SAFETY DATA SHEET

NATURAL GAS (GASEOUS STATE)

Date : 2015-11-10

No. FDS 001 | Version 1.02 | Last edition : 2017-12-12

1. Product and Company Identification

Product Name Natural Gas (gaseous state)

Reference None

Chemical formula CH_4

Product Type

Product Use(s) Fuel or fuel supply for various processes

Mixture of petroleum hydrocarbons

Synonym(s) Natural Gas, Gaseous Natural Gas, GNG

Manufacturer

Energir
1717, rue du Havre
Montréal (Québec)
Canada H2K 2X3
1-514 598 3339

Emergency Information 1 855 598 8111

Web site www.energir.com

2. Hazards Identification

Product Class	Category	Code
Flammable gas	1	H220
Gas under pressure	Compressed gas	H280
Simple asphyxiant	1	

GHS symbol

Signal word **DANGER - ATTENTION**

Hazard statement

H220 : Extremely flammable gas

H280 : Contains gas under pressure; may explode if heated

Precautionary statements

General N.A.

Prevention

P202 : Do not handle until all safety precautions have been read and understood.

P210 : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. 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 P403 : Store in a well ventilated place.

Disposal N.A.

Other Hazards Information Can displaced the oxygen and quickly cause asphyxiation

3. Composition/information on ingredients

COMPONENTS	CAS #	% (mass)
Methane	74-82-8	95,4
Ethane	74-84-0	1,8
Nitrogen	7727-37-9	1,9
Carbon dioxide	124-38-9	0,7

Additional Information Other elementary hydrocarbons may be present as an impurity.

4. First-aid measures

First aid procedures Show this safety data sheet to the emergency personnel and the attending physician.

Eye contact N.A.

Skin contact N.A.

Inhalation Move the victim to the fresh air

Practice CPR if needed

Give oxygen if possible

A medical examination may be obligatory under certain circumstances

Ingestion N.A.

Important Symptoms & Health Effects **SIMPLE ASPHYXIANT:** a physiologically inert gas that exerts its action by displacing oxygen from the air. If the percentage by volume of oxygen falls under 19.5%, there is not enough to maintain oxygen saturation in the blood.

Indication of any immediate medical attention and special treatment needed N.A.
No specific treatment is indicated
Give appropriate care to the person particular conditions

5. Fire-fighting measures

Suitable extinguishing media Do not extinguish the flame until the flow of natural gas has been stopped
Dry powder, carbon dioxide (CO_2) for small fires; halon or acceptable equivalent
Water fog may be used to cool containers

Unsuitable extinguishing media Do not use low expansion foam or powerful jet of water directly on the gas.

Dangerous Product Specific Hazards Flammable if exposed to any source of ignition.
Natural gas is lighter than air and disperses into the atmosphere.
Natural gas will not burn or explode if there is not enough air, or if there is too much
Evacuate the area if the safety valves are activated
There is a risk of re-ignition or explosion if the flame is extinguished before stopping the flow of natural gas and/or if the site of the incident is not cooled and the cause of the fire not eliminated

Hazardous Combustion Products Carbon monoxide (CO) if the natural gas is not completely burned

6. Accidental release measures

Personal Precautions, Protective Equipment and Emergency Procedures Activate the Emergency Measures Plan in case of a spill.
Stop the leak and/or contain the spill
Keep away from sources of heat and ignition
Ventilate the area
Evacuate all non-essential personnel and establish a security perimeter.
Call 911
If this service is not available in your area, call 1-800 361-8003

Environmental precautions

Let the gas escape into the atmosphere.
In case of significant quantities, consult the regional office of the environmental authority that has jurisdiction.

Methods and materials for containment and cleaning up

Verify the condition and behavior of the container.
Consider the weather conditions (wind speed and direction, temperature, humidity).
Stay upwind and, if possible, evaluate the direction taken by the product.
Use some pulverized water to disperse vapours.
Isolate the zone until the gas is dispersed.
Aerate and test the zone before entering.

7. Handling and storage

Secure Handling Precautions

Handling must conform to the LSST stipulations and its regulations, such as the RSST (in particular sections VII and X), the RSSM and the CSTC.
Manipulate away from any source of ignition. Do not smoke. Use not metallic tools. The equipment must be grounded. Ventilate adequately otherwise wear appropriate respiratory system. Compressed gas cylinders must not go through violent shocks and you should never use a damaged bottle. They must be attached up or held in a trolley when they are used. Do not use compressed gas cylinders in other purposes that those for whom they are intended. Manipulate safely according to the standardized methods corresponding to the RSST, NFPA-30 and CNPI. There is an existing CSA code about the natural gas and propane installation (CSA B149.1-00). Use only in well ventilated zones. See also OSHA regulations for the manipulation of this product, including the 29 CFR 1910.110 standard : Storage and handling of liquefied petroleum gases.

Secure Storage Conditions

Storage must conform to the LSST stipulations and its regulations, such as the RSST (in particular sections VII and X), the RSSM and the CSTC. According to the situation, the chapter Building of the Safety code and the CNPI can also apply.
Keep away from any source of heat and ignition. Store in a cool place, protected from the oxidizing materials. Ground containers, in a well ventilated place. Cylinders of compressed gas have to be conform with the Law on pressure devices(L.R.Q., c. A-20.01) and with the regulations which result from it. Compressed gas cylinders must be held away from any source of heat susceptible to raise the temperature of the contents beyond 55 °C, must be provided with protective hood of valves when they are not used and must be stored solidly held in vertical position, valves upwards. Cylinders of compressed gas, connected in series by a collector, must be supported, maintained together and form a unit, with a frame or of another installation designed for this purpose. Faucets and safety devices have to be protected from shocks. Keep away from any flame, sparks and excessive temperatures.
Keep only in approved containers.

Incompatible materials

Natural gas may burn or explode in a confined space when mixed with strong oxidizing agents (peroxide, chlorine, chlorine dioxide, liquid oxygen).

This product is incompatible with these substances: chlorine, oxygen at liquid state and strong oxidizing agents.

8. Exposure controls/personal protection

Control parameters – admissible ROHS value (QC)

COMPONENTS	# CAS	Type	Value	Remark
Methane	74-82-8			Simple asphyxiant
Éthane	74-84-0			Simple asphyxiant
Nitrogen	7727-37-9			Simple asphyxiant
Carbon dioxide	124-38-9	TWA	5000 ppm 9000 mg/m^3	

Others information

None known

Appropriate engineering controls General ventilation. Use an explosion-proof mechanical ventilator

Personal protective equipment (PPE)

Eye/face protection Wear safety glasses or a face shield if there is a risk of contact with pressurized natural gas
Eye protector, anti-spatters glasses or full face shield selection depends on the nature of the work to be made and of the risk of exposure.

Skin and body protection Gloves are not needed under normal conditions

Respiratory protection In general, no protection is needed if there is sufficient oxygen
Use self-contained breathing apparatus in case of an emergency

9. Physical and chemical properties

Appearance (form, color)	Gas colourless and odorless	**Vapor pressure**	N.A.
Odor	Gas contains an odorant (mercaptan) to help detect leaks (rotten egg smell)	**Vapor density (air=1)**	0,578
Odor threshold	Less than 10 000 ppm in air	**Density (water=1)**	0,44 at -162 °C
pH	N.A.	**Solubility (in water)**	0,0023g/100 ml
Melting / freezing point	-187 to -182 °C (estimate)	**Partition coefficient (n-octanol/water)**	0,0812
Initial boiling point and boiling range	-161°C (1 atm)	**Auto-ignition**	538°C
Flash point	-188 °C	**Decomposition temperature**	N.A.
Evaporation Rate	N.A.	**Viscosity**	N.A.
Flammability (solid, gas)	N.A.	**Specific gravity**	N.A.
Upper / lower flammability or explosive	Lower : 4,9% at 25 °C Upper : 14,9% at 25 °C		

10. Chemical Stability and Reactivity Information

Reactivity Keep away from sources of ignition and heat, high temperatures, open flames, sparks, welding, static electricity and other ignition sources. Do not smoke.

Chemical stability Stable under normal conditions of use, storage, and transportation.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid Gaseous methane, within the flammable or explosive limits, can easily ignite if subject to a sufficiently high-energy electrostatic discharge.

Incompatible materials Natural gas may burn or explode in a confined space when mixed with strong oxidizing agents (peroxide, chlorine, chlorine dioxide, liquid oxygen)

Dangerous decomposition products CO, CO_2, fumes (combustion)

11. Toxicological information

Information on the likely routes of exposure Inhalation and skin contact. Physiologically inert. Ingestion is not likely to happen during normal industrial use.

Health effects associated with ingredients

Inhalation/Skin/Eyes Simple asphyxiant:

By deplacing air, natural gas acts as an asphyxiant. The replacement of air by natural gas may cause headaches, diminished faculties, errors in judgement, increasing fatigue and impaired coordination, leading to convulsions, coma and death**.** Narcotic at high concentrations.

Acute Toxicology Data

COMPONENTS	CAS	LD_{50}	LC_{50}
Methane	74-82-8	N.A.	35 355 ppm 4 hours (mouse)
Ethane	74-84-0	N.A.	N.A.
Nitrogen	7727-37-9	N.A.	N.A.
Carbon dioxide	124-38-9	N.A.	N.A.

Skin Corrosion/Irritation This product is not irritating.

Eye Corrosion/Irritation This product does not cause grave eye irritation / lesion

Skin/Respiratory Sensitization No data concerning the respiratory or skin sensitization was found in the consulted documentary sources.

Specific target organ toxicity No data concerning the effect on the target organs was found in the consulted documentary sources.

Carcinogenicity No data concerning the carcinogenic effect was found in the consulted documentary sources (OSHA, ACGIH).

Reproductive Effects No data concerning the reproductive effect was found in the consulted documentary sources.

Germ Cells Mutagenicity No data concerning the in vivo or in vitro mutagenic effect on germ cells from mammals was found in the consulted documentary sources.

12. Ecological information

Aquatic Ecotoxicity

COMPONENTS	CAS	LC_{50}
Methane	74-82-8	N.A.
Éthane	74-84-0	N.A.
Nitrogen	7727-37-9	N.A.
Carbon dioxide	124-38-9	N.A.

Land Ecotoxicity This material is not harmful to environment.

Persistence and degradability The product is not persistent in the environment.

Bioaccumulation potential The product is not bioaccumulating.

Mobility in soil Not considered mobile.

Other adverse effects No data available

13. Disposal considerations

Disposal instructions Let the gas escape into the atmosphere.
In case of a bottle leak, close the bottle and return it to the supplier.

14. Transportation Information

UN Identification UN 1971
Proper shipping name NATURAL GAS, COMPRESSED (with high methane content)
Class 2.1

Packing group	N.A.
Environmental Hazards	This material is not harmful to aquatic life or environment.
Additional description & information	N.A.

15. Regulatory Information

Applicable Regulations

Product classification and SDS have been elaborated in accordance to DGR.
This product has been classified according to the criteria of the DGR and the SDS contains all the information required by the DGR.
Act respecting Occupational Health and Safety (AOHS) (CQLR, c. S-2.1)
Regulation respecting Occupational Health and Safety (c. S-2.1, r. 19.01)
The product is controlled according to WHMIS 2015.
In Canada, all ingredients are part of the Domestic Substances List (DSL)

16. Other information

Prepared by

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www.envirospec.qc.ca

SDS history

First edition 2015-11-10 (French)

SDS status

Active

Other Information

The information in this data sheet was written based on the best knowledge and the best experience currently available.

References

ACGIH. *Guide to Occupational Exposure Values 2012*, Compiled by the American Conference of Governmental Industrial Hygienists (ACGIH)

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CSST. *Service du répertoire toxicologique*.

GOUVERNEMENT DU QUÉBEC. *Règlement sur la santé et la sécurité du travail* (c.S-2.1, r.19.01) Update August 1st 2015

ROBERT R, Lauwerys (2003). *Toxicologie industrielle et intoxications professionnelles*. 5éédition. Masson, 1252 pp.

TRANSPORT CANADA, *Règlement sur le transport des marchandises dangereuses (RTMD)*

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (2005). *NIOSH Pocket Guide to Chemical Hazards*. NIOSH Publications, 424 pp.

U.S. NATIONAL FIRE PROTECTION ASSOCIATION. *Standards*
NFPA 77, Standard for Static Electricity
NFPA 68, Standard on Explosion Protection by Deflagration Venting
NFPA 69, Standard on Explosion Prevention Systems

Acronyms

ACGIH: American Conference of Governmental Industrial Hygienists
AICS: Australian Inventory of Chemical Substances
CAS: Chemical Abstract Services
CNPI : National Fire Code of Canada
CPR : Cardiopulmonary resuscitation
CSA: Canadian Standardization Association
CSST: Commission de la santé et sécurité du travail (Occupational Health and Safety Commission, Quebec)
CSTC: Safety Code for the Construction Industry
DGR: Dangerous Good Regulation
DSL: Domestic Substances List (Canada)
ECL: Existing Chemicals List
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
IARC: International Agency for Research on Cancer
LC: Lethal Concentration
LD: Lethal Dose
N.A. : Not Applicable / Not Available
NFPA: National Fire Protection Association
NIOSH: National Institute for Occupational Safety and Health

NTP: National Toxicology Program
OEL: Occupational Exposure Limit
ONU: Organisation des Nations Unies
OSHA: Occupational Safety and Health Administration
QC: Quebec Province, Canada
REPTOX : CSST Toxicological Directory
ROHS : Regulation respecting Occupational Health and Safety
RPC: Chemical Products Regulation
RSSM: Health and Security Regulation for Mine Industry
RTMD: Transportation of Dangerous Goods Regulations
SDS: Safety Data Sheet
STEL: Short Term Exposure Limit
TSCA: Toxic Substances Control Act
TWA: Time Weighted Average
WHMIS: Workplace Hazardous Materials Information System