

# Safety Data Sheet

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

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Version: 1.0

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

### 1.1. Product identifier

Product form : Substance

Substance name : Nitric acid, 70% w/w

 CAS No
 : 7697-37-2

 Product code
 : LC17700

 Formula
 : HNO3

 BIG no
 : 08999

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

Use of the substance/mixture : Chemical raw material

Metal surface treatment Printing industry: etch solution

Laboratory chemical

# 1.3. Details of the supplier of the safety data sheet

LabChem Inc

Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court

16063 Zelienople, PA - USA T 412-826-5230 - F 724-473-0647 info@labchem.com - www.labchem.com

### 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or 011-703-527-3887

# **SECTION 2: Hazards identification**

# 2.1. Classification of the substance or mixture

# **GHS-US** classification

Ox. Liq. 3 H272 Met. Corr. 1 H290 Skin Corr. 1A H314 Eye Dam. 1 H318

# 2.2. Label elements

# **GHS-US** labelling

Hazard pictograms (GHS-US)





GHS03

GHS05

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H272 - May intensify fire; oxidiser H290 - May be corrosive to metals

H314 - Causes severe skin burns and eye damage

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

P220 - Keep/Store away from clothing, combustible materials P221 - Take any precaution to avoid mixing with combustibles

P234 - Keep only in original container
P260 - Do not breathe mist, spray, vapours

P264 - Wash exposed skin thoroughly after handling

P280 - Wear eye protection, face protection, protective clothing, protective gloves 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

P304+P340 - IF INHALED: Remove person to fresh air and keep 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/doctor/... P363 - Wash contaminated clothing before reuse

P370+P378 - In case of fire: Use carbon dioxide (CO2), powder, alcohol-resistant foam for

extinction

P390 - Absorb spillage to prevent material damage

P405 - Store locked up

P406 - Store in corrosive resistant container with a resistant inner liner

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P501 - Dispose of contents/container to comply with local, state and federal regulations

### 2.3. Other hazards

Other hazards not contributing to the classification

: None

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

No data available

# SECTION 3: Composition/information on ingredients

#### 3.1. Substances

Substance type : Multi-constituent

Name	Product identifier	%	GHS-US classification
Nitric acid, 70% w/w (Main constituent)	(CAS No) 7697-37-2	100	Ox. Liq. 3, H272 Met. Corr. 1, H290 Skin Corr. 1A, H314 Eve Dam. 1, H318

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.

First-aid measures after inhalation

: Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact

: Wash immediately with lots of water (15 minutes)/shower. 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.

First-aid measures after eye contact

First-aid measures after ingestion

: Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Cover eyes aseptically. Take victim to an ophthalmologist.

Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Give milk to drink. Do not induce vomiting. Do not give activated charcoal. Do not give chemical antidote. Immediately consult a doctor/medical service. Call Poison Information Centre (www.big.be/antigif.htm). Take the container/vomit to the doctor/hospital. Ingestion of large

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

Symptoms/injuries after inhalation

: Irritation of the respiratory tract. Dry/sore throat. Corrosion of the upper respiratory tract. Coughing. FOLLOWING SYMPTOMS MAY APPEAR LATER: Respiratory difficulties. Possible inflammation of the respiratory tract. Risk of lung oedema. Blue/grey discolouration of the skin.

Symptoms/injuries after skin contact

: Yellow skin. May stain the skin. Caustic burns/corrosion of the skin. Slow-healing wounds.

Symptoms/injuries after eye contact

: Corrosion of the eye tissue. Permanent eye damage.

Symptoms/injuries after ingestion

: Nausea. Vomiting. Abdominal pain. Burns to the gastric/intestinal mucosa. Possible esophageal perforation. Shock.

Chronic symptoms

: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Affection/discolouration of the teeth. Risk of pneumonia.

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

Obtain medical assistance.

# **SECTION 5: Firefighting measures**

# 5.1. Extinguishing media

Suitable extinguishing media Unsuitable extinguishing media : EXTINGUISHING MEDIA FOR SURROUNDING FIRES: All extinguishing media allowed.

: No unsuitable extinguishing media known.

quantities: immediately to hospital.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard

: DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Promotes combustion. Reactions involving a fire hazard: see "Reactivity Hazard".

Explosion hazard

: INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard".

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Reactivity

: Concentrated solution reacts exothermically with water (moisture). Decomposes on exposure to temperature rise: release of toxic and corrosive gases/vapours (nitrous vapours). Violent to explosive reaction with many compounds e.g.: with (strong) reducers, with (some) bases, with organic material and with combustible materials with risk of spontaneous ignition. Reacts violently with (some) metals. Decomposes slowly on exposure to light: release of toxic and corrosive gases/vapours (nitrous vapours). Violent to explosive reaction with (some) metal powders: release of highly flammable gases/vapours (hydrogen).

### 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.

# **SECTION 6: Accidental release measures**

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

### 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. No naked flames. Corrosion-proof appliances. Keep

containers closed. Wash contaminated clothes.

### 6.1.2. For emergency responders

Protective equipment Emergency procedures : Equip cleanup crew with proper protection. Avoid breathing mist, Vapors, spray.

: Stop leak if safe to do so. Ventilate area.

### 6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

### 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. Dilute toxic gases/vapours with water spray. Take account of toxic/corrosive precipitation water. Hazardous reaction: measure explosive gas-air mixture. Reaction: dilute combustible gas/vapour with water curtain.

Methods for cleaning up

Take up liquid spill into inert absorbent material, e.g.: sand, earth, vermiculite or powdered limestone. Do not take up in combustible material such as: saw dust. Scoop absorbed substance into closing containers. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Spill must not return in its original container. Damaged/cooled tanks must be emptied. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

### 6.4. Reference to other sections

No additional information available

### **SECTION 7: Handling and storage**

### 7.1. Precautions for safe handling

Precautions for safe handling

: Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Keep the substance free from contamination. Use corrosionproof equipment. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Never dilute by pouring water to the acid. Always add the acid to the water. Keep away from naked flames/heat. Observe very strict hygiene - avoid contact. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

Hygiene measures

Do no eat, drink or smoke when using this product. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

# 7.2. Conditions for safe storage, including any incompatibilities

Heat and ignition sources

: KEEP SUBSTANCE AWAY FROM: heat sources.

Prohibitions on mixed storage

: KEEP SUBSTANCE AWAY FROM: combustible materials. reducing agents. (strong) bases. cellulosic materials. organic materials. metal powders. water/moisture.

Storage area

: Store in a cool area. Keep out of direct sunlight. Store in a dry area. Store in a dark area. Ventilation at floor level. Fireproof storeroom. Keep locked up. Provide for a tub to collect spills. Aboveground. Keep only in the original container. Store only in a limited quantity. Meet the legal requirements.

Special rules on packaging

: SPECIAL REQUIREMENTS: hermetical. dry. clean. opaque. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials

: SUITABLE MATERIAL: stainless steel. aluminium. iron. glass. MATERIAL TO AVOID: synthetic material.

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### 7.3. Specific end use(s)

No additional information available

# SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Nitric acid, 70% w/w (7697-37-2)		
USA ACGIH	ACGIH TWA (ppm)	2 ppm
USA ACGIH	ACGIH STEL (ppm)	4 ppm
USA OSHA	OSHA PEL (TWA) (mg/m3)	5 mg/m³
USA OSHA	OSHA PEL (TWA) (ppm)	2 ppm

### 8.2. Exposure controls

Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity

of any potential exposure. Provide adequate general and local exhaust ventilation.

Personal protective equipment : Protective goggles. Protective clothing. Face shield. Gloves. Combined gas/dust mask with filter

type NO/P2.



Materials for protective clothing : GIVE LESS RESISTANCE: polyethylene/ethylenevinylalcohol. GIVE POOR RESISTANCE:

chloroprene rubber. nitrile rubber. polyethylene. PVA. natural fibres.

Hand protection : Gloves.

Eye protection : Protective goggles.

Skin and body protection : Head/neck protection. Corrosion-proof clothing.

Respiratory protection : Gas mask with filter type B. Gas mask with filter type E. Gas mask with filter type NO. High

vapour/gas concentration: self-contained respirator.

# **SECTION 9: Physical and chemical properties**

# 9.1. Information on basic physical and chemical properties

Physical state : Liquid
Appearance : Liquid.
Molecular mass : 63.01 g/mol

Colour : Colourless-yellow. On exposure to light: red-brown.
Odour : Irritating/pungent odour. Asphyxiating odour.

Odour threshold : 0.29 - 0.98 ppm 0.75 - 2.5 mg/m³

. 1 (6 %)

pH : 1 (6 %) pH solution : 6 %

Relative evaporation rate (butylacetate=1) : No data available : -42 - -38 °C Melting point Freezing point : No data available : 83 - 122 °C Boiling point Flash point : Not applicable Self ignition temperature : Not applicable Decomposition temperature : No data available Flammability (solid, gas) : No data available : 7.3 - 58.5 hPa Vapour pressure

Relative vapour density at 20 °C : 2.2
Relative density : 1.4 - 1.5
Relative density of saturated gas/air mixture : 1.01

Density : 1413 - 1513 kg/m<sup>3</sup>

Solubility : Exothermically soluble in water. Soluble in ether.

Water: Complete

Log Pow : -2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)

Log Kow : No data available Viscosity, kinematic : No data available

Viscosity, dynamic : 0.0009 - 0.002 Pa.s (20 °C)

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**Explosive properties** : No data available

Oxidising properties : May intensify fire; oxidiser.

Explosive limits : No data available

Other information

Saturation concentration : 10 g/m<sup>3</sup> VOC content : Not applicable

Other properties Gas/vapour heavier than air at 20°C. Hygroscopic. Producing fumes/mist. Physical properties

depending on the concentration. Substance has acid reaction.

# SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Concentrated solution reacts exothermically with water (moisture). Decomposes on exposure to temperature rise: release of toxic and corrosive gases/vapours (nitrous vapours). Violent to explosive reaction with many compounds e.g.: with (strong) reducers, with (some) bases, with organic material and with combustible materials with risk of spontaneous ignition. Reacts violently with (some) metals. Decomposes slowly on exposure to light: release of toxic and corrosive gases/vapours (nitrous vapours). Violent to explosive reaction with (some) metal powders: release of highly flammable gases/vapours (hydrogen).

#### **Chemical stability** 10.2.

Unstable on exposure to light. Hygroscopic.

# Possibility of hazardous reactions

May react violently with reducing agents

### **Conditions to avoid**

Direct sunlight. Incompatible materials.

### Incompatible materials

Strong bases. Strong reducing agents. Organic compounds. cyanides. combustible materials. Aldehydes. Ammonia. metals. alcohols.

#### **Hazardous decomposition products** 10.6.

Nitrogen oxides. oxygen.

# **SECTION 11: Toxicological information**

# Information on toxicological effects

Acute toxicity : Not classified

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

pH: 1 (6 %)

: Causes serious eye damage. Serious eye damage/irritation

> pH: 1 (6 %) : Not classified

Respiratory or skin sensitisation Not classified Germ cell mutagenicity

Carcinogenicity Not classified (Based on available data, the classification criteria are not met)

: Not classified Reproductive toxicity Specific target organ toxicity (single exposure) : Not classified : Not classified Specific target organ toxicity (repeated

exposure)

Aspiration hazard : Not classified

Symptoms/injuries after inhalation Irritation of the respiratory tract. Dry/sore throat. Corrosion of the upper respiratory tract.

Coughing. FOLLOWING SYMPTOMS MAY APPEAR LATER: Respiratory difficulties. Possible inflammation of the respiratory tract. Risk of lung oedema. Blue/grey discolouration of the skin.

Symptoms/injuries after skin contact Yellow skin. May stain the skin. Caustic burns/corrosion of the skin. Slow-healing wounds.

Symptoms/injuries after eye contact Corrosion of the eye tissue. Permanent eye damage.

Symptoms/injuries after ingestion Nausea. Vomiting. Abdominal pain. Burns to the gastric/intestinal mucosa. Possible esophageal

perforation. Shock

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: Affection/discolouration of the teeth. Chronic symptoms

Risk of pneumonia.

# **SECTION 12: Ecological information**

#### 12.1. **Toxicity**

Ecology - general : Classification concerning the environment: not applicable.

Mild water pollutant (surface water). Harmful to fishes. Slightly harmful to invertebrates Ecology - water

(Daphnia). May cause eutrophication. pH shift.

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Nitric acid, 70% w/w (7697-37-2)		
LC50 fishes 1	25 - 36 mg/l (96 h; Lepomis macrochirus; PURE SUBSTANCE)	
EC50 Daphnia 1	180 mg/l (48 h; Daphnia magna; PURE SUBSTANCE)	
LC50 fish 2	72 ppm (Gambusia affinis; PURE SUBSTANCE)	
Threshold limit algae 1	> 19 mg/l (Algae; PURE SUBSTANCE)	

# 12.2. Persistence and degradability

Nitric acid, 70% w/w (7697-37-2)		
Persistence and degradability	Biodegradability: not applicable. No (test)data on mobility of the components of the mixture available.	
Biochemical oxygen demand (BOD)	Not applicable	
Chemical oyxgen demand (COD)	Not applicable	
ThOD	Not applicable	
BOD (% of ThOD)	Not applicable	

# 12.3. Bioaccumulative potential

Nitric acid, 70% w/w (7697-37-2)	
BCF fish 1	<= 1 (Pisces)
Log Pow	-2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Bioaccumulative potential	Bioaccumulation: not applicable.

### 12.4. Mobility in soil

No additional information available

# 12.5. Other adverse effects

No additional information available

# **SECTION 13: Disposal considerations**

# 13.1. Waste treatment methods

Waste disposal recommendations : Remove

: Remove waste in accordance with local and/or national regulations. Recycle/reuse. Remove for physico-chemical/biological treatment. Remove to an authorized dump (Class I). Treat using the best available techniques before discharge into drains or the aquatic environment.

: LWCA (the Netherlands): KGA category 01. Hazardous waste according to Directive

2008/98/EC.

# **SECTION 14: Transport information**

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

Additional information

UN-No.(DOT) : 2031 DOT NA no. UN2031

# 14.2. UN proper shipping name

DOT Proper Shipping Name : Nitric acid

other than red fuming, with at least 65 percent, but not more than 70 percent nitric acid

Department of Transportation (DOT) Hazard

Classes

: 8 - Class 8 - Corrosive material 49 CFR 173.136

Hazard labels (DOT) : 8 - Corrosive substances

5.1 - Oxidizing substances



Packing group (DOT) : II - Medium Danger

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DOT Special Provisions (49 CFR 172.102)

: A6 - For combination packagings, if plastic inner packagings are used, they must be packed in tightly closed metal receptacles before packing in outer packagings.

B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.

B47 - Each tank may have a reclosing pressure relief device having a start-to-discharge pressure setting of 310 kPa (45 psig).

TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59)

F) and 50 C (122 F), respectively.

DOT Packaging Exceptions (49 CFR 173.xxx) : None
DOT Packaging Non Bulk (49 CFR 173.xxx) : 158
DOT Packaging Bulk (49 CFR 173.xxx) : 242

### 14.3. Additional information

Other information : No supplementary information available.

State during transport (ADR-RID) : as liquid.

### **Overland transport**

Packing group (ADR) : II

Class (ADR) : 8 - Corrosive substances

Hazard identification number (Kemler No.) : 85
Classification code (ADR) : CO1

Danger labels (ADR) : 8 - Corrosive substances

5.1 - Oxidizing substances



Orange plates

203

Tunnel restriction code : E

# Transport by sea

DOT Vessel Stowage Location : D - The material must be stowed "on deck only" 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, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other : 66 - Stow "separated from" flammable solids,74 - Stow "separated from" oxidizers,89 -

Segregation same as for oxidizers,90 - Stow "separated from" radioactive materials

EmS-No. (1) : F-A EmS-No. (2) : S-B

### Air transport

DOT Quantity Limitations Passenger aircraft/rail : Forbidden

(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 30 L

CFR 175.75)

Subsidiary risks (IATA) : 5.1

# **SECTION 15: Regulatory information**

# 15.1. US Federal regulations

# Nitric acid, 70% w/w (7697-37-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on SARA Section 313 (Specific toxic chemical listings)

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Nitric acid, 70% w/w (7697-37-2)	
RQ (Reportable quantity, section 304 of EPA's List of Lists) :	1000 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

# 15.2. International regulations

### **CANADA**

Nitric acid, 70% w/w (7697-37-2)	
Listed on the Canadian DSL (Domestic Sustances List) inventory.	
WHMIS Classification	Class E - Corrosive Material Class C - Oxidizing Material

# **EU-Regulations**

No additional information available

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

Ox. Liq. 3 H272 Skin Corr. 1A H314

Full text of H-phrases: see section 16

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

O; R8 C; R35

Full text of R-phrases: see section 16

### 15.2.2. National regulations

Nitric acid,	, 70% w/w (7697-37-2)
Listed on th	he Canadian Ingredient Disclosure List

# 15.3. US State regulations

Nitric acid, 70% w/w(7697-37-2)	
State or local regulations	U.S Pennsylvania - RTK (Right to Know) List U.S New Jersey - Right to Know Hazardous Substance List U.S Massachusetts - Right To Know List

# **SECTION 16: Other information**

Full text of H-phrases: see section 16:

Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Met. Corr. 1	Corrosive to metals, Category 1
Ox. Liq. 3	Oxidising Liquids, Category 3
Skin Corr. 1A	Skin corrosion/irritation, Category 1A
H272	May intensify fire; oxidiser
H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

NFPA health hazard : 4 - Very short exposure could cause death or serious

residual injury even though prompt medical attention was

given.

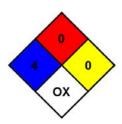
NFPA fire hazard : 0 - Materials that will not burn.

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

and are not reactive with water.

NFPA specific hazard : OX - This denotes an oxidizer, a chemical which can

greatly increase the rate of combustion/fire.



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# **HMIS III Rating**

Health : 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or

repeated overexposures

Flammability : 0 Minimal Hazard Physical : 0 Minimal Hazard

Personal Protection : H

SDS US (GHS HazCom 2012)

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.

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