

Safety Data Sheet

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

Revision date: 10/09/2014 Version: 1.0

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

1.1. Product identifier

Product form : Substance

Trade name : N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE

 CAS No
 : 110-18-9

 Product code
 : AB02020

 Formula
 : C6H16N2

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

Use of the substance/mixture : Laboratory use/Manufacturing component/Research

Use of the substance/mixture : Catalyst

1.3. Details of the supplier of the safety data sheet

AmericanBio, Inc.

15 Erie Dr.

Natick, MA 01760 - USA

T 800.443.0600 - F 508.655.2754

info@americanbio.com - www.americanbio.com

1.4. Emergency telephone number

Emergency number : 855.835.2572 (U.S.) :: 760.602.8703 (Outside U.S.)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Flam. Liq. 2 H225 Acute Tox. 3 (Oral) H301 Acute Tox. 3 (Inhalation) H331 Acute Tox. 4 (Inhalation:dust,mist) H332 Skin Corr. 1B H314

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US)







GHS02

GHS05

GHS06

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H225 - Highly flammable liquid and vapor

H301+H331 - Toxic if swallowed or if inhaled H314 - Causes severe skin burns and eye damage

H332 - Harmful if inhaled

Precautionary statements (GHS-US) : P210 - Keep away from open flames, sparks. - No smoking

P233 - Keep container tightly closed

P240 - Ground/bond container and receiving equipment P241 - Use explosion-proof electrical, lighting equipment

P242 - Use only non-sparking tools

P243 - Take precautionary measures against static discharge

P260 - Do not breathe mist, spray, vapors P261 - Avoid breathing mist, spray, vapors

P264 - Wash hands, forearms and face thoroughly after handling P270 - Do not eat, drink or smoke when using this product P271 - Use only outdoors or in a well-ventilated area

P280 - Wear eye protection, protective gloves, protective clothing, face protection P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting

P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated

clothing. Rinse skin with water/shower

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P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 - Immediately call a POISON CENTER or doctor/physician

P311 - Call a POISON CENTER or doctor/physician

P312 - Call a POISON CENTER/doctor/physician if you feel unwell

P321 - Specific treatment (see SECTION 4 on this label)

P330 - If swallowed, rinse mouth

P363 - Wash contaminated clothing before reuse

P370+P378 - In case of fire: Use foam/water spray/ sand for extinction P403+P233 - Store in a well-ventilated place. Keep container tightly closed

P403+P235 - Store in a well-ventilated place. Keep cool

P405 - Store locked up

P501 - Dispose of contents/container to local/federal regulations

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	Classification (GHS-US)
N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE (Main constituent)	(CAS No) 110-18-9	100	Flam. Liq. 2, H225 Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Inhalation), H331 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Corr. 1B, H314

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general

: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation

Remove the victim into fresh air. Immediately consult a doctor/medical service. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after skin contact

Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital. Rinse skin with water/shower. Remove/Take off immediately all contaminated clothing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after eye contact

: Rinse immediately with plenty of water for 15 minutes. Take victim to an ophthalmologist. Do not apply neutralizing agents. Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

First-aid measures after ingestion

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Immediately consult a doctor/medical service. Call Poison Information Centre (www.big.be/antigif.htm). Ingestion of large quantities: immediately to hospital. Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician. Specific treatment (see Consult a doctor/medical service if you feel unwell on this label).

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries : Causes severe skin burns and eye damage.

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Symptoms/injuries after inhalation : Headache. Nausea

: Headache. Nausea. Coughing. Lacrimation. Corrosion of the upper respiratory tract. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upper respiratory tract. Possible laryngeal spasm/oedema. Possible inflammation of the respiratory tract. Risk of lung oedema. Risk of pneumonia. Danger of serious damage to health by

prolonged exposure through inhalation. Harmful if inhaled.

Symptoms/injuries after skin contact

: Caustic burns/corrosion of the skin.

Symptoms/injuries after eye contact

: Corrosion of the eye tissue.

Symptoms/injuries after ingestion : Burns to the gastric/intestinal mucosa. Caustic burns/corrosion of the skin. Toxic if swallowed.

Swallowing a small quantity of this material will result in serious health hazard.

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

: Preferably: polyvalent foam. Water spray. BC powder. Carbon dioxide. Foam. Dry powder.

Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media

: Solid water jet ineffective as extinguishing medium. Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

Fire hazard

: DIRECT FIRE HAZARD. Highly flammable. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD. May be ignited by sparks. Gas/vapour spreads at floor level: ignition hazard. Reactions involving a fire hazard: see "Reactivity Hazard". Highly flammable liquid and vapor.

Explosion hazard

DIRECT EXPLOSION HAZARD. Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD. may be ignited by sparks. Reactions with explosion hazards:

see "Reactivity Hazard". May form flammable/explosive vapor-air mixture.

Reactivity

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Thermal decomposition generates: Corrosive vapors.

5.3. Advice for firefighters

Firefighting instructions

: Cool tanks/drums with water spray/remove them into safety. Do not move the load if exposed to heat. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Avoid (reject) fire-fighting water to enter environment.

Protection during firefighting

: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures

: Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.

6.1.1. For non-emergency personnel

Protective equipment

: Gas-tight suit. Corrosion-proof suit.

Emergency procedures

Keep upwind. Mark the danger area. Consider evacuation. Seal off low-lying areas. Close doors and windows of adjacent premises. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Corrosion-proof appliances. Keep containers closed. Wash contaminated clothes. Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment

: Equip cleanup crew with proper protection.

Emergency procedures

Ventilate area.

6.2. Environmental precautions

Prevent spreading in sewers. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment

: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the liquid spill. Try to reduce evaporation. Measure the concentration of the explosive gas-air mixture. Dilute combustible/toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water. Do not use compressed air for pumping over spills.

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Methods for cleaning up

: Take up liquid spill into a non combustible material e.g.: sand, earth, vermiculite. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

Precautions for safe handling

Additional hazards when processed

Precautions for safe handling

- : Handle empty containers with care because residual vapors are flammable.
- : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Use corrosionproof equipment. Handle uncleaned empty containers as full ones. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Use spark-/explosion proof appliances and lighting system. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Observe strict hygiene. Keep container tightly closed. Measure the concentration in the air regularly. Work under local exhaust/ventilation. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Provide good ventilation in process area to prevent formation of vapor. No naked lights. No smoking. Use only non-sparking tools. Use only outdoors or in a well-ventilated area. Avoid breathing mist/vapours/spray. Do not breathe mist/vapours/spray.

Hygiene measures

: Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities

Technical measures

: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof Comply with applicable regulations. equipment. Comply with applicable regulations.

Storage conditions

Keep only in the original container in a cool, well ventilated place away from : Direct sunlight., Heat sources. Keep in fireproof place. Keep container tightly closed.

Incompatible products

: Strong bases. strong acids.

Incompatible materials

Sources of ignition. Direct sunlight. Heat sources.

Heat-ignition Prohibitions on mixed storage

KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources. KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids.

Storage area

Ventilation at floor level. Keep locked up. Provide for a tub to collect spills. May be stored under

Special rules on packaging

nitrogen. Meet the legal requirements. SPECIAL REQUIREMENTS: closing, clean, correctly labelled, meet the legal requirements.

Secure fragile packagings in solid containers.

Packaging materials SUITABLE MATERIAL: steel. aluminium. MATERIAL TO AVOID: copper.

Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

Control parameters

No additional information available

Exposure controls

Personal protective equipment

: Avoid all unnecessary exposure.

Materials for protective clothing

GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: No data available. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data

available.

Hand protection Eye protection

: Gloves. Wear protective gloves.

Skin and body protection

Chemical goggles or face shield. Safety glasses.

Respiratory protection

Head/neck protection. Corrosion-proof clothing. Wear suitable protective clothing. Gas mask with filter type A. High vapour/gas concentration: self-contained respirator. Wear

approved mask.

Other information

: When using, do not eat, drink or smoke.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Liquid.

Molecular mass : 116.21 g/mol

Color : Colourless to light yellow.
Odor : Ammonia odour. Mild odour.

Odor threshold : No data available pH : 8 - 8.5 (100 ppm)

pH solution : 100 ppm

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : -55 °C

Freezing point : No data available

Boiling point : $121 \, ^{\circ}\text{C}$ Flash point : $17 \, ^{\circ}\text{C}$

Self ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : No data available

Vapor pressure : 21 hPa
Vapor pressure at 50 °C : <= 1100 hPa
Relative vapor density at 20 °C : No data available

Relative density : 0.78
Density : 775 kg/m³

Solubility : Soluble in water. Soluble in organic solvents.

Water: Complete

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
Explosive limits : 1 - 9 vol %

9.2. Other information

VOC content : 100 %

Other properties : Gas/vapour heavier than air at 20°C. Clear. Volatile.

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, carbon monoxide - carbon dioxide). Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Thermal decomposition generates: Corrosive vapors.

10.2. Chemical stability

Stable under normal conditions. Not established. Highly flammable liquid and vapor. May form flammable/explosive vapor-air mixture.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures. Open flame.

10.5. Incompatible materials

strong acids. Strong bases.

10.6. Hazardous decomposition products

fume. Carbon monoxide. Carbon dioxide. May release flammable gases. Thermal decomposition generates: Corrosive vapors.

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SECTION 11: Toxicological information

Information on toxicological effects

: Toxic if swallowed. Toxic if inhaled. Harmful if inhaled. Acute toxicity

N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE (\f)110-18-9		
LD50 oral rat	268 mg/kg (Rat)	
LD50 dermal rabbit	5390 mg/kg (Rabbit)	
LC50 inhalation rat (mg/l)	6.3 mg/l/4h (Rat)	
LC50 inhalation rat (ppm)	1318 ppm/4h (Rat)	

Skin corrosion/irritation : Causes severe skin burns and eye damage.

pH: 8 - 8.5 (100 ppm)

Serious eye damage/irritation : Not classified

pH: 8 - 8.5 (100 ppm)

Respiratory or skin sensitization : Not classified Germ cell mutagenicity : Not classified Carcinogenicity Not classified Reproductive toxicity : Not classified Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated

exposure)

: Not classified

Aspiration hazard

Potential Adverse human health effects and

: Not classified

symptoms

Symptoms/injuries after inhalation

Based on available data, the classification criteria are not met. Harmful if inhaled. Toxic if swallowed.

: Headache. Nausea. Coughing. Lacrimation. Corrosion of the upper respiratory tract. Respiratory difficulties. FOLLOWING SYMPTOMS MAY APPEAR LATER: Possible oedema of the upper respiratory tract. Possible laryngeal spasm/oedema. Possible inflammation of the respiratory tract. Risk of lung gedema. Risk of pneumonia. Danger of serious damage to health by

prolonged exposure through inhalation. Harmful if inhaled. Caustic burns/corrosion of the skin.

Symptoms/injuries after skin contact Symptoms/injuries after eye contact

Symptoms/injuries after ingestion

Corrosion of the eye tissue.

Burns to the gastric/intestinal mucosa. Caustic burns/corrosion of the skin. Toxic if swallowed.

Swallowing a small quantity of this material will result in serious health hazard.

SECTION 12: Ecological information

Toxicity 12.1.

Ecology - air

: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology - water

Mild water pollutant (surface water). Slightly harmful to fishes. Insufficient data available on

ecotoxicity.

N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE (110-18-9)

LC50 fish 1

240 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)

Persistence and degradability 12.2.

N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE (110-18-9)

Persistence and degradability Biodegradable in water. Not established.

12.3. **Bioaccumulative potential**

N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE (110-18-9)

Bioaccumulative potential No bioaccumulation data available. Not established

Mobility in soil

No additional information available

Other adverse effects 12.5.

Other information : Avoid release to the environment.

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations

Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Incinerate under surveillance with energy recovery. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to local/federal regulations.

Additional information

LWCA (the Netherlands): KGA category 03. Hazardous waste according to Directive 2008/98/EC. Handle empty containers with care because residual vapors are flammable.

Ecology - waste materials

: Avoid release to the environment. Hazardous waste due to toxicity.

SECTION 14: Transport information

In accordance with DOT

No dangerous good in sense of transport regulations

Additional information

Other information : No supplementary information available.

ADR

Transport document description : UN 2372, 3, II, (D/E)

Packing group (ADR) : II

Class (ADR) : 3 - Flammable liquid

Hazard identification number (Kemler No.) : 33 Classification code (ADR) : F1

Danger labels (ADR) : 3 - Flammable liquids



Orange plates

33 2372

Tunnel restriction code : D/E

Transport by sea

UN-No. (IMDG) : 2372

Class (IMDG) : 3 - Flammable liquids

EmS-No. (1) : F-E EmS-No. (2) : S-D

Air transport

UN-No.(IATA) : 2372

Class (IATA) : 3 - Flammable Liquids
Packing group (IATA) : II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE (110-18-9)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

No additional information available

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EU-Regulations

No additional information available

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

Flam. Liq. 2 H225 Acute Tox. 3 (Inhalation) H331 Acute Tox. 3 (Oral) H301 Skin Corr. 1B H314

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

F; R11 Xn; R20/22 C; R34

Full text of R-phrases: see section 16

15.2.2. National regulations

No additional information available

15.3. US State regulations

N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE(110-18-9)

State or local regulations U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

Other information : None.

Full text of H-phrases: see section 16:

Acute Tox. 3 (Inhalation)	Acute toxicity (inhalation) Category 3	
Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3	
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4	
Flam. Liq. 2	Flammable liquids Category 2	
Skin Corr. 1B	Skin corrosion/irritation Category 1B	
H225	Highly flammable liquid and vapor	
H301	Toxic if swallowed	
H314	Causes severe skin burns and eye damage	
H331	Toxic if inhaled	
H332	Harmful if inhaled	

NFPA health hazard : 3 - Short exposure could cause serious temporary or

residual injury even though prompt medical attention was

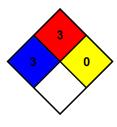
given.

NFPA fire hazard : 3 - Liquids and solids that can be ignited under almost all

ambient conditions.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions,

and are not reactive with water.



SDS US (GHS HazCom 2012)

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