional disturbances such as uncontrollable laughter and spastic gait are found in more advanced cases.
Symptoms/effects after inhalation	: May be harmful if inhaled. May cause irritation to the respiratory tract.
Symptoms/effects after skin contact	: May cause mild skin irritation. May cause sensitization.
Symptoms/effects after eye contact	: Causes serious eye irritation.
Symptoms/effects after ingestion	: May be harmful if swallowed.
Reason for classification	: Expert judgment

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Very toxic to aquatic life.

#### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

LC50 fish 1	0.48 - 0.56 mg/l Bleak ( <i>Alburnus alburnus</i> )
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### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

No additional information available

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Other adverse effects : This substance may be hazardous to the environment.

Effect on the ozone layer : No additional information available

## SECTION 13: Disposal considerations

### 13.1. Disposal methods

Sewage disposal recommendations : Do not dispose of waste into sewer.

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials : Avoid release to the environment.

## SECTION 14: Transport information

### 14.1. UN number

UN-No.(DOT) : 2968

DOT NA no. : UN2968

### 14.2. UN proper shipping name

Transport document description : UN2968 Maneb stabilized (against self-heating), 4.3, III

Proper Shipping Name (DOT) : Maneb stabilized  
against self-heating

Class (DOT) : 4.3 - Class 4.3 - Dangerous when wet material 49 CFR 173.124

Packing group (DOT) : III - Minor Danger

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Hazard labels (DOT) : 4.3 - Dangerous when wet



Dangerous for the environment : Yes

Marine pollutant : Yes



DOT Packaging Non Bulk (49 CFR 173.xxx) : 213

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Packaging Exceptions (49 CFR 173.xxx) : 151

### 14.3. Additional information

Emergency Response Guide (ERG) Number : 135

Other information : No supplementary information available.

### Transport by sea

DOT Vessel Stowage Location : B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

DOT Vessel Stowage Other : 13 - Keep as dry as reasonably practicable, 34 - Stow "away from" foodstuffs, 52 - Stow "separated from" acids

### Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 25 kg

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 100 kg

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90 (12427-38-2)

TSCA Exemption/Exclusion

CAUTION: This material is supplied for research and development purposes subject to the R&D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a "technically qualified individual" as defined by 40 CFR 720.3(ee). The use of this material for "commercial purposes" as defined by 40 CFR 720.3(r) is not permitted in the United States.

#### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

Subject to reporting requirements of United States SARA Section 313

Not listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 313 - Emission Reporting : 1 %

### 15.2. International regulations

#### CANADA

No additional information available

#### EU-Regulations

#### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

#### National regulations

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### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

Listed on the AICS (Australian Inventory of Chemical Substances)  
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)  
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory  
Listed on the Japanese ISHL (Industrial Safety and Health Law)  
Listed on the Korean ECL (Existing Chemicals List)  
Listed on NZIoC (New Zealand Inventory of Chemicals)  
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)  
Japanese Pollutant Release and Transfer Register Law (PRTR Law)  
Listed on INSQ (Mexican National Inventory of Chemical Substances)  
Listed on CICR (Turkish Inventory and Control of Chemicals)

### 15.3. US State regulations

**WARNING:** This product can expose you to Manganese(II) ethylenebis(dithiocarbamate), which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No significant risk level (NSRL)	Maximum allowable dose level (MADL)
Yes	No	No	No		

### Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)

U.S. - Massachusetts - Right To Know List  
U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List  
U.S. - Pennsylvania - RTK (Right to Know) List

## SECTION 16: Other information

Full text of H-phrases::

H261	In contact with water releases flammable gas
H319	Causes serious eye irritation
H361	Suspected of damaging fertility or the unborn child
H400	Very toxic to aquatic life

Abbreviations and acronyms

: Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

### Hazard Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 3 Serious Hazard - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well as liquids with flash points between 73 F and 100 F. (Classes IB & IC)

Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Prepared by safety and environmental affairs.

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SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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