Chemical Safety Data Sheet MSDS / SDS

Methane SDS

Revision Date:2024-04-25 Revision Number:1

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

Product identifier

Product name: Methane

CAS: 74-82-8

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

Address: 5 vasavi Layout Basaveswara Nilayam Pragathi Nagar Hyderabad, India -500090

Telephone: +91 9550333722

SECTION 2: Hazards identification

Classification of the substance or mixture

Gases under pressure: Refrigerated liquefied gas
Flammable gases, Category 1A, Flammable gas

GHS label elements, including precautionary statements

Pictogram(s)

Signal word Danger

Hazard statement(s)

H220 Extremely flammable gas

Precautionary statement(s)

Prevention

P282 Wear cold insulating gloves and either face shield or eye protection.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Response

P336+P317 Immediately thaw frosted parts with lukewarm water. Do not rub affected area. Get medical help.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 In case of leakage, eliminate all ignition sources.

Storage

P403 Store in a well-ventilated place.

Disposal

none

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name: Methane

Common names and synonyms:	Methane
CAS number:	74-82-8
EC number:	200-812-7
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

ON FROSTBITE: rinse with plenty of water, do NOT remove clothes. Refer for medical attention .

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

Most important symptoms/effects, acute and delayed

If concentration of gas is high enough, may cause asphyxiation. No detectable systemic effects, even at 5% concentration in air. (USCG, 1999)
High concentrations may cause asphyxiation. No systemic effects, even at 5% concentration in air. (USCG, 1999)
Excerpt from ERG Guide 115 [Gases - Flammable (Including Refrigerated Liquids)]: Vapors may cause dizziness or asphyxiation without warning. Some may be irritating if inhaled at high concentrations. Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite. Fire may produce irritating and/or toxic gases. (ERG, 2016)
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Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. Aliphatic hydrocarbons and related compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

Wear self contained breathing apparatus for fire fighting if necessary.

Specific hazards arising from the chemical

Excerpt from ERG Guide 115 [Gases - Flammable (Including Refrigerated Liquids)]: EXTREMELY FLAMMABLE. Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapors from liquefied gas are initially heavier than air and spread along ground. CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.) Vapors may travel to source of ignition and flash back. Cylinders exposed to fire may vent and release flammable gas through pressure relief devices. Containers may explode when heated. Ruptured cylinders may rocket. (ERG, 2016)
Special Hazards of Combustion Products: None (USCG, 1999)
Excerpt from ERG Guide 115 [Gases - Flammable (Including Refrigerated Liquids)]: EXTREMELY FLAMMABLE. Will be easily ignited by heat, sparks or flames. Will form explosive mixtures with air. Vapors from liquefied gas are initially heavier than air and spread along ground. CAUTION: Hydrogen (UN1049), Deuterium (UN1957), Hydrogen, refrigerated liquid (UN1966) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame. Use an alternate method of detection (thermal camera, broom handle, etc.) Vapors may travel to source of ignition and flash back. Cylinders exposed to fire may vent and release flammable gas through pressure relief devices. Containers may explode when heated. Ruptured cylinders may rocket. (ERG, 2016)
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Special protective actions for fire-fighters

Shut off supply; if not possible and no risk to surroundings, let the fire burn itself out. In other cases extinguish with water spray, powder, carbon dioxide. In case of fire: keep cylinder cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Personal protection: self-contained breathing apparatus. Consult an expert! Ventilation. Remove all ignition sources. NEVER direct water jet on liquid.

Environmental precautions

Evacuate danger area! Personal protection: self-contained breathing apparatus. Consult an expert! Ventilation. Remove all ignition sources. NEVER direct water jet on liquid.

Methods and materials for containment and cleaning up

Clean up promptly by sweeping or vaccum.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Use non-sparking handtools. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

Conditions for safe storage, including any incompatibilities

Fireproof. Cool. Ventilation along the floor and ceiling.Store in a cool, dry, well-ventilated location. Separate from halogens and oxygen. Outside or detached storage is preferred.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Methane			
CAS No.	74-82-8			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m^3	ppm	mg/m^3
Canada - Ontario	(1)	?	?	?
Finland	1000	?	?	?
	Remarks			
Canada - Ontario	(1) see aliphatic hydrocarbon gases			

Biological limit values

no data available

Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear safety goggles.

Skin protection

Cold-insulating gloves.

Respiratory protection

Use ventilation. Use breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state: Methane is a colorless odorless gas. It is also known as marsh gas or methyl hydride. It is easily ignited. The vapors are lighter than air. Under prolonged exposure to fire or intense heat the containers may rupture violently and rocket. It is used in making other chemicals and as a constituent of the fuel, natural gas.

Colour:	Colorless gas
Odour:	Odorless
Melting point/freezing point:	-296° F (USCG, 1999)
Boiling point or initial boiling point and boiling range:	?161°C(lit.)
Flammability:	Extremely flammable.
Lower and upper explosion limit/flammability limit:	Lower flammable limit: 5.3% by volume; Upper flammable limit: 14.0% by volume.
Flash point:	-188°C
Auto-ignition temperature:	998°F
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	34.8 uP at -181.6 deg C; 76.0 uP at -78.5 deg C; 102.6 uP at 0 deg C; 108.7 uP at 20 deg C; 133.1 uP at 100.0 deg C; 160.5 uP at 200.5 deg C; 181.3 uP at 284 deg C; 202.6 uP at 380 deg C; 226.4 uP at 499 deg C
Solubility:	3.5 mL/100 mL at 63° F (NTP, 1992)
Partition coefficient n-octanol/water:	log Kow = 1.09
Vapour pressure:	258574 mm Hg at 100° F ; 760 mm Hg at -258.7° F (NTP, 1992)
Density and/or relative density:	0.716g/mLat 25°C(lit.)
Relative vapour density:	0.55 (vs air)

Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

no data available

Chemical stability

no data available

Possibility of hazardous reactions

Very dangerous fire and explosion hazard when exposed to heat or flame.The gas is lighter than air.Contact of very cold liquefied gas with water may result in vigorous or violent boiling of the product and extremely rapid vaporization due to the large temperature differences involved. If the water is hot, there is the possibility that a liquid "superheat" explosion may occur. Pressures may build to dangerous levels if liquid gas contacts water in a closed container [Handling Chemicals Safely 1980].

Conditions to avoid

no data available

Incompatible materials

Reacts with chlorine and bromine in light (explosively in direct sunlight)

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. -Carbon oxides.

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

no data available

Reproductive toxicity

no data available

STOT-single exposure

Rapid evaporation of the liquid may cause frostbite.

STOT-repeated exposure

no data available

Aspiration hazard

On loss of containment this substance can cause suffocation by lowering the oxygen content of the air in confined areas.

SECTION 12: Ecological information

Toxicity

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

ANAEROBIC: Utilization of methane by soil microorganisms has been detected using five enriched soil samples collected from sites near Adelaide, South Australia; an average methane utilization of 55% was observed over 69 days. Methane utilization, expressed as % of control were as follows (value (soil type): 10 (litchfield podzolic, pH 5.9, 14% clay, 2.3% organic carbon, 17% moisture); 73 (pond mud, pH 7.9, 49% clay, 2.5% organic carbon, 126% moisture3); 55 (red brown earth, pH 7.7, 16% clay, 2.4% organic carbon, 8% moisture); 61 (Grey clay, pH 8.0, 36% clay, 3.1% organic carbon, 41% moisture); 75 (siliceous sands, pH 5.1, 5% clay, 2.4% organic carbon, 19% moisture)(1). The half-life of methane was estimated to range from 70 days to infinity based on gas exchange biodegradation experiments conducted in model estuarine ecosystems; inoculum sediments were obtained from Narragansett Bay, RI(2).

Bioaccumulative potential

An estimated BCF of 2 was calculated in fish for methane(SRC), using a log Kow of 1.09(1) and a regression-derived equation(1). According to a classification scheme(2), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

The Koc of methane is estimated as 9(SRC), using a log Kow of 1.09(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that methane is expected to have very high mobility in soil. Methane's vapor pressure of 4.7X10+5 mm Hg(4) suggests that this compound will permeate through soil(SRC).

Other adverse effects

no data available

SECTION 13: Disposal considerations

Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

UN Number

ADR/RID: UN1971 (For reference only, please check.)
IMDG: UN1971 (For reference only, please check.)
IATA: UN1971 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: METHANE, COMPRESSED or NATURAL GAS, COMPRESSED with high methane content (For reference only, please check.)
IMDG: METHANE, COMPRESSED or NATURAL GAS, COMPRESSED with high methane content (For reference only, please check.)
IATA: METHANE, COMPRESSED or NATURAL GAS, COMPRESSED with high methane content (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 2.1 (For reference only, please check.)
IMDG: 2.1 (For reference only, please check.)
IATA: 2.1 (For reference only, please check.)

Packing group, if applicable

ADR/RID: (For reference only, please check.)
IMDG: (For reference only, please check.)
IATA: (For reference only, please check.)

Environmental hazards

ADR/RID: No
IMDG: No
IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

EC Inventory

Listed.

United States Toxic Substances Control Act (TSCA) Inventory

Listed.

China Catalog of Hazardous chemicals 2015

Listed.

New Zealand Inventory of Chemicals (NZIoC)

Listed.

(PICCS)

Listed.

Vietnam National Chemical Inventory

Listed.

IECSC)

Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

References

IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

ECHA - European Chemicals Agency, website: https://echa.europa.eu/

Other Information

Density of the liquid at boiling point: 0.42 kg/l.High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death.Check oxygen content before entering area.Turn leaking cylinder with the leak up to prevent escape of gas in liquid state.After use for welding, turn valve off; regularly check tubing, etc., and test for leaks with soap and water.The measures mentioned in section PREVENTION are applicable to production, filling of cylinders, and storage of the gas.Other UN number: 1972 (refridgerated liquid), Hazard class: 2.1.