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

1.1. Product identifier

Product form : Substance
Trade name/designation : ISOBUTANE
Chemical name : Isobutane
EC Index : 601-004-00-0
EC No : 200-857-2
CAS No. : 75-28-5
REACH registration No : 01-2119485395-27-0023
Product group : Trade product

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

1.2.1. Relevant identified uses

Main use category : Industrial use, Professional use, Consumer use
Use of the substance/mixture : Fuels
Propellant
Blowing agent
monomer
Formulation
Distribution

1.2.2. Uses advised against

No data available

1.3. Details of the supplier of the safety data sheet

Supplier

NIS a.d. Novi Sad
Narodnog Fronta 12
21000 Novi Sad - Serbia
T + 381 (0) 21 481 1111
Dragana.Cvetkov@nis.eu (Responsible person SDS/REACH)

Only Representative

REACH Law Ltd.
Vänrikinkuja 3 JK 21
02600 Espoo - Finland
T +358(0) 9 412 3055 - F +358 (0) 9 412 3049
sds@reachlaw.fi


Manufacturer

NIS a.d. Novi Sad
Narodnog Fronta 12
21000 Novi Sad - Serbia
T + 381 (0) 21 481 1111
Dragana.Cvetkov@nis.eu (Responsible person SDS/REACH)

1.4. Emergency telephone number

Emergency number : + 381 (0) 21 481 1111 (08-16h) + 381 (0)11 360 8440 (24 h) + 381 (0)11 266 1122 (24 h) + 381 (0)11 266 2755 (24 h)

Country	Official advisory body	Address	Emergency number
Ireland	National Poisons Information Centre Beaumont Hospital	Beaumont Hospital Beaumont Road 9 Dublin	+353 1 809 21 66 (public, 8am - 10pm, 7/7) +353 01 809 2566 (Professionals, 24/7)
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre, Wolfson Unit	Claremont Place Newcastle-upon-Tyne NE1 4LP Newcastle	0844 892 0111 (UK only, Monday to Friday, 08.00 to 18.00 hours, healthcare professionals only)

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SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Gas 1 H220

Liquefied gas H280

Full text of hazard classes and H-statements : see section 16

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms :



GHS02

GHS04

Signal word :

Danger

Hazard statements :

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

Precautionary statements :

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 - Eliminate all ignition sources if safe to do so.
P403 - Store in a well-ventilated place.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.

Listed in Annex VI :

EC index no : 601-004-00-0

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII


This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substance

Substance name : ISOBUTANE
CAS No. : 75-28-5
EC No : 200-857-2
EC Index : 601-004-00-0

Substance name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
isobutane	(CAS No.) 75-28-5 (EC No) 200-857-2 (EC Index) 601-004-00-0 (REACH-no) 01-2119485395-27-0023	>= 97	Flam. Gas 1, H220 Compressed gas, H280
propane	(CAS No.) 74-98-6 (EC No) 200-827-9 (EC Index) 601-003-00-5	<= 1,5	Flam. Gas 1, H220 Press. Gas
butane	(CAS No.) 106-97-8 (EC No) 203-448-7 (EC Index) 601-004-00-0	<= 1,5	Flam. Gas 1, H220 Press. Gas

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Full text of H-statements: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

Additional advice	: First aider: Pay attention to self-protection. See also section 8 . Treat symptomatically. Never give anything by mouth to an unconscious person or a person with cramps. Show this safety data sheet to the doctor in attendance. In case of doubt or persistent symptoms, consult always a physician.
Inhalation	: Keep at rest. Provide fresh air. If breathing is irregular or stopped, administer artificial respiration. Get medical advice/attention.
Skin contact	: In case of frostbite, wash with plenty of water; do not remove clothing. Wash contaminated clothing before reuse. Get medical advice/attention.
Eyes contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical advice/attention.
In case of ingestion	: Rinse mouth. Rinse mouth immediately and drink plenty of water. Get medical advice/attention.

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

Inhalation	: May be irritating.
Skin contact	: Can cause frostbite.
Eyes contact	: Causes frostbite burns to eyes.
Ingestion	: Ingestion is not considered a potential route of exposure.

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

No data available

SECTION 5: Firefighting measures

5.1. Extinguishing media


Suitable extinguishing media	: Carbon dioxide. Dry extinguishing powder.
Unsuitable extinguishing media	: Strong water jet.

5.2. Special hazards arising from the substance or mixture

Specific hazards	: Extremely flammable gas. Contains gas under pressure; may explode if heated. Vapours can form explosive mixtures with air. Vapours are heavier than air and may spread along floors. Vapours can travel considerable distances to a source of ignition where they can ignite, flash back, or explode. Heating causes rise in pressure with risk of bursting. Container may explode if heated. Hazardous decomposition products Carbon oxides.
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5.3. Advice for firefighters

Firefighting instructions	: Special protective equipment for firefighters. . In case of fire: Wear self-contained breathing apparatus. Use water spray or fog for cooling exposed containers. Evacuate personnel to a safe area. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

For non-emergency personnel : Evacuate personnel to a safe area. Stay upwind/keep distance from source. Provide adequate ventilation. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Avoid contact with skin, eyes and clothing. Do not breathe gas. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ensure equipment is adequately earthed. Use explosion-proof machinery, apparatus, ventilation facilities, tools etc. Use only non-sparking tools.

6.1.2. For emergency responders

For emergency responders : Ensure procedures and training for emergency decontamination and disposal are in place. Concerning personal protective equipment to use, see section 8.

6.2. Environmental precautions

Do not allow to enter into surface water or drains.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if safe to do so. Leave to vapourize. Hose down gases, fumes and/or dust with water. All processes must be supervised by specialists or authorised personnel.

6.4. Reference to other sections

Concerning personal protective equipment to use, see section 8. Disposal: see section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Extremely cold liquid and gas under pressure. Causes severe frostbite. Provide adequate ventilation. Use personal protective equipment as required. Concerning personal protective equipment to use, see section 8. Do not breathe gas. Avoid contact with skin, eyes and clothing. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ensure equipment is adequately earthed. Keep container tight closed.

Hygiene measures : Keep good industrial hygiene. When using do not eat, drink or smoke. Wash hands and face before breaks and immediately after handling of the product. Take off contaminated clothing.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Gases under pressure. liquefied gas. Keep container tightly closed in a cool, well-ventilated place. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not store near or with any of the incompatible materials listed in section 10.

Packaging materials : Keep/Store only in original container.

7.3. Specific end use(s)

No data available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Isobutane (75-28-5)		
Austria	MAK (mg/m ³)	1900 mg/m ³
Austria	MAK (ppm)	800 ppm
Austria	MAK Short time value (mg/m ³)	3800 mg/m ³
Austria	MAK Short time value (ppm)	1600 ppm
Belgium	Limit value (ppm)	1000 ppm (gas)
Estonia	OEL TWA (mg/m ³)	1900 mg/m ³



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Isobutane (75-28-5)		
Estonia	OEL TWA (ppm)	800 ppm
Finland	HTP-arvo (8h) (ppm)	800 ppm
Finland	HTP-arvo (15 min)	2400 mg/m ³
Finland	HTP-arvo (15 min) (ppm)	1000 ppm
Germany	TRGS 900 Occupational exposure limit value (mg/m ³)	2400 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	1000 ppm
Slovenia	OEL TWA (mg/m ³)	2400 mg/m ³
Slovenia	OEL TWA (ppm)	1000 ppm
Slovenia	OEL STEL (mg/m ³)	9600 mg/m ³
Slovenia	OEL STEL (ppm)	4000 ppm
Switzerland	VME (mg/m ³)	1900 mg/m ³
Switzerland	VME (ppm)	800 ppm
Switzerland	VLE (mg/m ³)	7200 mg/m ³
Switzerland	VLE (ppm)	3200 ppm
USA - ACGIH	ACGIH STEL (ppm)	1000 ppm
USA - NIOSH	NIOSH REL (TWA) (mg/m ³)	1900 mg/m ³
USA - NIOSH	NIOSH REL (TWA) (ppm)	800 ppm
propane (74-98-6)		
Austria	MAK (mg/m ³)	1800 mg/m ³
Austria	MAK (ppm)	1000 ppm
Austria	MAK Short time value (mg/m ³)	3600 mg/m ³
Austria	MAK Short time value (ppm)	2000 ppm
Belgium	Limit value (ppm)	1000 ppm (gas)
Bulgaria	OEL TWA (mg/m ³)	1800,0 mg/m ³
Denmark	Grænseværdie (langvarig) (mg/m ³)	1800 mg/m ³
Denmark	Grænseværdie (langvarig) (ppm)	1000 ppm
Estonia	OEL TWA (mg/m ³)	1800 mg/m ³
Estonia	OEL TWA (ppm)	1000 ppm
Finland	HTP-arvo (8h) (mg/m ³)	1500 mg/m ³
Finland	HTP-arvo (8h) (ppm)	800 ppm
Finland	HTP-arvo (15 min)	2000 mg/m ³
Finland	HTP-arvo (15 min) (ppm)	1100 ppm
Germany	TRGS 900 Occupational exposure limit value (mg/m ³)	1800 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	1000 ppm
Greece	OEL TWA (mg/m ³)	1800 mg/m ³
Greece	OEL TWA (ppm)	1000 ppm
Ireland	OEL (8 hours ref) (ppm)	1000 ppm
Ireland	OEL (15 min ref) (ppm)	3000 ppm (calculated)
Latvia	OEL TWA (mg/m ³)	1800 mg/m ³
Latvia	OEL TWA (ppm)	1000 ppm



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propane (74-98-6)		
Poland	NDS (mg/m ³)	1800 mg/m ³
Portugal	OEL TWA (ppm)	1000 ppm
Romania	OEL TWA (mg/m ³)	1400 mg/m ³
Romania	OEL TWA (ppm)	778 ppm
Romania	OEL STEL (mg/m ³)	1800 mg/m ³
Romania	OEL STEL (ppm)	1000 ppm
Slovenia	OEL TWA (mg/m ³)	1800 mg/m ³
Slovenia	OEL TWA (ppm)	1000 ppm
Slovenia	OEL STEL (mg/m ³)	7200 mg/m ³
Slovenia	OEL STEL (ppm)	4000 ppm
Norway	Grænseværdier (AN) (mg/m ³)	900 mg/m ³
Norway	Grænseværdier (AN) (ppm)	500 ppm
Norway	Grænseværdier (Korttidsverdi) (mg/m ³)	900 mg/m ³
Norway	Grænseværdier (Korttidsverdi) (ppm)	500 ppm
Switzerland	VME (mg/m ³)	1800 mg/m ³
Switzerland	VME (ppm)	1000 ppm
Switzerland	VLE (mg/m ³)	7200 mg/m ³
Switzerland	VLE (ppm)	4000 ppm
Canada (Quebec)	VEMP (mg/m ³)	1800 mg/m ³
Canada (Quebec)	VEMP (ppm)	1000 ppm
USA - IDLH	US IDLH (ppm)	2100 ppm (10% LEL)
USA - NIOSH	NIOSH REL (TWA) (mg/m ³)	1800 mg/m ³
USA - NIOSH	NIOSH REL (TWA) (ppm)	1000 ppm
USA - OSHA	OSHA PEL (TWA) (mg/m ³)	1800 mg/m ³
USA - OSHA	OSHA PEL (TWA) (ppm)	1000 ppm
butane (106-97-8)		
Austria	MAK (mg/m ³)	1900 mg/m ³
Austria	MAK (ppm)	800 ppm
Austria	MAK Short time value (mg/m ³)	3800 mg/m ³
Austria	MAK Short time value (ppm)	1600 ppm
Belgium	Limit value (ppm)	1000 ppm (gas)
Bulgaria	OEL TWA (mg/m ³)	1900 mg/m ³
Croatia	GVI (granična vrijednost izloženosti) (mg/m ³)	1450 mg/m ³ 22 mg/m ³ (containing >=0.1% 1,3-Butadiene)
Croatia	GVI (granična vrijednost izloženosti) (ppm)	600 ppm 10 ppm (containing >=0.1% 1,3-Butadiene)
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (mg/m ³)	1810 mg/m ³
Croatia	KGVI (kratkotrajna granična vrijednost izloženosti) (ppm)	750 ppm
Denmark	Grænseværdier (langvarig) (mg/m ³)	1200 mg/m ³
Denmark	Grænseværdier (langvarig) (ppm)	500 ppm
Estonia	OEL TWA (mg/m ³)	1500 mg/m ³
Estonia	OEL TWA (ppm)	800 ppm
Finland	HTP-arvo (8h) (ppm)	800 ppm



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butane (106-97-8)		
Finland	HTP-arvo (15 min) (ppm)	1000 ppm
France	VME (mg/m ³)	1900 mg/m ³
France	VME (ppm)	800 ppm
Germany	TRGS 900 Occupational exposure limit value (mg/m ³)	2400 mg/m ³
Germany	TRGS 900 Occupational exposure limit value (ppm)	1000 ppm
Greece	OEL TWA (mg/m ³)	2350 mg/m ³
Greece	OEL TWA (ppm)	1000 ppm
Hungary	AK-érték	2350 mg/m ³
Hungary	CK-érték	9400 mg/m ³
Ireland	OEL (8 hours ref) (ppm)	1000 ppm
Ireland	OEL (15 min ref) (ppm)	3000 ppm (calculated)
Latvia	OEL TWA (mg/m ³)	300 mg/m ³
Poland	NDS (mg/m ³)	1900 mg/m ³
Poland	NDSch (mg/m ³)	3000 mg/m ³
Slovenia	OEL TWA (mg/m ³)	2400 mg/m ³ (containing >=0.1% Butadiene)
Slovenia	OEL TWA (ppm)	1000 ppm (containing >=0.1% Butadiene)
Slovenia	OEL STEL (mg/m ³)	9600 mg/m ³ (containing >=0.1% Butadiene)
Slovenia	OEL STEL (ppm)	4000 ppm (containing >=0.1% Butadiene)
United Kingdom	WEL TWA (mg/m ³)	1450 mg/m ³
United Kingdom	WEL TWA (ppm)	600 ppm
United Kingdom	WEL STEL (mg/m ³)	1810 mg/m ³
United Kingdom	WEL STEL (ppm)	750 ppm
Norway	Grenseverdier (AN) (mg/m ³)	600 mg/m ³
Norway	Grenseverdier (AN) (ppm)	250 ppm
Norway	Grenseverdier (Korttidsverdi) (mg/m ³)	600 mg/m ³
Norway	Grenseverdier (Korttidsverdi) (ppm)	250 ppm
Switzerland	VME (mg/m ³)	1900 mg/m ³
Switzerland	VME (ppm)	800 ppm
Switzerland	VLE (mg/m ³)	7200 mg/m ³
Switzerland	VLE (ppm)	3200 ppm
Australia	TWA (mg/m ³)	1900 mg/m ³
Australia	TWA (ppm)	800 ppm
Canada (Quebec)	VEMP (mg/m ³)	1900 mg/m ³
Canada (Quebec)	VEMP (ppm)	800 ppm
USA - ACGIH	ACGIH STEL (ppm)	1000 ppm
USA - NIOSH	NIOSH REL (TWA) (mg/m ³)	1900 mg/m ³
USA - NIOSH	NIOSH REL (TWA) (ppm)	800 ppm

DNEL : NA

PNEC : NA

Additional information : Recommended monitoring procedures. Personal monitoring. Concentration measurement in air

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8.2. Exposure controls

Engineering control measures	: Closed system. Provide adequate ventilation. Use only in area provided with appropriate exhaust ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Take precautionary measures against static discharge. Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres. Use only explosion-proof equipment. Organisational measures to prevent /limit releases, dispersion and exposure. See also section 7.
Personal protection equipment	: The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
Hand protection	: The selection of specific gloves for a specific application and time of use in a working area, should also take into account other factors on the working space, such as (but not limited to): other chemicals that are possibly used, physical requirements (protection against cutting/drilling, skill, thermal protection), and the instructions/specification of the supplier of gloves. Protective gloves against cold (EN 511)
Eye protection	: During splash contact: Face protection shield (EN166)
Body protection	: Overalls, apron and boots recommended
Respiratory protection	: Use self-contained respiratory apparatus for rescue and maintenance work in storage vessels. Self-contained open-circuit compressed air breathing apparatus (EN 137). O2- Deficiency : Wear a positive-pressure supplied-air respirator
Thermal hazard protection	: Use dedicated equipment.
Environmental exposure controls	: Avoid release to the environment. Comply with applicable Community environmental protection legislation.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Liquefied gas.
Colour	: Colourless.
Odour	: characteristic.
Odour threshold	: No data available No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point/freezing point	: -159,6 °C
Freezing point	: No data available
Initial boiling point and boiling range	: -11,7 °C
Flash point	: < -56 °C
Auto-ignition temperature	: 460 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: Extremely flammable
Vapour pressure	: 304 kPa
Vapour density	: 2 (Air=1)
Relative density	: 0,56 - 0,59
Solubility	: Water: very low
Partition coefficient n-octanol/water	: 1-2,8
Kinematic viscosity	: No data available
Dynamic viscosity	: No data available

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Explosive properties : Not applicable. The study does not need to be conducted because there are no chemical groups associated with explosive properties present in the molecule.

Oxidising properties : Not applicable. The classification procedure needs not to be applied because there are no chemical groups present in the molecule which are associated with oxidising properties.

Explosive limits : LEL: 1,8 -UEL: 8,4 vol %

9.2. Other information

No data available

SECTION 10: Stability and reactivity

10.1. Reactivity

Extremely flammable gas. Contains gas under pressure; may explode if heated. Reference to other sections: 10.5.

10.2. Chemical stability

The product is stable under storage at normal ambient temperatures.

10.3. Possibility of hazardous reactions

Reacts violently with . Strong oxidizing agents,. Acids.

10.4. Conditions to avoid

Keep away from sources of heat (e.g. hot surfaces), sparks and open flames. See also section 7.

10.5. Incompatible materials

Strong oxidizing agents. See also section 7.

10.6. Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. Reference to other sections: 5.2.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified (Based on available data, the classification criteria are not met)

propane (74-98-6)	
LC50/inhalation/4h/rat	658 mg/l/4h
butane (106-97-8)	
LC50/inhalation/4h/rat	658 g/m ³ (Exposure time: 4 h)

Skin corrosion/irritation : Not classified (Based on available data, the classification criteria are not met)
pH: Not applicable

Serious eye damage/eye irritation : Not classified (Based on available data, the classification criteria are not met)
pH: Not applicable

Respiratory or skin sensitisation : Not classified (Based on available data, the classification criteria are not met)

Germ cell mutagenicity : Not classified (Based on available data, the classification criteria are not met)

Carcinogenicity : Not classified (Based on available data, the classification criteria are not met)

Reproductive toxicity : Not classified (Based on available data, the classification criteria are not met)

STOT-single exposure : Not classified (Based on available data, the classification criteria are not met)

STOT-repeated exposure : Not classified (Based on available data, the classification criteria are not met)


Aspiration hazard : Not classified (Based on available data, the classification criteria are not met)

Other information : Symptoms related to the physical, chemical and toxicological characteristics.
Reference to other sections: 4.2.

SECTION 12: Ecological information

12.1. Toxicity

Environmental properties : Not hazardous.

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Isobutane (75-28-5)	
LC50 fish 1	24,11 - 147,54 mg/l (96h)
EC50 Daphnia 1	14,22 - 69,43 mg/l (48h)
ErC50 (algae)	7,71 - 19,37 mg/l

12.2. Persistence and degradability

ISOBUTANE (75-28-5)	
Persistence and degradability	Readily biodegradable.

12.3. Bioaccumulative potential

ISOBUTANE (75-28-5)	
Partition coefficient n-octanol/water	1-2,8

Isobutane (75-28-5)	
BCF fish 1	1,57 - 1,97
Partition coefficient n-octanol/water	1-2,8

propane (74-98-6)	
Partition coefficient n-octanol/water	2,3

butane (106-97-8)	
Partition coefficient n-octanol/water	2,89

12.4. Mobility in soil

ISOBUTANE (75-28-5)	
Ecology - soil	No data available.

12.5. Results of PBT and vPvB assessment

ISOBUTANE (75-28-5)	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

12.6. Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods


Waste disposal recommendations	: Handle with care. Safe handling: see section 7. Handling and storage. Collect and dispose of waste product at an authorised disposal facility. Dispose of contaminated materials in accordance with current regulations.
Additional information	: Never use pressure to empty container. Do not burn, or use a cutting torch on, the empty drum. Do not puncture or incinerate. Delivery to an approved waste disposal company. Dispose of contaminated materials in accordance with current regulations.
List of proposed waste codes/waste designations in accordance with EWC (2001/573/EC, 75/442/EEC, 91/689/EEC)	: Classified as hazardous waste according to European Union regulations Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities

SECTION 14: Transport information

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

14.1. UN number

UN number	: 1969
UN-No	: 1969
UN-No	: 1969
UN-No. (ADN)	: 1969
UN-No. (RID)	: 1969

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14.2. UN proper shipping name

Proper Shipping Name : ISOBUTANE
 Proper Shipping Name (IMDG) : ISOBUTANE
 Proper Shipping Name (IATA) : Isobutane
 Proper Shipping Name (ADN) : ISOBUTANE
 Proper Shipping Name (RID) : ISOBUTANE
 Transport document description (ADR) : UN 1969 ISOBUTANE, 2.1, (B/D)
 Transport document description (IMDG) : UN 1969 ISOBUTANE, 2.1
 Transport document description (IATA) : UN 1969 Isobutane, 2.1
 Transport document description (ADN) : UN 1969 ISOBUTANE, 2.1
 Transport document description (RID) : UN 1969 ISOBUTANE, 2.1

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : 2.1
 Danger labels (ADR) : 2.1



IMDG

Transport hazard class(es) (IMDG) : 2.1
 Danger labels (IMDG) : 2.1



IATA

Transport hazard class(es) (IATA) : 2.1
 Hazard labels (IATA) : 2.1




ADN

Transport hazard class(es) (ADN) : 2.1
 Danger labels (ADN) : 2.1

:

RID

Transport hazard class(es) (RID) : 2.1

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Danger labels (RID) : 2.1



14.4. Packing group

Packing group (ADR) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable
Packing group (ADN) : Not applicable
Packing group (RID) : Not applicable

14.5. Environmental hazards

Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user

- Overland transport


Classification code (ADR) : 2F
Special Provisions : 660, 657, 662
Limited quantities (ADR) : 0
Excepted quantities (ADR) : E0
Packing instructions (ADR) : P200
Mixed packing provisions (ADR) : MP9
Portable tank and bulk container instructions (ADR) : (M), T50
Tank code (ADR) : PxBN(M)
Tank special provisions (ADR) : TA4, TT9
Vehicle for tank carriage : FL
Transport category (ADR) : 2
Special provisions for carriage - Loading, unloading and handling (ADR) : CV9, CV10, CV36
Special provisions for carriage - Operation (ADR) : S2, S20
Hazard identification number (Kemler No.) : 23
Orange plates :



tunnel restriction code : B/D
EAC code : 2YE

- Transport by sea

Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P200
Tank instructions (IMDG) : T50
EmS-No. (Fire) : F-D

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EmS-No. (Spillage) : S-U
 Stowage category (IMDG) : E
 Stowage and handling (IMDG) : SW2
 Properties and observations (IMDG) : Flammable hydrocarbon. Heavier than air.

- Air transport

PCA Excepted quantities (IATA) : E0
 PCA Limited quantities (IATA) : Forbidden
 PCA limited quantity max net quantity (IATA) : Forbidden
 PCA packing instructions (IATA) : Forbidden
 PCA max net quantity (IATA) : Forbidden
 CAO packing instructions (IATA) : 200
 CAO max net quantity (IATA) : 150kg
 Special provisions (IATA) : A1
 ERG code (IATA) : 10L

- Inland waterway transport

Classification code (ADN) : 2F
 Special provisions (ADN) : 657, 66
 Limited quantities (ADN) : 0
 Excepted quantities (ADN) : E0
 Carriage permitted (ADN) : T
 Equipment required (ADN) : PP, EX, A
 Ventilation (ADN) : VE01
 Number of blue cones/lights (ADN) : 1

- Rail transport

Special provisions (RID) : 657, 660, 662
 Limited quantities (RID) : 0
 Excepted quantities (RID) : E0
 Packing instructions (RID) : P200
 Mixed packing provisions (RID) : MP9
 Portable tank and bulk container instructions (RID) : T50(M)
 Tank codes for RID tanks (RID) : PxBN(M)
 Special provisions for RID tanks (RID) : TU38, TE22, TA4, TT9, TM6
 Transport category (RID) : 2
 Special provisions for carriage - Loading, unloading and handling (RID) : CW9, CW10, CW36
 Colis express (express parcels) (RID) : CE3
 Hazard identification number (RID) : 23

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code


Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

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40. Substances classified as flammable gases category 1 or 2, flammable liquids categories 1, 2 or 3, flammable solids category 1 or 2, substances and mixtures which, in contact with water, emit flammable gases, category 1, 2 or 3, pyrophoric liquids category 1 or pyrophoric solids category 1, regardless of whether they appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or not.

ISOBUTANE - Isobutane - propane - butane

ISOBUTANE is not on the REACH Candidate List

ISOBUTANE is not on the REACH Annex XIV List

15.1.2. National regulations

Germany

VwVwS Annex reference : Water hazard class (WGK) nwg, Non-hazardous to water
German storage class (LGK) : LGK 2A - Gases
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

Waterbezwaarlijkheid : 11 - Weinig schadelijk voor in het water levende organismen
SZW-lijst van kankerverwekkende stoffen : The substance is not listed
SZW-lijst van mutagene stoffen : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark

Class for fire hazard : Class I-1
Store unit : 1 liter
Classification remarks : F+ <Flam. Gas 1; Liquefied gas>; Emergency management guidelines for the storage of flammable liquids must be followed
Recommendations Danish Regulation : Young people below the age of 18 years are not allowed to use the product


15.2. Chemical safety assessment

For this substance a chemical safety assessment has been carried out

SECTION 16: Other information

Abbreviations and acronyms:

	DNEL = Derived No Effect Level
	DMEL = Derived Minimal Effect level
	PNEC = Predicted No Effect Concentration
	OEL-STEL = Occupational Exposure Limits - Short Term Exposure Limits (STELs)
	TWA = time weighted average
	LC50 = Median lethal concentration
	LD50 = Median lethal dose

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	LL50 = Median lethal level
	EC50 = Median Effective Concentration
	EL50 = Median effective level
	ErC50 = EC50 in terms of reduction of growth rate
	ErL50 = EL50 in terms of reduction of growth rate
	NOEL = no-observed-effect level
	NOEC = No observed effect concentration
	NOELR = No observed effect loading rate
	NOAEC = No observed adverse effect concentration
	NOAEL = No observed adverse effect level
	EWC = European waste catalogue
	NA = Not applicable
	N.O.S. = Not Otherwise Specified
	VOC = Volatile organic compounds
	mg/kg BW = mg/kg bodyweight
	QSAR = Quantitative structure-activity relationship (QSAR)
	ADN = Accord Européen relatif au Transport International des Marchandises Dangereuses par voie de Navigation du Rhin ADR = Accord européen relatif au transport international des marchandises Dangereuses par Route CLP = Classification, Labelling and Packaging Regulation according to 1272/2008/EC IATA = International Air Transport Association IMDG = International Maritime Dangerous Goods Code LEL = Lower Explosive Limit/Lower Explosion Limit UEL = Upper Explosion Limit/Upper Explosive Limit REACH = Registration, Evaluation, Authorisation and Restriction of Chemicals
	WGK = Wassergefährdungsklasse (Water Hazard Class under German Federal Water Management Act)
	ABM = Algemene beoordelingsmethodiek

Sources of key data used to compile the datasheet : European Chemicals Bureau SDS supplier, CSR.

Full text of H- and EUH-statements:

Compressed gas	Gases under pressure : Compressed gas
Flam. Gas 1	Flammable gases, hazard category 1
Liquefied gas	Gases under pressure : Liquefied gas
Press. Gas	Gases under pressure
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

The contents and format of this SDS are in accordance with EEC Commission Directive 2015/830/EC, 1272/2008/EC and EEC Commission Regulation 1907/2006/EC (REACH) Annex II.

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