



# Isobutane

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878  
 Reference number: EIGA075  
 Issue date: 16/01/2013 Revision date: 15/01/2025 Supersedes version of: 25/07/2024 Version: 1.3

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

#### 1.1. Product identifier

Product form	: Substance
Name	: Isobutane
Trade name	: R600A; Isobutane 2.5; Isobutane 3.0; Isobutane 3.5
EC Index-No.	: 601-004-00-0
EC-No.	: 200-857-2
CAS-No.	: 75-28-5
REACH registration No.	: 01-2119485395-27
Product code	: 000010021773
Formula	: C4H10

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

##### 1.2.1. Relevant identified uses

Relevant identified uses	: Industrial and professional uses. Perform risk assessment prior to use. Test gas/Calibration gas. Chemical reaction / Synthesis. Laboratory use. Contact supplier for more information on uses.
Use of the substance/mixture	: Aerosol propellant Refrigerant Using gas alone or in mixtures for the calibration of analysis equipment. Use as an Intermediate (transported, on-site isolated). Using gas as feedstock in chemical processes. Formulation of mixtures with gas in pressure receptacles, Transfilling gas or liquid. Foaming agents personal care products Fuels Consumer use

##### 1.2.2. Uses advised against

Uses advised against	: Consumer use. Uses other than those listed above are not supported, contact your supplier for more information on other uses.
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#### 1.3. Details of the supplier of the safety data sheet

Linde Gas GmbH  
 Carl-von-Linde-Platz 1  
 A-4651 Stadl-Paura  
 Austria  
 T +43 50 4273  
[office@at.linde-gas.com](mailto:office@at.linde-gas.com)

#### 1.4. Emergency telephone number

Emergency number	: UMCO/NCEC: +44 1865 407333 (English); +49 89 220 61012 (German)
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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]

Physical hazards	Flammable gases, Category 1A	H220
	Gases under pressure : Liquefied gas	H280

Full text of H- and EUH-statements: see section 16

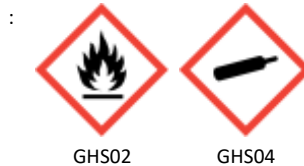
#### Adverse physicochemical, human health and environmental effects

No additional information available

#### 2.2. Label elements

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

Hazard pictograms (CLP)



Signal word (CLP)

: Danger

Hazard statements (CLP)

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

Precautionary statements (CLP)

- Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.  
P381 - In case of leakage, eliminate all ignition sources.
- Storage : P403 - Store in a well-ventilated place.

#### 2.3. Other hazards

Other hazards : Contact with liquid may cause cold burns/frostbite. Asphyxiant in high concentrations. These high concentrations are within the flammability range. Not classified as PBT or vPvB. The substance/mixture has no endocrine disrupting properties.

### SECTION 3: Composition/information on ingredients

#### 3.1. Substances

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-No.: 601-004-00-0 REACH-no: 01-2119485395-27	100	Flam. Gas 1A, H220 Press. Gas (Liq.), H280

Full text of H- and EUH-statements: see section 16

Contains no other components or impurities which will influence the classification of the product.



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### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

- First-aid measures after inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- First-aid measures after skin contact : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

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

- Most important symptoms and effects, both acute and delayed : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. See section 11.

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

None.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

- Suitable extinguishing media : Dry powder. Water spray or fog. Carbon dioxide. Shutting off the source of the gas is the preferred method of control. Be aware of the risk of formation of static electricity with the use of CO2 extinguishers. Do not use them in places where a flammable atmosphere may be present.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

### 5.2. Special hazards arising from the substance or mixture

- Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.
- Specific hazards : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : Carbon monoxide.

### 5.3. Advice for firefighters

- Specific methods : Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.  
Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.  
If possible, stop flow of product.  
Use water spray or fog to knock down fire fumes if possible.  
Move containers away from the fire area if this can be done without risk.



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Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.  
 Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.  
 Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.  
 Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. For non-emergency personnel

Emergency procedures : Act in accordance with local emergency plan. Try to stop release. Evacuate area. Eliminate ignition sources. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Stay upwind. See section 8 of the SDS for more information on personal protective equipment.

##### 6.1.2. For emergency responders

Emergency procedures : Monitor concentration of released product. Consider the risk of potentially explosive atmospheres. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. See section 5.3 of the SDS for more information.

#### 6.2. Environmental precautions

Try to stop release.

#### 6.3. Methods and material for containment and cleaning up

Methods and material for containment and cleaning up : Ventilate area.

#### 6.4. Reference to other sections

See also sections 8 and 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Safe use of the product : Take precautionary measures against static discharge.  
 Keep away from ignition sources (including static discharges).  
 Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.  
 Purge air from system before introducing gas.  
 Do not smoke while handling product.  
 Avoid suck back of water, acid and alkalis.  
 Only experienced and properly instructed persons should handle gases under pressure.  
 Ensure the complete gas system was (or is regularly) checked for leaks before use.  
 Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.  
 Consider the use of only non-sparking tools.  
 The product must be handled in accordance with good industrial hygiene and safety procedures.  
 Consider pressure relief device(s) in gas installations.  
 Do not breathe gas.  
 Avoid release of product into work area.  
 Ensure equipment is adequately earthed.



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Safe handling of the gas receptacle :

- : Suck back of water into the container must be prevented.
- Open valve slowly to avoid pressure shock.
- Refer to supplier's container handling instructions.
- Do not allow backfeed into the container.
- Protect containers from physical damage; do not drag, roll, slide or drop.
- Do not remove or deface labels provided by the supplier for the identification of the content of the container.
- When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
- Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
- If user experiences any difficulty operating valve discontinue use and contact supplier.
- Close container valve after each use and when empty, even if still connected to equipment.
- Never attempt to repair or modify container valves or safety relief devices.
- Damaged valves should be reported immediately to the supplier.
- Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
- Keep container valve outlets clean and free from contaminants particularly oil and water.
- Never attempt to transfer gases from one cylinder/container to another.
- Never use direct flame or electrical heating devices to raise the pressure of a container.

### 7.2. Conditions for safe storage, including any incompatibilities

Conditions for safe storage, including any incompatibilities :

- : Keep container below 50°C in a well ventilated place.
- Segregate from oxidant gases and other oxidants in store.
- Stored containers should be periodically checked for general condition and leakage.
- Observe all regulations and local requirements regarding storage of containers.
- Containers should not be stored in conditions likely to encourage corrosion.
- Containers should be stored in the vertical position and properly secured to prevent them from falling over.
- Container valve guards or caps should be in place.
- Store containers in location free from fire risk and away from sources of heat and ignition.
- Keep away from combustible materials.
- All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 National occupational exposure and biological limit values

Isobutane (75-28-5)	
Austria - Occupational Exposure Limits	
Local name	Butan (beide Isomeren): Isobutan (2-Methylpropan) (R 600a)
MAK (OEL TWA)	1900 mg/m <sup>3</sup>
MAK (OEL TWA) [ppm]	800 ppm
MAK (OEL STEL)	3800 mg/m <sup>3</sup> (3x 60(Mow) min)



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Isobutane (75-28-5)	
MAK (OEL STEL) [ppm]	1600 ppm (3x 60(Mow) min)
Regulatory reference	BGBl. II Nr. 156/2021

### 8.1.2. Recommended monitoring procedures

No additional information available

### 8.1.3. Air contaminants formed

No additional information available

### 8.1.4. DNEL and PNEC

Isobutane (75-28-5)	
DNEL/DMEL (additional information)	
Additional information	None established.
PNEC (additional information)	
Additional information	None established.

### 8.1.5. Control banding

No additional information available

## 8.2. Exposure controls

### 8.2.1. Appropriate engineering controls

#### Appropriate engineering controls:

Provide adequate general and local exhaust ventilation. Product to be handled in a closed system. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Gas detectors should be used when flammable gases/vapours may be released. Consider the use of a work permit system e.g. for maintenance activities.

### 8.2.2. Personal protection equipment

#### Personal protective equipment:

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered: PPE compliant to the recommended EN/ISO standards should be selected.

#### 8.2.2.1. Eye and face protection

##### Eye protection:

Wear goggles when transfilling or breaking transfer connections.

Standard EN 166 - Personal eye-protection - specifications

#### 8.2.2.2. Skin protection

##### Hand protection:

Wear working gloves when handling gas containers.

Standard EN 388 - Protective gloves against mechanical risks, performance level 1 or higher.

Wear cold insulating gloves when transfilling or breaking transfer connections.

Standard EN 511 - Cold insulating gloves, performance level 1 or higher. Recommended types include insulated gauntlets or gloves specifically selected to prevent liquid penetration and ingress of cryogenic liquids and to provide mechanical resistance.

#### Other skin protection



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Consider the use of flame resistant anti-static safety clothing.  
 Standard EN ISO 14116 - Limited flame spread materials.  
 Standard EN 1149-5 - Protective clothing: Electrostatic properties.  
 Wear safety shoes while handling containers.  
 Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

**Other information:**

Consider the use of flame resistant anti-static safety clothing.  
 Standard EN ISO 14116 - Limited flame spread materials.  
 Standard EN 1149-5 - Protective clothing: Electrostatic properties.  
 Wear safety shoes while handling containers.  
 Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

**8.2.2.3. Respiratory protection**

**Respiratory protection:**

Recommended: Filter AX (brown).  
 Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.  
 Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.  
 Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.  
 Gas filters do not protect against oxygen deficiency.  
 Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .

**8.2.2.4. Thermal hazards**

**Thermal hazard protection:**

None in addition to the above sections.

**8.2.3. Environmental exposure controls**

**Environmental exposure controls:**

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance	
Physical state	: Gas
Colour	: Colourless.
Form	: Liquefied gas
Odour	: Stenchant often added. Sweetish. Poor warning properties at low concentrations.
Odour threshold	: Odour threshold is subjective and inadequate to warn of overexposure.
Melting point	: -159 °C
Freezing point	: Not applicable
Boiling point	: -12 °C
Flammability	: Extremely flammable gas.
Oxidising properties	: No oxidising properties.
Explosive limits	: Not known.
Lower explosion limit	: 1.5 vol %
Upper explosion limit	: 9.4 vol %
Flash point	: Not applicable for gases and gas mixtures.
Auto-ignition temperature	: 460 °C
Decomposition temperature	: Not applicable.
pH	: Not applicable for gases and gas mixtures.
Viscosity, kinematic	: Not applicable for gases and gas mixtures.



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Viscosity, dynamic	: 0.238 mPa·s literature; Not applicable for gases and gas mixtures.
Solubility in water	: 54 mg/l
Partition coefficient n-octanol/water (Log Kow)	: 2.76
Partition coefficient n-octanol/water (Log Pow)	: Not applicable for gas mixtures.
Vapour pressure	: 3 bar(a)
Vapour pressure at 50°C	: 6.9 bar(a)
Critical pressure	: 3604 kPa
Density	: 0.525 g/cm <sup>3</sup> @ 20°C
Relative density	: 0.59
Relative vapour density at 20°C	: Not applicable.
Relative gas density	: 2
Particle characteristics	: Not applicable
	Not applicable for gases and gas mixtures.
	Nanoforms are not relevant for gases and gas mixtures.

### 9.2. Other information

#### 9.2.1. Information with regard to physical hazard classes

Tci	: 3.4 %
Critical temperature	: 135 °C

#### 9.2.2. Other safety characteristics

Molecular mass	: 58 g/mol
Gas group	: Press. Gas (Liq.)
Additional information	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Can form explosive mixture with air. May react violently with oxidants.

### 10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Avoid moisture in installation systems.

### 10.5. Incompatible materials

Air, Oxidisers. For additional information on compatibility refer to ISO 11114.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.





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### SECTION 11: Toxicological information

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

- Acute toxicity : Toxicological effects not expected from this product if occupational exposure limit values are not exceeded.
- Acute toxicity (dermal) : Not classified
- Acute toxicity (inhalation) : Not classified

Isobutane (75-28-5)	
LC50 Inhalation - Rat [ppm]	> 800000 ppmv/4h

- Skin corrosion/irritation : No known effects from this product.  
pH: Not applicable for gases and gas mixtures.
- Serious eye damage/irritation : No known effects from this product.  
pH: Not applicable for gases and gas mixtures.
- Respiratory or skin sensitisation : No known effects from this product.
- Germ cell mutagenicity : No known effects from this product.
- Carcinogenicity : No known effects from this product.
- Reproductive toxicity : Not classified
- Toxic for reproduction : Fertility : No known effects from this product.
- Toxic for reproduction : unborn child : No known effects from this product.
- STOT-single exposure : No known effects from this product.
- Target organ(s) : Cardiovascular system.  
Respiratory system.
- STOT-repeated exposure : No known effects from this product.
- Target organ(s) : Cardiovascular system.
- Aspiration hazard : Not applicable for gases and gas mixtures.

Isobutane (75-28-5)	
Viscosity, kinematic	Not applicable for gases and gas mixtures.
Hydrocarbon	Yes

#### 11.2. Information on other hazards

##### 11.2.1. Endocrine disrupting properties

No additional information available

##### 11.2.2. Other information

- Other information : The substance/mixture has no endocrine disrupting properties.

### SECTION 12: Ecological information

#### 12.1. Toxicity

- Assessment : Classification criteria are not met.
- Hazardous to the aquatic environment, short-term (acute) : Not classified
- Hazardous to the aquatic environment, long-term (chronic) : Not classified
- Not rapidly degradable



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Isobutane (75-28-5)	
LC50 - Fish [1]	24.11 mg/l Species: Various; Method: QSAR; Remark: QSAR, Key study;
LC50 - Fish [2]	14.22 mg/l Species: Daphnid; Method: QSAR; Remark: QSAR; Exp. Time: 48h
LC50 96 h - Fish [mg/l]	24.11 - 147.54 mg/l
EC50 48h - Daphnia magna [mg/l]	14.22 - 69.43 mg/l
EC50 72h - Algae [mg/l]	7.71 - 19.37 mg/l

### 12.2. Persistence and degradability

Isobutane (75-28-5)	
Assessment	The substance is readily biodegradable. Unlikely to persist.

### 12.3. Bioaccumulative potential

Isobutane (75-28-5)	
Partition coefficient n-octanol/water (Log Pow)	Not applicable for gas mixtures.
Partition coefficient n-octanol/water (Log Kow)	2.76
Assessment	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). See section 9.

### 12.4. Mobility in soil

Isobutane (75-28-5)	
Assessment	Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

### 12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

### 12.6. Endocrine disrupting properties

Other adverse effects : No known effects from this product.  
 Assessment : The substance/mixture has no endocrine disrupting properties.

### 12.7. Other adverse effects

Other adverse effects : No known effects from this product.

Effect on the ozone layer : No effect on the ozone layer.  
 Global warming potential [CO<sub>2</sub>=1] : 3  
 Effect on global warming : When discharged in large quantities may contribute to the greenhouse effect.  
 Contains greenhouse gas(es).  
 Contains fluorinated greenhouse gases listed in Annex I of EU 517/2014 as amended.



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### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste treatment methods : Contact supplier if guidance is required. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Do not discharge into any place where its accumulation could be dangerous. Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at <http://www.eiga.eu> for more guidance on suitable disposal methods. Ensure that the emission levels from local regulations or operating permits are not exceeded. Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 \*: Gases in pressure containers (including halons) containing hazardous substances.

#### 13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

### SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number or ID number</b>				
UN 1969	UN 1969	UN 1969	UN 1969	UN 1969
<b>14.2. UN proper shipping name</b>				
ISOBUTANE	ISOBUTANE	Isobutane	ISOBUTANE	ISOBUTANE
<b>Transport document description</b>				
UN 1969 ISOBUTANE, 2.1, (B/D)	UN 1969 ISOBUTANE, 2.1	UN 1969 Isobutane, 2.1	UN 1969 ISOBUTANE, 2.1	UN 1969 ISOBUTANE, 2.1
<b>14.3. Transport hazard class(es)</b>				
2.1	2.1	2.1	2.1	2.1
<b>14.4. Packing group</b>				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
<b>14.5. Environmental hazards</b>				
Dangerous for the environment: No	Dangerous for the environment: No Marine pollutant: No	Dangerous for the environment: No	Dangerous for the environment: No	Dangerous for the environment: No
No supplementary information available				



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### 14.6. Special precautions for user

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment, Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency, Before transporting product containers: - Ensure there is adequate ventilation, - Ensure that containers are firmly secured, - Ensure valve is closed and not leaking, - Ensure valve outlet cap nut or plug (where provided) is correctly fitted, - Ensure valve protection device (where provided) is correctly fitted.

#### Overland transport

Classification code (ADR) : 2F  
 Special provisions (ADR) : 392, 657, 662, 674  
 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, TT11  
 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 (ADR) : B/D

#### Transport by sea

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



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### Inland waterway transport

Classification code (ADN) : 2F  
 Special provisions (ADN) : 392, 657, 662, 674  
 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

Classification code (RID) : 2F  
 Special provisions (RID) : 392, 657, 662, 674  
 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. Maritime transport in bulk according to IMO instruments

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

##### REACH Annex XVII (Restriction List)

EU restriction list (REACH Annex XVII)		
Reference code	Applicable on	Entry title or description
40.	R600A; Isobutane 2.5; Isobutane 3.0; Isobutane 3.5	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.

##### REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

##### REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

##### PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)



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### POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

### Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

### VOC Directive (2004/42)

Restrictions on use : None.

### Seveso Directive (Disaster Risk Reduction)

Seveso Directive : 2012/18/EU (Seveso III) : Listed.

Seveso III Part II (Named dangerous substances)	Qualifying quantity (tonnes)	
	Lower-tier	Upper-tier
Liquefied flammable gases, Category 1 or 2 (including LPG) and natural gas	50	200

### Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

### Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

#### 15.1.2. National regulations

Ensure all national/local regulations are observed.

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work

Directive 2016/425/EEC on personal protective equipment

Directive 2014/34/EU on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)

Only products that comply with the food regulations (EC) No. 1333/2008 and (EU) No. 231/2012 and are labelled as such may be used as food additives.

This Safety Data Sheet has been produced to comply with Regulation (EU) 2015/830.

#### 15.2. Chemical safety assessment

A CSA has been carried out.

## SECTION 16: Other information

### Indication of changes:

Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
	ADR - Agreement concerning the International Carriage of Dangerous Goods by Road
	ATE - Acute Toxicity Estimate
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
CAO	Cargo Aircraft only / Cargo Aircraft only
CAS-No.	Chemical Abstract Service number



# Isobutane

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Abbreviations and acronyms:	
	CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
COD	Chemical oxygen demand (COD)
	CSA - Chemical Safety Assessment
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
EC	European Inventory of Existing Commercial Chemical Substances
ED	Endocrine disrupting properties
	EINECS - European Inventory of Existing Commercial Chemical Substances
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
IOELV	Indicative Occupational Exposure Limit Value
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
N.O.S.	Not Otherwise Specified
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PCA	Passenger and Cargo Aircraft / Passenger and Cargo Aircraft
PNEC	Predicted No-Effect Concentration
	PPE - Personal Protection Equipment
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
	RMM - Risk Management Measures
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
TRGS	Technical Rules for Hazardous Substances



# Isobutane

## Safety Data Sheet

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878

Abbreviations and acronyms:	
STOT-RE	Specific Target Organ Toxicity-Repeated Exposure
STOT-SE	Specific Target Organ Toxicity-Single Exposure
UFI	Unique Formula Identifier
	UN - United Nations
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulative
WGK	Water Hazard Class

Training advice : Ensure operators understand the flammability hazard.  
 Other information : Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP). Key literature references and sources of data are maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at <http://www.Eiga.eu> .

Full text of H- and EUH-statements:	
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
Press. Gas (Liq.)	Gases under pressure : Liquefied gas

The classification complies with : ATP 12  
 DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.  
 Details given in this document are believed to be correct at the time of going to press.  
 Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

Safety Data Sheet (SDS), EU AT

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

**End of document**