PUREGAS	SAFETY DATA SHEET	Revised edition no : 2 Date : 12/05/2014
	Methane	PG 010

SECTION 1. IDENTIFICATION OF THE PRODUCT AND COMPANY UNDERTAKING

Material Names/Synonyms	FIRE DAMP; MARSH GAS; METHYL HYDRIDE; NATURAL GAS; R50
Chemical Family	Hydrocarbons, gas
Product Use	Industrial
Usage Restrictions on Use	None known
Company:	**Puregas (Pty) Ltd** PO Box 123884, Alrode, 1451, South Africa **Tel :** (011) 903 9760 **Fax:** (011) 903 9766 **Cellphone:** 082 889 6946 (1st) 082 885 7475 (2nd) Info@puregas.co.za **Emergency Tel**: 0800 172 743 (Rapid Spill Response)

SECTION 2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION	Flammable gas, Category 1 Gas under pressure, Compressed gas
GHS LABEL ELEMENTS GHS SYMBOL	
Signal Word	Danger
HAZARD STATEMENT	Extremely flammable gas Contains gas under pressure; may explode if heated
Precautionary Statement(s) Prevention	Keep away from heat, sparks, open flame, and hot surfaces - No smoking
Response	Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so.
Storage	Store in a well-ventilated place. Protect from sunlight.
Other Hazards which do not Result in Classification	May cause asphyxia. May cause frostbite upon sudden release of compressed gas.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS #	Component	Percent
74-82-8	METHANE	100

Component Related Regulatory Information	This product may be regulated, have exposure limits or other information identified as the following: Aliphatic hydrocarbon gases (Alkane [C1-C4]).

SECTION 4. FIRST AID MEASURES

Inhalation	If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.
Skin contact	If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention.
Eye contact	Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.
Ingestion	If a large amount is swallowed, get medical attention
Notes to physician	For inhalation, consider oxygen.
Symptoms: Immediate	frostbite, suffocation
Symptoms: Delayed	No information on significant adverse effects

SECTION 5. FIRE-FIGHTING MEASURES

See Section 9 for Flammability Properties

Specific Hazards Arising from the Chemical	Severe fire hazard. Severe explosion hazard. Pressurized containers may rupture or explode if exposed to sufficient heat. Vapor/air mixtures are explosive above flash point. Electrostatic discharges may be generated by flow or agitation resulting in ignition or explosion.
Extinguishing Media	Carbon dioxide, regular dry chemical Large fires: Use regular foam or flood with fine water spray.
Unsuitable Extinguishing Media	None
Protective Equipment and Precautions for Firefighters	Wear full protective firefighting gear including self-contained breathing apparatus (SCBA) for protection against possible exposure.
Fire Fighting Measures	Move container from fire area if it can be done without risk. For fires in cargo or storage area: Cool containers with water from unmanned hose holder or monitor nozzles until well after fire is out. If this is impossible then take the following precautions: Keep unnecessary people away, isolate hazard area and deny entry. Let the fire burn. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck: Stop leak if possible without personal risk. Let burn unless leak can be stopped immediately. For smaller tanks or cylinders, extinguish and isolate from other flammables. Evacuation radius: 800 meters (1/2 mile). Stop flow of gas.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTION	Wear personal protective clothing and equipment, see Section 8.
ENVIROMENTAL PRECAUTIONS	Avoid release to the environment.
Methods for Containment	Keep unnecessary people away, isolate hazard area and deny entry. Remove sources of ignition. Ventilate closed spaces before entering.
Cleanup Methods	Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray.

SECTION 7. HANDLING AND STORAGE

Handling Procedures	Wash thoroughly after handling
Storage Procedures	Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Store in a well-ventilated place. Protect from sunlight. Keep separated from incompatible substances.
Incompatibilities combustible materials, halogens, oxidizing materials	

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits	**METHANE (74-82-8) ACGIH:** 1000 ppm TWA
COMPONENT BIOLOGICAL LIMIT VALUES	There are no biological limit values for any of this product's components.
ENGINEERING CONTROLS	Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.
EYE/ FACE PROTECTION	For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area
PROTECTIVE CLOTHING	For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing.
Glove Recommendations	For the gas: Wear appropriate chemical resistant gloves. For the liquid: Wear insulated gloves.
Respiratory Protection	Under conditions of frequent use or heavy exposure, respiratory protection may be needed. Respiratory protection is ranked in order from minimum to maximum. Consider warning properties before use. Any supplied-air respirator with a full face piece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-

For Unknown Concentrations or Immediately Dangerous to Life or Health	pressure mode. Any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Gas
COLOR	Colorless
ODOUR	Odorless
TASTE	Tasteless
MELTING/FREEZING POINT	-183 °C
FLASH POINT	-223◦C
EVAPORATION RATE	Not available
UEL	15%
HENRY'S LAW CONSTANT	0.00045830 atm-m3/mo
DENSITY	0.717 g/L @ 0 °C
KOW	724.44 estimated from water solubility
COEFF. WATER/OIL DIST	Not available
AUTO IGNITION	537◦C
APPEARANCE	Colourless
PHYSICAL FORM	Gas
ODOUR THRESHOLD	Not available
Ph	Not available
BOILING POINT	-162◦C
DECOMPOSITION	Not available
LEL	5.0◦C
VAPOR PRESSURE	760 mmHg @ -161 °C
VAPOUR DENSITY (Air = 1)	0.555

WATER SOLUBILITY	3.5 % @ 17 °C
LOG KOW	Not available
KOC	2192.80 estimated from water solubility
VISCOSITY	0.01118 cP @27 °C
MOLECULAR FORMULA	C-H4

Solvent Solubility
Soluble: alcohol, ether, benzene, organic solvents

SECTION 10. STABILITY AND REACTIVITY

Chemical Stability	Stable at normal temperatures and pressure
Conditions to Avoid	Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat.
Possibility of Hazardous Reactions	Will not polymerize.
Incompatible Materials	Combustible materials, halogens, oxidizing materials
Decomposition Products	Oxides of carbon

SECTION 11. TOXICOLOGICAL INFORMATION

Acute and Chronic Toxicity Component Analysis - LD50/LC50	The components of this material have been reviewed in various sources and the following selected endpoints are published: **METHANE (74-82-8)** Inhalation LC50 Mouse 326 g/m3 2 h
RTECS Acute Toxicity (selected)	The components of this material have been reviewed, and RTECS publishes the following endpoints: **METHANE (74-82-8)** **Inhalation:** 500000 ppm/2 hour Inhalation Mouse LC50; 326 gm/m3/2 hour inhalation Mouse LC50
Acute Toxicity Level	**METHANE (74-82-8)** Slightly Toxic: Inhalation
Immediate Effects	frostbite, suffocation
Delayed Effects	No information on significant adverse effects.
Irritation/Corrosivity Data	No animal testing data available for skin or eyes.

RTECS Irritation Respiratory Sensitizer	The components of this material have been reviewed and RTECS publishes no data as of the date on this document.
Dermal Sensitizer	No data available.
Carcinogenicity	No data available
Component Carcinogenicity	None of this product's components are listed by ACGIH, IARC, NTP, OSHA or DFG.
Mutagenic Data	No data available
Reproductive Effects Data	No data available
Tumorigenic Data	No data available
Specific Target Organ Toxicity - Single Exposure	No data available
Specific Target Organ Toxicity - Repeated Exposure	No data available
Aspiration Hazard	No data available
Medical Conditions Aggravated by Exposure	None Known

SECTION 12. ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity	No LOLI Eco toxicity data are available for this product's components.
Persistence and Degradability	No data available.
Bio accumulative Potential	No data available.
Mobility in Environmental Media	No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods	Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001.
Component Waste Numbers	The U.S. EPA has not published waste numbers for this product's components.

SECTION 14. TRANSPORT INFORMATION

US DOT Information

Shipping Name	Methane, compressed **UN/NA #:** UN1971 **Hazard Class:** 2.1 **Required Label(s):** 2.1

IMDG Information

Shipping Name:	Methane, compressed **UN #:** UN1971 **Hazard Class:** 2.1

SECTION 15. REGULATORY INFORMATION

Component Analysis

U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA 311/312 Hazardous Categories

Acute Health: Yes **Chronic Health:** No **Fire:** Yes **Pressure:** Yes **Reactive:** No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
METHANE	74-82-8	Yes	Yes	Yes	Yes	Yes

Not regulated under California Proposition 65

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
METHANE	74-82-8	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

SECTION 16. OTHER INFORMATION

NFPA Ratings: Health: 2 **Fire:** 4 **Reactivity:** 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsge meinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Other Information

Matheson Tri-Gas, Inc. makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty or merchantability or fitness for use. Matheson Tri-Gas, Inc. shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.