

ISOBUTANE

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Date of issue: 6/6/2017

Supersedes: 10/10/2015

Version: 13.2

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

1.1. Product identifier

Product form : Substance
 Substance name : ISOBUTANE
 EC No : 200-857-2
 CAS No : 75-28-5
 REACH registration No : TOTAL PETROCHEMICALS & REFINING (01-2119485395-27-0013) -
 Type of product : Extremely flammable gas
 Synonyms : 75-28-5
 Product group : -

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

1.2.1. Relevant identified uses

Main use category : Professional use
 Use of the substance/mixture : Manufacture of substances
 Distribution of substance
 Formulation & (re)packing of substances and mixtures
 Use as a fuel.
 Blowing agent
 Polymer production
 Polymer preparations and compounds
 Functional Fluids
 Combustible

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

REFINING & CHEMICALS BRANCH
 TOTAL PETROCHEMICALS & REFINING SA/NV
 Rue de l'Industrie 52 Nijverheidsstraat - B-1040 BRUSSELS - BELGIUM
 T +32 (0)2.288.91.11
rc.fer-sds@total.com - www.total.com

1.4. Emergency telephone number

Emergency number : Emergency call Carechem 24 International :
 • for English speaking countries: +44 (0) 1235 239 670
 • for Europe (in local languages): + 33 1 49 00 00 49
 • for Africa and Middle East: + 44 (0) 1235 239 671 • for China:
 + 86 10 5100 3039
 • for Asia Pacific (Hong-Kong, Singapore, Taiwan, Philippines, India, Vietnam, Sri Lanka, Japan, Korea, Malaysia, Indonesia, Thailand) :
 + 65 3158 1074

Country	Organisation/Company	Address	Emergency number	Comment
	National Poisons Emergency number		08 45 46 47	
Ireland	National Poisons Information Centre Beaumont Hospital	PO Box 1297 Beaumont Road 9 Dublin	+353 1 809 2566 (Healthcare professionals-24/7) +353 1 809 2166 (public, 8am - 10pm, 7/7)	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Flammable gases, Category 1 H220

Gases under pressure : Compressed gas H280

Full text of H statements : see section 16



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Adverse physicochemical, human health and environmental effects

In high concentrations vapours cause anaesthetic and narcotic effect. Contact with the liquefied gas may cause frostbite. Extremely flammable gas. Take precautionary measures against static discharge during blending and transfer operations. In use may form flammable/explosive vapour-air mixture. The vapours are denser than air and may travel along the ground. Distance ignition possible.

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) :

P201 - Obtain special instructions before use
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P243 - Take precautionary measures against static discharge
P273 - Avoid release to the environment
P281 - Use personal protective equipment as required
P309+P311 - IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381 - Eliminate all ignition sources if safe to do so
P410+P403 - Protect from sunlight. Store in a well-ventilated place

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substance

Name : ISOBUTANE
CAS No : 75-28-5
EC No : 200-857-2

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	> 95	Flam. Gas 1, H220 Press. Gas

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

First-aid measures general : Get medical advice/attention if you feel unwell.
First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor. If breathing is difficult, give oxygen. If breathing stops, give artificial respiration. Place under medical observation.
First-aid measures after skin contact : Wash skin with plenty of water. Remove/Take off immediately all contaminated clothing. In the event of contact with the liquid: treat resulting frostbite as a burn. Do not remove clothing adhering to the skin. In case of severe burns, seek hospital treatment.
First-aid measures after eye contact : Do not wear contact lenses. Rinse immediately with plenty of water. Consult an eye specialist.
First-aid measures after ingestion : Ingestion during handling is not likely. If necessary seek medical advice.

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

Symptoms/effects : Refer to § 11 for more details on effects.
Symptoms/effects after inhalation : In case of inhalation of high concentrations : Dizziness, headaches, nausea. Drowsiness. Unconsciousness. anoxia (asphyxia). May cause respiratory irritation.
Symptoms/effects after skin contact : Contact with the product may cause cold burns or frostbite.

6/21/2017

EN (English)

SDS Reference number: ATOF-022

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Symptoms/effects after eye contact : Direct contact with the liquefied gas may cause severe and possibly permanent eye injury due to frostbite from rapid liquid evaporation. Eye irritation.

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Carbon dioxide. Dry powder. Foam.
Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Extremely flammable gas.
Hazardous decomposition products in case of fire : Thermal decomposition generates : Toxic fumes. Carbon oxides (CO, CO₂). Hydrocarbons. Aldehydes. Ketones.

5.3. Advice for firefighters

Precautionary measures fire : Remove all sources of ignition. The vapours are denser than air and may travel along the ground. Distance ignition possible. Heat may cause pressure rise with explosion of tanks/drums. Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
Protection during firefighting : Do not attempt to take action without suitable protective equipment. Complete protective clothing. Self-contained breathing apparatus.
Other information : Notify fire brigade and environmental authorities. Evacuate unnecessary personnel. Use water spray or fog for cooling exposed containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate unnecessary personnel. Use special care to avoid static electric charges. Do not smoke. No flames, no sparks. Eliminate all sources of ignition.

6.1.1. For non-emergency personnel

Emergency procedures for non-emergency personnel : Only qualified personnel equipped with suitable protective equipment may intervene.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

For containment : Stop leak without risks if possible. The vapours are denser than air and may travel along the ground. Distance ignition possible.
Methods for cleaning up : Product evaporates when in contact with the air.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Prevent shock/impact. In use, may form flammable/explosive vapour-air mixture. Provide good ventilation in process area to prevent formation of vapour. Use only outdoors or in a well-ventilated area. Take precautionary measures against static discharge during blending and transfer operations. Explosion-free electrical equipment and lighting with earth.
Hygiene measures : Keep away from food and drink. Always wash hands after handling the product. Do not eat, drink or smoke when using this product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep away from ignition sources. Proper grounding procedures to avoid static electricity should be followed. Explosive vapour/air mixtures may be formed. Containers (tanks) should be grounded and provided with adequate pressure relief valve. Store in a well-ventilated place. Keep container tightly closed. Protect from heat and direct sunlight.
Special rules on packaging : Keep only in original container.
Packaging materials : Stainless steel.

7.3. Specific end use(s)

Recommended to professional users.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters



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Isobutane (75-28-5)		
USA - ACGIH	ACGIH STEL (ppm)	1000 ppm

8.2. Exposure controls

Appropriate engineering controls:

The substance is classified as extremely flammable and therefore the following conditions must be met to ensure safe use: "Risks are controlled by storage and use under conditions which avoid all ignition sources."

. Safety shower. Eye fountain.

Personal protective equipment:

Gas mask with filter type AX.

Hand protection:

cold-insulating gloves

Eye protection:

Do not wear contact lenses. Safety glasses

Skin and body protection:

Wear suitable protective clothing. Safety foot-wear

Respiratory protection:

Ensure good ventilation of the work station. In case of insufficient ventilation, wear suitable respiratory equipment



Environmental exposure controls:

Avoid release to the environment.

Other information:

Do not eat, drink or smoke during use. Handle in accordance with good industrial hygiene and safety procedures.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Gases under pressure. Pressurized liquefied gas.
Molecular mass	: 58 g/mol
Colour	: Colourless.
Odour	: Faint hydrocarbon.
Odour threshold	: No data available
pH	: -
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: -159 - -138 °C
Freezing point	: No data available
Boiling point	: -12 - 0 °C
Flash point	: -83 - -60 °C
Auto-ignition temperature	: 287 - 460 °C
Decomposition temperature	: No data available
Flammability (solid, gas)	: Extremely flammable gas
Vapour pressure	: > 1000 hPa (20°C)
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Solubility	: Soluble in aromatic hydrocarbons. Soluble in most organic solvents. Water: 50 - 60 mg/l
Log Pow	: 2.8
Viscosity, kinematic	: -
Viscosity, dynamic	: -



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Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 1.5 - 8.4 vol %

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Extremely flammable gas.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

In use may form flammable/explosive vapour-air mixture.

10.4. Conditions to avoid

Avoid contact with hot surfaces. No flames, no sparks. Eliminate all sources of ignition. Avoid the build-up of electrostatic charge.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

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

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: Inhalation may affect the nervous system causing headache, possibly dizziness, nausea, weakness, loss of coordination and unconsciousness
Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met) pH: -
Additional information	: Contact with the product may cause cold burns or frostbite
Serious eye damage/irritation	: Not classified (Based on available data, the classification criteria are not met) pH: -
Additional information	: May cause eye irritation
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Additional information	: May cause drowsiness or dizziness
Specific target organ toxicity (repeated exposure)	: Not classified

Isobutane (75-28-5)

NOAEC (inhalation, rat, gas, 90 days)	9148 ppmv/6h/day
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Aspiration hazard	: Not classified (Based on available data, the classification criteria are not met)
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SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	: Do not allow product to spread into the environment.
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Isobutane (75-28-5)

LC50 fish 1	27.98 mg/l
LC50 other aquatic organisms 1	16.33 mg/l (daphnid)
EC50 other aquatic organisms 1	8.57 mg/l (algae)

12.2. Persistence and degradability

ISOBUTANE (75-28-5)

Persistence and degradability	Inherently biodegradable. Product is expected to undergo degradation in the presence of sunlight.
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12.3. Bioaccumulative potential

ISOBUTANE (75-28-5)	
Log Pow	2.8
Bioaccumulative potential	Low bioaccumulation potential.
Isobutane (75-28-5)	
BCF fish 1	1.57 - 1.97
Log Pow	2.88
Log Kow	2.76

12.4. Mobility in soil

ISOBUTANE (75-28-5)	
Ecology - soil	because of its high volatility, the product is unlikely to cause ground or water pollution.
Isobutane (75-28-5)	
Log Koc	1.5 (estimated value)

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Do not discharge the product into the environment. Hazardous waste. Dispose of in accordance with relevant local regulations. Use only registered transporters. Empty containers should be taken for recycling, recovery or waste in accordance with local regulation.
Additional information	: Handle empty containers with care because residual vapours are flammable. Flammable vapours may accumulate in the container.

SECTION 14: Transport information

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

ADR	IMDG	IATA	ADN	RID
14.1. UN Number				
1969	1969	1969	1969	1969
14.2. UN proper shipping name				
ISOBUTANE	ISOBUTANE	Isobutane	ISOBUTANE	ISOBUTANE
Transport document description				
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
14.3. Transport hazard class(es)				
2.1	2.1	2.1	2.1	2.1
				
14.4. Packing Group				
Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards				
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				

14.6. Special precautions for user

- Overland transport

Classification code (ADR)	: 2F
Special provisions (ADR)	: 660, 657
Limited quantities (ADR)	: 0
Excepted quantities (ADR)	: E0
Packing instructions (ADR)	: P200



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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 (ADR) : B/D
EAC code : 2YE

- Transport by sea (IMDG)

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

- Air transport (IATA)

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

Classification code (RID) : 2F
Special provisions (RID) : 657, 660
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



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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 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:

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
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ISOBUTANE is not on the REACH Candidate List

ISOBUTANE is not on the REACH Annex XIV List

15.1.2. National regulations

Complies the United States TSCA (Toxic Substances Control Act) inventory
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Canadian DSL (Domestic Substances List)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Korean ECL (Existing Chemicals List)
Listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS)
Listed on the China Inventory of Existing Chemical Substances (IECSC)
Listed on NZIoC (New Zealand Inventory of Chemicals)

15.2. Chemical safety assessment

The substance is not classified for human health hazards or for environment effects and it is not PBT or vPvB so that no exposure assessment or risk characterisation is required. For tasks where the intervention of workers is required, the substance must be handled in accordance with good industrial hygiene and safety procedures.

SECTION 16: Other information

Training advice	: Training staff on good practice. Manipulations are to be done only by qualified and authorised persons.
Other information	: Use good personal hygiene practices.

Full text of H- and EUH-statements:

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

SDS EU (REACH Annex II)

*This information applies to the PRODUCT AS SUCH and conforming to specifications of TOTAL.
In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear.*

The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. However the revision of some data is in progress.

Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes.

The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive.

It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product.

It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product. (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

