

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

Safety Data Sheet AKM528

Date of issue: 18/05/2016

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Version: 1.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

Product form	: Substance
Physical state	: Solid
Substance name	: MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90
Product code	: AKM528
Formula	: C4H6MnN2S4
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. Relevant identified uses of the substance or mixture and uses advised against**1.2.1. Relevant identified uses**

Use of the substance/mixture : Chemical intermediate

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet**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 - www.gelest.com**GELEST INC.**Fritz-Klatte-Strasse 8
65933 Frankfurt**Germany**

T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM

info@gelestde.com - www.gelestde.com**1.4. Emergency telephone number**

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification**2.1. Classification of the substance or mixture****Classification according to Regulation (EC) No. 1272/2008 [CLP]**

Acute toxicity (inhalation:dust,mist) Category 4	H332
Serious eye damage/eye irritation, Category 2	H319
Skin sensitisation, Category 1	H317
Reproductive toxicity, Category 2	H361
Hazardous to the aquatic environment — Acute Hazard, Category 1	H400
Hazardous to the aquatic environment — Chronic Hazard, Category 1	H410
Full text of H statements : see section 16	

Adverse physicochemical, human health and environmental effects

No additional information available

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2.2. Label elements

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

Hazard pictograms (CLP) :



GHS07

GHS08

GHS09

Signal word (CLP) :

Warning

Hazard statements (CLP) :

H317 - May cause an allergic skin reaction.
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
H361 - Suspected of damaging fertility or the unborn child.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements (CLP) :

P202 - Do not handle until all safety precautions have been read and understood.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P261 - Avoid breathing dust.
P264 - Wash hands thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P308+P313 - IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

No additional information available

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

EC-No. :

235-654-8

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Manganese(II) ethylenebis(dithiocarbamate)	(CAS-No.) 12427-38-2 (EC-No.) 235-654-8 (EC Index-No.) 006-077-00-7	90 - 100	Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2, H319 Skin Sens. 1, H317 Repr. 2, H361d Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410

Full text of 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 person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact :

Wash with plenty of 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, both 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.

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4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

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

Unsuitable extinguishing media : Do not use straight streams.

5.2. Special hazards arising from the substance or mixture

Fire hazard : In contact with water releases flammable gases. 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. Advice for firefighters

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.

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.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Manganese(II) ethylenebis(dithiocarbamate) (12427-38-2)		
Italy - Portugal - USA ACGIH	ACGIH TWA (mg/m ³)	5 mg/m ³ as Mn
Latvia	OEL TWA (mg/m ³)	0.5 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	5 mg/m ³ as Mn

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8.2. Exposure controls

Appropriate engineering controls:

Handle in an enclosing hood with exhaust ventilation.

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
Colour	: Yellow.
Odour	: Odourless.
Odour threshold	: No data available
Refractive index	: No additional information available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: 131 °C decomposes
Freezing point	: No data available
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 gases.
Vapour pressure	: < 0.1 mm Hg @ 25°C
Relative vapour 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
Oxidising properties	: No data available
Explosive 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.

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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 : Harmful if inhaled.

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

ATE CLP (dust,mist)	1.5 mg/l/4h
Toxicity information	RTECS Number: OP0700000

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

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitisation : May cause an allergic skin reaction.
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

STOT-single exposure : Not classified
STOT-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.
Acute aquatic toxicity : Very toxic to aquatic life.
Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

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

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

No additional information available

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12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

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

SECTION 13: Disposal considerations

13.1. Waste treatment 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

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No. (ADR) : 2968
UN-No. (IMDG) : 2968
UN-No. (IATA) : 2968
UN-No. (ADN) : 2968
UN-No. (RID) : 2968

14.2. UN proper shipping name

Proper Shipping Name (ADR) : MANEB, STABILIZED
Proper Shipping Name (IMDG) : MANEB, STABILIZED
Proper Shipping Name (IATA) : Maneb preparation, stabilized
Proper Shipping Name (ADN) : MANEB, STABILIZED
Proper Shipping Name (RID) : MANEB, STABILIZED
Transport document description (ADR) : UN 2968 MANEB, STABILIZED (MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE)), 4.3, III, (E), ENVIRONMENTALLY HAZARDOUS
Transport document description (IMDG) : UN 2968 MANEB, STABILIZED (MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE)), 4.3, III, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS
Transport document description (IATA) : UN 2968 Maneb preparation, stabilized (MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE)), 4.3, III, ENVIRONMENTALLY HAZARDOUS
Transport document description (ADN) : UN 2968 MANEB, STABILIZED (MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE)), 4.3, III, ENVIRONMENTALLY HAZARDOUS
Transport document description (RID) : UN 2968 MANEB, STABILIZED (MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE)), 4.3, III, ENVIRONMENTALLY HAZARDOUS

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : 4.3
Danger labels (ADR) : 4.3



IMDG

Transport hazard class(es) (IMDG) : 4.3
Danger labels (IMDG) : 4.3

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IATA

Transport hazard class(es) (IATA) : 4.3

Hazard labels (IATA) : 4.3



ADN

Transport hazard class(es) (ADN) : 4.3

Danger labels (ADN) : 4.3



RID

Transport hazard class(es) (RID) : 4.3

Danger labels (RID) : 4.3



14.4. Packing group

Packing group (ADR) : III

Packing group (IMDG) : III

Packing group (IATA) : III

Packing group (ADN) : III

Packing group (RID) : III

14.5. Environmental hazards

Dangerous for the environment : Yes

Marine pollutant : Yes

Other information : No supplementary information available

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : W2

Special provisions (ADR) : 547

Limited quantities (ADR) : 1kg

Excepted quantities (ADR) : E1

Packing instructions (ADR) : P002, IBC08, R001

Special packing provisions (ADR) : B4

Mixed packing provisions (ADR) : MP14

Portable tank and bulk container instructions (ADR) : T1

Portable tank and bulk container special provisions (ADR) : TP33

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Tank code (ADR) : SGAN
Vehicle for tank carriage : AT
Transport category (ADR) : 0
Special provisions for carriage - Packages (ADR) : V1
Special provisions for carriage - Bulk (ADR) : VC1, VC2, AP3, AP4, AP5
Special provisions for carriage - Loading, unloading and handling (ADR) : CV23
Hazard identification number (Kemler No.) : 423
Orange plates :



Tunnel restriction code (ADR) : E
EAC code : 4Y

- Transport by sea

Special provisions (IMDG) : 223, 946
Limited quantities (IMDG) : 1 kg
Excepted quantities (IMDG) : E1
Packing instructions (IMDG) : P002
IBC packing instructions (IMDG) : IBC08
IBC special provisions (IMDG) : B4
Tank instructions (IMDG) : T1
Tank special provisions (IMDG) : TP33
EmS-No. (Fire) : F-G
EmS-No. (Spillage) : S-L
Stowage category (IMDG) : B
Stowage and handling (IMDG) : H1
Segregation (IMDG) : SG29, SG35, SG26
Properties and observations (IMDG) : Yellow powder. May evolve toxic, irritating or flammable fumes when wet, when involved in a fire or in contact with acids. Requires certification from the shipper that the substance is not class 4.2.

- Air transport

PCA Excepted quantities (IATA) : E1
PCA Limited quantities (IATA) : Y477
PCA limited quantity max net quantity (IATA) : 10kg
PCA packing instructions (IATA) : 486
PCA max net quantity (IATA) : 25kg
CAO packing instructions (IATA) : 491
CAO max net quantity (IATA) : 100kg
Special provisions (IATA) : A3
ERG code (IATA) : 4W

- Inland waterway transport

Classification code (ADN) : W2
Special provisions (ADN) : 547
Limited quantities (ADN) : 1 kg
Excepted quantities (ADN) : E1
Equipment required (ADN) : PP, EX, A
Ventilation (ADN) : VE01
Provisions for handling and stowage of the cargo (ADN) : HA08
Number of blue cones/lights (ADN) : 0

- Rail transport

Classification code (RID) : W2
Special provisions (RID) : 547
Limited quantities (RID) : 1kg
Excepted quantities (RID) : E1

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Packing instructions (RID)	: P002, IBC08, R001
Special packing provisions (RID)	: B4
Mixed packing provisions (RID)	: MP14
Portable tank and bulk container instructions (RID)	: T1
Portable tank and bulk container special provisions (RID)	: TP33
Tank codes for RID tanks (RID)	: SGAN
Transport category (RID)	: 0
Special provisions for carriage – Packages (RID)	: W1
Special provisions for carriage – Bulk (RID)	: VC1, VC2, AP3, AP4, AP5
Special provisions for carriage - Loading, unloading and handling (RID)	: CW23
Colis express (express parcels) (RID)	: CE11
Hazard identification number (RID)	: 423

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90 is not on the REACH Candidate List

MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90 is not on the REACH Annex XIV List

MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90 is 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.

MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90 is not subject to Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC

% Volatiles : < 3 %

15.1.2. National regulations

Germany

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : MANGANESE(II) ETHYLENEBIS(DITHIOCARBAMATE), tech-90 is listed

Denmark

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product
The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

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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

Other information

: Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

Acute Tox. 4 (Inhalation)	Acute toxicity (inhal.), Category 4
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Repr. 2	Reproductive toxicity, Category 2
Repr. 2	Reproductive toxicity, Category 2
Skin Sens. 1	Skin sensitisation, Category 1
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H361	Suspected of damaging fertility or the unborn child.
H361d	Suspected of damaging the unborn child.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

SDS EU (REACH Annex II) - Custom

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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