

# Material Safety Data Sheet

<b>Brought in the register</b>	
RPB No 1048000•02•32627	from 10 December 2013
valid till 10 December 2018	
R o s s t a n d a r d	
<b>The Information - Analytical Center</b>	
"Safety of Substances and Materials"	Head _____ /A.A. Toporkov/
FSUE "VNITSSMB"	Stamp

**Name:**

Technical (by ND)	GVAU (GPAP)
Chemical (by IUPAC)	No
Trading	GVAU (GPAP) 16B; GVAU (GPAP) 25I; GVAU (GPAP) 35BIP; GVAU (GPAP) 43IP; GVAU (GPAP) 45BP; GVAU (GPAP) 50BIP; GVAU (GPAP) 65BIP; GVAU (GPAP) 77P
Synonyms:	Hydrocarbon propellant, propane-butane, mixture of liquefied hydrocarbonic gases

OKP Code  
0 2 7 2 3 9

TN VED Code  
2 7 1 1 1 9 0 0 0 0

Symbol and name of the basic normative, technical or information document on production (GOST, Specifications, OST, STO, (M)SDS , etc.).

Specifications 0272-001-10480001-2013. Gases- Displacers of Aerosol Packages GVAU (GPAP)

## CHARACTERISTIC OF HAZARD

Alarm word: <b>Dangerous (Hazardous)</b>	
Brief (verbal): Inflammable gases, slightly hazardous on influence degree on organism. Possess narcotic action, may cause asthma and frostbite. May pollute atmospheric air.	
Detailed: in 16 applied sections of Safety Data Sheet	

Basic hazardous ingredients	MPCw.z.	Class of hazard	№ CAS	№ EC
Butane	900/300 (limiting aliphatic hydrocarbons C1-C6 in recalculation on C/)	4	106-97-8	203-448-7
Propane			74-98-6	200-827-9

**Applicant:** OOO " Gas Technologies" **Kirzhatch**  
(name of organization) (town)

**Type of Applicant:** Manufacturer ~~Supplier~~ ~~Seller~~ ~~Exporter~~ ~~Importer~~  
(unnecessary to cross out)

**OKPO Code** 1 0 4 8 0 0 0 1 **Emergency telephone number:** (49237) 2-01-36

**The Head of Applicant Organization:** \_\_\_\_\_ / \_\_\_\_\_ /  
(signature) (decoding)

Stamp

**IUPAC** – International Union of Pure and Applied Chemistry

**GHS (SGS)** – recommendation of OOH ST/SG/AC.10/30 “Globally Harmonized System of Classification and Labelling of Chemicals” (System of Classification of Danger and Marking of Chemical Production Coordinated at a global level (SGS))

**OKP** - All-Russian Qualifier of Production

**OKPO** - All-Russian Qualifier of Enterprises and Organizations

**CNFTA** - Commodity Nomenclature of Foreign Trade Activities

**№ CAS** – Substance Number in Register of Chemical Abstracts Service

**№ EC** - Substance Number in Register of European Chemical Agency

**MPCw.z.** - Maximum Permissible Concentration of chemical substance in air of working zone, mg / m<sup>3</sup> (maximal single / average in shift)

### **Safety Data Sheet**

The Safety Data Sheet meets:

- to recommendations of OOH ST/SG/AC.10/30 « (GHS) »;

- to the rules of EC «Regulation No1907/2006 concerning Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH rules - Registration, Estimation, Sanction and Restriction of Chemical substances) », appendix II

Alarm word

- it is indicated one of two words “**Dangerous (Hazardous)**” or “**Cautious**” (or “**Absent**”) according to GOST 31340-2007 “Precautionary Marking of Chemical Production. General Requirements”.

## 1. CHEMICAL PRODUCT AND COMPANY OR SURPLIER IDENTIFICATION

### 1.1. CHEMICAL PRODUCT IDENTIFICATION

1.1.1. Product:	GVAU (GPAP)
1.1.2. Brief recommendations on application: <i>(including restriction on application)</i>	Gases-Displacers of Aerosol Packages GVAU (GPAP) (further under the text the liquefied gases) are intended for use in quality of displacers of aerosol packages and used as the energy carrier in aerosol compositions (means of household chemical goods, cosmetic and perfumery production). [1]. At application of liquefied hydrocarbonic gases it is necessary to take into account macroclimatic conditions of areas and periods of a year [1].

### 1.2. COMPANY OR SURPLIER IDENTIFICATION

1.2.1. Company :	OOO " Gas Technologies"
1.2.2. Address (post):	601010, Russia, Vladimir region, Kirzhach, 5 Frunze Str.,
1.2.3. Phone including for emergency consultations and restriction on time:	(49237)2-01-36; 2-01-22.
1.2.4. Fax:	(49237)2-01-22.
1.2.5. E-mail:	boss@gazgarant.ru

## 2. HAZARDS IDENTIFICATION

2.1. Degree of hazard of chemical product as a whole: <i>(data about classification of hazard and according to the legislation of the Russian Federation (GOST 12.1.007) and SGS (after statement))</i>	Slightly dangerous on influence degree on an organism mixes of the hydrocarbonic liquefied gases, 4 class of hazard [1].
2.2. Hygienic specifications for product as a whole for a working zone: <i>(MPCw.z. or OBUV w.z.)</i>	The control of contents of harmful substances in air of a working zone is recommended to carry out on limiting aliphatic hydrocarbons C1-C6 in recalculation on C/: $MPCw.z. = 900/300 \text{ mg } \backslash \text{m}^3$ [1,2].
2.3. Marking data (in accordance with GOST 31340-07):	
2.3.1. Description of hazard:	Symbol: cylinder. Alarm word: dangerous. Brief characteristic of hazard: flammable gas under pressure: cylinders (tanks) can blow up at heating [3].
2.3.2. Measures on hazard prevention:	Conditions of safe storage: - protect from solar beams: - store in well ventilated place. Measures on safe handling: Keep away from heat and sources of ignition, heat, sparks, an open flame: - do not smoke. Measures on liquidation of extreme situation : - do not stop burning at leak:

	<ul style="list-style-type: none"> <li>- remove all sources of ignition if it does not represent danger</li> <li>- flush places of frostbite with warm water;</li> <li>- do not rub the irritated skin.</li> <li>- immediately obtain medical attention aid.[3]</li> </ul>
--	--

### 3. COMPOSITION (INFORMATION ABOUT INGREDIENTS)

<b>3.1. Data on product as a whole</b>	
Chemical name: (on IUPAC)	No [1].
3.1.2. Chemical formula:	No. Consists of hydrocarbons mainly in range C1-C6 [4]
3.1.3. General characteristic of structure: <i>(with account of branded assortment and indication of impurity and the functional additives influencing on hazard of product; way of obtaining)</i>	<u>OOO " Gas Technologies"</u> develops gases -displacers of aerosol packages GVAU (GPAP) according to requirements of Specifications 0272-001-10480001-2013 authorized when due hereunder [1].

#### 3.2. INGREDIENTS:

*(name, CAS and EC numbers (at presence), mass fraction, MPCw.z. or OBUV w.z., classes of hazard, references to data sources)*

Table 1

Ingredients [1].	MPCw.z. mg\m <sup>3</sup> [2].	Class of hazard	No CAS [4].	No EC [4].
- Limiting aliphatic hydrocarbons C1-C6 - Propane, butane, ethane - Methane	900/300 (in recalculation on C)  7000	4	propane: 74-98-6	200-827-9
			butane: 106-97-8	203-448-7
			ethane 74-84-0	200-814-8
- Alkenes C1-C6 including: propylene, butylene, ethylene	300/100 (in recalculation on C)	4	methane 74-82-8	200-812-7
			propylene: 115-07-1	204-062-1
			butylene: 106-98-9	203-449-2
			ethylene: 74-85-1	200-815-3
Hydrogen sulphide in a mix with hydrocarbons C1-C6	3	2	No	No
including hydrogen sulphide	10	2	7783-06-4	231-977-3
Mercaptan sulfur	1,0	2	75-08-1	200-837-3

### 4. FIRST AID MEASURES

#### 4.1. Observable symptoms

4.1.1. Inhalation:	Asthma, narcotic effect: headache, dizziness, weakness, drowsiness, change of pulse rate; pains in the field of heart, infringement of movement coordination, nausea, vomiting. In heavy cases - asthma, loss of consciousness
4.1.2. Skin contact:	Hit on a skin of liquefied gas liquid phase causes frostbite, reminding a burn: redness, oedema, pain. In conditions of production at contact with gases it is possible occurrence of dermatitis [5,6,7,8].
4.1.3. Eyes contact:	Contact to the liquefied gases causes frostbite with reddening, pain, burns; infringement of sight is possible. In conditions of production at contact with gases conjunctivitis arise [5,6,7,8].
4.1.4. Swallowing:	The given way of influence is improbable. Symptoms are not established [5,6,7,8].

## 4.2. FIRST AID MEASURES

4.2.1. Inhalation:	At breath infringement - remove the victim to fresh air from заразованной zone, release him from constraining clothes, warm. At excited condition to arrange to the prevention of bruises. At breath absence immediately (before arrival of doctor), after clearing of oral cavity from emetic weights and slime give artificial respiration by a method « from mouth in mouth», give to smell medical liquid ammonia from cotton wool with an interval of 1-2 minutes. After restoration of independent breath leave the patient in lying position, having provided full rest and warmth, give strong tea, coffee, put hot-water bottles to finitenesses. Further emergency medical help or resuscitation help [5,6,7,8] should render the help.
4.2.2. Skin	Immediately remove clothes (liquefied gas is instantly absorbed and penetrates to a body), flush the skin with a plenty of water with soap, grease the struck site of skin by ointment from burns (bubbles were not formed yet). At formation of bubbles, it is necessary to impose a sterile bandage. At strong frostbite do not remove clothes from the struck site. Obtain medical attention. [5,6,7,8].
4.2.3. Eyes:	Immediately flush eyes with flowing water at well opened eyelids. Further supervision at ophthalmologist. [5,6,7,8].
4.2.4. Swallowing:	Hit inside of an organism (swallowing) of liquefied gases is improbable. At swallowing obtain medical attention.
4.2.5. Contra-indications:	There are no data. [5,6,7].
4.2.6. Means of first aid (first-aid set):	Ointment from burns, eye tray, medical liquid ammonia, sterile bandage, bandages.

## 5. FIRE FIGHTING MEASURES

5.1. General characteristic of fire fighting measures:	Combustible, explosive mixtures of hydrocarbonic liquefied gases. Ignite from sparks and flame. On open areas with air form explosive mixtures [1,9].
5.2. Parameters of fire fighting measures: <i>(product indicators in accordance with GOST 12.1.044 and GOST P 51330)</i>	Flash point: butane - minus 69 °C (calculation); propane - minus 96°C (calculation) [1,9]. Self-ignition temperature at pressure 0.1 MPa (760 ммHg): butane - 405 oC; propane - 470 °C Concentration limits of flame distribution in a mixture with air at pressure 0.1 MPa (1 atm.) and temperature 15-20 °C: butane - 1.8-9,1 %.; propane - 2.3 - 9,5 %. [1].
5.3. Hazard caused by products of burning and/or thermo destruction:	Dangerous products of thermal-oxidative break-down – carbon oxides [5,6].
5.4. Recommended extinguishing media:	At ignition: powder PSB, carbon dioxide, at fire - volumetric suppression, cooling by water [1]. The most effective means of suppression are inert gases, aerosol structures, powders [9].
5.5. Forbidden means of fire suppression:	It is not recommended to use water as compact jets and suppression means on basis of water at fire suppression of

	C class - burning of gaseous substances [9].
5.6. Means of personal protection at fire suppression (SIZ firemen):	Fireproof suit complete with the self-rescuer SPI - 20. [10].
5.7. Specificity at suppression:	Prevent gas receipt to failure place, organize water screen between fire center and tanks with gas. Cylinders and tanks can blow up at heating. In empty tanks explosive mixtures [10] are formed.

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1. Measures on prevention of harmful influence on people, environment, buildings, constructions, etc. at emergency and extreme situations:

6.1.1. Necessary actions of the general character:	Call fire and gas saving services of area; notify local authorities and territorial service of Rospotrebnadzor about danger. Stop transport movement, except special. Isolate dangerous zone in radius not less than 200 m. Remove strangers and personnel not involved in liquidation of failure. Keep windward side, avoid low places. Observe measures of fire safety. Do not smoke. Remove sources of fire, sparks. In failure zone apply explosion-proof storage lamps and gas analyzers. Enter failure zone in means of personal protection. Render first aid to injured or send them to medical inspection [10].
6.1.2. Means of personal protection: <i>(emergency brigades and personnel)</i>	For emergency brigades – insulating gas masks IP-4M, safety saving belts, canvas overalls, rubber boots. At excess of maximum concentration limit in 100 times - protective cap with filtering element and universal protective PZU patron. Anti-gas filtering RPG respirator with A patron. At ignition - fireproof suit complete with SPI self-rescuer. [10].

### 6.2. Actions order at liquidation of emergency and extreme situations

6.2.1. Steps to be taken at leak, spills: <i>(including safety measures providing environment protection)</i>	At small failure remove leak with safety measures observance. At intensive leak as agreed with experts (fire protection, rescuers of Ministry of Emergency Measures) set on fire leaving gas and let it burn out under control of water jets. At spills outside of room bank-up place of failure, cover with air - mechanical foam or an inert material, exclude formation of gas polluted zones and hit to reservoirs [10]. Isolate area while gases will not dissipate. Centers of defeat are unstable, for an intensification of gases dispersion use sprayed water. Check up gases concentration before allowing people on territory or personnel to work [10].
6.2.2. Actions at fire:	Do not come nearer to tanks: cool them with water from maximal distance. Do not stop burning at leak. Extinguish with fine-sprayed foam from maximal distance [10].

## 7. HANDLING AND STORAGE

### 7.1. PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

<p>7.1.1. Precautions and means of collective protection: <i>(including fire fighting measures)</i></p>	<p>Inflow and exhaust ventilation system in industrial rooms and local exhaust devices. Analysis of working zone and industrial floors air and air on open areas. Air-tight performance of equipment, tanks and connecting units. Immediate elimination of leaks and gas polluted zones. Observance of fire prevention rules. Performance of equipment, communications and armatures of artificial illumination in explosion-proof performance, protection from accumulation of static electricity. Workplaces should be equipped with primary fire extinguishing means as agreed with fire services. At repair works, at opening of cylinders and other tanks use spark safe tool. In working and store rooms it is forbidden carrying out fire works and using sources of open heating. Maintenance of personnel with means of personal protection. [1, 11].</p>
<p>7.1.2. Environment protection:</p>	<p>Basic requirements providing natural environment protection:</p> <ul style="list-style-type: none"><li>- maximal hermetic sealing of tanks, lines, pump units and another equipment;</li><li>- periodic control of harmful substances contents in working zone air and on open areas with use of analyzers or systems of automatic protection and signal system, allowed to application when due hereunder;</li><li>- analysis of industrial leaks on mineral oil contents in them in allowable concentration [1].</li></ul>
<p>7.1.3. Transport information:</p>	<p>Gases-displacers of aerosol packages GVAU (GPAP) are transported by automobile, railway and a sailing charter [1]. By transportation in cylinders it is necessary to use the spacers protecting them from impacts; safety caps should be directed to one side. It is not allowed to roll and drag cylinders by the ground: at unloading it is necessary to lower cylinders caps upwards and at once to put them on "boot" [11].</p>

### 7.2. STORAGE:

<p>7.2.1. Conditions and terms of safe storage: <i>(including a warranty period of storage)</i></p>	<p>Liquefied hydrocarbonic gases according to GOST 1510 are stored under surplus pressure in stationary underground storehouses, metal tanks and cylinders [13]. Cylinders with gas can be stored under shed protecting from direct solar beams or in a special covered room far from heating devices. Tanks and cylinders are stored on different platforms [13]. Warranty period of storage - 6 months from the date of shipment [1].</p>
<p>7.2.2. Substances and materials incompatible at storage:</p>	<p>Oxidizers, explosive, poisonous and inflammable substances and materials.</p>
<p>7.2.3. Materials recommended for container and packing:</p>	<p>Tanks, metal cylinders and other capacities examined when due hereunder according to Rules for Construction and Safe Operation of vessels, working under pressure [1,14,15].</p>
<p>7.3. Safety measures and rules of storage in a life:</p>	<p>Observe rules and temperature conditions with liquefied gases. Cylinder with gas should be stored in vertical position, do not dig in and not put it in cellar. Cylinders with gases should be located on vehicle according to</p>

	the project of cylinders accommodation, coordinated and authorized when due hereunder. Storage places of cylinders with gases should have good ventilation. Do not allow gas leak [15].
--	--

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1. Parameters of working zone subject to obligatory control <i>(MPCw.z. or OBUVwz)</i>	MPCw.z. - 900300 mg / m <sup>3</sup> (in recalculation on C) limiting aliphatic hydrocarbons C1-6. [1,2].
8.2. Measures of maintenance of harmful substances contents in allowable concentration:	Inflow and exhaust ventilation system in working rooms: air-tight performance of equipment, tanks and connecting units: control of maximum concentration limit of harmful substances in air of working zone and on open areas [11].

### 8.3. PERSONAL PROTECTION

8.3.1. General recommendations:	Use means of personal protection: work with doubler in closed spaces [1,7]. Carry out preliminary and periodic medical surveys of personnel. Do not eat on workplace and do not smoke, observe rules of personal hygiene [7].
8.3.2. Respiratory protection (SIZOD types):	At gases concentration exceeding insignificantly MPCw.z. - industrial filtering gas mask with box of A mark. At high concentration and work in the closed reservoirs, wells, etc. – hose insulating gas masks with compulsory submission of pure air of PSH-1, PSH-2, DPA-5 marks or similar [1,7,16].
8.3.3. Protective clothes (material, type):	Safety goggles, leather or canvas gloves, canvas or cotton overalls, leather footwear (without metal nails and upholstery), rubberized apron. IT IS FORBIDDEN to work in clothes made from wood as it absorbs gases vapors keeping them long time, and can ignite from sparks and flame [1,11].
8.3.4. Means of personal protection at use in a life:	Ventilation of rooms should provide vapors concentration of gases-displacers of aerosol packages GVAU (GPAP) no more than 20 % of lower limit of explosive concentration.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Physical state: <i>(aggregate state, color, smell)</i>	In liquefied state - colorless liquid with weak specific smell, weak intensity. At output in atmosphere turns to colorless gas more heavy than air [17].
9.2. Parameters describing basic properties of materials in the first line hazardous: <i>(temperature parameters, pH, solubility, octane factor, etc.)</i>	
Autoignition temperature ignition at pressure 0.1 MPa	butane - 405 °C; propane - 470 °C
Concentration limits of ignition in mix with air at pressure 0.1MPa and temperature 15-20°C;	butane - 1.8-9,1 %.; propane - 2.3 - 9,5 %. [1].



## 10. STABILITY AND REACTIVITY DATA

10.1. Chemical stability: <i>(for unstable production specify decomposition products)</i>	Hydrocarbons included in gas -displacer of aerosol packages GVAU (GPAP) possess high stability under normal conditions [7,8].
10.2. Reactivity:	Enter reactions of radical replacement (halogenation, sulphochlorination, nitriding, etc.), proceeding at high temperatures and ultra-violet irradiation [17]. Vapors of liquefied gases with air under normal conditions form an explosive mix with low limits of explosivity [1,10]. Water vapors are capable to saturate liquefied gas up to the certain value, at excess of this limit the vapor surplus condenses, that can lead to formation of ice plugs. [12]
10.3. Conditions to be avoided: <i>(including dangerous symptoms at contact with incompatible substances and materials)</i>	Heating, sparks, flame, impacts can lead to fire and explosive situation.

## 11. TOXICOLOGICAL INFORMATION

11.1. General characteristic of influence: <i>(estimation of hazard degree (toxicity) of influence on organism)</i>	Gases -displacers of aerosol packages GVAU (GPAP) concern to lightly toxic substances on influence on organism. Possess strong narcotic action. Poisonings at normal pressure and high concentration are connected with downturn of oxygen in inhaled air and development of hypoxia (oxygen starvation). Toxic properties of liquefied hydrocarbonic gases are shown at excess concentrations [7.8].
11.2. Ways of influence: <i>(inhalation, at swallowing, at hit on skin and in eyes)</i>	Inhalation, hit on skin, in eyes [5,6].
11.3. Damaging organs, tissues and systems of a person;	Nervous and cardiovascular systems, respiratory ways: integuments and eyes (at contact with liquefied gas) [5,6].
11.4. Information about hazardous for health influences at direct contact with substance, and also consequences of these influences: <i>(irritating action on the top respiratory ways, eyes, skin, sensitization)</i>	Irritate the top respiratory ways: it is possible irritation of integuments and mucous membranes of eyes because of presence of nonlimiting hydrocarbons, sulfur compounds, mercaptans in structure. Hit of a liquid phase in eyes and on skin causes frostbite, reminding a burn [7,8,19,20]. Skin-resorbive effect is not established: symptoms of sensitizing effect is possible because of nonlimiting hydrocarbons (butylene) and other impurities presence in production structure [5,6,19,20].
11.5. Information about hazardous remote consequences of influence on organism: <i>(influence on reproduction function, carcinogenicity, cumulativeness and so on)</i>	Embriotropic, genadotrophic, teratogenic, mutagen and cancerogenic effects of propane and butane were not studied [5,6]. Cumulativeness – light [5,6].
11.6. Parameters of high toxicity: <i>(DL50 (LD50) way of receiving), kind of animal CL50(LC50), exposition time (h) kind of animal.)</i>	Parameters of toxicometry on gas -displacer of aerosol packages GVAU (GPAP) of the given structure are absent and are resulted on mixture components.

Components	Effect	Value, mg / m <sup>3</sup>	Time of exposition, h	Kind of animal
Bhutan	CL50	658000	4	Rats
		680000	2	Mice [5]
Butylene	CL50	401000	2	Mice [19]
Propane	CL50 is not reached [6]			
Metane	CL50	326000	2	Mice [21]
Hydrocarbons C3 - C4 (alkanes)	CL50	400000-600000	2	Mice [18]

C3 - C4, alkenes C3 - C4)				
Propylene	CL100	783000	2	Mice
	CL100	86000	4	Rats
	Effect	Value, mg / kg	Way of receiving	Kind of animal
	DL50	1200-1700	k/a	Mammals [20]

11.7. Rates (concentrations) with minimal toxic effect;	<p>Information about gas -displacer of aerosol packages GVAU (GPAP) of given structure are absent and are resulted on some components.</p> <p>Butylene: I. im ir-1200 mg / m<sup>3</sup>. ing., a person (on irritating action on mucous membranes of eyes and the top respiratory ways) [19]</p> <p>Propylene; PC hp. - 100 mg / m<sup>3</sup>, ing., round the clock. 3 months, rats (reduction of body weight, level of blood pressure, depression of cholinesterase activity, growth of phagocytic number) [20].</p> <p>Rates (concentrations) with minimal toxic effect for methane, propane and butane are not established [5,6,21].</p>
---	--

## 12. ECOLOGICAL INFORMATION

12.1. General ecological information: (atmospheric air, reservoirs, ground)	Hydrocarbons are photochemical pollutants of atmosphere, they are long kept in air and transferred to big distances. Influence of photochemical pollutants leads to damage of vegetative cover, reduction of crop capacity, sick rate of population. [7,8].
12.2. Ways of influence on environment	Infringement of storage and transportation rules, emergency leaks of liquid and gaseous phases.
12.3. Observable attributes of influence:	Occurrence of smell in atmospheric air, depression of vegetative cover [7,8].

### 12.4. The most important characteristics of influence:

12.4.1. Hygienic specifications: (allowable concentration in atmospheric air, water, including in fishery reservoirs, ground)	<p>Limiting aliphatic hydrocarbons C1-C6 (ethane, propane, butane):</p> <p>MPC air = 200 - mg / m<sup>3</sup>, refl., (butane). 4 class of hazard [22].</p> <p>Metane; OBUVB air = 50 mg / m<sup>3</sup> [22.];</p> <p>ODU water = 2 mg / l. san.-tox. 2 class of hazard [23.];</p> <p>MPC fish. res. = 0.01 mg / l. tox. 3 class of hazard [24].</p> <p>Alkene C1-C6 (ethylene, propylene, butylene):</p> <p>MPC air = 3 mg / m<sup>3</sup>. refl. 4 class hazard (butylene); 3 class of hazard (propylene, ethylene) [22];</p> <p>MPC water - 0.5 mg / l. org., 3 class of hazard (ethylene, propylene) [23];</p> <p>MPC water = 0,2 mg / l. org, 3 class of hazard (butylene) [23];</p> <p>Hydrogen sulphide (dihydrosulphide):</p> <p>MPC air = 0.008 mg / m<sup>3</sup>, refl., 2 class of hazard [22];</p> <p>MPC ground = 0.4 mg / kg (on sulfur), air migratory [25].</p>
12.4.2. Parameters of ecological toxicity;	EC 1000 - 10000 mg / l. fishes (data for propylene)[20].
12.4.3. Migration and transformation in environment due to biodecomposition and other processes (oxidation, hydrolysis, etc.):	Hydrocarbonic gases are slowly transformed in environment [7,8].

### 13. DISPOSAL CONSIDERATIONS

13.1. Safety measures in handling of wastes formed at application, storage, transportation, etc.	Safety measures in handling of wastes (rests) are similar with used measures at work with liquefied gases (see sections 5.6.7 and 8SDS).
13.2. Disposal considerations including container (packing)	Controllable burning out on fire places or the centralized burning out, creation of conditions for full dispersion of gas rests [10]. Burning through jet system in industrial conditions: control of industrial flows over mineral oils contents in them [7,8]. Cylinders under surplus pressure are returned to gas-fuel station for re- fueling. Surplus pressure in tanks after liquefied gas discharge should be not less than 50540 Pa (380 mm Hg) [13].
13.3. Disposal considerations in a life:	For exception of harmful influence of GVAU (GPAP) on environment it is strictly forbidden to discharge a product in reservoirs used for purposes of economic-drinking and cultural- household water use. [14,15].

### 14. TRANSPORT INFORMATION

14.1. UN Number: <i>(according to United Nations recommendations of on dangerous cargoes transportation (typical rules). Last edition);</i>	1965 [26].
14.2. Proper shipping name:	Liquefied hydrocarbonic gases [1].
14.3. Kinds of used vehicles:	Liquefied hydrocarbonic gases are transported by railway, automobile and sailing charter according to rules of dangerous cargoes transportations, working on transport of given kind and Rules for Construction and Safe Operation of vessels working under pressure, authorized when due hereunder [1].
14.4. Hazard classification of cargo: <i>(in accordance with GOST 19433 and to recommendations of the United Nations on transportation of dangerous cargoes)</i>	Class 2, subclass 2.3, classification code - 2313 (GOST 19433-88), 2112 (railway transport), hazard sign according drawing 3 Class 2, a subclass 2.3. classification code - 2313 (GOST 19433-88), 2112 (railway transport), hazard sign according drawing 3 [1,27].
14.5. Transport label: <i>(handling signs: basic, additional information inscriptions)</i>	« Protect from solar beams » [1,28.] « Inflammably » [13].
14.6. Packaging group: <i>(according to recommendations of the United Nations on transportation of dangerous cargoes)</i>	It is not regulated [26].
14.7. Information about automobile transportations hazard (DOPOG);	23-1965 [29].
14.8. Emergency cards: <i>(at railway, sea, etc. transportations)</i>	Emergency card No 206 - by railway transportation [10] Emergency cards of the enterprise without number at transportations by automobile and river transport [27,29]. Emergency cards F-D. S-U - by sea transportations [32].
14.9. The information about hazard at international cargo traffic: <i>(according SMGS, ADR(DOPOG); , RID(MPOG), IMDG Code (MMOG), ICAO/ITAO(IKAO) , etc., including data about environmental hazard including «Sea Pollutants »)</i>	Hazard Code 23 - inflammable gas. Classification Code 2F [30.31].

## 15. REGULATORY INFORMATION

<b>15.1. National legislation</b>	
15.1.1. Laws of Russian Federation	« About Protection of Consumers Rights ». « About Protection of Environment ». «About Sanitary-and-Epidemiologic Wellbeing of Population ». « About Technical Regulation ». « About Protection of Atmospheric Air »
15.1.2. Documents regulating requirements on person and environment protection: <i>(certificates, certificates, etc.)</i>	Are not required
<b>15.2. International legislation</b>	
5.2.1. International conventions and agreements: <i>(whether product is regulated by Montreal Protocol, Stockholm Convention, etc.)</i>	It is regulated by Montreal Protocol, Stockholm Convention
15.2.2. Precautionary marking (labels) working in EC countries: <i>(hazard symbols, risk and safety phrases etc.)</i>	Hazard symbol - « F + "-extremely hazardous substance. Codes and phrases of risk: R 13 - extremely inflammable. Codes and phrases on safe handling: S 9-15-16-33-34-36-37-39 keep container with contents in well aired room: keep far from sources of ignition - do not smoke; take safety measures from static discharges; avoid impacts and терния; put on corresponding protective clothes; to put on corresponding gloves; to use means of protection of the eye / person.; [33]. [33].

## 16. OTHER INFORMATION

16.1 Information about revision (reprinting of SDS): (it is underlined, that SDS was developed for the first time or is registered repeatedly (it is underlined the principal cause of its revision))	Safety Data Sheet was developed for the first time in conformity to requirements of GOST 30333-2007.
--	--

### 16.2. List of data sources used at Safety Data Sheet drawing up

1. GOST P 52087-2003. Hydrocarbonic liquefied fuel gases. Specifications.
2. MPC /OBUV of harmful substances in working zone air. Hygienic specifications.  
GN 2.2.5.1313-03/2.2.5.2308-07.-M.: RPOHV Ministry of Health of Russia. 2003 and 2008.
3. GOST 31340-2007. Interstate Standard. Precautionary marking of chemical production.  
General requirements.
4. ESIS (European chemical Information Substances) / Data Sheet: Result far BC.
5. Information card of potentially hazardous chemical and biological substance.  
Butane. Certificate of State Registration VT No 000188 from 27.12.94.
6. Information card of potentially hazardous chemical and biological substance.  
Propane. Certificate of State Registration VT No 000187 from 27.12.94.
7. Harmful chemical substances. Hydrocarbons. Halogen derivativ hydrocarbons. Reference media under V.A.Filov edition, - L.: Chemistry. 1990.
8. Harmful chemical substances. Natural organic compounds.  
Encyclopedia. Volume 7. Under V.A.Filov edition. - SPb.: SPHFA, NPO «World and Family - 95 », 1998.
9. Korolchenko A.J. Fire and explosion hazard of substances and materials and means of their suppression.

- Directory. - M.: Acc. "Pozhnauka", 2004. \
10. Emergency cards on hazardous cargoes transported on CIS, Latvian Republics, Lithuanian Republic, Estonian Republic railways. M.: "Transport" 2000.
  11. Gordyukhin A.I. Operation of gas networks and units. M.: Stroyizdat. 1971.
  12. Ionin A.A. Gas supply. - M.: Stroyizdat, 1965.
  13. GOST 1510-84. Oil and mineral oil. Marking, packing, transportation and storage.
  14. GOST 15860-84 Steel welded cylinders for liquefied hydrocarbonic gases for pressure 1.6 MPa. Specifications.
  15. OST 37.001-653-99 Gas cylinder equipment for vehicles using gas as motor fuel. General technical requirements and test methods.
  16. Collective and personal means of protection. Control of protective means. Encyclopedia "Ecometria" from reference media on ecological and medical measurements. M.: FID « Delovoy express », 2002.
  17. Chemical encyclopedia. V.1 -M.: Soviet encyclopedia. 1988.
  18. Information card of potentially hazardous chemical and biological substance. Hydrocarbons C3-C4 (propane-butane fraction). Certificate about State Registration VT No 001750 from 25.04.2000.
  19. Information card of potentially hazardous chemical and biological substance. But-1-en (Butylene). Certificate about State Registration VT No 000522 from 23.06.1995.
  20. Information card of potentially hazardous chemical and biological substance. Propylene. Certificate about State Registration VT No 000256 from 06.02.1995.
  21. Information card of potentially hazardous chemical and biological substance. Methane. Certificate about State Registration VT No 000976 from 20.12.1995.
  22. MPC / OBUV air of occupied places. Hygienic Specifications. GN 2.1.6.1338-03/2.1.6.2309-07. M.: RPOHV Ministry of Health of Russia. 2003 and 2008.
  23. MPC / OBUV water of water objects of economic - drinking and cultural - household water use. Hygienic specifications. GN 2.1.5.1315-03/2.1.5.2307-07.-M RPOHV Ministry of Health of Russia. 2003 and 2008.
  24. List of fishing specifications: MPC / OBUV water for water objects having fishing significance. M.: VNIRO, 1999 with additions  
No No 1-4.
  25. Maximum permissible concentration (MPC) of chemical substances in ground. Hygienic Specifications. GNH 2.1.7.2041-06. M.: Rospotrebnadzor of Russia, 2006.
  26. Recommendations on transportation of hazardous cargoes. Typical rules. The fourteenth reconsidered edition. The United Nations Organization. New York and Geneva, 2005.
  27. GOST 19433-88. Hazardous cargoes. Classification and marking. - M.: Publishing house of Standards, 1988.
  28. GOST 14192-96 with change 1. Interstate Standard. Marking of cargoes.-M Publishing house of Standards. 1998.
  29. Rules of transportation of hazardous cargoes by automobile transport. - M.: the Ministry of Transport of the Russian Federation. 1996.
  30. European Agreement about international road transportation of hazardous cargoes. DOPOG. The United Nations Organization, New York and Geneva. 2002.
  31. Rules of transportations of hazardous cargoes. Appendix 2 to « Agreement about International Railway Cargo Traffic », Ministry of Railways of the RF. 1998.
  32. International Sea Code on hazardous cargoes. Code MMOG. Volume 1.2. - S-Pb.: ZAO TSNIIMF, 2007.
  33. Parameters of substances and materials hazard./Under. V.K.Gusev edition - M.: I.D.Sytin Fund. 1999.
  34. GOST 30333-2007. Interstate Standard. Material Safety Data Sheet. General requirements.