

Product : **cis-2-Butene**

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MSDS Nr : 302-00-0004BOC(U)

Version : 1.02

Date : 03/05/2001

Replaces version dated : 29/07/1994

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product name	cis-2-Butene
Chemical formula	CH ₃ CH=CHCH ₃
Company identification	see heading and/or footer
Emergency phone numbers	see heading and/or footer

2 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation	Substance.
Components/Impurities	Contains no other components or impurities which will influence the classification of the product.
CAS Nr	00590-18-1
EC Nr (from EINECS)	203-452-9

3 HAZARDS IDENTIFICATION

Hazards identification	Liquefied gas Extremely flammable
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4 FIRST AID MEASURES

Inhalation	In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination. In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
Skin/eye contact	In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Immediately flush eyes thoroughly with water for at least 15 minutes. Obtain medical assistance
Ingestion	Ingestion is not considered a potential route of exposure.

5 FIRE FIGHTING MEASURES

Specific hazards	Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products	Incomplete combustion may form carbon monoxide.
Suitable extinguishing media	All known extinguishants can be used.
Specific methods	If possible, stop flow of product. Move away from the container and cool with water from a protected position. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.
Special protective equipment for fire fighters	In confined space use self-contained breathing apparatus.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions	Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to
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Environmental precautions
Clean up methods

be safe.
Ensure adequate air ventilation.
Eliminate ignition sources.
Try to stop release.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Ventilate area.

7 HANDLING AND STORAGE

Handling and storage

Ensure equipment is adequately earthed.
Suck back of water into the container must be prevented.
Purge air from system before introducing gas.
Do not allow backfeed into the container.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Keep away from ignition sources (including static discharges).
Segregate from oxidant gases and other oxidants in store.
Refer to supplier's container handling instructions.
Keep container below 50°C in a well ventilated place.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Personal protection

Ensure adequate ventilation.
Do not smoke while handling product.

9 PHYSICAL AND CHEMICAL PROPERTIES

Molecular weight 56
Melting point -139 °C
Boiling point 3.7 °C
Critical temperature 162 °C
Relative density, gas 1.9 (air=1)
Relative density, liquid 0.64 (water=1)
Vapour Pressure 20°C 1.8 bar
Solubility mg/l water No reliable data available.
Appearance/Colour Colourless gas
Odour Sweetish
Poor warning properties at low concentrations.
Flammability range 1.7-9.7 vol% in air.
Autoignition temperature 325 °C
Other data Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

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10 STABILITY AND REACTIVITY

Stability and reactivity Can form explosive mixture with air.
May react violently with oxidants.

11 TOXICOLOGICAL INFORMATION

General No known toxicological effects from this product.

12 ECOLOGICAL INFORMATION

General No known ecological damage caused by this product.

13 DISPOSAL CONSIDERATIONS

General 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.
Contact supplier if guidance is required.

14 TRANSPORT INFORMATION

UN Nr 1012
Class 2.1
ADR/RID Classification code 2F
ADR/RID Hazard Nr 23
Labelling ADR Label 2.1: flammable gas
Other transport information 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 that they are firmly secured and:
- cylinder valve is closed and not leaking
- valve outlet cap nut or plug (where provided) is correctly fitted
- valve protection device (where provided) is correctly fitted
- there is adequate ventilation.
- compliance with applicable regulations.

15 REGULATORY INFORMATION

Number in Annex I of Dir 67/548 601-012-00-4.
EC Classification F+;R12
-Symbols F+: Extremely flammable
Labelling of cylinders
-Symbols Label 2.1: flammable gas
-Risk phrases R12 Extremely flammable.

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-Safety phrases	S9 Keep container in well ventilated place.
	S16 Keep away from ignition sources - No smoking.
	S33 Take precautionary measures against static discharges.

16 OTHER INFORMATION

Ensure all national/local regulations are observed.

Ensure operators understand the flammability hazard.

Contact with liquid may cause cold burns/frost bite.

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

Users of breathing apparatus must be trained.

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.

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