

**Safety data sheet**  
**complying with Regulation 1907/2006/EC (REACH Regulation),**  
**EU 2020/878 and Regulation No 1272/2008/EC (CLP)**

Printing date 19.07.2023

Version number 1

Revision: 19.07.2023

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

**Trade name:** ENDERS 190g ILL SYSTEM gas cartridge  
                  ENDERS 227g bayonet type valve gas cartridge  
**UFI:** KN98-50PS-C000-Y2D0

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

No further relevant information available.

**Application of the substance / the mixture:** Butane gas**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Enders Colsman AG  
Address: Brauck 1 D-58791 Werdohl  
Tel : 02392/9782-30  
e-mail: service@enders-germany.de

**1.4 Emergency telephone number:**

Emergency telephone number: 112

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification according to Regulation EC No 1272/2008 CLP:**

H280 : Contains gas under pressure; may explode if heated



GHS02 flame

Flam. Gas 1A H220 Extremely flammable gas.

**Additional information:**

## Supplementary Information

Note K: The classification as a carcinogen or mutagen need not apply if it can be shown that the substance contains less than 0,1 % w/w 1,3-butadiene (Einecs No 203-450-8). If the substance is not classified as a carcinogen or mutagen, at least the precautionary statements (P102-)P210-P403 should apply. This note applies only to certain complex oil-derived substances in Part 3 of Annex VI to Regulation (EC) No 1272/2008. For the complete labelling of H phrases referred to in this section, see section 16.

**2.2 Label elements****Labelling according to Regulation EC No 1272/2008 CLP:**

The product is classified and labelled according to the CLP regulation.

(Contd. on page 2)

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**ENDERS 227g bayonet type valve gas cartridge**

(Contd. of page 1)

**Hazard pictograms:**

GHS02

**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.

**Additional information:**

Paragraph 1.3.2. CLP Regulation 1272/2008/EC

If propane, butane and liquefied petroleum gas or 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 nonrefillable 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 shall only be labelled with the appropriate pictogram and the hazard and precautionary statements concerning flammability.

No information concerning the effects on human health and the environment is required on the label. Instead the supplier shall provide the information concerning effects on human health and the environment to downstream users or distributors by means of the safety data sheet (SDS).

**2.3 Other hazards****Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**SECTION 3: Composition/information on ingredients****3.2 Mixtures****Description:** Mixture: consisting of the following components.**Ingredients according Regulation (EU) 2020/878:**

CAS: 68476-86-8 EINECS: 270-705-8 Reg.nr.: 01-2119490743-31-XXXX	Petroleum gases, liquefied, sweetened Flam. Gas 1A, H220; Press. Gas (Comp.), H280	90-100%
CAS: 75-08-1 EINECS: 200-837-3 Index number: 016-022-00-9 Reg.nr.: 01-2119491286-30-XXXX	ethanethiol Flam. Liq. 1, H224; Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410 (M=10); Acute Tox. 4, H302; Acute Tox. 4, H332; Skin Sens. 1B, H317	0.0008-<0.0015%

(Contd. on page 3)

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**ENDERS 227g bayonet type valve gas cartridge**

(Contd. of page 2)

**Additional information:**

Contains &lt;0.1% w/w 1,3-butadiene (EINECS No 203-450-8)

Substance UVCB (Unknown or Variable composition, Complex reaction products or Biological materials)

**SECTION 4: First aid measures****4.1 Description of first aid measures****General information:**

Never give anything by mouth to an unconscious person.

Take affected persons out of danger area and lay down.

Involve doctor immediately. Show Safety Data Sheet or the label of the product if available.

Take affected persons out into the fresh air.

**After inhalation:**

In case of unconsciousness place patient stably in side position for transportation.

In case large quantity is inhaled move contaminated patient to fresh air. Keep him warm and still.

Obtain medical assistance if breathing remains difficult.

Supply fresh air and to be sure call for a doctor.

**After skin contact:**

Do not attempt to remove sticking garments due to frost. Rinse with lukewarm water (Temperature around 40 °C). Continue rinsing for at least 15 minutes. If no lukewarm is available, do not rinse with water. Cover the affected area with sterile gauze or clean clothing.

**After eye contact:**

Rinse opened eye for at least 15 minutes under running water.

Avoid strong water jet-risk of cornea damage, consult a doctor.

If there are signs of frostbite, pain, swelling, or photophobia that persist, the patient should seek specialized health care.

**After swallowing:**

Drink plenty of water and provide fresh air. Call for a doctor immediately.

Consult the doctor immediately and show the label or this Safety Data Sheet.

**Information for doctor:**

Doctor's notes: For a simple suffocating gas at normal temperatures and pressures - there is no specific antidote.

In case of contact with the product in liquid form, treatment for frostbite is recommended.

(Subject to application: In case of effects from inhalation of H<sub>2</sub>S or CO, follow the specific protocols).**4.2 Most important symptoms and effects, both acute and delayed**

No further relevant information available.

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

No further relevant information available.

**SECTION 5: Firefighting measures****5.1 Extinguishing media****Suitable extinguishing agents:**

Where possible and if it is safe, stop the flow of the gas. If the flow can not be stopped, allow the fire to burn while cooling the containers and surroundings with water spray.

LARGE FIRE: Use water spray, water mist or foam.

SMALL FIRE: Dry dust or carbon dioxide (CO<sub>2</sub>), dry sand or fire foam.**For safety reasons unsuitable extinguishing agents:**

Water with full jet

(Contd. on page 4)

**Safety data sheet**  
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Printing date 19.07.2023

Version number 1

Revision: 19.07.2023

**Trade name: ENDERS 190g ILL SYSTEM gas cartridge**  
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(Contd. of page 3)

Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

**5.2 Special hazards arising from the substance or mixture**

Insufficient cooling of the containers results in a rapid increase in pressure caused by the evaporation of its contents and an increase in temperature in the tank. This causes the container to rupture completely followed by ignition and explosion of the mass (BLEVE).

Hazardous combustion products: carbon monoxide, carbon dioxide and non-combustible hydrocarbons (smoke).

**5.3 Advice for firefighters****Protective equipment:**

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

In the event of a large fire or in enclosed or insufficiently ventilated areas, use full fire-resistant protective clothing and a stand-alone breathing apparatus (SCBA) with a full mask that operates in a positive pressure state in addition to conventional firefighting tools.

**Additional information**

Collect contaminated fire fighting water separately. It must not enter the sewage system.

Cool the packaging containers with large amounts of water for a long time. Move away immediately from the safety vents in case of loud noise or in case of discoloration of the tank. ALWAYS stay away from tanks that are engulfed in flames.

**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures:**

Avoid inhalation of vapors.

Avoid contact with spilled material.

Avoid contact with oxidising agents.

Ensure adequate ventilation.

Wear protective equipment. Keep unprotected persons away.

Keep away from ignition sources.

Wear protective clothing.

**6.1.2 For emergency responders**

General information: Material leaks produce large amounts of extremely flammable gases that are heavier than air and will accumulate in low areas or confined spaces.

(Subject to application): When hazardous amounts of H<sub>2</sub>S and / or CO are suspected around the spilled product, additional or specific actions may be ordered, including restricted access, use of special protection equipment, procedures and training of the staff.

Fire: Vapors are denser than air. Rollers or other containers may explode under fire conditions - use water spray to cool closed containers.

Do not allow extinguishing water to reach sewers or water beds - it may cause a sewer explosion and may overheat.

**6.2 Environmental precautions:**

Inform respective authorities in case of seepage into water course or sewage system.

Inform authorities in case of gas release.

Do not allow to enter sewers/ surface or ground water.

Leaks in water or at sea:

Prevent further leakage and dispersion if safe to do so.

Leakage of the liquid product into the water could lead to a rapid and complete evaporation of the product.

Isolate the area and prevent the risk of fire / explosion, taking into account the direction and speed of the wind, until the material is completely dissolved.

(Contd. on page 5)

**Safety data sheet**  
complying with Regulation 1907/2006/EC (REACH Regulation),  
EU 2020/878 and Regulation No 1272/2008/EC (CLP)

Printing date 19.07.2023

Version number 1

Revision: 19.07.2023

Trade name: ENDERS 190g ILL SYSTEM gas cartridge  
ENDERS 227g bayonet type valve gas cartridge

(Contd. of page 4)

**6.3 Methods and material for containment and cleaning up:**

Ensure adequate ventilation.  
Send for recovery or disposal in suitable receptacles.

**6.4 Reference to other sections:**

See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

**SECTION 7: Handling and storage****7.1 Precautions for safe handling**

Open and handle receptacle with care.  
Handle with care. Avoid jolting, friction and impact.  
Explosive mixtures of vapours and air.  
(Subject to application) A specific risk assessment of inhalation from the presence of H<sub>2</sub>S and / or CO in empty tank spaces, confined spaces, product residues, tank waste and water waste, and in case of unintentional release, should be done to help determine appropriate controls for local conditions.  
Cleaning, inspection and maintenance of the internal structure of storage tanks should be done only with appropriate equipment and qualified personnel, as defined by national, local or company regulations.  
Handle empty containers carefully. Vapor residues may be flammable.

**Information about fire - and explosion protection:**

Keep ignition sources away - Do not smoke.

Protect against electrostatic charges.  
Keep respiratory protective device available.  
Do not spray onto a naked flame or any incandescent material.  
Flammable gas-air mixtures may form in empty receptacles.  
Keep it in a dry, cool, well ventilated, fixed in advance place, away from sources of heat, flames, ignition and direct sunlight.

**7.2 Conditions for safe storage, including any incompatibilities**

Store only in original containers or in approved containers.  
The cylinders must be locked vertically - and only transported in a safe place in a well-ventilated area.  
Opened bottles must be carefully closed and stored upright.  
For maintenance work, the tanks must be emptied and cleaned with an inert gas (ie nitrogen).

**Storage:****Requirements to be met by storerooms and receptacles:**

Store in a cool location.

**Packaging Materials:**

The product must be stored in a specially designed pressure vessel (spherical containers, cylindrical containers, bottles) in accordance with the relevant regulations.

**Information about storage in one common storage facility:**

Store away from foodstuffs.  
Store away from flammable substances.

**Further information about storage conditions:**

Store in cool, dry conditions in well sealed receptacles.  
Protect from heat and direct sunlight.  
Store under lock and key and with access restricted to technical experts or their assistants only.

(Contd. on page 6)

**Safety data sheet**  
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**EU 2020/878 and Regulation No 1272/2008/EC (CLP)**

Printing date 19.07.2023

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Revision: 19.07.2023

**Trade name: ENDERS 190g ILL SYSTEM gas cartridge**  
**ENDERS 227g bayonet type valve gas cartridge**

(Contd. of page 5)

Store under lock and key and out of the reach of children.

**7.3 Specific end use(s)** No further relevant information available.**SECTION 8: Exposure controls/personal protection****8.1 Control parameters****Ingredients with limit values that require monitoring at the workplace:****CAS: 75-08-1 ethanethiol**

WEL (Great Britain)	Short-term value: 5.2 mg/m <sup>3</sup> , 2 ppm
	Long-term value: 1.3 mg/m <sup>3</sup> , 0.5 ppm

**8.2 Exposure controls****Individual protection measures, such as personal protective equipment****General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

**Respiratory protection:**

Use suitable respiratory protective device in case of insufficient ventilation.

Use a respirator (EN 137) during cleaning and inspection of equipment, as well as in conditions of insufficient ventilation.

**Hand protection**

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation. In case of contact of hands with droplets of the cold product, use special gloves for low temperatures (EN 60903).

**Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a mixture of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

**Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

The determined penetration times according to EN 16523-1:2015 are not performed under practical conditions. Therefore a maximum wearing time, which corresponds to 50% of the penetration time, is recommended.

**Eye/face protection**

Use goggles or face shields to protect the eyes from droplets of the liquid product (EN 166, CR 13464). Use a full face mask with hydrocarbon filters in cases of small leaks (EN 136 and 141 respectively).

(Contd. on page 7)

**Safety data sheet**  
 complying with Regulation 1907/2006/EC (REACH Regulation),  
 EU 2020/878 and Regulation No 1272/2008/EC (CLP)

Printing date 19.07.2023

Version number 1

Revision: 19.07.2023

Trade name: ENDERS 190g ILL SYSTEM gas cartridge  
 ENDERS 227g bayonet type valve gas cartridge

(Contd. of page 6)

**Body protection:**

Use of suitable protective clothing (EN 340, 465, 466, 467) and protective boots (EN 345, 346). In case of large fire, it is necessary to use a fire-resistant waterproof form (EN 469, 533, 1486).

**SECTION 9: Physical and chemical properties****9.1 Information on basic physical and chemical properties****General Information**

<b>Physical state</b>	Compressed gas
<b>Colour:</b>	Colourless
<b>Odour:</b>	Characteristic
<b>Odour threshold:</b>	Not determined
<b>Melting point/freezing point:</b>	-187.6 - -138 °C
<b>Boiling point or initial boiling point and boiling range</b>	Not determined
<b>Flammability</b>	Not determined.
<b>Lower and upper explosion limit</b>	
<b>Lower:</b>	1.8 Vol %
<b>Upper:</b>	15 Vol %
<b>Flash point:</b>	-60 °C
<b>Auto-ignition temperature:</b>	287 - 537 °C
<b>Decomposition temperature:</b>	Not determined
<b>pH</b>	Not determined
<b>Viscosity:</b>	
<b>Kinematic viscosity</b>	Not determined
<b>Dynamic:</b>	Not determined
<b>Solubility</b>	
<b>water at 20 °C:</b>	24.4 - 60.4 mg/l Fully miscible
<b>Partition coefficient n-octanol/water (log value)</b>	1.09 - 2.8 log POW
<b>Vapour pressure at 40 °C:</b>	505 hPa
<b>Density and/or relative density</b>	
<b>Density:</b>	Not determined
<b>Relative density at 25 °C</b>	0.4228-0.589 g/cm <sup>3</sup>
<b>Vapour density</b>	Not determined

**9.2 Other information****Appearance:**

**Form:** Gaseous

**Important information on protection of health and environment, and on safety.****Ignition temperature:**

Product is not selfigniting.

**Explosive properties:**

Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

**Cloud point / clarification point:****Oxidising properties**

Not oxidising

**Evaporation rate**

Not applicable

(Contd. on page 8)

**Safety data sheet**  
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 EU 2020/878 and Regulation No 1272/2008/EC (CLP)

Printing date 19.07.2023

Version number 1

Revision: 19.07.2023

Trade name: ENDERS 190g ILL SYSTEM gas cartridge  
 ENDERS 227g bayonet type valve gas cartridge

(Contd. of page 7)

**Information with regard to physical hazard classes**

Explosives	Void
Flammable gases	Extremely flammable gas.
Aerosols	Void
Oxidising gases	Void
Gases under pressure	Void
Flammable liquids	Void
Flammable solids	Void
Self-reactive substances and mixtures	Void
Pyrophoric liquids	Void
Pyrophoric solids	Void
Self-heating substances and mixtures	Void
Substances and mixtures, which emit flammable gases in contact with water	Void
Oxidising liquids	Void
Oxidising solids	Void
Organic peroxides	Void
Corrosive to metals	Void
Desensitised explosives	Void

**SECTION 10: Stability and reactivity****10.1 Reactivity** Stable under normal conditions**10.2 Chemical stability****Thermal decomposition / conditions to be avoided**

To avoid thermal decomposition do not overheat.

Stable at environment temperature.

**10.3 Possibility of hazardous reactions** No dangerous reactions known.**10.4 Conditions to avoid**

The product should not be exposed to high temperatures, sparks, flame and electrostatic charges.

**10.5 Incompatible materials**

Oxidizing agents

Halogens

**10.6 Hazardous decomposition products**

Carbon monoxide (CO)

Carbon dioxide (CO<sub>2</sub>)**SECTION 11: Toxicological information****11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008****Acute toxicity** Based on available data, the classification criteria are not met.**Skin corrosion/irritation** Based on available data, the classification criteria are not met.**Serious eye damage/irritation** Based on available data, the classification criteria are not met.**Respiratory or skin sensitisation** Based on available data, the classification criteria are not met.**Germ cell mutagenicity** Based on available data, the classification criteria are not met.**Carcinogenicity** Based on available data, the classification criteria are not met.**Reproductive toxicity** Based on available data, the classification criteria are not met.

(Contd. on page 9)



**Safety data sheet**  
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Version number 1

Revision: 19.07.2023

**Trade name: ENDERS 190g ILL SYSTEM gas cartridge**  
**ENDERS 227g bayonet type valve gas cartridge**

(Contd. of page 8)

**STOT-single exposure** Based on available data, the classification criteria are not met.**STOT-repeated exposure** Based on available data, the classification criteria are not met.**Aspiration hazard** Based on available data, the classification criteria are not met.**11.2 Information on other hazards****Endocrine disrupting properties**

None of the ingredients is listed.

**SECTION 12: Ecological information****12.1 Toxicity**

Short-term toxicity to fish: Estimated LC50 = 24.11 to 147.54 mg / L in freshwater.

Short-term toxicity to aquatic invertebrates: Estimated 96 hours LC50 = 7.02 to 69.43 mg / L

Toxicity to aquatic algae and cyanobacteria: EC50 = 7.71 - 16.5 mg / l.

**Aquatic toxicity:** No further relevant information available.**12.2 Persistence and degradability**

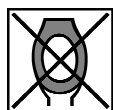
It is not expected to undergo hydrolysis in the environment due to the lack of hydrolyzable functional groups and therefore the tests do not appear to be scientifically necessary.

**12.3 Bioaccumulative potential** Not bioaccumulative.**12.4 Mobility in soil** No further relevant information available.**12.5 Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**12.6 Endocrine disrupting properties**

The product does not contain substances with endocrine disrupting properties.

**12.7 Other adverse effects****Additional ecological information:****General notes:** Do not allow product to reach ground water, water course or sewage system.**SECTION 13: Disposal considerations****13.1 Waste treatment methods****Recommendation**

Dispose according to National Regulations.



Must not be disposed together with household garbage. Do not allow product to reach sewage system.

**Uncleaned packaging:****Recommendation:** Disposal must be made according to official regulations.

EN

(Contd. on page 10)

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 EU 2020/878 and Regulation No 1272/2008/EC (CLP)

Printing date 19.07.2023

Version number 1

Revision: 19.07.2023

Trade name: ENDERS 190g ILL SYSTEM gas cartridge  
 ENDERS 227g bayonet type valve gas cartridge

(Contd. of page 9)

**SECTION 14: Transport information****14.1 UN number or ID number**

ADR, IMDG, IATA

UN2037

**14.2 UN proper shipping name**

ADR

2037 RECEPTACLES, SMALL, CONTAINING GAS  
(GAS CARTRIDGES)

IMDG, IATA

RECEPTACLES, SMALL, CONTAINING GAS (GAS  
CARTRIDGES)**14.3 Transport hazard class(es)**

ADR



Class

2 5F Gases.

Label

2.1

IMDG, IATA



Class

2.1 Gases.

Label

2.1

**14.4 Packing group**

ADR, IMDG, IATA

Void

**14.5 Environmental hazards:**

Not applicable.

**14.6 Special precautions for user**

EMS Number:

Warning: Gases.

F-D,S-U

**14.7 Maritime transport in bulk according to IMO**

instruments

Not applicable.

**Transport/Additional information:**

ADR

Limited quantities (LQ)

1L

Excepted quantities (EQ)

Code: E0

Not permitted as Excepted Quantity

Transport category

2

Tunnel restriction code

B/D

IMDG

Limited quantities (LQ)

120 ml

(Contd. on page 11)

**Safety data sheet**  
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Version number 1

Revision: 19.07.2023

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**ENDERS 227g bayonet type valve gas cartridge**

(Contd. of page 10)

**Excepted quantities (EQ)**

Code: E0

Not permitted as Excepted Quantity

**UN "Model Regulation":**UN 2037 RECEPTACLES, SMALL, CONTAINING  
GAS (GAS CARTRIDGES), 2.1**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

REACH Regulation 1907/2006/EC

Regulation (EU) 2020/878

CLP Regulation 1272/2008/EC

Directive 98/24/EC on the protection of health and safety of workers from the risks related to chemicals agents at work.

Council Directive 94/33/EC on the protection of young people at work, as ammended.

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 ammended

**Directive 2012/18/EU****Named dangerous substances - ANNEX I** None of the ingredients is listed.**Seveso category P2** FLAMMABLE GASES**Qualifying quantity (tonnes) for the application of lower-tier requirements** 10 t**Qualifying quantity (tonnes) for the application of upper-tier requirements** 50 t**DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

None of the ingredients is listed.

**REGULATION (EU) 2019/1148****Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**

None of the ingredients is listed.

**Annex II - REPORTABLE EXPLOSIVES PRECURSORS**

None of the ingredients is listed.

**Regulation (EC) No 273/2004 on drug precursors**

None of the ingredients is listed.

**Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**

None of the ingredients is listed.

**National regulations:****Other regulations, limitations and prohibitive regulations****Substances of very high concern (SVHC) according to REACH, Article 57**

It doesn't contain substances of very high concern (SVHC).

(Contd. on page 12)

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**ENDERS 227g bayonet type valve gas cartridge**

(Contd. of page 11)

**15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

#### SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

##### Relevant phrases

H220 Extremely flammable gas.  
H224 Extremely flammable liquid and vapour.  
H280 Contains gas under pressure; may explode if heated.  
H302 Harmful if swallowed.  
H317 May cause an allergic skin reaction.  
H332 Harmful if inhaled.  
H400 Very toxic to aquatic life.  
H410 Very toxic to aquatic life with long lasting effects.

##### Training hints

Suitable training on safety in handling, storing and converting the product should be given to the employees based on all the existing information.

#### Classification according to Regulation (EC) No 1272/2008

Flammable gases	On basis of test data
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##### Abbreviations and acronyms:

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
ELINCS: European List of Notified Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
PBT: Persistent, Bioaccumulative and Toxic  
SVHC: Substances of Very High Concern  
vPvB: very Persistent and very Bioaccumulative  
Flam. Gas 1A: Flammable gases – Category 1A  
Press. Gas (Comp.): Gases under pressure – Compressed gas  
Flam. Liq. 1: Flammable liquids – Category 1  
Acute Tox. 4: Acute toxicity – Category 4  
Skin Sens. 1B: Skin sensitisation – Category 1B  
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1  
Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1