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1. IDENTIFICATION OF CHEMICAL PRODUCTS AND INFORMATION ON THE MANUFACTURER AND / OR SUPPLIER

1.1 Technical name	Liquefied petroleum gas for portable gas appliances
Recommendations and restrictions on the use of chemical products.	Universal, designed for portable gas appliances: non-mechanical lighters with piezo ignition, stoves, burners, barbecue grills, lanterns, lighting and blowtorches, lamps and heaters, refrigerators, etc.
1.2 Information about the responsible person	SPARKWORX Sp. z o. o.
Name of the organization	
Address	Złota Street, No. 75A/7, 00-819 Warsaw, Poland
Emergency telephone number	+48736382872
E-mail	Info@sparkworx.pl

2. GHS HAZARD IDENTIFICATION

2.1 The degree of danger of chemical products in general	- flammable gases, class 1A - gases under pressure: liquefied gas
2.2 Information about the warning marking	
Signal word	Danger
Hazard symbols	 «Flame»  «Gas cylinder»  "Exclamation mark"
H-phrases	H220: Extremely flammable gas H280: Contains gas under pressure; possibility of explosion when heated H336: May cause drowsiness and dizziness.
P-phrases	P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P337: Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381: In case of leakage, eliminate all ignition sources. P403: Store in a well-ventilated place. When stored in disposable aerosol cans, additionally: P251 Do not pierce or incinerate, even after use. P410 Keep away from sunlight. P412 Do not expose to temperatures above 50 °C.

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Product information in general					
Chemical name according to IUPAK		Doesn't have			
Chemical formula		Doesn't have			
General characteristics of the composition		A mixture of C3-C4 hydrocarbons			
3.2 Components					
Components (INCI)	Concentration (%)	CAS number	EU number	TLV, mg/m ³	Hazard class
Isobutane	0,01 – 99,98	75-28-5	200-857-2	900/300, vapours*	4
n-Butane	0,01 – 99,98	106-97-8	203-448-7		4
Propane	0,01 – 39,99	74-98-6	200-827-9		4
* - aliphatic limit hydrocarbons C2 - C10 (in terms of C)					

4. FIRST AID MEASURES

4.1 Observed symptoms	In case of contact with eyes: redness, lacrimation, pain. When exposed to the skin: redness, itching, burning. Contact with liquefied gas causes frostbite, resembling a burn. Upon inhalation: at moderate concentrations, the first signs of oxygen starvation occur; increased pulse rate, increased breathing volume, decreased attention, pallor of the skin, impaired coordination of movement. Acute poisoning is characterized by headache, dizziness, nausea, vomiting.
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4.2 First aid measures for victims

In case of contact with eyes

general weakness, and pain in the heart area. In severe cases, suffocation, loss of consciousness.

Rinse eyes thoroughly with running water while keeping the eye slit wide open. Seek medical attention immediately.

When exposed to skin

Rinse quickly and thoroughly with water, apply ointment to the affected area for burns. If blisters are present (severe frostbite), carefully apply a sterile bandage and seek immediate medical attention.

If swallowed

This route of entry into the body is unlikely.

Inhalation

Remove the victim from the polluted atmosphere, remove clothing that restricts breathing, fresh air, rest, warmth. Coffee, tea. Inhale ammonia from a cotton ball. If breathing suddenly weakens or stops, give oxygen. If there is none, immediately perform artificial respiration "from mouth to mouth" continuously until spontaneous breathing is restored. Call a doctor.

5. MEASURES AND MEANS TO ENSURE FIRE AND EXPLOSION SAFETY

5.1 General characteristics of fire and explosion hazard

Flammable gas.

5.2 Fire and explosion hazard indicators

Components	Flash point, °C	Autoignition temperature, °C	Concentration limit of flame distribution in air, vol. %
Isobutane	-76 (calc.)	460	1.3-9.8
<i>n</i> -Butane	-60	372	1.4-9.3
Propane	-104	470	1.7-10.9

5.3 Gorenje and/or thermodestruction products and the danger caused by them

Explosion hazard category of the mixture IIA, explosion hazard group of the mixture – T1 (isobutane, *n*-butane).

During combustion, carbon oxides are formed, which, at high concentrations, lead to poisoning, and in severe cases, death is possible. In case of poisoning by combustion products, immediately call an ambulance. Before the arrival of the doctor, take the victim to a room with clean air, rest, and warmth. When breathing stops, perform artificial respiration.

Carbon monoxide (carbon monoxide) disrupts the transportation and transfer of oxygen to tissues, and oxygen deficiency develops in the body. Symptoms of poisoning: headache, dizziness, blurred vision, nausea, vomiting, loss of consciousness.

Carbon dioxide (carbon dioxide) in a fire causes increased respiration and increased pulmonary ventilation, has a vasodilating effect. Symptoms of poisoning: increased pulse rate, increased blood pressure, migraine pain, headache, dizziness, lethargy, loss of consciousness.

5.4 Recommended fire extinguishing agents

CO₂, foam, powder fire extinguishers, water vapor, asbestos cloth

5.5 Prohibited fire extinguishing agents

Compact water jet

5.6 Extinguishing Specificity

Containers may explode when heated.

Do not stop burning if there is a leak.

Cool containers with water from a maximum distance, do not approach burning containers.

It is capable of ignition from sparks and flames.

It forms explosive mixtures with air, including in open areas. It can accumulate in low places in explosive concentrations.

In case of fire – a fire-retardant suit completes with a self-rescuer SPE-20 E.

6. MEASURES TO PREVENT AND ELIMINATE ACCIDENTS AND EMERGENCIES AND THEIR CONSEQUENCES

6.1 Measures to prevent harmful effects on people, the environment, buildings, structures, etc. in case of emergency and emergency situations Necessary general actions in case of emergencies and emergencies.

Isolate the danger zone within a radius of at least 200 m. Adjust the specified distance based on chemical reconnaissance data. Remove bystanders. Stay upwind, avoid low places. Enter the danger zone wearing protective equipment.

Observe fire safety measures. Do not smoke. Eliminate sources of fire and sparks. Provide first aid to victims and send them from the affected area for a medical examination. Observe the Rules for the Design and Safe Operation of Pressure Vessels.

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Personal protective equipment in emergency situations

Insulating gas mask Ci-30 and overalls. If the maximum permissible concentration is exceeded up to 100 times– a protective cap with a filter element with a universal protective ROM cartridge is installed. Industrial respirator comprising a SECO Full Face mask equipped with a Filter 2021 ABEK2 (EN 148-1 Rd40 connection).

6.2 Actions in case of leakage, spillage, placer

Remove personnel not involved in emergency response from the hazardous area. Take measures to stop the flow of product.

In case of a small leak, eliminate the leak while observing safety precautions. In case of an intensive leak, in agreement with specialists (fire department, emergency response), set fire to the escaping product and let it burn out under the control of water jets.

Isolate the area until the gas dissipates. Sprayed water is used to dissipate (isolate) vapors.

Cover the spill site with air-mechanical foam. Take measurements for compliance with the MPC w.a. and the MPC atm.a.

In case of industrial leaks, act according to the emergency response plan.

7. RULES FOR THE STORAGE AND HANDLING OF CHEMICAL PRODUCTS DURING LOADING AND UNLOADING

7.1 Safety measures when handling chemical products

Systems of engineering safety measures

Supply and exhaust ventilation in production areas and local exhaust devices. Air analysis of the working area in production areas and open areas. Sealed design of equipment and connecting units. Immediate elimination of leaks and gassed areas. Compliance with fire safety regulations. Explosion-proof design of equipment, communications and artificial lighting fittings. Protection against static electricity accumulation. Workplaces must be equipped with primary fire extinguishing equipment. Use spark-proof tools during repair work. Comply with safety regulations and personal hygiene, use personal protective equipment. Production areas must be equipped with first aid kits.

Environmental protection measures

Achieving maximum sealing of the technological process. Organization of constant monitoring of the serviceability of technological equipment. Preventing emissions of hydrocarbons and other harmful substances from entering air and water basins, drains, and reservoirs. In open areas, periodic monitoring of the content of the components of the isobutane and n-butane fractions in the air of the working area should be carried out. Industrial effluents are analyzed for the content of petroleum products in them in accordance with the methodological guidelines for the analysis of wastewater from oil refineries and petrochemical enterprises, approved in accordance with the established procedure.

Recommendations for safe movement and transportation

Transport of flammable gas in disposable aerosol dispensers (400 ml) is carried out under Limited Quantity (LQ) provisions (Chapter 3.4 ADR/RID/IMDG). Maximum gross weight per package must not exceed 30 kg. Aerosols must be protected from direct sunlight and atmospheric precipitation. Cargo must be secured in accordance with EN 12195 to prevent movement during transport. Do not expose to temperatures above 50°C.

7.2 Rules for storage of chemical products

Conditions and terms of safe storage

Store in a cool, dry, and well-ventilated area. Protect from direct sunlight and atmospheric precipitation. Keep at temperatures between -20°C and +35°C. Do not expose to temperatures exceeding 50°C. Aerosol dispensers must be stored in an upright position (caps facing upwards).

Requirements for storage rooms and vessels:

Keep away from heat, sparks, open flames, and other ignition sources. No smoking. Storage facilities must be equipped with explosion-proof lighting and electrical equipment. Maintain a minimum distance of 1 meter from heating appliances. The storage layout must ensure the stability of the packaging to prevent shifting.

Incompatible materials:

Do not store together with strong oxidizing agents, acids, alkalis, and flammable materials.

Disposable cylinders are made of metal and polymer materials, designed for an overpressure of at least 1.6 MPa.

Keep away from children.

Containers and packaging (including the materials from which they are made)

Safety measures and household storage rules

8. EXPOSURE CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT

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8.1 Parameters of the working area subject to mandatory control (TLV or TSEL)

Butane: TLV = 900/300 mg/m³;
Propane: TLV = 300 mg/m³

8.2 Measures to ensure the content of harmful substances in acceptable concentrations

Supply and exhaust ventilation, ventilation suction device in places of possible product release. To control the content of harmful substances in the air of the work area and in open areas.

8.3 Personal protective equipment for personnel

General recommendations

Avoid direct contact with the product, do not inhale vapors, do not eat or drink, do not smoke in the workplace, and use PPE. All employees must undergo preliminary and periodic medical examinations when applying for a job; they must be provided with personal protective equipment approved in accordance with the established procedure. Persons not younger than 18 years of age, who have passed mandatory medical examination, have no contraindications to work, know the rules for using personal protective equipment and providing first aid, have undergone training, internship at a specific workplace and passed the exam for admission to independent work in the established manner are allowed to work. All employees must undergo preliminary and periodic medical examinations when applying for a job; they must be provided with personal protective equipment approved in accordance with the established procedure. Observe the rules of personal hygiene, safety precautions, keep the workplace clean and tidy. Do not allow cluttering of passages to fire-fighting equipment and communication equipment.

Respiratory protection (types of protective equipment).

At high concentrations and when working in closed containers, vessels, wells – hose insulating gas masks with forced supply of fresh air to the breathing area or insulating air-breathing apparatus or similar.

Special protective clothing.

Workwear to protect workers from the effects of oil and petroleum products made from fabrics with water-oil- and oil-repellent properties (cotton, chemical fibers, as well as artificial leather and polymer-coated fabrics). It is forbidden to work in woolen clothing, as it absorbs gas vapors, holding them for a long time and can ignite from sparks and flames. Special non-slip shoes with deep grooving, upholstered with non-sparking nails.

Special protective shoes.

Hand protection products.

Mittens made of viscose-polyester fabric with oil- and water-protective properties and dacron-viscose fabric with oil- and oil- and water-protective impregnation.

Eye protection products.

Wear tightly fitting closed-type safety goggles providing protection against gases, vapors, and liquid splashes. Equipment must be certified to EN 166 (specifically marking 3 for liquids and 5 for gases/fine dust). Recommended models include Uvex Ultravision, 3M 2890S, or Honeywell LG series. If a full-face respirator is used, additional eye protection is not required.



9. PHYSICAL AND CHEMICAL PROPERTIES

Specifications	Indicators
Physical condition (including the state of aggregation)	Under normal conditions, it is a colorless gas with a characteristic odor; when the pressure increases, it easily liquefies and is a colorless transparent liquid with a specific odor.
Colour	Colorless
Odour	Specific
Saturated vapor pressure is excessive at a temperature of plus 45 °C.	not more than 1.6 MPa
Boiling point at 103.1 kPa	Propane – minus 42.1°C Butane – minus 0.5°C

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	Isobutane – minus 11.73°C
Critical temperature, °C	Propane – 96.84°C Butane – 152.01°C Isobutane – 134.98°C
Critical pressure, MPa	Propane – 4.58 Butane – 3,747 Isobutane – 3.60
Solubility	It is soluble in organic solvents, not soluble in water
UFI	D000-X0NC-C00V-T2HM

10. STABILITY AND REACTIVITY

10.1 Chemical stability

Chemically stable products under normal conditions.

10.2 Reactivity

Under normal conditions, they are chemically inert. Under certain conditions, hydrocarbons (temperature, catalyst, etc.) are oxidized, halogenated, sulfonated, and nitrated. They are easily ignited by sparks and flames. Explosive mixtures are formed with vapor air in the appropriate concentration ratios.

10.3 Conditions to avoid

It creates a threat of vapor phase propagation and in a mixture with air under certain conditions, in the presence of an ignition source, almost always leads to an explosion. To avoid dangerous manifestations, exclude heating, pressure, work carried out with an open fire source, contact with oxidizing agents, acids, and alkalis.

11. TOXICOLOGICAL INFORMATION

11.1 General characteristics of the impact Carcinogenicity

The product is classified as a low-hazard substance according to Regulation (EC) No 1272/2008 (CLP). Toxic effects under normal conditions are primarily determined by oxygen deficiency (simple asphyxiant). High concentrations in the air may lead to death by suffocation (asphyxiation). Inhalation of vapors exerts a strong narcotic effect, causing drowsiness or dizziness (STOT SE 3). Exposure of unprotected skin or eyes to the liquid phase may cause cryogenic burns (frostbite) similar to thermal burns.

11.2 Ways of exposure

By inhalation, or by contact of liquefied gas with eyes or skin.

11.3 Affected human organs, tissues and systems

Nervous and cardiovascular systems, eyes and skin (in contact with the liquid phase), lungs, liver.

11.4 Information on health hazards from direct contact with products, as well as the consequences of these effects

High concentrations cause anesthesia, can cause hypoxia, severe damage to the nervous system (vegetative-vascular dystonia, hepatopathy), weakening of cardiac activity. With prolonged exposure to the respiratory tract, bronchitis, bronchopneumonia, and toxic pulmonary edema may develop. Direct contact (eyes, skin) with liquefied gas (liquid phase) can lead to "cold" burns.

11.5 Information on dangerous long-term effects of product exposure on the body (effects on reproductive function, carcinogenicity, mutagenicity, cumulativeness and other chronic effects)

The effect on reproductive function and carcinogenic effects have not been studied. There is no data indicating that the product or any components present in an amount greater than 0.1% are mutagenic or genotoxic. The cumulativeness is weak.

No component of this product present at levels greater than or equal to 0,1 % is classified as probable, possible or confirmed human carcinogen by IARC.

11.6 Acute toxicity values (LD50, exposure route (oral, dermal), species; LC50, exposure time (h), species)

Substance	LC50, mg/m ³	Exposure time, h	Type of animal
Propane		not achieved	
Butane	658000	4	rats
	680000	2	mice
Isobutane	1 286 700	2	mice
	961400	4	rats

Specific target organ toxicity - single exposure

Not classified as specific target organ toxicant.

Specific target organ toxicity - repeated exposure

Not classified as specific target organ toxicant.

Aspiration hazard

Not classified as presenting an aspiration hazard.

Chronic effects

No information.

12. INFORMATION ON ENVIRONMENTAL IMPACT

12.1 General characteristics of the impact on environmental objects (atmospheric

It pollutes the atmospheric air with hydrocarbons, which are sources of photochemical pollution of the environment, remain in the air for a long

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air, reservoirs, soils, including observed signs of exposure)

12.2 Ways of environmental impact

12.3 The most important environmental impact characteristics

Hygiene standards

time and are transported over long distances. When released into the atmospheric air, there is a decrease in oxygen content, the presence of a specific odor when the maximum permissible concentration is exceeded. Minimize dispersion in the environment.

In case of violation of the rules of handling and transportation, accidental leaks, as a result of emergency situations.

Components	TLV atm.v. or ESEL atm.v., mg/m ³ (HDL, hazard class)	TLV water 2 or JDO water, mg/l, (HDL, hazard class)	TLV of fish.farm.3 or ESEL fish.farm., mg/l (HDL, hazard class)	TLV of the soil or Soil APC, mg/kg (HDL)
Propane	Not installed	Not installed	Not installed	Not installed
Butane	200/-, refl.4 class	Not installed	Not installed	Not installed
Isobutane	15/-, refl.4 class	Not installed	Not installed	Not installed

Ecotoxicity indicators [LC, EC, NOEC, etc. for fish (96 h), daphnia (48 h), algae (72 or 96 h), etc.].

According to REACH for propane, butane and isobutane:

LC50 - 49.9 mg/L, 96 h, fish;

LC50 – 69.43 mg/L, 48 h, Daphnia Magna;

EC50 – 19.37 mg/l, 96 h, algae.

Migration and transformation in the environment due to biodegradation and other processes (oxidation, hydrolysis, etc.)

Transformed (dispersed in the environment, oxidized to carbon oxides)

Aquatic microorganisms

There is no evidence of any significant impact or harmful effects of the products on aquatic organisms.

Persistence and degradability

There is no information.

Bioaccumulative potential

Accumulation in organisms is not expected.

Mobility in the soil

Not applicable.

Other side effects

No other adverse effects on the environment (e.g. ozone depletion, endocrine disorders) are expected from this product.

13. RECOMMENDATIONS FOR DISPOSAL OF WASTE (RESIDUES)

13.1 Safety measures for handling waste generated during use, storage, transportation

Identical to the handling of basic products according to clauses 7 and 8

13.2 Information on places and methods of neutralization, disposal or disposal of waste products, including containers (packaging)

Sent for recycling. If necessary, controlled burning at the fire site or centralized burning. Creating conditions for complete dispersion of gas residues. Containers are emptied of product and water, residues are blown onto a flare.

13.3 Recommendations for the disposal of waste generated during the use of products in everyday life

Recycling and disposal of waste in the production process by agreement with a company that has a license for waste disposal.

Disposable cylinders are disposed of as household waste after use.

14. TRANSPORT INFORMATION

14.1 Number UN

2037

14.2 Proper shipping and transport names

Shipping Name:

RECEPTACLES, SMALL CONTAINING GAS (GAS CARTRIGES) without a release device, non-refillable

Transport Name:

Liquefied hydrocarbon gas for portable devices

By road, rail, water, and air

14.3 Types of transport used

Class – 2

14.4 Transport hazard classification (ADR/RID/IMDG)

Division 2.1

Classification code – 2115

Number(s) of the drawing(s) of the hazard sign(s) – 3

Subclass – 2.1

14.5 Cargo hazard classification according to UN recommendations

Additional danger – no

United Nations Packaging Group in disposable cylinders from 50 to 1000 cm³ – UN1950

14.6 Transport marking

When packaged in disposable cylinders:

"Keep out of sunlight";

"Keep out of moisture";

"Temperature limits from minus 20 to plus 35 °C";

"Sealed packaging"

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14.7 Types of transport risks

International Civil Aviation Organization/ International Air Transport Association (ICAO / IATA)

Danger / Class / Division	2.1
Environmental hazards	
Signs	10L

International Maritime Dangerous Goods Code (IMDG)code

Danger / Class / Division	2.1
Danger to the aquatic environment	
Signs	F-D S-U

Intergovernmental Organisation for International Carriage by Rail (RID) / Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

Danger / Class / Division	Class – 2
Signs	2.1
Code	5F
Maritime transport in bulk according to IMO instruments	Not assigned.

(or: Transport in bulk according to Annex II of
MARPOL 73/78 and the IBC Code)

14.9 Special precautions Absent.

15. REGULATORY INFORMATION

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

15.1.1 EU Regulations

Regulation (EC) No 1907/2006 (REACH): This product does not contain any substances of very high concern (SVHC) listed in Annex XIV or on the Candidate List above 0.1%.

Regulation (EC) No 1272/2008 (CLP): The product is classified and labeled in accordance with this regulation (Aerosols, Category 1/2, Flammable gas).

Directive 75/324/EEC: On the approximation of the laws of the Member States relating to aerosol dispensers (as amended).

Seveso III Directive (2012/18/EU): Applies to storage of flammable gases (Section P3a/P3b for aerosols).

15.2 International Conventions and Agreements

15.2.1 Montreal Protocol (Ozone Depleting Substances)

Not regulated. The product does not contain any substances that deplete the ozone layer (ODS).

15.2.2 Stockholm Convention (Persistent Organic Pollutants - POPs)

Not regulated. The product does not contain persistent organic pollutants listed in the convention.

15.2.3 Rotterdam Convention (Prior Informed Consent - PIC)

Not regulated. The product is not subject to the PIC procedure for certain hazardous chemicals and pesticides in international trade.

HMIS

NFPA

REACH

GHS

MDGC

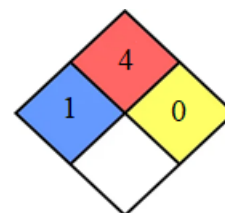
ICAO/IATA

Application II MARPOL 73/78

RID

ADR

HEALTH	1
FLAMMABILITY	4
PHYSICAL HAZARD	0
PERSONAL PROTECTION	I



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16. ADDITIONAL INFORMATION

16.1 Information about the revision (republishing) of the Safety Data Sheet | The safety data sheet was developed for the first time

16.2 List of data sources used in the preparation of the Safety Data Sheet

1. Regulation (EC) No 1907/2006 (REACH) with subsequent amendments.
2. Regulation (EC) No 1272/2008 (CLP) on classification, labelling and packaging of substances and mixtures.
3. ECHA (European Chemicals Agency) — Information on Chemicals database (official source for SVHC and registration data).
4. ADR / RID / IMDG / ICAO TI / IATA DGR — International regulations for the transport of dangerous goods.
5. Aerosol Dispensers Directive (75/324/EEC) and its adaptations to technical progress.
6. GESTIS Substance Database — Information system on hazardous substances of the German Social Accident Insurance (IFA).
7. TOXNET / HSDB (Hazardous Substances Data Bank) — Toxicological data and environmental fate information.
8. Safety Data Sheets (SDS) of the raw material suppliers (Propane/Butane components).