1. IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

1.1. Product identifier
- Trade name: LIQUEFIED PETROLEUM GAS PROPANE - BUTANE MIXTURE, AUTOGAS
- Chemical name: Hydrocarbons, C₃-C₄
- Index no.: 649-199-00-1
- EC no.: 270-681-9
- CAS no.: 68476-40-4
- Registration No.: 01-2119486557-22-0009
- Product code: 1000036; 1000619; 1000620; 1960000; 1960002; 1960004; 1960005; 1960007; 1960009; 1960020

1.2. Relevant identified uses of the substance or mixture and uses advised against
- Relevant identified uses: Industrial: manufacture of substance, use as a fuel
  Professional: use as a fuel
  Consumer: use as a fuel
- Uses advised against: The uses that are in the list above are relevant. Other uses are not recommended unless an assessment that proves that the related risks are controlled has been conducted before starting that use.

1.3. Details of the supplier of the safety data sheet
- Manufacturer/supplier: INA-Industrija nafte, d.d.
  Address: Av. Večeslava Holjevca 10 pp 555, 10002 Zagreb, HRVATSKA
  Phone: 00-385-1-6450-842 / 00-385-1-6451-075 (24 h)
  Fax: 00-385-1-6452-050
  e-mail: sds@ina.hr
- Responsible person: Mirela Mavrinac, B.Sc. Hrvoje Raukar, B.Sc.
  SD & HSE Sector
  Tel. 00-385-1-6450-803

1.4. Emergency Telephone Number
- Emergency Service Telephone Number: 112
  National Protection and Rescue Directorate
  Nehajski 5, 10000 Zagreb
  e-mail: info@duzs.hr
- Medical Information Telephone Number: 00-385-1-23-48-342
2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. Classification according to Regulation (EC) No 1272/2008 (CLP/GHS):

Press. Gas; H280
Flam. Gas 1; H220

2.2. Substance or mixture labelling

2.2.1. Labelling according to Regulation (EC) No 1272/2008 (CLP/GHS)

Hazard pictograms:

GHS04    GHS02

Signal word: Danger

Hazard statements (H):  

H220  Extremely flammable gas  
H280  Contains gas under pressure; may explode if heated.

Precautionary statements (P):

P102  (Only if sold to the general public): Keep out of reach of children.
P210  Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P377  Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381  Eliminate all ignition sources if safe to do so.
P410+P 403  Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

Note K – The classification as carcinogen or mutagen need not to apply if it can be shown that the substance contains less than 0,1 % w/w 1,3 butadiene.
SAFETY DATA SHEET
According to the Regulation No. 1907/2006

Product: LIQUEFIED PETROLEUM GAS
Date: 2016/8/24
Edition: 7

3. COMPOSITION / INFORMATION ON INGREDIENTS

- Substance: X
- Mixture:

- Components contributing to product hazardousness:

<table>
<thead>
<tr>
<th>Substance name</th>
<th>Substance identification</th>
<th>[%]</th>
<th>Classification according to Regulation (EC) No 1272/2008 (CLP/GHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3-C4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

- General information: Before administering first aid to the affected persons, isolate the accident area from sources of ignition, including the disconnection from the power supply. Before entering the enclosed space, check the atmosphere and provide ventilation due to the risk of elevated H2S and CO concentrations. Use personal protective equipment (see Section 8)

- First aid procedures
  - after inhalation: Remove the affected person from the contaminated area to fresh air. In the case of dizziness, nausea, headache and persisting difficulties, immediately seek medical attention. In case of unconsciousness, move the affected person to hospital in lateral position, ensuring clear airways. In case of difficulty breathing or respiratory arrest, open the airways, start with resuscitation (heart massage and artificial respiration) and immediately seek medical attention.
  - after skin contact: Frostbite can occur. Do not remove clothing from the area of the frostbite, do not rub, massage or apply pressure to the damaged skin surface. Rinse the affected area with plenty of water for 15 minutes. Immediately seek medical attention.
  - after eye contact: Frostbite can occur. Remove contact lenses. Rinse the eyes with water at least 15 minutes. Immediately seek medical attention.
  - after ingestion: Not considered a possible route of exposure. Frostbite on the lips and in the mouth can occur during contact with the product.

- Note to person administering first aid/physician: Administering oxygen only by trained medical personnel.
5. FIRE FIGHTING MEASURES

- Extinguishing media
  - SUITABLE: Large fires: Water spray, water mist or foam.
                Small fires: Dry powder or CO₂ or firefighting foam.
  - NOT SUITABLE: Water jet, simultaneous use of water and foam.

- Firefighting measures for special hazards:
  Stop product leakage if it can be done in a safe manner, if not, leave the product to burn out and cool the containers and surroundings with water spray.

- Special firefighting measures:
  Use water spray or foam to cool the fire site, containers and tank trucks. Close gas valves and outlets.

- Special fire fighter protective equipment:
  Wear protective clothing for firefighters (intervention suit) in accordance with HRN EN 469 and a self-contained open-circuit compressed air breathing apparatus in accordance with HRN EN 137.

- Special hazards arising from the substance or mixture:
  The vapours are heavier than air and may spread further from the place of accident and cause an explosion and fire. Smoke containing CO, CO₂ may occur with the incomplete combustion of hydrocarbons.

- Advice for firefighters:
  No data available.

- Additional information:
  Product combustion generates asphyxiant fumes and toxic gases (CO and CO₂).

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions:
  Use personal protective equipment (see Section 8).

- Environmental precautions:
  Prevent spreading of the product if it can be performed in a safe manner. Prevent leakage into drains.
  Provide ventilation. The product shall rapidly evaporate if an accidental discharge into the water occurs. Isolate the discharge area.

- Methods for cleaning-up and recovery:
  Ventilate the discharge area and allow the product to evaporate.

- Additional warnings:
  Discharged liquid soon turns into a gas and forms explosive mixture with air! When the concentration drops below explosion limits at the point of escape, initiate intervention.
  Displays characteristics of cryogen liquid. Many materials in contact with cooling – cryogen liquid become brittle and crack. May cause frostbites.
7. HANDLING AND STORAGE

- Handling
  - safety precautions: Use product only in well-ventilated areas. Keep away from sources of heat and ignition. Use non-sparking tools. Decant only at properly marked and equipped areas in accordance with relevant regulations. Take special care of connection points to prevent possible leaks. Strictly follow occupational safety and fire safety measures.
  - Do not throw cylinders in order to avoid cylinder or valve damage.
  - Do not handle cylinder in the presence of open flame. Do not check for leaks with open flame, only with soap (foam).
  - Do not open valves on cylinders or special-purpose tanks with any tool (only with hands).
  - During handling or storing full or empty LPG cylinders DO NOT remove safety caps.
  - safe handling advice: Do not smoke, eat or drink in a room with a hazardous substance. Avoid inhalation, and contact with skin and eyes. Use personal protection equipment listed in Section 8.

- Storage: technical measures and storage conditions:
  - SUITABLE: Pressurised closed containers made and equipped according to special regulations concerning LPG. Store in open space or well-ventilated place, explosion-proof.
  - TO BE AVOIDED: Avoid storing with flammable chemicals (oxidants, acids). Do not keep sparking tools and machines in storage area. Do not store or use cylinders in horizontal position i.e. position in which the liquid is coming out through gas phase opening.

- Packaging materials
  - RECOMMENDED: Original manufacturer’s container with valid certificate.
  - NOT SUITABLE: Any other.
  - Special use: No data available.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Exposure limit values

<table>
<thead>
<tr>
<th>Hazardous substance (CAS No.)</th>
<th>Occupational exposure limit values/short term values (OEL/STEL) ppm</th>
<th>Biological limit values mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- Monitoring procedures: Measuring the concentration of oxygen and hazardous substances in the air according to the regulations.

8.2. Exposure controls
- **Summary of risk management measures**: The degree of protection and type of control depend on the possible exposure according to the risk assessment. Use adequate ventilation to maintain the concentration of explosive substances below the explosion limit. Educate and train the employees on potential hazards and control measures in performing regular activities. Stipulate a safe handling procedure.

### 8.2.1. Occupational exposure controls

- **Description of operating procedure and technological control**: Provide good ventilation of work space and air supply.

- **Personal protective equipment**
  - respiratory tract protection: In the event of an elevated gas concentration and a decreased oxygen concentration, use the self-contained breathing apparatus. In normal conditions, use a mask with the suitable filter (filter for the protective mask and semi-mask, protection against gas and evaporation of organic compounds with a boiling point up to 65°C), HRN EN 14387.
  
  - hand protection: Use protective gloves (HRN EN 374-3) of suitable material (nitrile or nitrile butyl rubber). In frequent contact with the hazardous substance, the resistance level to absorption of the gloves shall be > 240 min.
  
  - eye protection: Safety goggles for working with chemicals (HRN EN 166).
  
  
- **Special hygienic and safety precautions**: The work place shall be equipped with a shower. No smoking or eating and drinking when handling the gas. Regularly control and monitor the accuracy and the use of personal protective equipment used when handling the hazardous chemical. Regularly monitor and maintain personal protective clothing and equipment. The contaminated clothing may not be used and shall be replaced.

### 8.2.2. Environmental exposure controls

- **Summary of risk management measures**: No data available.

### 9 PHYSICAL AND CHEMICAL PROPERTIES

#### 9.1. General information:

- state: gas; liquid under pressure
- colour: colourless
- odour: intensive
- odour threshold: not applicable

#### 9.2. Important health, safety and environmental information:

- pH value (indicate conc. and temp.): Not applicable.
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling point/boiling range at 101,3 – 101,325 kPa:</td>
<td>-161,48 up to -0,5 (from literature)</td>
</tr>
<tr>
<td>Flash point at 101,3 kPa:</td>
<td>-104 up to -60 (from literature)</td>
</tr>
<tr>
<td>Flammability (solid, gas):</td>
<td>Extremely flammable (from literature)</td>
</tr>
<tr>
<td>Explosive properties:</td>
<td>Vol. % 1,9 – 9,5 (from literature)</td>
</tr>
<tr>
<td>Oxidizing properties:</td>
<td>No data available.</td>
</tr>
<tr>
<td>Vapour pressure at 40 °C:</td>
<td>kPa 678 - 1224</td>
</tr>
<tr>
<td>Density at 15 °C:</td>
<td>kg/m³ 531,1 – 593,2</td>
</tr>
<tr>
<td>Relative density (water = 1):</td>
<td>0,531 – 0,593</td>
</tr>
<tr>
<td>Solubility (indicate solvent):</td>
<td>g/L Soluble in ether, ethanol, chloroform (from literature)</td>
</tr>
<tr>
<td>Solubility in water at 20 – 25 °C and pH 7:</td>
<td>mg/L 24,4 – 60,4 (from literature)</td>
</tr>
<tr>
<td>Partition coefficient n-octanol / water at 20 – 25 °C and pH 7</td>
<td>logPow 1,09 – 2,8 (from literature)</td>
</tr>
<tr>
<td>Viscosity (kinematic) at xx °C:</td>
<td>mm²/s Not applicable.</td>
</tr>
<tr>
<td>Vapour density at 15°C:</td>
<td>kg/m³ No data available.</td>
</tr>
<tr>
<td>Volatility:</td>
<td>No data available.</td>
</tr>
</tbody>
</table>

9.3. Other data:
- Melting point/freezing point at 101,3 kPa: | °C -187,6 up to -138,3 (from literature) |
- Disintegration temperature: | °C No data available. |
- Auto ignition temperature at 99,8 up to 102,1 kPa: | °C 287 – 537 (from literature) |
- Conductivity: | pS/m No data available. |

10. STABILITY AND REACTIVITY
- Reactivity: Stable under recommended handling and storage conditions. Does not polymerise.
- Chemical stability: Stable under recommended handling and storage conditions. Does not polymerise.
- Possibility of hazardous reactions: Stable under recommended handling and storage conditions.
- Conditions to avoid: Contact with air, strong oxidants and increased temperature.
- Incompatible materials: Strong oxidants.
- Hazardous decomposition products: Combustion produces harmful gases — carbon monoxide (CO) and carbon dioxide (CO₂).
11. TOXICOLOGICAL INFORMATION

- Information on toxicological effects:
  - Acute toxicity
    - oral (LD₅₀): No data available.
    - inhalation (LC₅₀): 658 mg/L (4 hours, rat)
    - dermal (LD₅₀): No data available.
  - Irritation/Corrosion
    - skin: Compressed air causes frostbites.
    - eyes: Compressed air causes frostbites.
    - respiratory tract: No data available.
  - Sensitisation
    - skin: No data available.
    - respiratory tract: No data available.
  - Aspiration hazard: Not applicable.
  - Other classic effects: (e.g. unconsciousness, particularly toxic metabolites, etc.): Suffocating gas causes headache and drowsiness. High concentration or longer exposure period may cause fainting and suffocation.
  - Permanent effects due to acute or chronic exposure: No data available.
  - Special effects
    - mutagenicity: No data available.
    - carcinogenicity: No data available.
    - fertility decrease: No data available.
    - harmful effect on unborn child: No data available.
    - toxicity to reproduction: No data available.
    - other (e.g. endocrine disruptors): No data available.
    - STOT (SE): No data available.
    - STOT (RE): No data available.
  - Prohibitions and restrictions: No data available.
  - Other: No data available.

12. ECOLOGICAL INFORMATION

12.1. Toxicity
  - to aquatic organisms: No data available.
  - to ground organisms: No data available.
  - to plants and land animals: No data available.

12.2. Persistence and degradability
- biodegradation: No data available.
- other degradation processes: No data available.
- degradation in wastewater: No data available.

12.3. Bioaccumulative potential
- bio-concentration factor (BCF): No data available.

12.4. Mobility in soil
- Known or predicted distribution in environmental compartments: Quickly evaporates into the atmosphere.
  - surface tension: No data available.
  - absorption/desorption: No data available.
  - other physical and chemical properties: See section 9.

12.5. Results of PBT and vPvB assessment
- data from chemical safety report: No data available.

12.6. Other adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS
- Waste codes: Not applicable.
- Waste treatment methods: No data available.
- Waste from residues: Not applicable. There is no classic waste.
- Contaminated packaging: Close the empty containers and return to producer.
- Relevant provisions: Act on Sustainable Waste Management, Regulation on waste catalogue, Ordinance on waste management.

14. TRANSPORT INFORMATION
- UN proper shipping name: Hydrocarbon gas, mixture, liquefied, N.O.C., mixture: A, A01, A02, A0, A1, B1, B2, B or C.
- UN number: 1965
- Transport hazard class(es) ADR/RID/ADN/ICAO/IATA: 2 (F) gases
  IMDG: 2 (F) gases
- Packing group ADR/RID/ADN/IMDG/ICAO/IATA: Not assigned to any packaging group.
- Environmental hazards ADR, RID, ADN, ICAO/IATA: No data available.
  IMDG: No data available.
- Special precautions for user ADR
  Transport category: 2
  RID
  Transport category: 2
SAFETY DATA SHEET
According to the Regulation No. 1907/2006

<table>
<thead>
<tr>
<th>Product</th>
<th>LIQUEFIED PETROLEUM GAS PROpane - BUTANE MIXTURE, AUTOGAS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle for tank carriage:</td>
<td>FL</td>
</tr>
<tr>
<td>Tank code:</td>
<td>PxBN(M)</td>
</tr>
<tr>
<td>Tunnel restriction code:</td>
<td>B/D</td>
</tr>
<tr>
<td>Label:</td>
<td>2.1 (+13)</td>
</tr>
<tr>
<td>Classification code:</td>
<td>2F</td>
</tr>
<tr>
<td>Hazard identification:</td>
<td>23</td>
</tr>
<tr>
<td>Special provisions:</td>
<td>274, 583, TU38, TE22, TA4, TT9, TM6, CW9, CW10, CW36, CE3.</td>
</tr>
<tr>
<td>ADN</td>
<td></td>
</tr>
<tr>
<td>Label:</td>
<td>2.1</td>
</tr>
<tr>
<td>Additional requirements/Remarks:</td>
<td>2;31</td>
</tr>
<tr>
<td>Dangers:</td>
<td>2.1</td>
</tr>
<tr>
<td>Equipment required:</td>
<td>PP, EX, A</td>
</tr>
<tr>
<td>Classification code:</td>
<td>2F</td>
</tr>
<tr>
<td>Carriage permitted:</td>
<td>YES</td>
</tr>
<tr>
<td>Type of tank vessel:</td>
<td>G/1</td>
</tr>
<tr>
<td>Anti-explosion protection required:</td>
<td>YES</td>
</tr>
<tr>
<td>Maximum degree of filling in %:</td>
<td>91</td>
</tr>
<tr>
<td>IMDG</td>
<td></td>
</tr>
<tr>
<td>Subsidiary risk:</td>
<td>none</td>
</tr>
<tr>
<td>Group of the cargo:</td>
<td>category E</td>
</tr>
<tr>
<td>Special provisions:</td>
<td>274</td>
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<tr>
<td>EmS:</td>
<td>F-D, S-U</td>
</tr>
<tr>
<td>Segregation group:</td>
<td>not applicable</td>
</tr>
<tr>
<td>ICAO</td>
<td></td>
</tr>
<tr>
<td>Label:</td>
<td>2.1</td>
</tr>
<tr>
<td>Cargo IMP code:</td>
<td>RFG</td>
</tr>
<tr>
<td>Passenger and cargo aircraft:</td>
<td>not allowed</td>
</tr>
<tr>
<td>Cargo aircraft only:</td>
<td>150 kg net per packaging</td>
</tr>
<tr>
<td>ERG code:</td>
<td>10 I</td>
</tr>
<tr>
<td>Transport in liquid condition according to MARPOL Convention, Annex II and IBC Codex</td>
<td></td>
</tr>
<tr>
<td>Trade name:</td>
<td>LIQUEFIED PETROLEUM GAS PROPANE - BUTANE MIXTURE, AUTOGAS</td>
</tr>
<tr>
<td>Pollution category (according to MARPOL, Annex II):</td>
<td>Not classified as sea pollutant (lighter than water, evaporates on contact with water).</td>
</tr>
<tr>
<td>Vessel type (according to IBC Code):</td>
<td>2G/2PG</td>
</tr>
<tr>
<td>Special and operative requirements (according to IBC Code):</td>
<td>None.</td>
</tr>
</tbody>
</table>

Date: 2016/8/24
Edition: 7
15. REGULATORY INFORMATION

- Applicable EU regulations:

- Applicable national regulations:
  Chemicals Act; Ordinance on limit values of exposure to hazardous substances at work and on biological limit values; Ordinance on the compilation of safety data sheets.

- Chemical Safety Assessment carried out (CSA):
  YES X NO

- Authorization information:

- Restriction information:

16. OTHER INFORMATION

Revision indicators

Section: Subject of change:
  Completely new edition of SDS “Liquefied petroleum gas propane - butane mixture, Autogas”, with changes in all sections.

Full text of H-phrases, EUH- and P-phrases:

H220 Extremely flammable gas.
H280 Contains gas under pressure; may explode if heated.
P102 Keep out of reach of children.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 Eliminate all ignition sources if safe to do so.
P410+P403 Protect from sunlight. Store in a well-ventilated place.

Abbreviations and acronyms:

ADN European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
SAFETY DATA SHEET
According to the Regulation No. 1907/2006

Product: LIQUEFIED PETROLEUM GAS
PROPNANE - BUTANE MIXTURE, AUTOGAS

Date: 2016/8/24
Edition: 7

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS number: Chemical Abstract Service number
CLP: Classification, Labelling and Packaging of substances and mixtures
CSA: Chemical Safety Assessment
CSR: Chemical Safety Report
EC number: European Community number for identification of chemical substances commercially available in the EU
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods Code transport
LC50: Lethal concentration for 50% of tested organisms
LD50: Lethal concentration for 50% of tested organisms (medium lethal concentration)
OIN: Oil industry notes
PBT: Persistent, bioaccumulative and toxic
REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail
STOT (SE): Specific Target Organ Toxicity (Single Exposure)
STOT (RE): Specific Target Organ Toxicity (Repeated Exposure)
UVCB: Chemical Substances of Unknown or Variable Composition, Complex Reaction Products and Biological Materials
vPvB: Very persistent and very bioaccumulative

Statement:
This SDS is in compliance with the EU Regulation No. 1907/2006 and No. 1272/2008 of the European Parliament and the Council. It contains important user health and safety and environmental protection information. The information provided herein is not a substitute for any specification of quality and should not be deemed as a guarantee of the adequacy and applicability of this product for any purpose whatsoever. All information provided herein is based on our current knowledge and compliant with applicable legal regulations. The user is responsible for adherence to relevant legal regulations.

Data source:
1. www.hzt.hr
3. LOA Category K – Other petroleum gases

APPENDIX: EXPOSURE SCENARIOS ACCORDING TO CHEMICAL SAFETY REPORT