Natural Gas (Methane)

Revision: 7.1

Release Date: 17.06.2025

SECTION 1: Identification of the Hazardous Chemical and of the Supplier

Product name	:	Methane
CAS-No.	:	74-82-8
Synonyms	:	Sales gas, Natural gas, NGV, Methane
Recommended use	:	Fuel gas for industrial, commercial and residential.

Manufacturer Details

Company	:	PETRONAS GAS BERHAD
Address	:	Level 49, 50 & 51, Tower 1 PETRONAS Twin Towers Kuala Lumpur City Centre 50088 Kuala Lumpur Malaysia
Telephone	:	03 2051 6812 (Corporate Office)

Supplier/Distributor Details

Company	:	GAS MALAYSIA ENERGY AND SERVICES SDN BHD
Address	:	First Floor, No.5, Jalan Serendah 26/17 Seksyen 26, Peti Surat 7901 40732 Shah Alam Selangor Darul Ehsan Malaysia
Telephone	:	03 5101 2100
Emergency number	:	For pipeline emergency contact: 1 800 88 9119 (Operation Control Centre)

SECTION 2: Hazards Identification

Classification of the hazardous chemical

Flammable gases : Category 1

Gases under pressure : Compressed gas

Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements : H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

Precautionary statements : **Prevention:**

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

: **Response:**

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

P381 Eliminate all ignition sources if safe to do so.

: **Storage:**

P410 + P403 Protect from sunlight. Store in a well-ventilated place.

SECTION 3: Composition and information of the ingredients of the hazardous chemical

Substance / Mixture : Substance

Hazardous components

Chemical Name	CAS-No.	Concentration (%)
Methane	74-82-8	>= 90 - < 99
Carbon Dioxide	124-38-9	>= 1 - < 3.5
Nitrogen	74-84-0	>= 1 - < 3.5

SECTION 4: First Aid Measures

If inhaled	:	If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a medical doctor.
In case of skin contact	:	Immediately warm frostbite area with warm water (not to exceed 40°C). Do not rub affected area. Don't remove frozen gloves, shoes, or clothing.
In case of eye contact	:	Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	:	Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a medical doctor.
General advice	:	Move out of dangerous area. Show this safety data sheet to the doctor in attendance. Do not leave the victim unattended. Get medical attention immediately.
Most important symptoms and effects, both acute and delayed	:	Simple asphyxiant and may cause dizziness and drowsiness.

SECTION 5: Firefighting Measures

Extinguishing Media

Suitable extinguishing media	:	Alcohol-resistant foam Dry chemical Carbon dioxide (CO_2)
Unsuitable extinguishing media	:	High volume water jet

Physicochemical hazards arising from the chemical

Special protective equipment and precautions for fire-fighters

Special protective equipment for firefighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Specific extinguishing methods	:	For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

SECTION 6: Accidental Release Measures

Personal precautions, protective equipment and emergency procedures	:	Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Ensure adequate ventilation.
Environmental precautions	:	Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 7: Handling and Storage

Handling
Precautions for safe handling

Advice on protection against fire and explosion	:	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Use only explosion-proof equipment. Normal measures for preventive fire protection. Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.
Advice on safe handling	:	Take precautionary measures against static discharges. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Storage
Conditions for safe storage, including any incompatibilities

Conditions for safe storage	:	Prevent unauthorized access. Keep container tightly closed in a dry and well-ventilated place. Area should be well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with technological safety standards. No smoking.
Further information on storage stability	:	No decomposition if stored and applied as directed

SECTION 8: Exposure Controls and Personal Protection

Control parameters

Components	CAS-No.	Value Type (Form of exposure)	Control Parameters / Permissible Concentration	Basis
Carbon Dioxide	124-38-9	TWA	5,000 ppm 9,000 mg/m3	MY PEL
		TWA	5,000 ppm	ACGIH
		STEL	30,000 ppm	ACGIH

Individual protection measures, such as personal protective equipment

Eye/face protection	:	Tightly fitting safety goggles.
Respiratory protection	:	If working in confined space and Oxygen concentration is less than 19.5% volume, use SCBA or airline system.
Skin protection	:	Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves.
Hygiene measures	:	Wash hands before breaks and at the end of workday.

SECTION 9: Physical and Chemical Properties

Appearance	:	Compressed gas
Colour	:	Colourless
Odour	:	Mercaptan mixture (added). Natural gas in origin state is odorless.
Odour Threshold	:	Not applicable
pH	:	No data available
Melting point/freezing point	:	-183°C
Boiling point/boiling range	:	-162 °C
Flash point	:	-187 °C
Evaporation rate	:	No data available
Upper flammability limit	:	15% (Volume in air)
Lower flammability limit	:	5% (Volume in air)
Vapour pressure	:	147 hPa (15 °C)

Relative vapour density	:	0.042 (Air = 1.0)
Relative density	:	No data available
Density	:	No data available
Solubility(ies)		
Water solubility	:	33 g/l (20 °C)
Partition coefficient n-octanol/water	:	Pow: 1.81
Self-Ignition / Auto-ignition temperature	:	537 °C
Decomposition temperature	:	Not applicable
Viscosity, dynamic	:	Not applicable
Viscosity, kinematic	:	Not applicable
Molecular weight	:	16 g/mol

SECTION 10: Stability and Reactivity

Reactivity	:	Hazardous polymerisation does not occur.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Heat, sparks, flame and build-up of static electricity
Incompatible materials	:	Strong oxidizing agents
Hazardous decomposition products	:	Fumes, smoke, carbon monoxide

SECTION 11: Toxicological Information

Acute toxicity

Components:
Methane

Acute oral toxicity	:	Not applicable
Acute inhalation toxicity	:	LC50 (Mouse): 353553 ppm
		Exposure time: 4h
		Test atmosphere: gas
Acute dermal toxicity	:	Not applicable

Carbon Dioxide

Acute oral toxicity	:	Not applicable
Acute inhalation toxicity	:	LC50: 167857 ppm
		Exposure time: 4h
		Test atmosphere: gas
Acute dermal toxicity	:	Not applicable

Ethane

Acute oral toxicity	:	Not applicable
Acute inhalation toxicity	:	No data available
Acute dermal toxicity	:	Not applicable

Skin corrosion/irritation

Components :

Methane	:	Not applicable
Carbon Dioxide	:	Not applicable
Ethane	:	Not applicable

Serious eye damage/eye irritation

Components:

Methane	:	No data available
Carbon Dioxide	:	No data available
Ethane	:	No data available

Respiratory (inhalation) or skin sensitization (skin contact)

Components:

Methane

Exposure routes	:	Inhalation
Remarks	:	No data available

Exposure routes	:	Skin contact
Remarks	:	No data available

Carbon Dioxide

Exposure routes	:	Inhalation
Remarks	:	No data available

Exposure routes	:	Skin contact
Remarks	:	No data available

Ethane

Exposure routes	:	Inhalation
Remarks	:	No data available

Exposure routes	:	Skin contact
Remarks	:	No data available

Germ cell mutagenicity Assessment

Components:

Methane	:	No evidence of mutagenicity
Carbon Dioxide	:	No data available
Ethane	:	Not mutagenic in vivo and in vitro

Carcinogenicity Assessment

Components:

Methane	:	No data available
Carbon Dioxide	:	No data available
Ethane	:	No data available

Reproductive toxicity Assessment

Components:

Methane	:	No data available
Carbon Dioxide	:	No data available
Ethane	:	No toxicity to reproduction

Specific Target Organ Toxicity (STOT) – single exposure assessment

Components:

Methane	:	No data available
Carbon Dioxide	:	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.
Ethane	:	No data available

Specific Target Organ Toxicity (STOT) – repeated exposure assessment

Components:

Methane	:	No data available
Carbon Dioxide	:	No data available
Ethane	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure

Aspiration toxicity

Components:

Methane Statement on Aspiration Tox.	:	Not applicable
Carbon Dioxide Statement on Aspiration Tox.	:	Not applicable
Ethane Statement on Aspiration Tox.	:	Not applicable

SECTION 12: Ecological Information

Ecotoxicity

Components:

Methane:

Toxicity to fish	:	LC50 (Fish): 147.54 mg/l Exposure time: 96 h Remarks: QSAR
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia (water flea)): 69.43 mg/l Exposure time: 48 h Remarks: QSAR
Toxicity to algae	:	EC50 (Green Algae): 7.7 mg/l 19.37 mg/l Exposure time: 96 h Remarks: QSAR
Toxicity to fish (chronic toxicity)	:	No data available
Toxicity to daphnia and other aquatic invertebrates (chronic toxicity)	:	No data available
Toxicity to microorganisms	:	No data available

Carbon Dioxide:

Toxicity to fish	:	No data available
Toxicity to daphnia and other aquatic invertebrates	:	No data available
Toxicity to algae	:	No data available
Toxicity to fish (chronic toxicity)	:	No data available
Toxicity to daphnia and other aquatic invertebrates (chronic toxicity)	:	No data available
Toxicity to microorganisms	:	No data available

Ethane:

Toxicity to fish	:	No data available
Toxicity to daphnia and other aquatic invertebrates	:	LC50 (Daphnia (water flea): 46.6 mg/l Exposure time: 48 h
Toxicity to algae	:	EC50 (Green Algae): 16.47 mg/l Exposure time: 96 h Remarks: QSAR
Toxicity to fish (chronic toxicity)	:	No data available

Toxicity to daphnia and other aquatic invertebrates (chronic toxicity)	:	No data available
Toxicity to microorganisms	:	No data available

Persistence and degradability

Components:

Methane	:	Biodegradability: Result: Ready biodegradable Remarks: QSAR
Carbon Dioxide	:	No data available
Ethane	:	Biodegradability: Result: Readily biodegradable Remarks: QSAR

Bio-accumulative potential

Components:

Methane	:	Bioaccumulation: Remarks: No data available Partition coefficient n-octanol / water Low Pow: 109
Carbon Dioxide	:	No data available Bioaccumulation: Partition coefficient n-octanol / Water
Ethane	:	Bioaccumulation: Remarks: No data available Partition coefficient: n- octanol / water log Pow: 1.81 (20 °C) pH: 7

Mobility in soil

Methane	:	Medium mobility
Carbon Dioxide	:	Medium mobility
Ethane	:	Medium mobility

Other adverse effects

Methane	:	No data available.
Carbon Dioxide	:	No data available.
Ethane	:	No data available.

SECTION 13: Disposal Information

Disposal methods

Waste from residues	:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	:	Empty remaining contents. Dispose of an unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport Information

International Regulations

UNRTDG

UN Number	:	UN 1971
Proper Shipping Name	:	METHANE, COMPRESSED
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	2.1

IATA-DGR

UN/ID No.	:	UN 1971
Proper shipping name	:	Methane, compressed
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	Division 2.1 – Flammable gases
Packing instruction (cargo aircraft)	:	200
Packing instruction (passenger aircraft)	:	Not permitted for transport

IMDG-Code	:	UN 1971
Proper shipping name	:	METHANE, COMPRESSED
Class	:	2.1
Packing group	:	Not assigned by regulation
Labels	:	2.1
EmS Code	:	F-D, S-U
Marine pollutant	:	No

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied

Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged materials as it I described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, packages sizes, and variations in regional or country regulations.

SECTION 15: Regulatory Information

Safety, health, and environmental regulations specific for the hazardous chemical

Occupational Safety and Health (Classification, Labelling and Safety Data Sheet of Hazardous Chemicals) Regulations 2013.

Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health) Regulations 2000.

The components of this product are reported in the following inventories:

CH INV	:	On the inventory, or in compliance with the inventory.
TSCA	:	On TSCA Inventory.
DSL	:	All components of this product are on the Candian DSL
AICS	:	On the inventory, or in compliance with the inventory.
NZIoC	:	On the inventory, or in compliance with the inventory.
ENCS	:	Not in compliance with the inventory
ISHL	:	Not in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory.
PICCS	:	On the inventory, or in compliance with the inventory.
IECSC	:	On the inventory, or in compliance with the inventory.

SECTION 16: Other Information

Activities not allowed within pipeline Right-of-way (ROW) perimeter, for example, excavation, planting trees, open burning, heavy vehicle parking, etc.

SDS preparation date	:	16.06.2020
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Sources of key data used to compile the Safety Data Sheet	:	ECHA – European Chemicals Agency GESTIS database on hazardous substances – DGUV TOXNET – Toxicology Data Network

Full text of other abbreviations

(Q)SAR	:	(Quantitative) Structure Activity Relationship
ACCIH	:	American Conference of Governmental Industrial Hygienists
AICS	:	Australian Inventory of Chemical Substances
ANTT	:	National Agency for Transport by Land of Brazil
ASTM	:	American Society for the Testing of Materials
bw	:	Body weight
C	:	Ceiling
CCHC	:	Chemicals Classifications and Hazard Communication
CEIL	:	Ceiling
ChV	:	Chronic Toxic Value
CMR	:	Carcinogen, Mutagen or Reproductive Toxicant
CPR	:	Controlled Products Regulations
DIN	:	Standard of the German Institute for Standardization
DSL	:	Domestic Substance List (Canada)
ECx	:	Concentration associated with x% response
ELx	:	Loading rate associated with x% response
EmS	:	Emergency Schedule
ENCS	:	Existing and New Chemical Substances (Japan)
ErCx	:	Concentration associated with x% response
ERG	:	Emergency Response Guide

GHS	:	Globally Harmonized System of Classification and Labelling of Chemicals
GLP	:	Good Laboratory Practice
IARC	:	International Agency for Research on Cancer
IATA	:	International Air Transport Association
IBC	:	International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
IC50	:	Half maximal inhibitory concentration
ICAO	:	International Civil Aviation Organization
ICOP	:	Industry Code of Practice on Chemicals Classification and Hazard Communication
IECSC	:	Inventory of Existing Chemicals Classification and Hazard Communication
IMDG	:	International Maritime Dangerous Goods
IMO	:	International Maritime Organization
ISHL	:	Industrial Safety and Health Law (Japan)
ISO	:	International Organization for Standardization
KECI	:	Korea Existing Chemicals Inventory
LC50	:	Lethal Concentration to 50 % of a test population
LD50	:	Lethal Dose to 50 % of a test population (Median Lethal Dose)
MARPOL	:	International Convention for the Prevention of Pollution from Ships
MY PEL	:	Malaysian Permissible Exposure Limit
n.o.s.	:	Not Otherwise Specified
Nch	:	Chilean Norm
NITE	:	National Institute of Technology and Evaluation
NO(A)EC	:	No Observed (Adverse) Effect Concentration
NOELR	:	No Observe Effect Loading Rate
NOM	:	Official Mexican Norm
NTP	:	National Toxicology Program
NZIoC	:	New Zealand Inventory of Chemicals
OCSPP	:	Office of Chemical Safety and Pollution Prevention
OECD	:	Organization for Economic Co-operation and Development
PBT	:	Persistent, Bioaccumulative and Toxic
PICCS	:	Philipines Inventory of Chemicals and Chemicals Substances
REACH	:	Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
SADT	:	Self-Accelerating Decomposition Temperature
SDS	:	Safety Data Sheet
STEL	:	Short Term Exposure Limit
TCSI	:	Taiwan Chemical Substance Inventory
TDG	:	Transportation of Dangerous Goods
TSCA	:	Toxic Substance Control Act (United States)
TWA	:	Time Weighted Average
UN	:	United Nations
UNRTDG	:	United Nations Recommendations on the Transport of Dangerous Goods
UVCB	:	Unknown or Variable Composition, Complex Reaction Products and Biological Materials
vPvB	:	Very Persistent and Very Bioaccumulative
WHMIS	:	Workplace Hazardous Materials Information System
LLx	:	Loading rate associated with x % lethality effect

NOTE: This Safety Data Sheet (SDS) and the information herewith have been offered to the reader in good faith as being accurate. We have reviewed information in this SDS which we have received from external sources. We believe that the information provided herewith to be correct but cannot guarantee its accuracy or completeness. Safety and Health precautions in tis SDS may not be adequate for all individuals and/or situations. It is the reader's obligation to evaluate and use this product safety and to comply with all applicable laws and regulations. No statement made in this SDS shall be construed as permission or recommendation for the use of the product in a manner that might infringe existing patents. No warranty is made, either expressed or implied.

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