SECTION 1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier	
Product name:	SEH020300 BTP 300 Cartridge SUPER-EGO
Chemical type:	odorized mixture of combustibile gases in the liquid state, under pressure
UFI:	6P80-204Y-8006-G99Q

1.2. Relevant identified uses of the substance or mixture and uses advised against	
Identified uses:	Combustible gas cartridge for welding and filling of portable appliances. Professional use
Uses advised against:	Any use other than the uses above identified.

1.3. Details of the supplier of the safety data sheet

Supplier	SUPER-EGO TOOLS, S. L.U. Ctra. Durango -Elorrio, Km 2 48220 Abadiano Vizcaya, España Teléfono: + 34 946 210 100 Fax: + 34 946 210 131 E-mail: seguridad@super-ego.es www.super-ego.es

Emergency Telephone Number

For urgent information, please contact	Servicio de Información Toxicológica Teléfono: + 34 91 562 04 20 (solo emergencias toxicológicas) Información en español (24h/365 días)

SECTION 2. Hazards identification

2.1. Classification of the substance or mixture

Flammable gases, Category 1; H220
Gases under pressure: liquefied gas; H280

2.2. Label elements

Hazard pictograms:		
Signal word:	Danger	
Hazard statements:	H220	Extremely flammable gas
Precautionary statements:	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	In case of leakage, eliminate all ignition sources
	P403	Store in a well-ventilated place.

Derogations from labelling requirements:

The labeling of this product is simplified according to derogation in Annex 1, Section 1.3.2.1 of Regulation 1272/2008 which provides for the following: *If propane, butane and Petroleum gases, liquefiedor a mixture containing these substances classified in accordance with the criteria of this Annex, is placed on the market in closed refillable cylinders or in non-refillable cartridges within the scope of EN 417 as fuel gases which are only released for combustion (current edition of EN 417, relating to 'Non-refillable metallic gas cartridges for liquefied petroleum gases, with or without a valve, for use with portable appliances; construction, inspection, testing and marking'), these cylinders or cartridges need be labelled only with the appropriate pictogram and the hazard and precautionary statements concerning flammability.*

2.3. Other hazards

- the accumulation of vapours in confined environments can form explosive mixtures in contact with air, especially in closed environments or inside empty, uncleaned containers;
- The accumulation of vapours in confined spaces may cause asphyxiation (due to lack of oxygen);
- Vapours are invisible even if the liquid expansion produces mist in presence of wet air;
- LPG vapours are heavier than air and tend to drop to ground and stratify;
- Cold burns (frostbite) will result from skin/ eye contact with liquid;
- The combustion produces CO_2 (carbon dioxide), asphyxiating gas. As the oxygen level decreases, due to insufficient ventilation/fumes exhaust, CO (carbon monoxide) can also release, a very toxic gas;
- strong heating of the container (for example, in case of fire) causes a significant increase in the volume of the liquid and pressure, with the danger of bursting the recipient containing it.

See section 12.5 for PBT or vPvB assessment of constituents.
See section 11.2 and 12.6 for endocrine disrupting properties assessment of constituents.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Constituents	EINECS N°	CAS N°	INDEX N°	REACH registration N°	CLP classification	[%]
Petroleum gases, liquefied[3]	270-704-2	68476-85-7[2]	649-202-00-6	n.a. [1]	Flam. Gas 1; H220 Press. Gas; H280 Note [4] K, U, S	> 99.9

[1] Exempt according to the provisions of Article 2(7)(b) and Annex V of REACH. Liquefied petroleum gas is exempted from the obligation of registration according to Annex V, item 10 of EC Regulation n° 1907/2006 (REACH). Alternatively, the supplier of liquefied petroleum gas may have registered its constituents: n-butane CAS 106-97-8 and EC 203-448-7 (01-2119474691-32-xxxx), isobutane CAS 75-28-5 and EC 200-857-2 (01-2119485395-27-xxxx) and propane CAS 74-98-6 and EC 200-827-9 (01-2119486944-21-xxxx).

[2] Alternative CAS 68476-40-4 Hydrocarbons, C3-4

[3] The Carc. and Muta. classifications are not necessary, according to Note K, for the substances containing less than 0.1% of w/w 1,3-butadiene

[4] Note K:
The harmonised classification as a carcinogen or mutagen applies unless it can be shown that the substance contains less than 0,1 % w/w 1,3 butadiene (Einecs No 203-450-8), in which case a classification in accordance with Title II of this Regulation shall be performed also for those hazard classes. Where the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P210-P403 shall apply

[4] Note U:
When put on the market gases have to be classified as 'Gases under pressure', in one of the groups compressed gas, liquefied gas, refrigerated liquefied gas or dissolved gas. The group depends on the physical state in which the gas is packaged and therefore has to be assigned case by case. The following codes are assigned:
Press. Gas (Comp.)
Press. Gas (Liq.)
Press. Gas (Ref. Liq.)
Press. Gas (Diss.)
Aerosols shall not be classified as gases under pressure (See Annex I, Part 2, Section 2.3.2.1, Note 2).

[4] Note S:
This substance may not require a label according to Article 17 (see Section 1.3 of Annex I) (Table 3).

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation (gaseous phase):	Move contaminated patient out of the dangerous area. If the casualty is unconscious, place in the lateral recovery position If breathing is difficult, give oxygen if possible, or assisted ventilation. Obtain medical assistance if breathing remains difficult. In the event of cardiac arrest, (no pulse), apply cardiopulmonary resuscitation.
Contact with the skin (liquid phase):	Wash affected area with water and soap. Seek medical attention if skin irritation, swelling or redness develops and persists. Accidental rapid evaporation of liquid may cause cold burns. If there are signs of frostbite, such as blanching or redness of skin or burning or tingling sensation, do not rub, massage or compress the affected area. Seek professional medical attention or send the casualty to a hospital.
Contact with the eyes (liquid phase):	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist. In case of cold burns from LPG (Liquefied Petroleum Gas) involving the eyes, arrange for admission to hospital immediately.
Ingestion (liquid phase):	Not considered a likely route of exposure – frostbite to the lips and mouth may occur if in contact with the liquid. Seek medical attention immediately.

4.2. Most important symptoms and effects, both acute and delayed

Exposure to high vapour concentrations, particularly in confined spaces and poorly ventilated areas, can cause respiratory irritation, nausea, dizziness. Exposure to high concentrations may cause asphyxiation as a consequence of oxygen deficiency. Prolonged contact with the liquid rapidly evaporating can cause frostbite.

4.3. Indication of any immediate medical attention and special treatment needed

When using high-pressure equipment, injection of product can occur: send the casualty immediately to hospital. Do not wait for symptoms to develop. In case of cold burns involving the eyes, seek medical attention and arrange for admission to hospital immediately.

SECTION 5: Firefighting measures

5.1. Extinguishing media	
Suitable:	Fire of small entity or involving the transport means can be extinguished with appropriate extinguishers suitable for Class C fire (e.g. chemical powder or carbon dioxide).
Not suitable:	Do NOT use water jet or foam

5.2. Special hazards arising from the substance or mixture

Extremely flammable gas. Vapours are heavier than air, spread along ground and form explosive mixtures of vapour and air. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion, spread of fire and a risk of burns and injuries.
Combustion products may include carbon dioxide, asphyxiant gas. As the oxygen level decreases, due to insufficient ventilation/fumes exhaust, CO (carbon monoxide) can also release.

5.3. Advice for firefighters

DO NOT extinguish a leaking gas fire unless leak can be stopped. It is better to fight an ignited gas release fire than a gas cloud expanding towards an ignition source. Cylinders or other containment vessels may explode under fire conditions - use water spray to cool unopened containers. Large ignited gas releases which cannot be extinguished by stopping the gas flow must be kept under control with the use of fractional jet hydrants. Use fractionated jet water to dilute the concentration of gas clouds below the lower explosive limit, this for decreasing the concentration of possible gas clouds.
Fire fighters must always werar appropriate individual protection equipment (helmet, fire-proof gloves and self-contained, positive-pressure, breathing apparatus with face shield). Personal protective equipment for firefighters EN 443, EN 469, EN 659, (see also section 8).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

DO NOT use electrical equipment/tools which are not provided with an explosion-proof system (e.g. antideflagants). Stop or contain leak at the source, if safe to do so. Avoid contact of the liquid with skin and eyes.

For non-emergency personnel:	Wear full antistatic and fire resistent protective clothing to cover also the upper and lower limbs. Furthermore, depending on the activity performed, antistatic protective gloves must be worn and, in case of risk of contact of the liquid phase with the eyes/face, full head and face protection such as protective shield and/or safety goggles. See also SECTION 8.2 for suitable personal protective equipment. Keep non-involved personnel away from the area of spillage. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares, etc.) and ensure adequate ventilation. Evacuate and isolate the area. In case of large spills, warn the residents from downwind zones. Warn the authorities according to what provided for by the emergency response plan.
For emergency responders:	Wear antistatic clothing in cotton or wool for total protection of the trunk and the limbs. Protect your eyes with shield or safety goggles. Use antistatic footwear. Protect your hands with suitable gloves. In case of intervention in areas where gas presence is high (e.g. confined areas), use a self contained breathing apparatus. Take note of any information in Section 8 on suitable personal protective equipment. If possible, stay upwind. Provide adequate ventilation. Use fractionated jet water to dilute the concentration of gas clouds below the lower explosive limit, this for decreasing the concentration of possible gas clouds. Prevent gas from spreading into low-lying areas (e.g. cellars, etc), since gas vapours density is higher than air and vapours tend to stratify near the ground. Orient mobile containers (e.g. cylinders) in such a way to prevent liquid from flowing out if safe to do this. Pay attention to the accumulation in wells and confined spaces. It's possible to use special sensors to detect flammable gases or vapors.

6.2 Environmental precautions

Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Prevent spillage from entering drains or any place where dangerous accumulation may occur (sewers, depressions etc.).

6.3. Methods and material for containment and cleaning up

Ventilate closed rooms and evaporate the product, favouring dispersion. Keep in mind that the vapours are heavier than air and may travel considerable distance on the ground, explode or catch fire, and return to their source. Inside buildings or confined spaces, ensure proper ventilation. Water: Spilling the liquid product in water will presumably result in a quick and complete evaporation. Isolate the area and prevent the risk of fire/explosion for boats and other structures, taking into account the wind direction and speed, up to the complete dispersion of the product.

6.4. Reference to other sections

For information on personal protection, see SECTION 8.2. For information on disposal, see SECTION 13.1.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Risk of explosive mixtures of vapour and air. Ensure that all relevant regulations regarding explosive atmospheres, and handling and storage facilities of flammable products, are followed. Product handling operations are to be carried out only by qualified personnel, well trained on the specific risks connected with this operation and on the safety precautions to take. DO NOT use electrical equipment/tools that are not provided with an explosion-proof system. Take precautionary measures against static electricity. Ground/bond containers, tanks and transfer/receiving equipment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Keep away from heat/sparks/open flames/hot surfaces. Do not smoke. Do not use compressed air for filling, discharging, or handling operations. Do not enter storage areas and confined spaces unless adequately ventilated. Before entering storage tanks and commencing any operation in a confined area, check the atmosphere for oxygen content and flammability. Empty containers retain product residue and can be hazardous. Do not weld, solder, drill, cut or incinerate empty containers or non reclaimed containers. Ensure that proper housekeeping measures are in place. Avoid contact with skin and eyes. Do not breathe vapours. Use adequate personal protective equipment as needed (see SECTION 8.2). Keep away from food and beverages. Do not eat, drink or smoke when using this product. Workers should wash hands and face before eating, drinking, smoking and ehen leaving the workplace with soap and water Do not reuse contaminated clothing. Contaminated work clothing should not be allowed out of the workplace.

7.2. Conditions for safe storage, including any incompatibilities

keep only in the original container or in a suitable container for this kind of product. Keep in suitable, closed and correctly labelled containers. Gas cylinders should not be stored near other gas cylinders containing compressed oxygen. Empty containers retain product residue and can be hazardous. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned. Containers should be protected from sunlight and stored in a cool and well-ventilated place. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not expose to temperatures over 50 °C. Avoid the build-up of electrostatic charges. Store away from incompatible materials (see SECTION 10.5). The storage of the product is subject to the provisions of Directive 2012/18 / EU (SEVESO III).

7.3. Specific end use(s)

The storage and handling of the product designed for use with lighters, refills for lighters, aerosols and gas cartridges must observe the reference standards covering the transport of hazardous goods, especially the P003 packaging instructions.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limit values:

Note: For the identification of dangerous contractions for professional inhalation, besides those predicting an exposure damage, in the absence of national or community limit exposure values, for common phrases, please refer to the document ACGIH "Threshold limit value (TLVs) for chemical substances and physical agents & biological exposure indices (BEIs)". Specific TLV for liquefied petroleum gas (LPG) – previously grouped in the classification "aliphatic hydrocarbons: alkanes [C1-C4]" now removed – have been withdrawn together with the 2013 issue. Critical effects lead to asphyxiation with a specific reference to the "minimum oxygen content" in the inhaled atmospheres.

DNEL: not applicable

PNEC: not applicable

Monitoring procedures:
Refer to relevant legislation and in any case to the good industrial heath practices in the work place.

8.2. Exposure controls

Only PPEs compliant with the standards set out in European reference standards must be worn. PPEs supplier must be consulted in all cases before making a final decision.

Skin protection:	Wear work clothes with long sleeves. Refer to UNI EN 340 and to other UNI-EN standards applicable. Antistatic safety footwear, resistant to chemical agents. Work clothes must not have pockets or other places where the product can become trapped if accidental contact occurs.
Hand protection:	In case of possible contact with the skin, use gloves with wrist bands that are highly resistance to hydrocarbons and have felt on the insid. Recommended: nitrile rubber (NBR) or PVC with a protective index for chemical agents of at least 5 (permeation time > 240 minutes). If there is a risk of contact with the liquid, wear cold resistant gloves [ref. EN 511 Standard]. Use gloves in compliance with the conditions and limits set by the manufacturer. Replace gloves immediately in case of cuts, holes or other signs of damages or degradation. In the case, refer to UNI EN 374. 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.
Eye protection:	If splashing is likely, full head and face protection (protective shield and/or safety goggles) should be used. [rif. EN 166].
Respiratory protection:	Regardless of the other possible actions (adjustments of the plants, operating procedures and other means to reduce workers exposure), suitable breathing apparatus according to need are indicated. In well-ventilated area or outdoor: In case of use of the product without suitable vapor containment systems, use full face or half-masks. A filter for hydrocarbons vapors can be used (AX). (EN 136/140/145). In confined spaces (e.g. interior tanks): the use approved devices for respiratory protection (masks etc) must be evaluated according to the work activity, the duration and predictable intensity of the exposure. If it is not possible to determine or estimate with good certainty the exposure levels or if an oxygen-deficient atmosphere occur, only a Self-contained Breathing Apparatus should be used. Large amounts of LPG vapours should create an oxygen-deficient atmosphere, and in this case only a Self-contained Breathing Apparatus should be used.
Environmental measures:	No additional risk management measures required.
Technical and hygienic measures:	Use only with adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapours. Keep away from food and beverages. Do not eat, drink or smoke when using this product. Wash with PH neutral soap and water. Do not use irritating products or solvents that remove the sebaceous layer of the skin. Contaminated work clothing must not be reuse. Do not reuse contaminated clothing. Contaminated work clothing should not be allowed out of the workplace.
Thermal hazard:	In case of thermal risk (frostbite) due to jets of liquid product, wear a face shield or a visor for splash protection [rif. EN 166], clothing that completely covers the trunk and limbs and antistatic protective gloves, with protection extended to the forearm, compliant with the EN 388 standard for mechanical risks with high resistance to abrasion, lined internally to protect against the risk of cold burns.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties	
Physical state:	liquified gas under pressure
Colour	colourless
Odour:	Odorless unless specifically odorized by combustion use or automotive. 25% L.I.E. with gas odorant.
Melting point/freezing point:	from -187°C (propane) to -138°C (butane)
Boiling point:	from -42°C (propane) to -0,5°C (butane)
Flammability:	H220 - Extremely flammable gas
Lower and upper explosion limit:	upper: from 8,41 to 9,5 % vol; lower: from 1,86 to 2,27 % vol
Flash point:	from -104 °C (propane) to -60°C (butane)
Auto-ignition temperature:	from + 468°C (propane) to + 405°C (butane)
Decomposition temperature:	not applicable (does not self-decompose)
pH:	not relevant for the product (gas)
Kinematic viscosity:	not relevant for the product (gas)
Solubility:	negligible
Partition coefficient n-octanol/water:	not relevant for the product (mixture)
Vapour pressure:	from 7,5 bar for propane to 1,8 bar for butane @20°C (ASTM D 1267 method)
Density and/or relative density:	not relevant for the product (gas)
Relative vapour density:	from 1,86 for propane to 2,45 for butane
Particle characteristics:	not relevant for the product (gas)

9.2. Other information	
Thermic conductivity in liquid phase at 15°C in W/m x °C:	13×10^{-2}
Electric conductivity in liquid phase (at 0°÷ 20°C) in S x m $^{-1}$:	Butane $1 \div 5 \times 10^{-12}$ Propane $0,1 \div 0,5 \times 10^{-12}$
Suitability of materials:	Dissolves greases and attacks natural rubber. Does not corrode metallic materials
Critical point, in °C:	from +96,5 for propane to +151 for butane

Note:
Under standard conditions, the product is in the gaseous phase, the information reported here refers to the conditions in which the product is placed on the market. Please consider "explosive limit" as a synonym of "flammability limit", used outside the Union.
Data source:
- Technical Data Book – A.P.I. (2nd edition, 1970)
- Encyclopédie des gaz – ELSEVIER (1976)

SECTION 10: Stability and reactivity

10.1. Reactivity

The product can react with strong oxidizing agents.

10.2. Chemical stability

The product is stable under normal conditions of use and storage.

10.3. Possibility of hazardous reactions

Contact with strong oxidizers may cause a fire hazard. A mixture with strong oxidisers may create an explosive mass. Prevent the formation of explosive mixtures with air and avoid contact with all possible source of ignition.

10.4. Conditions to avoid

Prevent the formation of explosive mixtures with air and avoid contact with all possible source of ignition. Avoid strong heating of products and containers. Avoid violent decompression of recipients with biphasic content as it may generate strong cooling, with temperatures under 0°C. Avoid the contact with strong oxidising agents (oxygen, nitrous oxide, chlorine, fluorine, etc.).

10.5. Incompatible materials

oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. If triggered, a gas-air mixture within the flammability limits burns with an exothermic reaction and the production of carbon oxides (CO_2, CO).

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

a) acute toxicity		
Petroleum gases, liquefied	Oral	The study does not need to be conducted as the substance is a flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations.
	Inhalation	LC_{50} – Rat = 1355 mg/m³ 15min - (Alderley Park (SPF)) male/female (butane 106-97-8)
		LC_{50} – Rat = 570000 ppm 15min - (Alderley Park (SPF)) male/female, material test, isobutane (butane 106-97-8)
		CL_{50} – Rat, maschio, local = 1237 mg/l (120 Minutes, Experimental data, 2 (reliable with restrictions), key study, material test, isobutane) (butane 106-97-8)
		LC_{50} – Rat = 1442 – 1443 mg/m³ (15 min) (Propane 74-98-6)
	Dermal	The study does not need to be conducted as the substance is a flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations.
Product	Based on available data, the classification criteria are not met.	
b) skin corrosion/irritation		
Petroleum gases, liquefied	The study does not need to be conducted as the substance is a flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations. Some dose-response studies in humans have shown that propane and butane do not have irritant and corrosive properties to skin and mucous membranes. Contact with the liquefied gas can produce frostbite.	
Product	Based on available data, the classification criteria are not met.	
c) serious eye damage/irritation		
Petroleum gases, liquefied	The study does not need to be conducted as the substance is a flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations.	
Product	Based on available data, the classification criteria are not met.	
d) respiratory or skin sensitisation		
Petroleum gases, liquefied	The study does not need to be conducted as the substance is a flammable gases at room temperature and capable of forming explosive mixtures with air. A high fire and explosion hazard would be associated with any testing at meaningful concentrations.	
Product	Based on available data, the classification criteria are not met.	
e) germ cell mutagenicity		
Petroleum gases, liquefied	No evidence of genotoxicity for the major components of LPG.	
	Furthermore the product contains 1,3-butadiene (EINECS 203-450-8) in concentration <0.1% w/w.	
Product	Based on available data, the classification criteria are not met.	
f) carcinogenicity		
Petroleum gases, liquefied	No evidence of carcinogenicity for the major components of LPG	
	Furthermore the product contains 1,3-butadiene (EINECS 203-450-8) in concentration <0.1% w/w.	
Product	Based on available data, the classification criteria are not met.	
g) reproductive toxicity		
Petroleum gases, liquefied	No evidence of reprotoxicity for the major components of LPG	
Product	Based on available data, the classification criteria are not met.	
h) Specific target organ toxicity (STOT) — single exposure		
Petroleum gases, liquefied	LOAEC (Inhalation, rat, gas) = 12000 ppmv/4h (propane CAS 74-98-6)	
	NOAEC (Inhalation, rat, gas) = 4000 – 16000 ppmv/4h (propane CAS 74-98-6)	
Product	Based on available data, the classification criteria are not met.	
i) Specific target organ toxicity (STOT) — repeated exposure		
Petroleum gases, liquefied	NOAEC (Inhalation, rat, gas, 90 days) = 9000 ppmv/6h/day (Sprague-Dawley CD) - male/female (butane 106-97-8)	
	LOAEC (Inhalation, rat, gas, 90 days) = 12000 ppmv/6h/day (propane CAS 74-98-6)	
	NOAEC (Inhalation, rat, gas, 90 days) = 9000 ppmv/6h/day (Sprague-Dawley CD) - male/female (propane CAS 74-98-6)	
Product	Based on available data, the classification criteria are not met.	
j) aspiration hazard		
Petroleum gases, liquefied	Not applicable (gas)	
Product	Based on available data, the classification criteria are not met.	

11.2. Information on other hazards

The mixture does not contain substance(s) identified as having endocrine disrupting properties for human health in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 or included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties for human health.

SECTION 12: Ecological information

12.1. Toxicity	
Petroleum gases, liquefied	The LPG consists of substances which are gas at standard temperature and pressure and is expected to partition primarily to air rather than in water, sediment and soil. These constituents do not have adverse effects on aquatic organisms.
	CL_{50} – Fish = 49,9 mg/l (Propane CAS 74-98-6)
	EC_{50} – Daphnia = 27,1 mg/l (Propane CAS 74-98-6)
	EC_{50} – Algae, 72 h = 11,9 mg/l (Propane CAS 74-98-6)
	CL_{50} – Fish = 24,11 mg/l 96 hours - QSAR Model (butane CAS 106-97-8)
	EC_{50} – Daphnia = 14,22 mg/l - QSAR Model (butane CAS 106-97-8)
	EC_{50} – Algae, 96 h = 7,71 mg/l - QSAR Model (butane CAS 106-97-8)
Product	Based on available data, the classification criteria are not met.
12.2. Persistence and degradability	
Petroleum gases, liquefied	Abiotic degradation: This substance may contribute to ozone formation in the near surface atmosphere. However, the photochemical formation of ozone depends on a complex interaction of other atmospheric pollutant sources and environmental conditions.
	Biotic degradation: QSAR studies with the ethane, which has a 100% biodegradable in 16 days, were carried out. Biodegradation: 100 % (16d. QSAR Read-Across) (Propane 74-98-6) Biodegradation: 50 % after 3,46 days; (degradation calculated by QSAR method) (butane CAS 106-97-8)
12.3. Bioaccumulative potential	
Petroleum gases, liquefied	Unlikely bioaccumulation
	Log Kow = 2,36 (Propane 74-98-6)
	BCF = 1,56 (Propane 74-98-6)
	Log Pow = 2,89 (butane 106-97-8)
	Log Kow ≤ 3 (butane 106-97-8)
12.4. Mobility in soil	
Petroleum gases, liquefied	Substance is a hydrocarbon UVCB. Standard tests for this endpoint are intended for single substances and are not appropriate for this complex substance. However at standard temperature and pressure LPG constituents are gaseous and is expected to partition primarily to air rather than in water, sediment and soil.
12.5. Results of PBT and vPvB assessment	
Product constituents do not satisfy the criteria for PBT or vPvB classification according to Annex XIII of Regulation (EC) 1907/2006 (REACH).	

12.6. Endocrine disrupting properties
The mixture does not contain substance(s) identified as having endocrine disrupting properties for enviromental in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 or included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties for enviromental.

12.7. Other adverse effects	
Petroleum gases, liquefied	ODP: 0 years. ODP s the relative amount of degradation to the ozone layer it can cause, with trichlorofluoromethane (R 11 or CFC-11) being fixed at an ODP of 1.0
	GWP: 3 years. GWP is a measure of how much heat a greenhouse gas traps in the atmosphere over a specific time compared to a similar mass of carbon dioxide (CO_2). Carbon dioxide, with a global warming potential of 1, is used as the base figure for measuring global warming potential.

SECTION 13: Disposal considerations

13.1. Waste treatment methods	
Product:	The product gives dangerous properties to the waste containing residuals because of gas flammability and possibility to form explosive atmospheres. It is therefore compulsory to take all the required measures and precautions to avoid dispersing the product in air. Do not dispose of the product into the sewerage system, in the environment or through wastewater.
Packaging:	Empty containers retain product residue and can be hazardous. Do not cut, weld, bore, burn or incinerate emptied containers, unless they have been cleaned and declared safe. Dispose contaminated packaging according to official regulations.
	European Waste Catalogue code(s) (Decision 2001/118/CE): 16 05 04 (gases in pressure containers (including halons) containing hazardous substances). These codes can be given only as a suggestion, according to the original composition of the product, and its intended (foreseeable) use(s). The final user (producer of the waste) has the responsibility for the attribution of the most suitable code, according to the actual use(s) of the material, contaminations or alterations.

SECTION 14: Transport information

The product is subject to the provisions of existing legislation governing the transport of dangerous goods by road (ADR), rail (RID), sea (IMDG Code) and air (IATA).

14.1. UN number or ID number	
ADR/RID:	2037
IMDG Code:	2037
IATA:	2037

14.2. UN proper shipping name	
ADR/RID:	RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES) without a release device, non-refillable
IMDG Code:	RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES) without a release device, non-refillable
IATA:	RECEPTACLES, SMALL, CONTAINING GAS (GAS CARTRIDGES) without a release device, non-refillable

14.3. Transport hazard class(es)	
ADR/RID:	2
IMDG Code:	2.1
IATA:	2.1

14.4. Packing group	
ADR/RID:	-
IMDG Code:	-
IATA:	-

14.5. Environmental hazards

The product is not a marine pollutant.

14.6. Special precautions for user	
ADR/RID:	Classification code: 5F
	Hazard label: 2.1
	Tunnel restriction codes: (D)
IMDG Code:	Hazard label: 2.1
	EMS: F-D, S-U
IATA:	Hazard label: 2.1
	Special provisions: A167

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture	
Substances of very high concern (SVHC) candidate for authorisation (REACH, art. 59):	
None (in concentration > 0.1% p/p).	
Substances subject to authorisation process (REACH, Annex XIV):	
None	
Restrictions applicable to the product and / or constituents (REACH, Annex XVII):	
Product	entry nº 40
Limitations applicable under the provisions of Directive 2012/18/UE (SEVESO III):	
The product is subject to the provisions of Directive 2012/18 / EU	
15.2. Chemical safety assessment	
A chemical safety assessment has not been required for the product or its constituents.	

SECTION 16: Other information

Revision:

Changes compared to the previous version of the safety data sheet:
SECTION 1; SECTION 2; SECTION 3; SECTION 4; SECTION 5; SECTION 6; SECTION 7; SECTION 8; SECTION 9; SECTION 10; SECTION 11; SECTION 12; SECTION 13; SECTION 14; SECTION 15: SECTION 16

Methods of evaluating information [art. 9 of Regulation (EC) 1272/2008 (CLP)] used for the purpose of classification:

Classification is based on expert judgment.

Full text of the Hazard statements (H) cited in SECTION 2 and SECTION 3:

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

Key references and data sources:

- ✓ Regulation (EC) 1272/2008 (CLP) (and its subsequent modifications and amendments)
- ✓ Regulation (EC) 1907/2006 (REACH) (and its subsequent modifications and amendments)
- ✓ Safety data sheet of raw materials suppliers

Advice on any training appropriate for workers:

The staff responsible for handling the product should be informed about its hazards and potential risks related to its use and be instructed on the precautions to be taken in order to avoid or limit exposure.

Acronyms:

ACGIH:	American Conference of Governmental Industrial Hygienists
ADR:	european agreement concerning the international carriage of dangerous goods by road
BCF:	Bioconcentration factor
CAS	chemical abstracts service
CLP:	classification labelling and packaging
EC_{50}:	Effective Concentration, 50%
EWC:	European Waste Catalogue
EINECS:	European Inventory of Existing Commercial Chemical Substances
GWP:	global warming potential
IATA:	international air transport association
IMDG:	international maritime dangerous goods code
Kow	n-octanol/water partition coefficient
LC_{50}:	Lethal Concentration, 50%
LOAEC:	Lowest adverse effects concentrations
NOAEC:	No Observed Adverse Effect Concentration
ODP:	Ozone Depletion Potential
OECD:	organisation for economic cooperation and development
PBT:	persistente, bioaccumulabile, tossico
Pow	it is referred as ratio of the solute in the alcoholic phase and in the aqueous phase
QSAR	Quantitative structure-activity relationship
REACH:	registration, evaluation and authorization of chemicals
RID:	regulations concerning the international carriage of dangerous goods by rail
UFI	Unique Formula Identifier
vPvB:	very persistent and very bioaccumulative

Notes:

The information provided in this safety data sheet is correct to the best of our knowledge at the date of its publication. The indications given are designed only as a guidance for safe handling, use, processing, storage, transportation and disposal and are not to be considered a warranty or quality specification. The user must verify their suitability and completeness, also in accordance to its particular use of the product.