



SAFETY DATA SHEET

In accordance with Regulation (EC) No. 1907/2006 (REACH) as amended by Regulation (EU) 2020/878

Safety data sheet number: 004.0012-01/26

SECTION I: Identification of the substance/mixture and of your company/undertaking

1.1 Product identifier:

Trade name: BUTANE GAS
Product characteristics: Gas cartridge containing 227 g
Trade name of the product: GreenBlue 400 ml. Certificate: Pi 0875, compliant with EN417, isopropane-butane, operating temperature range from -10°C to +40°C, GB227.
Use of the substance: FOR USE WITH PORTABLE GAS APPLIANCES ONLY

1.2 Relevant identified uses of the substance or mixture and recommended uses

for the product type: Non-refillable metal gas cylinders containing 227G butane gas.

Relevant identified uses:	Use as fuel for gas burners and gas appliances in accordance with EN 521:2019. For further information on applications, please contact your supplier.
PROFESSIONAL APPLICATIONS	Use as fuel.
CONSUMER APPLICATIONS	Use as fuel.
Uses advised against:	Contains gas under pressure; may explode if heated. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Other uses are not recommended.

1.3 Detailed information about the supplier of the safety data sheet

Company name: Centrumelektroniki.EU sp. z o.o.
Street name : Korfantego 7
Postal code, city: 42-600 Tarnowskie Góry, PL,
Website: centrumelektroniki.pl
Email: contact@centrumelektroniki.pl
Phone: +48 32 284 7222

Department responsible for information:

Address: Centrumelektroniki.EU sp. z o.o. 42-600
Postal code, city: Tarnowskie Góry, PL,
Phone: +48 32 284 7222
Email: contact@centrumelektroniki.pl

1.4 Emergency telephone number

European emergency number:	112
CIAB phone number in Portugal:	+351 800 250 250
National Poison Information Center (NVIC)	+31 (0) 30 274 8888
Belgian Toxicology Center	+32 (0) 70 245 245
Toxicology Center (Berlin) Germany Telephone: GIZ-Nord, Göttingen, Germany	+49 (0) 30 19240
Poison Control Center (Orfila) France	+33 (0) 1 45 42 59 59

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Poison Information Service (Spain)	+34 (0) 91 562 04 20
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SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

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

Flammable gas 1A;	H220	Highly flammable gas.
Gas under pressure (liquid);	H280	Contains gas under pressure; may explode if heated.

In addition, the classification provided by companies to ECHA in their REACH registrations indicates that this substance contains gas under pressure and may explode if heated.

2.2 Label elements

Labeling in accordance with Regulation (EC) No. 1272/2008 (CLP)

Hazard pictograms:



Note: if the hazard pictogram "GHS02" or "GHS06" applies, the use of the hazard pictogram "GHS04" is optional (Commission Regulation (EU) No 286/2011).

Signal word: Hazard category:	Danger	
Hazard statements:	1 A H220	Highly 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	Gas leak: Do not extinguish unless the leak can be stopped.
Storage:	P381	Safely. In case of leak, eliminate all sources of ignition.
	P403	Store in a well-ventilated place.
	P410+P403	Protect from sunlight. Store in a well-ventilated place.

Additional labeling requirements (supplementary CLP hazard statement): None.

2.3 Other hazards

SECTION 3: Composition/information on ingredients

3.1. Substances

3.2. Mixtures

Description: The mixture consists of butane (CAS No.: 106-97-8), hydrocarbons, and propane (CAS No.: 74-98-6).

Hazardous ingredients:

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Chemical name	CAS No. EC No. REACH No. Index No.	Concentration	Classification Hazard class and category code / Hazard statement code(s)	H phrase Acute M factor Chronic M factor	Note
BUTANE	CAS No.: 106-97-8 EC No.: 203-448-7 Index No.: 601-004-00	98.7 w/w	Flammable gas 1A, gas under pressure H220		
PROPANE	CAS No.: 74-98-6 EC No.: 200-827-9 Index No.: 601-003-00	0.5% w/w	Flammable gas 1A, gas under pressure H220		

Substances listed in the list of substances of very high concern (SVHC): None.
Does not contain any other ingredients or impurities that could affect the classification of the product.

SECTION 4: First aid measures

4.1. Description of first aid measures

General recommendations	<p>Ensure your own safety. Remove victims from the danger zone.</p> <p>Immediately remove all contaminated clothing. Keep the patient warm and calm.</p> <p>Do not leave victims unattended. WARNING BEFORE INTERVENTION:</p> <p>Before attempting to rescue victims, isolate the area from all potential ignition sources, including disconnecting the electrical power supply.</p> <p>Before entering confined spaces, ensure adequate ventilation and check that the atmosphere is safe and breathable.</p> <p>Ensure your own safety by avoiding contamination.</p> <p>Use an approved positive-pressure breathing apparatus with a full-face mask.</p> <p>Move contaminated patients from the danger area.</p> <p>Seek medical attention – show the safety data sheet or label if possible.</p> <p>(Depending on application) High concentrations of hydrogen sulfide (H₂S) and/or carbon monoxide (CO) may pose a particular hazard.</p>
Inhalation	<p>Move victims to fresh air.</p> <p>Place unconscious persons in a stable position on their side. Do not leave the affected person unattended.</p> <p>Keep the person warm and calm.</p> <p>If the victim is unconscious, place them in a safe position. Call a doctor immediately.</p> <p>If breathing is difficult, give oxygen if possible or provide assisted ventilation. In case of cardiac arrest (no pulse), perform cardiopulmonary resuscitation.</p> <p>(Depending on the situation) If H₂S or CO inhalation is suspected, rescuers must wear breathing apparatus, safety belts, and ropes, and follow rescue procedures.</p> <p>(1) Move the injured person to fresh air as quickly as possible.</p>

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	<p>(2) If the victim is not breathing, start artificial respiration immediately.</p> <p>(3) Seek medical advice for further treatment.</p>
Skin contact	<p>In case of frostbite, rinse thoroughly with water. Do not remove clothing that has stuck to the skin as a result of freezing. Cover with a sterile dressing and seek medical advice.</p> <p>Immediately rinse the affected area with plenty of water. Continue for at least 15 minutes. If symptoms of frostbite occur (pale or red skin, burning or tingling sensation), do not rub, massage, or apply pressure to the affected area.</p> <p>Take the victim to the hospital.</p>
Eye contact	<p>Immediately rinse the affected eye with water at room temperature. Consult an ophthalmologist. Rinse the open eye for several minutes under running water. Then consult a doctor.</p> <p>If possible, remove contact lenses.</p> <p>If symptoms of frostbite, pain, swelling, tearing, or photophobia occur, or in case of damage caused by high-pressure water jets, the patient should seek medical attention at a specialist medical facility.</p>
Ingestion/aspiration	<p>Ingestion is not considered a possible route of exposure. Notes for the physician Oxygen-displacing gas.</p> <p>No specific antidote is known.</p> <p>antidote is known. Monitor the cardiovascular system. Symptomatic treatment.</p> <p>Not considered a likely route of exposure.</p> <p>Contact with the liquid may cause frostbite of the lips and mouth.</p>

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

Exposure to high concentrations may cause suffocation.

Contact with the product in liquid form may cause frostbite (skin/eyes). Ingestion is not considered a likely route of exposure.

4.3. Indication of the need for immediate medical attention and special treatment

No further relevant information.

SECTION 5: Extinguishing media

5.1. Extinguishing media

Suitable extinguishing media	<p>If possible, stop the gas flow, provided it is safe to do so. If the flow cannot be stopped, allow the fire to burn out while cooling the containers and surroundings with a water spray.</p> <p>Water spray, foam, CO₂, dry powder.</p> <p>Extinguishing media that must not be used for safety reasons: high-volume water stream</p> <p>Special hazards during firefighting Fire of vapors heavier than air.</p> <p>Flammable or explosive vapor/air mixtures may form. Keep all ignition sources away from the area.</p> <p>In case of fire, cool endangered containers with water.</p> <p>A closed container may burst if heated excessively.</p>
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	<p>Special protective equipment for firefighters.</p> <p>In case of dust and/or smoke that may be inhaled, use self-contained breathing apparatus.</p>
Suitable extinguishing media:	<p>LARGE FIRE: Water spray. Water mist (only by appropriately trained personnel). Foam. SMALL</p> <p>FIRES: Carbon dioxide. Dry chemical powder. Dry sand. Firefighting foam. Water spray or water mist. Fire extinguishing powder.</p>
Unsuitable extinguishing agents:	<p>Carbon dioxide. Do not use water jet to extinguish. Do not direct water jet directly onto burning product. Avoid using foam and water on the same surface at the same time.</p>

5.2. Special hazards arising from the substance or mixture

Specific hazards:	<p>Exposure to fire may cause containers to rupture/explode. In case of insufficient cooling of containers: BLEVE (boiling liquid expanding vapor explosion): complete rupture of the container, followed by ignition and explosion of the mass.</p>
Hazardous combustion products:	<p>Carbon dioxide (CO₂). Carbon monoxide (CO). Unburned hydrocarbons (smoke).</p>

5.3. Guidelines for firefighters

Special methods:	<p>In case of a large fire or in enclosed or poorly ventilated areas, wear full fire-resistant protective clothing and a self-contained breathing apparatus (SCBA) with a full face mask operating in positive pressure mode. Use firefighting measures appropriate to the surrounding fire. Exposure to fire and heat radiation may cause gas containers to rupture. Cool endangered containers with water spray from a safe position. Prevent water used in emergency situations from entering sewers and drainage systems.</p> <p>If possible, stop the flow of the product. If possible, use a water stream or water mist to suppress fire smoke.</p> <p>Do not extinguish a leaking gas flame unless absolutely necessary. Self-ignition/explosive re-ignition may occur. Extinguish all other fires. Move containers away from the fire if it can be done without risk. In enclosed spaces, use breathing apparatus with an independent air supply.</p>
Special protective equipment for firefighters:	<p>Standard protective clothing and equipment (self-contained breathing apparatus) for firefighters. Standard EN 137 – Self-contained open-circuit compressed air breathing apparatus with full-face mask. EN 469 standard – Protective clothing for firefighters. EN 659 standard: Protective gloves for firefighters. Standard firefighting equipment.</p> <p>Cool containers with plenty of water until the fire is completely extinguished.</p>

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	<p>If you hear increased noise coming from safety devices or notice a change in the color of the tank, withdraw immediately.</p> <p>Always stay away from tanks that are on fire.</p> <p>In the event of a large fire, use unmanned hose holders or monitor nozzles. If the fire cannot be extinguished, withdraw from the area and allow the fire to burn itself out.</p>
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SECTION 6: Measures to prevent accidental release

6.1. Precautions for personnel, protective equipment, and emergency procedures

6.1.0 Precautions for persons	<p>Personal protective equipment must be used; see Section 8. Avoid contact with skin and eyes.</p> <p>Keep away from sources of ignition – no smoking. Vapors heavier than air.</p> <p>Ensure adequate ventilation.</p> <p>Ensure good ventilation of the room, including at floor level.</p> <p>Eliminate potential ignition sources (e.g., electricity, sparks, fire, torches) as far as possible. Prevent the product from entering waterways, sewers, basements, or confined spaces. If safe, stop the leak.</p> <p>Keep uninvolved persons away from the spill site. Notify emergency services.</p> <p>Enter the area only if absolutely necessary.</p> <p>A gas detector can be used to check for the presence of flammable gases or vapors. If necessary, notify the relevant authorities in accordance with applicable regulations.</p>
6.1.1 For non-emergency personnel	<p>Avoid direct contact with spilled material and inhalation of vapors. Stop all work involving open flames, stop all vehicles, and turn off all machinery and equipment that may cause sparks or ignition. All equipment used when handling the product must be grounded.</p> <p>Stay downwind. Try to stop the leak. Evacuate the area.</p> <p>Monitor the concentration of the released product.</p> <p>Consider the risk of an explosive atmosphere.</p> <p>Wear self-contained breathing apparatus before entering the area unless the atmosphere has been determined to be safe.</p> <p>Eliminate sources of ignition. Ensure adequate ventilation.</p> <p>Prevent entry into sewers, basements, and excavations or other areas where accumulation of the substance may be hazardous.</p> <p>Follow the local emergency plan.</p>
6.1.2 For emergency responders	<p>Spills of this material produce large quantities of extremely flammable gas, which is heavier than air and accumulates in low areas or confined spaces.</p> <p>Cylinders or other containers may explode in a fire – cool unopened containers with a water spray. Do not allow water used to extinguish the fire to enter drains or watercourses – this may cause an explosion hazard in the drains and reignite the fire.</p> <p>(Depending on application): If the presence of hazardous amounts of H2S and/or CO around the spilled product, it may be justified to take additional or special measures, including restricting access, using</p>

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	special protective equipment, procedures, and personnel training.
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6.2. Environmental precautions

	<p>Do not allow to enter sewage systems, drainage systems, water bodies, soil. Avoid entry into the sewage system or lower-level rooms due to the risk of explosion. In the event of unintentional release of the product outside the production area, immediately notify your company's environmental protection department.</p> <p>LAND LEAKS Prevent the product from entering sewers, drains, and basements. If safe to do so, stop or contain the spill at the source. Ensure adequate ventilation in buildings or enclosed spaces. WATER OR SEA LEAKS If safe, stop or contain the leak at source. Spills of liquid product into water will likely cause rapid and complete evaporation of the product. Please isolate the area. Prevent fire/explosion hazards to ships and other structures in the vicinity, taking into account wind direction and speed, until the material is completely dispersed. If the product enters waterways or sewers, notify the appropriate authorities.</p>
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6.3. Methods and materials for containment and removal

6.3.1 To contain:	Contain the spread of the spill. Take special precautions Keep the area evacuated and free from ignition sources until the spilled liquid has evaporated (ground free of frost).
6.3.2 To remove:	Secure the spill – ventilate the area and allow the liquid to evaporate.
6.3.3 Other information:	None

6.4. References to other sections

	See also sections 8 and 13.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling - recommendations for safe handling	<p>Use personal protective equipment; see Section 8. Avoid contact with skin and eyes. Ensure good ventilation or extraction. Ensure good room ventilation, including at floor level. Special instructions for compressed gases must be observed. Fire and explosion protection instructions Take precautions against electrostatic charges, keep away from sources of ignition. Explosion-proof equipment required. Temperature class T 2 GENERAL INFORMATION Risk of explosive vapor-air mixtures. Ensure compliance with all relevant</p>
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	<p>regulations concerning explosive atmospheres and the handling and storage of flammable products.</p> <p>Minimize exposure by using measures such as closed systems, dedicated equipment, and adequate general/local ventilation.</p> <p>Cleaning, inspection, and maintenance of the internal structure of storage tanks must only be carried out by suitably equipped and qualified personnel in accordance with national, local, or company regulations.</p> <p>Consideration should be given to the need for risk-based health surveillance. (Depending on the application) A detailed risk assessment should be carried out for inhalation of H₂S and/or CO in the space above the tank, confined spaces, product residues product residues, tank waste and sewage, and unintentional releases to help determine control measures appropriate to local conditions.</p>
<p>7.1.1 Protective measures</p>	<p>Use only in well-ventilated areas.</p> <p>Consider implementing technical advances and process improvements (including automation) to eliminate releases.</p> <p>Before breaking the seal, empty the systems and clean the transfer lines. Before maintenance, clean/flush the equipment if possible.</p> <p>Provide safe operating systems or equivalent solutions to manage risk.</p> <p>Regularly check, test, and maintain all control measures.</p> <p>Avoid all sources of ignition, oxidizing agents, chlorine, and hydrogen chloride or hydrogen fluoride.</p> <p>Use piping and equipment designed to withstand the pressures involved. Use a non-return valve or other device to prevent backflow. Handle empty containers with care, as residual vapors may be flammable. Take precautions against electrostatic discharge, use appropriate bonding and/or grounding.</p>
<p>7.1.2 Environmental precautions:</p>	<p>Spilled materials produce large amounts of extremely flammable gas, which is heavier than air and accumulates in low places or enclosed spaces.</p> <p>Use explosion-proof equipment/accessories and spark-proof tools.</p> <p>Use electrically bonded tools/equipment.</p> <p>Dispose of waste safely.</p>
<p>7.1.3 Safe use of the product:</p>	<p>Handle the product in accordance with good hygiene and safety practices. Only experienced and properly trained personnel should handle pressurized gases.</p> <p>Consider using pressure limiting devices in gas installations. Before use, ensure that the entire gas system has been (or is regularly) checked for leaks.</p> <p>Do not smoke while operating the product.</p> <p>Only use equipment that is suitable for this product, its supply pressure, and temperature. If in doubt, contact your gas supplier.</p> <p>Avoid sucking in water, acids, and alkalis.</p> <p>Assess the risk of an explosive atmosphere and the need for explosion-proof equipment.</p> <p>Remove air from the system before introducing gas.</p> <p>Precautions should be taken against electrostatic discharge. Keep away from ignition sources (including electrostatic discharge).</p>

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	<p>Consider using only non-sparking tools. Do not breathe gas. Avoid getting the product into the work area. Ensure that equipment is properly grounded.</p>
<p>7.1.4 Safe handling of gas containers gas:</p>	<p>Follow the supplier's instructions for handling containers. Do not allow gas to flow back into the container. Protect containers from physical damage; do not drag, roll, slide, or drop them. When moving cylinders, even for short distances, use a trolley (hand truck, transport trolley, etc.) designed for transporting cylinders. Do not remove the valve covers until the container has been secured to the wall or table or placed on a container stand and is ready for use. If you experience any difficulty operating the valve, discontinue use and contact your supplier. Never attempt to repair or modify container valves or safety devices. Report damaged valves to your supplier immediately. Keep the container valve outlets clean and free of contaminants, especially oil and water. After disconnecting the container from the device, immediately replace the supplied valve outlet caps or plugs and container lids. Close the container valve after each use and after emptying, even if it is still connected to the device. Never attempt to transfer gas from one cylinder/container to another. Never use direct fire or electric heating devices to increase the pressure in the container. Do not remove or destroy the labels provided by the supplier to identify the contents of the container. Prevent water from flowing back into the container. Open the valve slowly to avoid pressure surges.</p>
<p>7.1.2 General occupational hygiene advice</p>	<p>Do not eat, drink, or smoke while using this product.</p>
<p>7.2. Conditions for safe storage, including any incompatibilities</p>	
<p>Technical measures and storage conditions:</p>	<p>Store only in the supplied cylinders or approved containers. Cylinders must be secured in an upright position and transported only in a safe position in a well-ventilated vehicle or hand truck. Cylinders that have been opened must be carefully resealed and stored in an upright position. For maintenance or servicing, empty containers must be purged and filled with an inert gas (e.g., nitrogen). The product must be stored in specially designed pressure vessels (spherical containers, cylindrical containers, cylinders, gas cartridges) in accordance with the relevant regulations. Requirements for storage areas and containers Containers should be stored tightly closed in a cool, well-ventilated place. Protect from direct sunlight. Suitable materials (mild steel)</p>
<p>Further information on storage conditions storage:</p>	<p>Store in a cool place. Store in a well-ventilated place.</p>
<p>Storage class:</p>	<p>2A</p>

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	<p>All regulations and local requirements for container storage must be observed. Containers should not be stored in conditions conducive to corrosion. Valve caps or container caps should be fitted.</p> <p>Containers should be stored upright and secured to prevent them from tipping over. Periodically check stored containers for overall condition and tightness. Store containers at temperatures below 50°C in a well-ventilated area. Store containers in an area free from fire hazards, away from sources of heat and ignition sources.</p> <p>Keep away from combustible materials.</p> <p>Keep separate from oxidizing gases and other oxidizers stored in the warehouse. All electrical equipment in storage rooms should be adapted to the risk of an explosive atmosphere.</p>
Tips for joint storage	Do not store together!

7.3. Special end uses

	Please refer to the exposure scenarios attached in the appendix.
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SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1 Occupational exposure/biological limit values	<p>National occupational exposure limits: Not reported. European occupational exposure limits: Not reported. Biological limit values (BLV): Not assigned.</p> <p>The relevant exposure limits for "petroleum gases, liquefied" (CAS No. 68476-85-7) are: TWA (Greece): Short-term value: 1250 ppm, 2250 mg/m³ , Long-term value: 1250 ppm, 2250 mg/m³ ; PEL (OSHA): 1800 mg/m³ , 1000 ppm; REL (NIOSH) 1800 mg/m³ , 1000 ppm; TLV (ACGIH): Simple asphyxiant.</p>	
75-08-1 Ethyl mercaptan	WEL (UK)	Short-term value: 5.2 mg/m ³ , 2 ppm Long-term value: 1.3 mg/m ³ , 0.5 ppm
	TWA (Greece)	Short-term value: 25 mg/m ³ , 10 ppm Long-term value: 25 mg/m ³ , 10 ppm
	DFG-MAK (GER)	Long-term value: 1.3 mg/m ³ , 0.5 ppm PEAK/CEIL: I(1)
	PEL (OSHA)	Maximum limit: 25 mg/m ³ , 10 ppm
	REL (NIOSH)	Maximum limit: 1.3* mg/m ³ , 0.5* ppm *15 min
	TLV (ACGIH)	Long-term value: 1.3 mg/m ³ , 0.5 ppm
8.1.2 Information on currently recommended monitoring procedures	EN 689 EN 1127-1:2011 EN 60079-0:2012	
8.1.3 Applicable occupational exposure limit values and/or biological limit values for air pollutants (if they arise during use)	No information available.	

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the substance/mixture as intended			
8.1.4 DNEL/PNEC values	DNEL:		
	Dermal	DN(M)EL – chronic systemic effects	23.4 mg/kg (WORKERS) Benzene is the only marker substance that poses a risk to the skin in the stream (the other marker substances are gases).
	Inhalation	DN(M)EL – chronic systemic effects	2.21 mg/m ³ (WORKERS) The DNEL category depends on the 1,3-butadiene content. 0.0664 mg/m ³ (GENERAL POPULATION POPULATION) The DN(M)EL category is dependent on the 1,3-butadiene content. AF=1.
<p>Justification for not setting a DN(M)EL</p> <ul style="list-style-type: none"> - Acute exposure (inhalation): The available data do not allow the DNEL to be determined. - Acute exposure (dermal): No data available. Studies are not technically feasible. - Long-term exposure (inhalation): The available data do not allow the DNEL value to be determined. - Long-term exposure (dermal): No data available. Studies are not technically feasible. <p>Justification for not determining a PNEC</p> <p>The substance is a UVCB hydrocarbon (with complex, unknown, or variable composition). Therefore, conventional methods for determining PNEC values are not appropriate, and it is not possible to determine a single representative PNEC value for such substances.</p> <p>The substance is a gas, therefore the determination of a PNEC value is not justified and is of little relevance to risk assessment from a technical point of view. of little relevance to the risk assessment.</p>			

8.2. Exposure control

8.2.1 Appropriate engineering controls / technical measures to prevent exposure:	Use in a well-ventilated area. Use this product with explosion-proof equipment.
Organizational measures to prevent exposure:	Before hiring an employee for a position where exposure to substances may occur, a licensed healthcare professional should assess and document the employee's health status.
Stability and reactivity // Conditions to avoid:	Keep away from heat and fire. Materials to avoid strong oxidizers, chlorine, oxygen Hazardous decomposition products In case of fire or thermal decomposition, carbon monoxide, carbon dioxide (CO ₂), etc. are formed.
Hazardous reactions:	Vapors may form explosive mixtures with air.
Disposal instructions:	In accordance with local regulations, e.g., incineration in a flare system. The product cannot be assigned a waste code number in accordance with the European list of waste types, as this classification is based on the (as yet undetermined) use of the product by the consumer. The waste code number must be determined in accordance with the European list of waste types (Decision on the EU list of waste types 2000/532/EC) in cooperation with the waste disposal company / manufacturing company / official authority.

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8.2.1. Individual protective measures, e.g., personal protective equipment:	
<p>A risk assessment must be carried out and documented in each work area to assess the hazards associated with the use of the product and to select personal protective equipment appropriate to the risk. The following recommendations should be taken into account: Personal protective equipment should be selected in accordance with the recommended EN/ISO standards.</p>	
Eye/face protection:	<div style="text-align: center; margin-bottom: 10px;">  <p>Self-contained breathing apparatus (SCBA) EN 136 EN 137 EN 141:2000</p> </div> <div style="text-align: center; margin-bottom: 10px;">  <p>Safety glasses must be worn Safety glasses EN 166, CR 13464 Wear safety glasses when transferring or disconnecting transfer lines. Standard EN 166 – Personal eye protection – requirements.</p> </div> <div style="text-align: center;">  <p>Wear a face shield</p> </div>
Skin protection:	
- Hand protection	<div style="text-align: center; margin-bottom: 10px;">  <p>Wear hand protection Protective gloves (EN 374, EN 407) EN 60903:2003, EN 420, EN 388. The glove material must be impermeable and resistant to the product/substance/preparation. The choice of glove material should be made after considering the penetration time, diffusion rate, and degradation. Glove material: PVC gloves. Nitrile rubber, NBR. The choice of suitable gloves depends not only on the material, but also on other quality characteristics and varies depending on the manufacturer. Penetration time of the glove material The exact breakthrough time must be specified by the manufacturer of the protective gloves and must be observed.</p> </div>

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	<p>Work gloves must be worn when handling gas containers. Standard EN 388 – Protective gloves against mechanical risks, performance level 1 or higher. When transferring or disconnecting pipes, wear gloves that insulate against the cold. Standard EN 511 – Gloves insulating against the cold. Neoprene rubber (HNBR).</p>
<p>- Other</p>	<p>Body protection:</p>  <p>Protective footwear must be worn. Protective boots</p>  <p>Protective clothing must be worn EN 340, EN 465:1995, EN 466-1:1995, EN 467:1995, EN 397. In case of large-scale fires: DIN EN 137, EN 469, EN 533:1997, EN 1486:2007. Consider using flame-retardant and antistatic protective clothing. Standard EN ISO 14116 – Materials with limited flame spread. Standard EN 1149-5 – Protective clothing: electrostatic properties. Wear protective footwear when handling containers. EN ISO 20345 – Personal protective equipment – Safety footwear.</p>
<p>Respiratory protection</p>	 <p>Respiratory protection must be used. Gas filters can be used if all environmental conditions are known, e.g., the type and concentration of contaminants and the duration of use. In the event of short-term exceedances of permissible exposure values, e.g., when connecting or disconnecting containers, gas filters with a full-face mask should be used. Recommended: AX filter (brown). Gas filters do not protect against oxygen deficiency. Standard EN 14387 – Gas filters, combination filters and standard EN136, full-face masks. Self-contained breathing apparatus (SCBA) EN 136 EN 137 EN 141:2000</p>
<p>Thermal hazards</p>	<p>None, except for the sections above.</p>
<p>8.2.2. Environmental exposure controls</p>	
	<p>Probability of leakage into the environment (into the air) during production and distribution. Monitoring of losses to the environment should be controlled</p>

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	<p>in accordance with local and EU regulations.</p> <p>For information on atmospheric emission restrictions, refer to local regulations. Detailed methods for cleaning waste gases are described in section 13.</p> <p>See Section 6 Methods and materials for containment and cleaning up contamination</p>
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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General information: This entry refers to the physical and chemical properties of butane.

Appearance:		
(a)	Physical state	at 20°C and 1013 hPa: gaseous.
(b)	Color:	Colorless.
(c)	Odor: Odor threshold:	Odorless Indeterminate
(d)	Melting/freezing point	The melting point of petroleum gases was from -187.6 to -138.3 °C.
(e)	Boiling point or initial boiling point and boiling range	The boiling point of petroleum gases is from -161.48°C to -0.5°C.
(f)	Flammability	The maximum lower and upper range for this category was between 5 and 15%.
(g)	Lower and upper explosion limits ("flammability limits")	LFL: 1.8% UFL: 15%
(h)	Flash point	Petroleum gases have flash points ranging from -104 to -60.0°C.
(i)	Auto-ignition temperature	The auto-ignition temperature of petroleum gases ranges from 287 to 537°C.
(j)	Decomposition temperature	Not determined.
(k)	pH	Not specified. Not applicable to gases.
(l)	Kinematic viscosity	Not specified. Not applicable to gases.
(m)	Solubility	Not specified.
(n)	Partition coefficient n-octanol/water (logarithmic value)	Not applicable to gases 61 g/m ³
(o)	Vapor pressure	Vapor pressure at 40 °C: 361 kPa Vapor pressure at 50 °C: 451.25 kPa
(p)	Density and/or relative density	The relative density of petroleum gases is 0.4228 to 0.589 g/cm ³ at 25°C.
(q)	Relative density of vapor	The relative density of a gas with respect to air at a temperature of 20 °C as a reference point is 0.780 kg/m ³
(r)	Particle characteristics	Not applicable to gases

9.2. Other information

9.2.1. Information on physical hazard classes

(a) Explosives	Not applicable
(b) Flammable gases	Highly flammable gases
(c) Aerosols	Not applicable

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(d) Oxidizing gases	Not applicable
(e) Gases under pressure	Contains gas under pressure; may explode if heated
(f) Flammable liquids	Not applicable
(g) Combustible solids	Not applicable
(h) Self-reactive substances and mixtures	Not applicable
(i) Pyrophoric liquids	Not applicable
(j) Pyrophoric solids	Not applicable
(k) Self-igniting substances and mixtures	Not applicable
(l) Substances and mixtures which, in contact with water, emit flammable gases contact with water	Blank
(m) Liquid oxidizers	Not applicable
(n) Oxidizing solids	Not applicable
(p) Substances corrosive to metals	Not applicable
(q) Explosives with reduced sensitivity	Not applicable

9.2.2. Other safety properties

(a) Mechanical sensitivity;	No further relevant information available.
(b) Spontaneous polymerization temperature;	No further relevant information available.
(c) Formation of explosive dust-air mixtures;	No further relevant information available.
(d) acid/base reserve;	No further relevant information available.
(e) evaporation rate;	No further relevant information available.
(f) miscibility;	No further relevant information.
(g) conductivity;	No further relevant information available.
(h) corrosivity;	No further relevant information available.
(i) gas group;	No further relevant information available.
(j) redox potential;	No further relevant information available.
(k) potential to generate radicals;	No further relevant information available.
(l) photocatalytic properties.	No further relevant information available.

SECTION 10: Stability and reactivity

10.1. Reactivity

	No data available.
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10.2. Chemical stability

	Stable under normal conditions of use.
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10.3. Possibility of hazardous reactions

	May form explosive mixtures with air.
	May react violently with oxidizers.

10.4. Conditions to avoid

	Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Avoid moisture in installation systems.
	Contact with incompatible materials, exposure to flames, sparks, and other ignition sources.

10.5. Incompatible materials

	Halogens, oxidizers. Air, oxidizers.
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	Additional information on compatibility can be found in ISO 11114.
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10.6. Hazardous decomposition products

	Under normal conditions of storage and use, no hazardous decomposition products should be formed. Thermal decomposition or combustion may produce carbon monoxide and carbon dioxide.
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SECTION 11: Toxicological information

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

The substance "Hydrocarbons, C3-4-rich, petroleum distillate" (CAS No. 74-98-6) belongs to the group of substances with low olefin and aromatic content (LOA) category P.		
(a)	Acute toxicity:	Based on the available data, the classification criteria are not met. The product is flammable in air at room temperature, therefore, in accordance with Annex XI to the REACH Regulation, certain tests do not need to be performed.
(b)	Skin corrosion/irritation:	The product is flammable in air at room temperature, therefore, according to Annex XI of the REACH Regulation, certain tests do not need to be performed. Key value for chemical safety assessment: Does not cause irritation.
(c)	Serious eye damage/irritation:	The product is flammable in air at room temperature, and according to Annex XI of the REACH Regulation, there is no need to perform this test. Key value for chemical safety assessment: Does not cause irritation.
(d)	Respiratory or skin sensitization:	The product is flammable in air at room temperature and, in accordance with Annex XI to the REACH Regulation, there is no need to perform this test. This test is not required in accordance with Annex XI of the REACH Regulation.
(e)	Germ cell mutagenicity:	No effects of this product are known.
(f)	Carcinogenicity:	
(g)	Reproductive toxicity:	
(h)	STOT – single exposure:	No effects of this product are known.
(i)	STOT – repeated exposure:	No effects of this product are known.
(j)	Aspiration hazard:	Not applicable to gases and gas mixtures.

11.2. Information on other hazards

	No data available
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SECTION 12: Ecological information

12.1. Toxicity

12.1.1 Toxicity to the aquatic environment

LC50	24.11-147.54 mg/l (FISH) Short-term toxicity to fish.
EC50	7.71–16.5 mg/l (AQUATIC ALGAE AND CYANOBACTERIA)
LC50/96h	7.02–69.43 mg/l (AQUATIC INVERTEBRATES) Short-term toxicity.

12.1.2 Sediment toxicity

The results of the chemical safety assessment do not indicate the need for further testing.

12.1.3 Terrestrial toxicity

This study does not need to be conducted because direct and indirect exposure of soil is unlikely. Toxicity to birds: The results of the chemical safety assessment do not indicate the need for further testing.

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12.2. Persistence and degradability

12.2.1 Persistence assessment

Assessment	The predicted data indicate that the representative structures of the substance are not considered persistent and do not meet the screening criteria for persistence.
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12.2.2 Stability

Hydrolysis:	The substance is resistant to hydrolysis because it does not have a functionally reactive group. Therefore, this process does not contribute to a measurable loss of this substance in the environment as a result of degradation.
Phototransformation in water/soil:	No data available.

12.2.3 Biodegradation

- Biodegradation in water:	The substance is readily biodegradable.
- Biodegradation in water and sediments:	The results of the chemical safety assessment do not indicate the need further testing.
- Biodegradation in soil:	There is no need to conduct tests because the substance has a low potential for adsorption to soil.

12.3. Bioaccumulation potential

Assessment:	Bioaccumulation is not expected because the logKow of the substance is less than 3.0. See section 9.
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12.4. Mobility in soil

Assessment	Due to its high volatility, the product is unlikely to cause soil or water contamination. It is unlikely to decompose in soil.
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12.5. Results of PBT and vPvB assessment

Assessment:	PBT: The substance does not meet the criteria set out in Annex XIII to the REACH Regulation. vPvB: The substance does not meet the criteria set out in Annex XIII to the REACH Regulation.
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12.6. Endocrine disrupting properties

Assessment:	Emissions characterization is not required because the substance does not meet the PBT/vPvB criteria
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12.7. Other adverse effects

Other adverse effects:	No effects of this product are known.
Impact on the ozone layer:	None.
Global warming potential [CO ₂ =1]:	4
Impact on global warming:	Contains greenhouse gas(es). If released in large quantities, may contribute to the greenhouse effect.

SECTION 13: Disposal information

13.1. Waste treatment methods

13.1.1 Product/packaging disposal:	Dispose of in accordance with applicable regulations and with the approval of local authorities. Recommendation: Dispose of in accordance with local regulations. If necessary, contact your supplier for guidance.
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	Do not dispose of the product in areas where there is a risk of explosive mixtures with air. Incinerate gaseous waste in a suitable burner equipped with a flame arrestor. Do not discharge to areas where accumulation may pose a hazard. Ensure that emission levels specified in local regulations or operating permits are not exceeded. For more guidance on appropriate disposal methods, please refer to the EIGA Code of Practice Doc.30 "Disposal of Gases," which can be downloaded from http://www.eiga.org . Unused product should be returned to the supplier in its original packaging.
13.1.2 Waste treatment – important information:	The product evaporates very quickly under normal temperature and pressure conditions, and waste treatment is rarely necessary.
13.1.3 Wastewater disposal – important information:	Prevent the product from entering the sewage system.
13.1.4 Other disposal recommendations:	Partially used or empty cylinders should be returned to the supplier.
13.2 Additional information:	None.
List of hazardous waste codes (from Commission Decision 2000/532/EC, as amended):	16 05 04 *: Gases in pressure containers (including halons) containing dangerous substances.
Additional information:	External processing and disposal of waste should be in accordance with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or identification number



In accordance with ADR / RID / IMDG / IATA / ADN

UN No.:	UN 2037
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14.2. Proper shipping name

Road/rail transport (ADR/RID):	UN 2037	SMALL CONTAINERS CONTAINING GAS (GAS CARTRIDGES))
Maritime transport (IMDG):	UN 2037	CONTAINERS, SMALL, CONTAINING GAS (GAS CARTRIDGES)) without release device, not refillable
Air transport (ICAO-TI / IATA-DGR):	UN 2037	CONTAINERS, SMALL, CONTAINING GAS (GAS CARTRIDGES))

14.3. Transport hazard class(es)

ADR/RID, ADN:	Class 2, label 2.1 Flammable gases, classification code: 5F	
IMDG / IATA-DGR:	Class 2, Gases 2.1 Flammable gases	


Land transport (ADR/RID):

Hazard identification number / (Kemler code): (ADR/RID):	23	Flammable gas
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Hazard class – labeling:	2.1	
Classification code (ADR/RID)	5F	
Special provisions:	191, 303, 327, 344	
Limited quantities:	1 1	
EQ:	E0	
Packaging – instructions:	P003, LP200	
Packaging – special provisions:	PP17, PP96, RR6, L2	
Special provisions for combined packaging:	MP9	
Special provisions for transport – loading, unloading (ADR):	CV9, CV12	
Special provisions for transport – loading, unloading (RID):	CW9, CW12	
Special provisions for transport – handling (ADR):	S2	
Transport category	2	
Tunnel restriction code:	D	

Maritime transport (IMDG):	
EmS-No: (Fire)	F-D
EmS-No: (spillage)	S-U
Special provisions:	191, 277, 303
Stowage and segregation:	Category B. Keep away from living quarters
Limited quantities:	See SP277
Permitted quantities:	E0
Packaging – instructions:	P003
Packaging – regulations:	PP17
Storage and handling:	SW2
Properties and remarks:	Usually contain mixtures of liquefied butane and propane in various proportions, intended for use in camping stoves, etc.
Medical First Aid Guide (MFAG):	First aid kit on board


Air transport (IATA):		
Hazard label:	Flammable gas	
Exempt quantity code:	E0	
Passenger and cargo aircraft: Limited quantity:	Packing instruction Y203 – maximum net quantity per package 1 kg	
Passenger and cargo aircraft:	Packing instruction 203 – maximum net quantity per package 1 kg	
Transport aircraft only:	Packing instruction 203 – maximum net quantity per package 15 kg	
Special provisions:	A145 A167 A802	
Emergency response code (ERG):	10L	

Inland waterway vessels (ADN):

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Hazard marking:	2.1	
Special provisions:	191, 303, 327, 344	
Limited quantities:	1 1	
EQ:	E0	
Required equipment:	PP, EX, A	
Ventilation:	VE01	

14.4. Packing group

ADR/RID	ADN	IMDG	IATA-DGR:
Not applicable	Not applicable	Not applicable	Not applicable

14.5. Environmental hazards

Hazardous to the environment:	The substance/mixture is not hazardous to the environment according to the criteria of the UN model regulations.
Marine pollutant – IMDG:	No

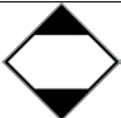
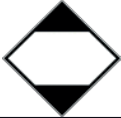
14.6. Special precautions for users

Land transport (ADR/RID):	
Transport category	2
Tunnel restriction code:	D

14.7. Sea transport in bulk in accordance with IMO instruments

	No data available
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Other information:

ADR	Limited quantities (LQ)	1L
Limited quantity marking.	Packages containing dangerous goods in limited quantities should be marked as shown in Figure 3.4.7.1 ADR	
Exempted quantities (EQ)	Code: E0 Not permitted as an excepted quantity	
Transport category	2	
Tunnel restriction code	D	
IMDG	Limited quantities (LQ)	1L
Limited quantity marking.	Packages containing dangerous goods in limited quantities should be marked as shown in Figure 3.4.7.1 ADR	
Acceptable quantities (EQ)	Code: E0 Not permitted as an exempted quantity UN 2037 Small containers containing gas (gas cartridges) / UN1950 Aerosols	

SECTION 15: Regulatory information

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

National regulations – EC Member States
REACH Regulation 1907/2006/EC
Regulation (EU) 2020/878
CLP Regulation 1272/2008/EC
Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work.
Council Directive 94/33/EC on the protection of young people at work, as amended.
Directive 92/85/EEC on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding, as amended.
Note K applies. Contains less than 0.1% by weight of 1,3-butadiene (Einecs No. 203-450-8).
Directive 2012/18/EU Hazardous substances listed by name – ANNEX I None of the ingredients are listed. Seveso category P2 FLAMMABLE GASES Qualifying quantity (in tons) for lower-tier requirements 10 t Qualifying quantity (in tons) for upper-tier requirements 50 t
Commission Regulation (EU) 2019/521 of March 27, 2019, amending, for the purposes of adapting to technical and scientific progress, technical and scientific progress, Regulation (EC) No 1272/2008 of the European Parliament and of the Council on classification, labeling, and packaging substances and mixtures.
Directive (EU) 2016/2284 of the European Parliament and of the Council of December 14, 2016, on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (text with EEA relevance).
IMO IMDG: International Maritime Dangerous Goods Code
(MFAG): First Aid Guide
ADR 2023: Agreement concerning the International Carriage of Dangerous Goods by Road
Directive 2010/75/EU of the European Parliament and of the Council of November 24, 2010 on industrial emissions (integrated pollution prevention and control)
COMMISSION DIRECTIVE (EU) 2016/2037 of November 21, 2016, amending Council Directive 75/324/EEC as regards the maximum allowable pressure in aerosol dispensers and adapting the labeling provisions to Regulation (EC) No 75/324/EEC of May 20, 1975 on the approximation of the laws of the Member States relating to aerosol dispensers

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Reason for change: Date of previous version:	Compliance with the requirements of Regulation (EU) 2020/878 01/01/2023
Department issuing the safety data sheet: see section 1:	Department responsible for information
Abbreviations and acronyms:	ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road AS/NZS: Australian Standards/New Zealand Standards CAS: Chemical Abstracts Service CFR: Code of Federal Regulations CLP: Classification, Labeling, and Packaging CNS: Central Nervous System DIN: German Institute for Standardization DMEL: Derived Minimal Effect Level DNEL: Derived No Effect Level EC: European Community EN: European Standard

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	<p>EQ: Exempted quantities EU: European Union</p> <p>Flam. Gas: Flammable gases</p> <p>IATA: International Air Transport Association</p> <p>IATA-DGR: International Air Transport Association – Dangerous Goods Regulations</p> <p>IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk</p> <p>IMDG Code: International Maritime Dangerous Goods Code</p> <p>LC50: Lethal Concentration Limit</p> <p>LEL: Lower Explosive Limit</p> <p>MARPOL: Marine Pollution: International Convention for the Prevention of Pollution from Ships</p> <p>NF: French standard</p> <p>OEL: Occupational exposure limit</p> <p>OSHA: Occupational Safety and Health Administration PBT: Persistent, bioaccumulative, and toxic</p> <p>PNEC: Predicted No-Effect Concentration Gas under pressure</p> <p>REACH: Registration, Evaluation, Authorization and Restriction of Chemicals RID: Regulations concerning the international carriage of dangerous goods by rail</p> <p>TLV: threshold limit value</p> <p>TRGS: Technical Regulations for Hazardous Substances UN: United Nations</p> <p>vPvB: Very persistent and very bioaccumulative WEL: Permissible exposure limit</p>
Training advice:	Ensure that operators understand the flammability hazard.
Full text of H and EUH statements	
Flammable gas 1A	Flammable gases, category
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H224	Extremely flammable liquid and vapor.
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H340	May cause genetic defects <specify route of exposure if it has been conclusively proven that no other route of exposure causes the hazard>.
H350	May cause cancer <specify route of exposure if it has been conclusively proven that no other route of exposure causes the hazard>.
H400	Very toxic to aquatic organisms (M-factor = 10).
H410	Very toxic to aquatic organisms, causing long-term effects (M factor = 10).
H229:	Pressurized container: may burst if heated.
P210:	Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. (The manufacturer must specify the relevant ignition sources: for example burner flame, lighter flame, lamp flame).
P211:	Do not spray towards open flames or other sources of ignition.
P102	Keep out of reach of children.
P377	Gas leak: Do not extinguish unless leak can be stopped safely.
P381	In case of leak, eliminate all sources of ignition.
P403	Store in a well-ventilated place.
P410+P403	Protect from sunlight. Store in a well-ventilated place.
P410+P412:	Protect from sunlight. Do not expose to temperatures exceeding 50°C/122°F.
Pressure. Gas (liquid)	Pressurized gases: Liquefied gas
DISCLAIMER:	



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Language: ENG (english)

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Before using this product in any new process or experiment, thorough material compatibility and safety testing should be conducted.

The information contained herein is current at the time of publication.

Although every effort has been made to ensure the accuracy of this document, we are not responsible for any injury or damage resulting from

its use.

The information contained in this safety data sheet has been compiled to the best of our knowledge and was current at the time of its update. It does not constitute a guarantee of the properties of the product as described in the legal warranty provisions.

End of document