

Safety Data Sheet 906205

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

SECTION 1: Identification

1.1. Identification

Product form : Substance Substance name : Hydrogen Cyanide

CAS-No. : 74-90-8

Product code : SG-1001-06618

Formula : CHN

Synonyms : Hydrocyanic acid / Prussic acid / Hydrogen cyanide, anhydrous / Cyanhydric acid / Hydrogen

cyanide, stabilized / Cyanides / Hydrocyanic acid / Prussic acid / Hydrogen cyanide, anhydrous

/ Cyanhydric acid / Hydrogen cyanide, stabilized / Cyanides

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Laboratory chemicals

Manufacture of substances

1.3. Supplier

Air Liquide USA LLC and its affiliates 9811 Katy Freeway, Suite 100 Houston, TX 77024 - USA T 1-800-819-1704 www.us.airliquide.com

1.4. Emergency telephone number

Emergency number : Chemtrec: 1-800-424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Flammable liquids H224 Extremely flammable liquid and vapour

Category 1
Acute toxicity (oral)
H300
Fatal if swallowed

Category 1

Acute toxicity (dermal) H310 Fatal in contact with skin

Category 1
Acute toxicity H330 Fatal if inhaled

(inhalation:gas) Category 1

Skin corrosion/irritation H315 Causes skin irritation

Category 2
Serious eye damage/eye H320 Causes eye irritation

Serious eye damage/eye H320 Causes eye irritation irritation Category 2B

Specific target organ H335 May cause respiratory irritation

toxicity (single exposure)

Category 3

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US)





GHS02

GHS06

Signal word (GHS-US) : Dange

Hazard statements (GHS-US) : H224 - Extremely flammable liquid and vapour

H300+H310+H330 - Fatal if swallowed, in contact with skin or if inhaled

H315 - Causes skin irritation H320 - Causes eye irritation

H335 - May cause respiratory irritation

CGA-HG04 - May form explosive mixtures with air

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CGA-HG11 - Symptoms may be delayed

Precautionary statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood.

P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking.

P260 - Do not breathe vapors.

P271 - Use only outdoors or in a well-ventilated area.

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

P301+P310 - If swallowed: Immediately call a POISON CENTER

P302+P352 - If on skin: Wash with plenty of water

P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact

lenses, if present and easy to do. Continue rinsing

P331 - Do NOT induce vomiting.

P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P403 - Store in a well-ventilated place.

P405 - Store locked up.

P501 - Dispose of contents/container in accordance with local/regional/national/international

regulations

P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing

P362 - Take off contaminated clothing and wash before reuse.

P381 - Eliminate all ignition sources if safe to do so.

P307+P311 - If exposed: Call a poison center/doctor

P284 - Wear respiratory protection. Consult respirator supplier's product information for the

selection of the appropriate respiratory protection.

CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C/125 °F

CGA-PG05 - Use a back flow preventive device in the piping CGA-PG06 - Close valve after each use and when empty

CGA-PG10 - Use only with equipment rated for cylinder pressure

CGA-PG14 - Approach suspected leak area with caution

CGA-PG18 - When returning cylinder, install leak tight valve outlet cap or plug

CGA-PG21 - Open valve slowly

2.3. Other hazards which do not result in classification

No additional information available

Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

Substances

Name	Product identifier	%	GHS-US classification
Hydrogen Cyanide (Main constituent)	(CAS-No.) 74-90-8	> 99%	Flam. Liq. 1, H224 Acute Tox. 1 (Oral), H300 Acute Tox. 1 (Dermal), H310 Acute Tox. 1 (Inhalation:gas), H330 Skin Irrit. 2, H315 Eye Irrit. 2B, H320 STOT SE 3, H335

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

3.2. **Mixtures**

Not applicable

SECTION 4: First-aid measures

Description of first aid measures

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Apply artificial respiration with bag and mask if breathing stopped. Get immediate medical

advice/attention.

Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash First-aid measures after skin contact

contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention.

Rinse immediately with plenty of water for 15 minutes. Remove contact lenses, if present and First-aid measures after eye contact

easy to do. Continue rinsing. If eye irritation occurs, seek medical attention.

: Do NOT induce vomiting. IF SWALLOWED: Get immediate medical advice/attention. First-aid measures after ingestion

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

: Fatal if inhaled. May cause respiratory irritation. Symptoms/effects after inhalation Symptoms/effects after skin contact : Fatal in contact with skin. Causes skin irritation.

Symptoms/effects after eye contact : Causes eye irritation. Symptoms/effects after ingestion : Fatal if swallowed.

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Symptoms/effects upon intravenous

administration

: Not known.

Chronic symptoms : Adverse effects not expected from this product.

4.3. Immediate medical attention and special treatment, if necessary

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Specific hazards arising from the chemical

Fire hazard : This product is flammable.

Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire

and increasing risk of burns and injuries.

Reactivity : None known.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray

or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting : Standard protective clothing and equipment (e.g, Self Contained Breathing Apparatus) for fire

fighters. 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 : Ensure adequate ventilation.

6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment consistent with the site emergency plan.

Emergency procedures : Evacuate personnel to a safe area. Close doors and windows of adjacent premises. Keep

containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

6.1.2. For emergency responders

Protective equipment : Standard protective clothing and equipment (e.g, Self Contained Breathing Apparatus) for fire

fighters. Equip cleanup crew with proper protection.

Emergency procedures : Evacuate and limit access. Ventilate area. Remove ignition sources. Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained

released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering atmospheres of unknown contaminant concentration until

proven to be safe.

6.2. Environmental precautions

Try to stop release if without risk.

6.3. Methods and material for containment and cleaning up

For containment : Try to stop release if without risk.

Methods for cleaning up : Dispose of contents/container in accordance with local/regional/national/international

regulations.

6.4. Reference to other sections

See also Sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Use only with equipment rated for cylinder pressure. Close valve after each use and when empty. Handle empty containers with

cylinder pressure. Close valve after each use and when empty. Handle empty containers with care because residual vapors are flammable. In use, may form flammable vapor-air mixture.

Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Use only non-sparking tools.

Hygiene measures : Do not eat, drink or smoke when using this product.

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7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations. Proper grounding procedures to avoid static electricity

should be followed.

Storage conditions : Do not expose to temperatures exceeding 52 °C/ 125 °F. Keep container closed when not in

use. Protect cylinders from physical damage; do not drag, roll, slide or drop. Store in well

ventilated area. Store locked up.

Incompatible products : None known.

Incompatible materials : Oxidizing materials. Air. Amines. Acids. Sodium hydroxide. Calcium hydroxide. sodium

carbonate.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Hydrogen Cyanide (74-90-8)		
ACGIH	ACGIH Ceiling (ppm)	4.7 ppm
OSHA	OSHA PEL (TWA) (mg/m³)	11 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	10 ppm
OSHA	Limit value category (OSHA)	prevent or reduce skin absorption
IDLH	US IDLH (ppm)	50 ppm
NIOSH	NIOSH REL (STEL) (mg/m³)	5 mg/m³
NIOSH	NIOSH REL (STEL) (ppm)	4.7 ppm
NIOSH	US-NIOSH chemical category	Potential for dermal absorption

8.2. Appropriate engineering controls

Appropriate engineering controls

: Ensure exposure is below occupational exposure limits (where available). Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Consider the use of a work permit system e.g. for maintenance activities. Alarm detectors should be used when toxic gases may be released.

Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Wear chemically resistant protective gloves. Wear working gloves when handling gas containers. 29 CFR 1910.138: Hand protection

Eye protection:

Wear safety glasses with side shields. Wear goggles and a face shield when transfilling or breaking transfer connections. 29 CFR 1910.133: Eye and Face Protection

Skin and body protection:

Wear suitable protective clothing, e.g. lab coats, coveralls or flame resistant clothing.

Respiratory protection:

Wear a respirator when performing non-routine tasks not limited to line breaking or sampling. Wear a respirator during routine operations if determined to be necessary during a process-specific review. Consult respirator suppliers' product information or their representatives for the selection of the appropriate respirator. See Sections 5 & 6.

Thermal hazard protection:

None necessary during normal and routine operations.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance : Colorless or pale-blue liquid or gas (above 26°C).

Color : Colorless to pale-blue
Odor : Bitter almonds
Odor threshold : No data available
pH : No data available

Melting point : -15 °C

Freezing point : No data available

Boiling point : 26 °C

Critical temperature : 456.7 °K

Flash point : -18 °C (96%)

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

Flammability (solid, gas) : See Section 2.1 and 2.2

Vapor pressure : 630 mm Hg
Relative vapor density at 20 °C : No data available
Relative density : No data available
Specific gravity / density : 0.687 g/cm³ (at 20 °C)
Molecular mass : 27.025 g/mol

Relative gas density : Similar to air

Solubility : Water: No data available

Log Pow : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available
Explosion limits : 5.6 - 40 vol %

Explosive properties : Without adequate ventilation formation of explosive mixtures may be possible.

Oxidizing properties : None.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

None known.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Can form explosive mixture with air.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Oxidizing materials. Air. Amines. Acids. Sodium hydroxide. Calcium hydroxide. sodium carbonate.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Fatal if swallowed. Dermal: Fatal in contact with skin. Inhalation:gas: Fatal if inhaled.

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Skin corrosion/irritation

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Hydrogen Cyanide (74-90-8)	
LD50 oral rat	4.2 mg/kg
LD50 dermal rabbit	6.8 mg/kg
LC50 inhalation rat (ppm)	70 ppm/4h
ATE US (oral)	4.200 mg/kg body weight
ATE US (dermal)	6.800 mg/kg body weight
ATE US (gases)	70.000 ppmV/4h

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

Reproductive toxicity : Not classified Specific target organ toxicity - single exposure : May cause respiratory irritation.

Specific target organ toxicity - repeated

exposure

: Not classified

: Causes skin irritation.

Aspiration hazard : Not classified

Symptoms/effects after inhalation : Fatal if inhaled. May cause respiratory irritation. Symptoms/effects after skin contact Fatal in contact with skin. Causes skin irritation.

Symptoms/effects after eye contact : Causes eye irritation. Symptoms/effects after ingestion : Fatal if swallowed. Symptoms/effects upon intravenous

administration

Not known.

Chronic symptoms : Adverse effects not expected from this product.

SECTION 12: Ecological information

Toxicity

Hydrogen Cyanide (74-90-8)	
LC50 fish 1	0.082 - 0.137 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	1.8 mg/l (Exposure time: 48 h - Species: Daphnia species)
LC50 fish 2	24 - 35 μg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])

Persistence and degradability

No additional information available

Bioaccumulative potential

Hydrogen Cyanide (74-90-8)	
BCF fish 1	(no bioaccumulation expected)

Mobility in soil

No additional information available

Other adverse effects

Effect on ozone layer : No known effects from this product.

SECTION 13: Disposal considerations

13.1. **Disposal methods**

Regional legislation (waste) : U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII. U.S. -RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261. U.S. - RCRA (Resource Conservation & Recovery Act) - P Series Wastes -Acutely Toxic Wastes.

Contact supplier if guidance is required. Do not discharge into any place where its Waste treatment methods accumulation could be dangerous. Ensure that the emission levels from local regulations or operating permits are not exceeded. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Must not be discharged to atmosphere. Toxic and corrosive gases formed during combustion should be scrubbed before discharge to atmosphere.

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Product/Packaging disposal recommendations

: Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN1051 Hydrogen cyanide, stabilized with less than 3 percent water, 6.1 (3), I

UN-No.(DOT) : UN1051

Proper Shipping Name (DOT) : Hydrogen cyanide, stabilized

with less than 3 percent water

Class (DOT) : 6.1 - Class 6.1 - Poisonous materials 49 CFR 173.132

· 244

Packing group (DOT) : I - Great Danger

Subsidiary risk (DOT) 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 6.1 - Poison

3 - Flammable liquid





DOT Packaging Non Bulk (49 CFR 173.xxx) DOT Packaging Bulk (49 CFR 173.xxx) DOT Special Provisions (49 CFR 172.102)

: 1 - This material is poisonous by inhalation (see 171.8 of this subchapter) in Hazard Zone A (see 173.116(a) or 173.133(a) of this subchapter), and must be described as an inhalation hazard under the provisions of this subchapter.

B35 - Tank cars containing hydrogen cyanide may be alternatively marked Hydrocyanic acid, liquefied if otherwise conforming to marking requirements in subpart D of this part. Tank cars marked HYDROCYANIC ACID prior to October 1, 1991 do not need to be remarked. B61 - Written procedures covering details of tank car appurtenances, dome fittings, safety devices, and marking, loading, handling, inspection, and testing practices must be approved by the Associate Administrator before any single unit tank car tank is offered for transportation. B65 - Tank cars must have a test pressure of 34.47 Bar (500 psig) or greater and conform to Class 105A. Each tank car must have a pressure relief device having a start-to-discharge pressure of 15.51 Bar (225 psig). The tank car specification may be marked to indicate a test pressure of 20.68 Bar (300 psig).

B77 - Other packaging are authorized when approved by the Associate Administrator.

B82 - Cargo tanks and portable tanks are not authorized.

DOT Packaging Exceptions (49 CFR 173.xxx)

(49 CFR 173.27)

DOT Quantity Limitations Passenger aircraft/rail : Forbidden

DOT Quantity Limitations Cargo aircraft only (49 : Forbidden

CFR 175.75)

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 : 40 - Stow "clear of living quarters"

Emergency Response Guide (ERG) Number 117 (UN1051);152 (UN1614);154 (UN1613)

Other information : No supplementary information available.

Transportation of Dangerous Goods

Transport document description : UN1051 HYDROGEN CYANIDE, STABILIZED (containing less than 3 percent water), 6.1 (3), I

UN-No. (TDG) · UN1051

: HYDROGEN CYANIDE, STABILIZED Proper Shipping Name TDG Primary Hazard Classes : 6.1 - Class 6.1 - Toxic Substances

Packing group : I - Great Danger

TDG Subsidiary Classes : 3

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TDG Special Provisions

: 23 - (1) A consignor of these dangerous goods must include, except for UN1005, ANHYDROUS AMMONIA, the words "toxic by inhalation" or "toxic — inhalation hazard" or "toxique par inhalation" or "toxicité par inhalation" in the following places, unless the words are already part of the shipping name: (a)on a shipping document, immediately after the description of the dangerous goods; (b)on a small means of containment, next to the shipping name of the dangerous goods; and (c)on a large means of containment, next to the placard for the primary class of the dangerous goods or the placard for the subsidiary class, if any. For example, the notation on a shipping document would be "UN1935, CYANIDE SOLUTION, N.O.S, Class 6.1, PG I, toxic by inhalation". (2) This special provision does not apply to a person who transports these dangerous goods in accordance with an exemption set out in sections 1.15, 1.17 or 1.17.1 of Part 1 (Coming Into Force, Repeal, Interpretation, General Provisions and Special Cases). (3) A consignor of UN1005, ANHYDROUS AMMONIA, must include the words "inhalation hazard" or "dangereux par inhalation": (a)on a shipping document, immediately after the shipping name of the dangerous goods; and (b)on a small means of containment, next to the shipping name of the dangerous goods. When UN1005, ANHYDROUS AMMONIA, is contained in a large means of containment on which is affixed the anhydrous ammonia placard, the words "Anhydrous Ammonia, Inhalation Hazard" or "Ammoniac anhydre, dangereux par inhalation" must be displayed next to the placard in accordance with paragraph 4.18.2(b). SOR/2014-306

ERAP Index 1 000 **Explosive Limit and Limited Quantity Index** : 0

Passenger Carrying Road Vehicle or Passenger : Forbidden

Carrying Railway Vehicle Index Passenger Carrying Ship Index

: Forbidden

Transport by sea

Transport document description (IMDG) UN UN1051 Hydrogen Cyanide, Stabilized, 6.1, I, MARINE

POLLUTANT/ENVIRONMENTALLY HAZARDOUS

UN-No. (IMDG) : UN1051

Proper Shipping Name (IMDG) : Hydrogen Cyanide, Stabilized

Class (IMDG) : 6.1 - Toxic substances

Packing group (IMDG) : I - substances presenting high danger

Air transport

Transport document description (IATA) : UN Forbidden , ENVIRONMENTALLY HAZARDOUS

UN-No. (IATA) : Forbidden

SECTION 15: Regulatory information

15.1. US Federal regulations

Hydrogen Cyanide (74-90-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Listed on the United States SARA Section 302 Subject to reporting requirements of United States SARA Section 313	
EPA TSCA Regulatory Flag	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.
CERCLA RQ	10 lb
Section 302 EPCRA Reportable Quantity (RQ)	10 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	100 lb
SARA Section 313 - Emission Reporting	1 %

15.2. International regulations

CANADA

Hydrogen Cyanide (74-90-8)

Listed on the Canadian DSL (Domestic Substances List)

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EU-Regulations

Hydrogen Cyanide (74-90-8)

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

National regulations

Hydrogen Cyanide (74-90-8)

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 Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Japanese Poisonous and Deleterious Substances Control Law

Japanese Pollutant Release and Transfer Register Law (PRTR Law)

Listed on the Canadian IDL (Ingredient Disclosure List)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

13.3. OS State regulations	
Hydrogen Cyanide (74-90-8)	
U.S California - Proposition 65 - Carcinogens List	Yes
U.S California - Proposition 65 - Developmental Toxicity	No
U.S California - Proposition 65 - Reproductive Toxicity - Female	No
U.S California - Proposition 65 - Reproductive Toxicity - Male	Yes
State or local regulations	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

Other information

: This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

Full text of H-phrases:

r toxt or ri prinadoo.	
H224	Extremely flammable liquid and vapour
H300	Fatal if swallowed
H310	Fatal in contact with skin
H315	Causes skin irritation
H320	Causes eye irritation
H330	Fatal if inhaled
H335	May cause respiratory irritation

NFPA health hazard

: 4 - Materials that, under emergency conditions, can be

lethal

NFPA fire hazard

: 4 - Materials that rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and burn readily.

NFPA reactivity

1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.



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