

# SAFETY DATA SHEET

According to the Hazardous Products Regulations

## NGL- Propane - HD5 - NonOdorized

Version  
12.1

Revision Date:  
2019-05-30

SDS Number:  
800010025829

Print Date: 2019-06-05  
Date of last issue: 26.08.2016  
Date of first issue: 16.11.2015

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### SECTION 1. IDENTIFICATION

Product name : NGL- Propane - HD5 - NonOdorized

Product code : X3504

#### Manufacturer or supplier's details

Manufacturer/Supplier : **P38 Energy / Budget Propane**  
683 Larocque RoadValleyfield,  
J6T 4E1Québec, Canada

Telephone : 1-800-561-9127

Telefax : 1-450-373-3336

#### Emergency telephone number

BUSINESS (24 hr) : 1-800-561-9127

Canutec (24 hr) : 1-613-996-6666; Toll Free: 1-888-CAN-UTEC (226-8832)

#### Recommended use of the chemical and restrictions on use

Recommended use : Used as a domestic, commercial, industrial and automotive fuel, a feedstock in chemical processes.

Restrictions on use : This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the supplier.

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### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Flammable gases : Category 1

Gases under pressure : Liquefied gas

#### GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:  
H220 Extremely flammable gas.  
H280 Contains gas under pressure; may explode if heated.

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### HEALTH HAZARDS:

Not classified as a health hazard under GHS criteria.

### ENVIRONMENTAL HAZARDS:

Not classified as an environmental hazard under GHS criteria.

### Precautionary statements

#### : **Prevention:**

P102 Keep out of reach of children.

P210 Keep away from heat/sparks/open flames/hot surfaces.

No smoking.

P243 Take precautionary measures against static discharge.

#### **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.

#### **Disposal:**

No precautionary phrases.

### Other hazards which do not result in classification

Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.

High gas concentrations will displace available air; unconsciousness and death may occur suddenly from lack of oxygen.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name : NGL- Propane - HD5 - NonOdorized

### Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
propane	74-98-6	> 90
propylene	115-07-1	< 5
Hydrocarbons, C>3	68476-44-8	< 2.5

## SECTION 4. FIRST-AID MEASURES

General advice : Not expected to be a health hazard when used under normal conditions.

If inhaled : Call emergency number for your location / facility.  
Remove to fresh air. Do not attempt to rescue the victim unless proper respiratory protection is worn. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting, or unresponsive, give 100% oxygen with rescue breathing or Cardio-Pulmonary Resuscitation as required and transport to the nearest medical facility.

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- |   |  |
|---|--|
| In case of skin contact                                     | : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.<br>If persistent irritation occurs, obtain medical attention.<br>In the event of frostbite, slowly warm the exposed area by rinsing with warm water.<br>Transport to the nearest medical facility for additional treatment.          |
| In case of eye contact                                      | : Flush eye with copious quantities of water.<br>Remove contact lenses, if present and easy to do. Continue rinsing.<br>If persistent irritation occurs, obtain medical attention.<br>In the event of frostbite, slowly warm the exposed area by rinsing with warm water.<br>Transport to the nearest medical facility for additional treatment. |
| If swallowed  | : In the unlikely event of ingestion, obtain medical attention immediately.  |
| Most important symptoms and effects, both acute and delayed | : Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache and nausea.<br>Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due to evaporative cooling.   |
| Protection of first-aiders                                  | : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.  |
| Notes to physician  | : IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!<br>Artificial respiration and/or oxygen may be necessary.<br>Call a doctor or poison control center for guidance.<br>Treat symptomatically.  |

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### SECTION 5. FIRE-FIGHTING MEASURES

- |                                       |   |
|---------------------------------------|---|
| Suitable extinguishing media          | : Shut off supply. If not possible and no risk to surroundings, let the fire burn itself out.<br>Dry chemical<br>Carbon dioxide (CO <sub>2</sub> )<br>Keep containers and surroundings cool with water spray.<br>Large fires should only be fought by properly trained fire fighters. |
| Unsuitable extinguishing media        | : Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire.   |
| Specific hazards during fire-fighting | : Hazardous combustion products may include:<br>Carbon monoxide may be evolved if incomplete combustion   |

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occurs.

Unidentified organic and inorganic compounds.

Sustained fire attack on vessels may result in a Boiling Liquid Expanding Vapor Explosion (BLEVE).

Contents are under pressure and can explode when exposed to heat or flames.

The vapour is heavier than air, spreads along the ground and distant ignition is possible.

- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Further information : Clear fire area of all non-emergency personnel.  
Keep adjacent containers cool by spraying with water.  
If possible remove containers from the danger zone.  
If the fire cannot be extinguished the only course of action is to evacuate immediately.
- Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter.  
Vapour may form an explosive mixture with air.  
Test atmosphere for flammable gas concentrations to ensure safe working conditions before personnel are allowed to enter the area.  
Notify authorities if any exposure to the general public or the environment occurs or is likely to occur.
- Environmental precautions : Use appropriate containment to avoid environmental contamination.  
Risk of explosion. Inform the emergency services if product enters surface water drains.
- Methods and materials for containment and cleaning up : Allow to evaporate.  
Attempt to disperse the gas or to direct its flow to a safe location, for example by using fog sprays.  
  
Evacuate the area of all non-essential personnel.

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Ventilate contaminated area thoroughly.  
Avoid contact with skin, eyes and clothing.

Additional advice

: For guidance on selection of personal protective equipment see Chapter 8 of this Safety Data Sheet.  
For guidance on disposal of spilled material see Chapter 13 of this Safety Data Sheet.  
Local authorities should be advised if significant spillages cannot be contained.

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### SECTION 7. HANDLING AND STORAGE

General Precautions

: Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.  
Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.  
Air-dry contaminated clothing in a well-ventilated area before laundering.  
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.  
Take precautionary measures against static discharges.

Advice on safe handling

: This product can create a low temperature exposure hazard when released as a liquid.  
Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.  
Avoid prolonged or repeated contact with skin.  
Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.  
Earth all equipment.  
Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.  
This product is intended for use in closed systems only.  
Ensure that all local regulations regarding handling and storage facilities are followed.

Avoidance of contact

: Strong oxidising agents.

Product Transfer

: Do not use compressed air for filling discharge or handling.  
Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Delivery lines may become cold enough to present a cold burns hazard.

#### Storage

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- Other data : Store only in purpose-designed, appropriately labelled pressure vessels or cylinders.  
Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat.  
Do not store near cylinders containing compressed oxygen or other strong oxidizers.  
Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.
- Packaging material : Suitable material: For containers and container linings, use materials specifically approved for use with this product., Examples of suitable materials are: PA-11, PEEK, PVDF, PTFE, GRE (Epoxy), GRVE (vinyl ester), Viton (FKM), type F and GB, Neoprene (CR).  
Unsuitable material: Some forms of cast iron., Examples of materials to avoid are: ABS, polymethyl methacrylate (PMMA), polyethylene (PE / HDPE), polypropylene (PP), PVC, natural rubber (NR), Nitrile (NBR) ethylene propylene rubber (EPDM), Butyl (IIR), Hypalon (CSM), polystyrene, polyvinyl chloride (PVC), polyisobutylene., For containers and container linings, aluminium should not be used if there is a risk of caustic contamination of the product.
- Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

## SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
propane	74-98-6	TWA	1,000 ppm 1,800 mg/m3	OSHA Z-1
propylene	115-07-1	TWA	500 ppm	ACGIH

Contains no components with occupational exposure limit values.

### Biological occupational exposure limits

No biological limit allocated.

### Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and sam-

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ples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods <http://www.cdc.gov/niosh/>

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha.gov/>

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances <http://www.hse.gov.uk/>

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA) , Germany <http://www.dguv.de/inhalt/index.jsp>

L'Institut National de Recherche et de Sécurité, (INRS), France <http://www.inrs.fr/accueil>

**Engineering measures** : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:  
Use sealed systems as far as possible.  
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.  
Local exhaust ventilation is recommended.

### General Information:

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.  
Define procedures for safe handling and maintenance of controls.  
Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.  
Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.  
Drain down system prior to equipment break-in or maintenance.

### Personal protective equipment

Respiratory protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

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Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.

Select a filter suitable for organic gases and vapours [Type AX boiling point  $\leq 65^{\circ}\text{C}$  ( $149^{\circ}\text{F}$ )].

Hand protection  
Remarks

: Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Neoprene rubber. Nitrile rubber. If contact with liquefied product is possible or anticipated, gloves should be thermally insulated to prevent cold burns.

Eye protection

: Wear goggles for use against liquids and gas, combined with face shield with chin guard.

Skin and body protection

: Chemical and cold resistant gloves/gauntlets, boots, and apron.

Thermal hazards

: When handling cold material that can cause frost burns, wear heat resistant gloves, safety hat and visor, cold resistant overalls (with cuffs over gloves and legs over boots) and heavy duty boots e.g. leather for cold resistance.

Protective measures

: Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

### Environmental exposure controls

General advice

: Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.  
Information on accidental release measures are to be found in section 6.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

: compressed liquefied gas

Colour

: colourless



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Odour : odourless

Odour Threshold : Data not available

pH : Not applicable

Freezing point : < -188 °C / < -306 °F

Initial boiling point and boiling range : ca. -42 °C / -44 °F

Flash point : ca. -104 °C / -155 °F  
Method: Tag closed cup

Evaporation rate : Data not available

Flammability (solid, gas) : Extremely flammable.

Upper explosion limit : 10 %(V)

Lower explosion limit : Typical 1.9 %(V)

Vapour pressure : > 53.3 kPa (-56 °C / -69 °F)

Relative vapour density : 1.05  
(Air = 1.0)

Relative density : 0.493 (25 °C / 77 °F)

Density : 493 kg/m<sup>3</sup> (25 °C / 77 °F)

Solubility(ies)  
Water solubility : slight  
Solubility in other solvents : Data not available

Partition coefficient: n-octanol/water : log Pow: 2.3

Auto-ignition temperature : Typical 287 - 537 °C / 549 - 999 °F

Decomposition temperature : Data not available

Viscosity  
Viscosity, kinematic : Data not available

Explosive properties : Classification Code: Not classified

Oxidizing properties : Data not available

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Surface tension	: Data not available
Conductivity	: Low conductivity: < 100 pS/m, The conductivity of this material makes it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10,000 pS/m., Whether a liquid is nonconductive or semiconductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid
Molecular weight	: Data not available

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No, product will not become self-reactive.
Chemical stability	: Stable.
Possibility of hazardous reactions	: No hazardous reaction is expected when handled and stored according to provisions
Conditions to avoid	: Avoid heat, sparks, open flames and other ignition sources. Prevent vapour accumulation. In certain circumstances product can ignite due to static electricity.
Incompatible materials	: Strong oxidising agents.
Hazardous decomposition products	: Hazardous decomposition products are not expected to form during normal storage.

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### SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment : Information given is based on product testing.

#### Information on likely routes of exposure

Inhalation is the primary route of exposure although exposure may occur through skin or eye contact.

#### Acute toxicity

##### Product:

Acute oral toxicity	: Remarks: Not applicable
Acute inhalation toxicity	: LC 50 (Rat): > 20000 ppmV Exposure time: 4 h Remarks: Low toxicity:

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Based on available data, the classification criteria are not met.

Acute dermal toxicity : Remarks: Not applicable

Acute toxicity (other routes of administration) :  
Remarks: Inhalation of vapours or mists may cause irritation to the respiratory system.

### Skin corrosion/irritation

**Product:**

Remarks: Not irritating to skin.

### Serious eye damage/eye irritation

**Product:**

Remarks: Essentially non-irritating to eyes.

### Respiratory or skin sensitisation

**Product:**

Remarks: Not a sensitiser.

Based on available data, the classification criteria are not met.

### Germ cell mutagenicity

**Product:**

Genotoxicity in vivo

: Remarks: Non mutagenic

Based on available data, the classification criteria are not met.

### Carcinogenicity

**Product:**

Remarks: Not a carcinogen.

Based on available data, the classification criteria are not met.

### IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

### NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

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### Reproductive toxicity

**Product:**

Effects on fertility

:

Remarks: Not a developmental toxicant.

Does not impair fertility.

Based on available data, the classification criteria are not met.

### STOT - single exposure

**Product:**

Remarks: High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

### STOT - repeated exposure

**Product:**

Remarks: Low systemic toxicity on repeated exposure.

### Aspiration toxicity

**Product:**

Not an aspiration hazard.

### Further information

**Product:**

Remarks: Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due to evaporative cooling.

High gas concentrations will displace available air; unconsciousness and death may occur suddenly from lack of oxygen.

Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

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## SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment

: Ecotoxicological data have not been determined specifically for this product.

Information given is based on a knowledge of the components and the ecotoxicology of similar products.

### Ecotoxicity

**Product:**

Toxicity to fish (Acute toxicity)

:

Remarks: LL/EL/IL50 > 100 mg/l

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Practically non toxic:  
Based on available data, the classification criteria are not met.

Toxicity to crustacean (Acute toxicity) :  
Remarks: LL/EL/IL50 > 100 mg/l  
Practically non toxic:  
Based on available data, the classification criteria are not met.

Toxicity to algae/aquatic plants (Acute toxicity) :  
Remarks: LL/EL/IL50 > 100 mg/l  
Practically non toxic:  
Based on available data, the classification criteria are not met.

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to crustacean (Chronic toxicity) : Remarks: Data not available

Toxicity to microorganisms (Acute toxicity) : Remarks: LL/EL/IL50 > 100 mg/l  
Practically non toxic:  
Based on available data, the classification criteria are not met.

### Persistence and degradability

#### Product:

Biodegradability : Remarks: Oxidises rapidly by photo-chemical reactions in air.  
Readily biodegradable.

### Bioaccumulative potential

#### Product:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Partition coefficient: n-octanol/water : log Pow: 2.3

### Mobility in soil

#### Product:

Mobility : Remarks: Because of their extreme volatility, air is the only environmental compartment that hydrocarbon gases will be found.

### Other adverse effects

#### Product:

Additional ecological information : In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

- Waste from residues : It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand. Do not dispose into the environment, in drains or in water courses. Given the nature and uses of this product, the need for disposal seldom arises. If necessary, dispose by controlled combustion in purpose-designed equipment. If this is not possible, contact the supplier.
- Contaminated packaging : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not pollute the soil, water or environment with the waste container. Return part-used or empty cylinders to the supplier. For tanks seek specialist advice from suppliers. Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.
- Local legislation  
Remarks : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

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### SECTION 14. TRANSPORT INFORMATION

#### TDG

- UN number : 1075  
Proper shipping name : PETROLEUM GASES, LIQUEFIED, NON ODORIZED  
Class : 2.1  
Packing group : Not Assigned  
Labels : 2.1  
Marine pollutant : no

#### International Regulations

##### IATA-DGR

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UN/ID No.	: UN 1075
Proper shipping name	: PETROLEUM GASES, LIQUEFIED
Class	: 2.1
Packing group	: Not Assigned
Labels	: 2.1

### IMDG-Code

UN number	: UN 1075
Proper shipping name	: PETROLEUM GASES, LIQUEFIED
Class	: 2.1
Packing group	: Not Assigned
Labels	: 2.1
Marine pollutant	: no

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Special precautions	: Not applicable
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### Special precautions for user

Remarks	: Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
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## SECTION 15. REGULATORY INFORMATION

### Safety, health and environmental regulations/legislation specific for the substance or mixture

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

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

PICCS	: All components listed.
EINECS	: All components listed.
IECSC	: All components listed.
DSL	: All components listed.
ENCS	: All components listed.
AIIC	: All components listed.
KECI	: All components listed.
TSCA	: All components listed.

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Version	Revision Date:	SDS Number:	Print Date: 2019-06-05
12.1	2019-05-30	800010025829	Date of last issue: 26.08.2016
			Date of first issue: 16.11.2015

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NZIoC : All components listed.

CH INV : All components listed.

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### SECTION 16. OTHER INFORMATION

#### Full text of other abbreviations

AIIC -Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances 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% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; 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; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation 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; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; 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; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

A vertical bar (|) in the left margin indicates an amendment from the previous version.

Sources of key data used to compile the Safety Data Sheet : The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID date base, EC 1272 regulation, etc).

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not



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to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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