MATERIAL
SAFETY
DATA SHEET

PRODUCT NAME	CAS#
Methane	74-82-8
TRADE NAME AND SYNONYMS	**DOT I.D. NO.**
Methane; Methane, compressed (D.O.T.)	UN 1971
CHEMICAL NAME AND SYNONYMS	**DOT HAZARD CLASS**
Methane; Methyl Hydride	Division 2.1
ISSUE DATE AND REVISIONS	**FORMULA**
Revised July 2007	CH_4

HEALTH HAZARD DATA

EMERGENCY OVERVIEW

Methane is a colourless, flammable, nontoxic gas with a sweet, oil-type odor. Methane is the first member of the paraffin series of hydrocarbons. It is the major constituent of natural gas. The gas is normally shipped as a nonliquefied gas in high pressure cylinders at 15,620 kPa (2 265psig) at 21.1 °C. It is occasionally shipped in bulk as a cryogenic liquid.

Methane is useful in the testing of gas appliances which are to be used in natural gas areas. It is one of the raw materials used in the production of ethanol, methyl chloride, methylene chloride, and is also used to produce ammonia and acetylene. High purity methane is burned to form a high quality carbon black which is used in a variety of electronic components.

SYMPTOMS OF OVER-EXPOSURE

Methane is classified as a simple asphyxiant. Methane is practically physiologically inert except when it lowers the partial pressure of oxygen in the air enough to cause systemic effects due to oxygen deficiency, e.g., nausea and pressure on the forehead and eyes. Methane has a sweet oil type of odor, but this odor provides no warning of dangerous concentrations.

Inhalation: High concentrations of methane so as to exclude an adequate supply of oxygen to the lungs causes dizziness, deeper breathing due to air hunger, possible nausea and eventual unconsciousness.

TOXICOLOGICAL PROPERTIES

Methane is inactive biologically and essentially nontoxic; therefore, the major property is the exclusion of an adequate supply of oxygen to the lungs.

Methane is not listed in the IARC, NTP or by OSHA as a carcinogen or potential carcinogen.

Persons in ill health where such illness would be aggravated by exposure to methane should not be allowed to work with or handle this product.

RECOMMENDED FIRST AID TREATMENT

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE TO METHANE. RESCUERS SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND BE COGNIZANT OF EXTREME FIRE AND EXPLOSION HAZARD.

Inhalation: Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. Unconscious persons should be moved to an uncontaminated area, given assisted respiration and supplemental oxygen. Further treatment should be symptomatic and supportive.

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES

Forms explosive or flammable mixtures with most oxidizers (oxygen, chlorine, fluorine, etc.).
It is flammable over a wide range in air.

PHYSICAL DATA

BOILING POINT	LIQUID DENSITY AT BOILING POINT
-258.6 °F (-161.4 °C)	26.5 lb/ft^3 (424.5 kg/m^3)
VAPOR PRESSURE	**GAS DENSITY AT 700F.1 atm**
@ 70 °F (21.1 °C) above the critical temp. of –116.6 °F (-82.6 °C)	0.0416 lb/ft^3 (.6664 kg/m^3)
SOLUBILITY IN WATER	**FREEZING POINT**
Negligible	-296.5 °F (-182.5 °C)
EVAPORATION RATE	**SPECIFIC GRAVITY (AIR=1)**
N/A (Gas)	@ 70 °F (21.1 °C) = 0.56
APPEARANCE AND ODOR	
Colorless, odorless gas	

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	AUTO IGNITION TEMPERATURE	FLAMMABLE LIMITS % BY VOLUME
-306 °F (-188 °C) C.C.	1076 °F (580 °C)	LEL 5 UEL 15

EXTINGUISHING MEDIA
Water, carbon dioxide, dry chemical.

ELECTRICAL CLASSIFICATION
Class 1, Group D

SPECIAL FIRE FIGHTING PROCEDURES
If possible, stop the flow of methane. Use water spray to cool surrounding containers.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Should flame be extinguished and flow of gas continue, increase ventilation to prevent flammable or explosive mixture formation.

REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID
Unstable		N/A
Stable	X	

INCOMPATIBILITY (Materials to avoid)
Oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS
None

HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID
May Occur		N/A
Will Not Occur	X	

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with an inert gas prior to attempting repairs. If leak is in container or container valve, contact HSG for specific advice.

WASTE DISPOSAL METHOD

Do not attempt to dispose of waste or unused quantities. Return in the shipping container properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place to HSG. For emergency disposal assistance, contact HSG for specific advice.

SPECIAL PROTECTION INFORMATION

RESPIRTORY PROTECTION (Specify type)

Positive pressure air line with mask or self-contained breathing apparatus should be available for emergency use.

VENTILATION	**SPECIAL**
Hood with forced ventilation	N/A
MECHANICAL (Gen.)	**OTHER**
In accordance with electrical codes	N/A

LOCAL EXHAUST

To prevent accumulation above the LEL.

PROTECTIVE GLOVES	**EYE PROTECTION**
Plastic or rubber	Safety goggles or glasses

OTHER PROTECTIVE EQUIPMENT

Safety shoes, safety shower, eyewash "fountain"

SPECIAL PRECAUTIONS*

SPECIAL LABELING INFORMATION	
DOT Shipping Name: Methane DOT Shipping Label: Flammable Gas	DOT Hazard Class: Division 2.1 I.D. No.: UN 1971

SPECIAL HANDLING RECOMMENDATIONS

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3,000 psig) piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder.

SPECIAL STORAGE RECOMMENDATIONS

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area of noncombustible construction away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125 ^{o} F (52 ^{o}C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "No Smoking or Open Flames" signs in the storage or use area. There should be no sources of ignition in the storage or use area.

OTHER RECOMMENDATIONS OR PRECAUTIONS

Methane is noncorrosive and may be used with any common structural material. Earth-ground and bond all lines and equipment associated with the methane system. Electric equipment should be non-sparking or explosion proof. Compressed gas cylinders should not be refilled except by qualified producers of compressed gases.

the accuracy or completeness thereof is not guaranteed no warranty of any kind is made with respect thereto. This information is not intended as a license to operate under or a recommendation to practice or infringe any patent of this Company or others covering any process, composition of matter or use.

Since the Company shall have no control of the use of the product described herein, the Company assumes no liability for loss or damage incurred from the proper or improper use of such product.