



# 1-BUTENE (4,4,4-D3, 98%)

## Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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Version: 3.0

**DLM-4623**

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

#### 1.1. Product identifier

Product form : Substance  
Substance name : 1-BUTENE (4,4,4-D3, 98%)  
EC index no : 601-012-00-4 (Unlabeled)  
EC no : 203-449-2 (Unlabeled)  
CAS No : 106-98-9 (Unlabeled)  
Product code : DLM-4623  
Formula :  $CD_2=CDCH_2CH_3$

#### 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  
Industrial/Professional use spec : For professional use only.

##### 1.2.2. Uses advised against

No additional information available

#### 1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.  
50 Frontage Road  
Andover, MA 01810  
USA

USA: 1-800-322-1174 Int: 1-978-749-8000  
[cilsales@isotope.com](mailto:cilsales@isotope.com) [www.isotope.com](http://www.isotope.com)

#### Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)  
International: 1-703-741-5970 (24 hours)

### 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  
Compressed gas H280

Full text of H-phrases: see section 16

##### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

F+; R12  
R5

Full text of R-phrases: see section 16

##### Classification (GHS-US)

Flam. Gas 1 H220  
Compressed gas H280

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

No additional information available

# 1-BUTENE (4,4,4-D3, 98%) DLM-4623

## Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 2.2. Label elements

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

Hazard pictograms (CLP) :



GHS02

GHS04

Signal word (CLP) :

Danger

Hazard statements (CLP) :

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

Precautionary statements (CLP) :

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

#### GHS-US labeling

Hazard pictograms (GHS-US) :



GHS02

GHS04

Signal word (GHS-US) :

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P403 - Store in a well-ventilated place  
P410+P403 - Protect from sunlight. Store in a well-ventilated place

### 2.3. Other hazards

Other hazards not contributing to the classification

: May displace oxygen and cause rapid suffocation.

## SECTION 3: Composition/Information on ingredients

### 3.1. Substance

Name	Product identifier	%	Classification according to Directive 67/548/EEC
1-BUTENE (4,4,4-D3, 98%) (Main constituent)	(CAS No) 106-98-9 (Unlabeled) (EC no) 203-449-2 (Unlabeled) (EC index no) 601-012-00-4 (Unlabeled)	100	F+; R12 R5
Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
1-BUTENE (4,4,4-D3, 98%) (Main constituent)	(CAS No) 106-98-9 (Unlabeled) (EC no) 203-449-2 (Unlabeled) (EC index no) 601-012-00-4 (Unlabeled)	100	Flam. Gas 1, H220 Compressed gas, H280

Full text of R- and H- phrases: see section 16

Name	Product identifier	%	Classification (GHS-US)
1-BUTENE (4,4,4-D3, 98%) (Main constituent)	(CAS No) 106-98-9 (Unlabeled)	100	Flam. Gas 1, H220 Compressed gas, H280

Full text of H-phrases: see section 16

### 3.2. Mixture

Not applicable

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## Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures general	: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
First-aid measures after inhalation	: If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.
First-aid measures after skin contact	: Wash with soap and plenty of water. Consult a physician.
First-aid measures after eye contact	: Flush eyes with water as a precaution.
First-aid measures after ingestion	: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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

Symptoms/injuries after inhalation	: May be harmful if inhaled. May cause respiratory tract irritation.
Symptoms/injuries after skin contact	: May be harmful if absorbed through skin. May cause skin irritation.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: May be harmful if swallowed.

#### 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 : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

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

Reactivity : Not available.

#### 5.3. Advice for firefighters

Firefighting instructions	: Wear self contained breathing apparatus for fire fighting if necessary.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.
Other information	: Use water spray to cool unopened containers.

### SECTION 6: Accidental release measures

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

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

Emergency procedures : Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

##### 6.1.2. For emergency responders

No additional information available

#### 6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

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

For containment : Clean up promptly by sweeping or vacuum.

#### 6.4. Reference to other sections

No additional information available

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling	: Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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

Technical measures	: Keep container tightly closed in a cool, dry and well-ventilated place.
Storage conditions	: Store at room temperature away from light and moisture.

#### 7.3. Specific end use(s)

No additional information available

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## Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### 1-BUTENE (4,4,4-D3, 98%) (106-98-9 (Unlabeled))

Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	250 ppm Body weight effects
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#### 8.2. Exposure controls

Appropriate engineering controls : Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Personal protective equipment : Gloves. Protective clothing. Protective goggles. Self-contained breathing apparatus.



Materials for protective clothing : Wear suitable protective clothing and gloves.

Hand protection : Wear suitable protective clothing and gloves.

Eye protection : Wear safety glasses with side shields (or goggles) and a face shield.

Skin and body protection : Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : When appropriate, use NIOSH/CEN approved respirator.

Environmental exposure controls : Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

### SECTION 9: Physical and chemical properties

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

Physical state : Gas

Appearance : Liquified gas.

Molecular mass : 59.12 g/mol (Labeled)

Color : Colourless.

Odor : No data available

Odor threshold : No data available

pH : No data available

Relative evaporation rate (butyl acetate=1) : No data available

Melting point : 185 °C (-301 °F)

Freezing point : No data available

Boiling point : 6.3 °C (43.3 °F)

Flash point : -79.99 °C (-111.98 °F) - closed cup

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : No data available

Vapor pressure : 4346 hPa (3,260 mmHg) at 37.7 °C (99.9 °F); 2,585 hPa (1,939 mmHg) at 21.1 °C (70 °F)

Relative vapor density at 20 °C : 1.94 (Air = 1.0)

Relative density : 0.595 g/cm<sup>3</sup>

Solubility : No data available

Log Pow : No data available

Log Kow : No data available

Viscosity, kinematic : No data available

Viscosity, dynamic : No data available

Explosive properties : No data available

Oxidizing properties : No data available

Explosive limits : 1.6 - 9.3 vol %

#### 9.2. Other information

No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Not available.

#### 10.2. Chemical stability

Stable if stored under recommended conditions.

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## Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 10.3. Possibility of hazardous reactions

No additional information available

### 10.4. Conditions to avoid

Heat, flames and sparks.

### 10.5. Incompatible materials

Strong oxidizing agent. strong acids.

### 10.6. Hazardous decomposition products

carbon oxides.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Dizziness. Headache. Central nervous system depression. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Symptoms/injuries after inhalation	: May be harmful if inhaled. May cause respiratory tract irritation.
Symptoms/injuries after skin contact	: May be harmful if absorbed through skin. May cause skin irritation.
Symptoms/injuries after eye contact	: May cause eye irritation.
Symptoms/injuries after ingestion	: May be harmful if swallowed.

## SECTION 12: Ecological information

### 12.1. Toxicity

No additional information available

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

No additional information available

### 12.4. Mobility in soil

No additional information available

### 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)	: Waste materials should be disposed of under conditions which meet Federal, State, and Local environmental control regulations.
Waste disposal recommendations	: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.
Ecology - waste materials	: Dispose of as unused product.

## SECTION 14: Transport information

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

### 14.1. UN number

UN-No.(DOT) : 1012

# 1-BUTENE (4,4,4-D3, 98%) DLM-4623

## Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

DOT NA no. UN1012

### 14.2. UN proper shipping name

Proper Shipping Name (DOT) : Butylene  
see also Petroleum gases, liquefied  
Transport hazard class(es) (DOT) : 2.1 - Class 2.1 - Flammable gas 49 CFR 173.115  
Hazard labels (DOT) : 2.1 - Flammable gas



DOT Special Provisions (49 CFR 172.102) : 19 - For domestic transportation only, the identification number UN1075 may be used in place of the identification number specified in column (4) of the 172.101 table. The identification number used must be consistent on package markings, shipping papers and emergency response information.  
T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the applicable liquefied compressed gases are authorized to be transported in portable tanks in accordance with the requirements of 173.313 of this subchapter.  
DOT Packaging Exceptions (49 CFR 173.xxx) : 306  
DOT Packaging Non Bulk (49 CFR 173.xxx) : 304  
DOT Packaging Bulk (49 CFR 173.xxx) : 314;315

### 14.3. Additional information

Other information : No supplementary information available.  
Special transport precautions : Not dangerous goods.

#### Overland transport

Class (ADR) : 2 - Gases  
Hazard identification number (Kemler No.) : 23  
Classification code (ADR) : 2F  
Hazard labels (ADR) : 2.1 - Flammable gases



Orange plates : An orange rectangular label with a black border. It is divided into two horizontal sections. The top section contains the number '23' and the bottom section contains the number '1012'.

Tunnel restriction code : B/D  
Limited quantities (ADR) : 0  
EAC : 2YE  
Excepted quantities (ADR) : E0

#### Transport by sea

DOT Vessel Stowage Location : E - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.  
DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"  
MFAG-No : 115

#### Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : Forbidden  
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 150 kg  
Civil Aeronautics Law : Gases under pressure/Gases flammable under pressure

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## Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 14.4. Environmental hazards

Other information : No supplementary information available.

### 14.5. Special precautions for user

Special transport precautions : Not dangerous goods.

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

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

#### 1-BUTENE (4,4,4-D3, 98%) (106-98-9 (Unlabeled))

SARA Section 311/312 Hazard Classes	Fire hazard Sudden release of pressure hazard
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### 15.2. International regulations

#### CANADA

#### 1-BUTENE (4,4,4-D3, 98%) (106-98-9 (Unlabeled))

Listed on the Canadian DSL (Domestic Substances List) inventory.

#### 15.2.1. National regulations

No additional information available

### 15.3. US State regulations

#### 1-BUTENE (4,4,4-D3, 98%)(106-98-9 (Unlabeled))

State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
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## SECTION 16: Other information

Other information : This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

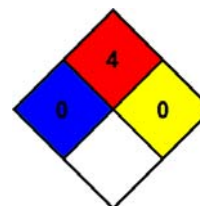
Full text of R-, H- and EUH-phrases:

Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
R12	Extremely flammable
R5	Heating may cause an explosion
F+	Extremely flammable

NFPA health hazard : 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

NFPA fire hazard : 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



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### HMIS III Rating

Health	: 0 Minimal Hazard - No significant risk to health
Flammability	: 4 Severe Hazard
Physical	: 3 Serious Hazard

CIL Multi-Solvent Mixture SDS

*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*