

### Potential industries and applications isobutylene detection:

- Petrochemical Refineries
- Chemical Plants
- Pharmaceutical Labs
- Food Processing and Packaging Plants

**Isobutylene (C<sub>4</sub>H<sub>8</sub>)**, also called butylene, is a hydrocarbon of significant industrial importance. It is a four-carbon branched alkene (olefin), one of the four isomers of butylene. At standard room temperature and pressure it is a colorless, flammable gas. At extremely low temperatures it becomes a liquid.

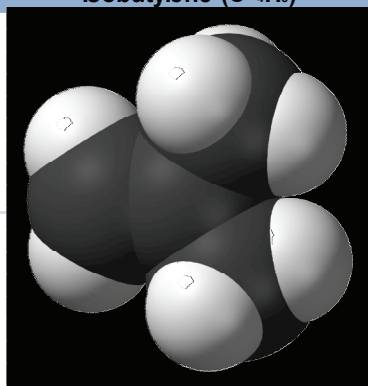
Isobutylene is used as an intermediate in the production of a variety of products, including the high-octane fuel. It is also used in the preparation of organic compounds. Related compounds include isobutene, 2-methylpropene, and 1-dimethylethylene. Isobutylene is a gas at room temperature and becomes a liquid at extremely low temperatures.

Through hydroformylation, or oxo synthesis, the resulting aldehydes are easily converted into many secondary products.

Alkenes are polymerized by heating with catalysts to give high-octane gasolines, plastics, and synthetic rubber.

Classified as a hazardous material by the U.S. Department of Transportation, isobutylene is a highly flammable gas and presents a danger of explosion. It is usually stored as a compressed gas and, if released, may produce an oxygen-deficient atmosphere which presents an asphyxiation hazard.

Isobutylene (C<sub>4</sub>H<sub>8</sub>)



#### General

Systematic Name	Isobutylene
Other Names	Isobutene _Butylene 2-Methylpropylene

Molecular Formula	C <sub>4</sub> H <sub>8</sub>
Appearance	Colorless gas
CAS Number	115-11-7
Molar Mass	56.11 g/mol
Vapour Density	0.5879 g/cm
Melting Point	-140.3 °C, -220.54 °F
Boiling Point	-6.9°C, 20 °F

#### Hazards

ACGIH-TLV	
Time Weighted Value (TWW)	Short Term Exposure Limit (STLV)
N/A	N/A
OSHA-PEL	
Permissible Exposure Limit - Time Weighted Average (TWA)	Permissible Exposure Limit (PEL)
N/A	N/A
NIOSH	
Permissible Exposure Limit - Time Weighted Average	Immediately Dangerous to Life or Health
N/A	N/A
Highly Flammable	
Lower Explosive Limit 1.8% Vol. in Air	Upper Explosive Limit 9.6% Vol. in Air

### Industrial Applications

#### Fuel additives

In its pure form, isobutylene is used in organic synthesis and in the production of high octane aviation gasoline.

Isobutylene is reacted with methanol and ethanol to manufacture gasoline additives, methyl tert-butyl ether (MTBE) and ethyl tert-butyl ether (ETBE), respectively. Alkylation with butane produces isooctane, another fuel additive.

#### Synthetic rubber

Polymerization of isobutylene produces butyl rubber (polyisobutylene), where it comprises 98% of the raw material used.

Alkenes serve as intermediates in the preparation of a variety of organic compounds. In the oxo process, alkenes react catalytically with carbon monoxide and hydrogen to give aldehydes.

Isobutylene is also used in the production of methacrolein, which is in the manufacture of polymers and synthetic resins.

#### Food Preservatives

Isobutylene is also used Friedel-Crafts alkylation of phenols to produce such antioxidants as butylated hydroxytoluene (BHT) and butylated hydroxyanisole (BHA), two commonly used food preservatives.



**Conspec's CN Series** is an economical choice for isobutylene gas monitoring. The CN Series is a simple and "smart" gas detector. An industry-standard 4-20 mA analog output signal. Can be connected to any existing PLC, DCS, or EMS system.

**Specifications:**

**Mechanical**

Enclosure	NEMA 4x
Dimensions	4.5"x5"x4"
Weight	1 ¼ lbs.
Mounting	4 holes
Conduit Entry	One (3/4" cable grip)

**Environmental**

Operating Temperature	-4°F - 120°F (-20°C - 50°C)
Temperature Compensation	Full Temperature Range
Operating Humidity	10% - 90% RH Non-condensing

**Electrical**

Operating Voltage	12-24VDC
Cable Requirements	3 Conductor 18 AWG Suggested
Current Consumption	50mA full scale
Output Signal	Linear 4-20mA, RS-485 (optional)

**System**

Sensor Ranges Isobutylene	0-20 ppm, 0-200 ppm, 0-2000 ppm
Sensor Type	Photo-ionization
Keypad	9-Button Infrared Remote Control
Modes	2 (Normal & Calibration)
Display	Two-Line, 8-Character Alphanumeric LCD
Status LEDs	3 LEDs, 4 Status
Alarms	2 User-Defined



**Conspec's CX Series** is an economical choice for isobutylene gas monitoring. The CX Series is a simple "smart" gas detector designed for use in hazardous or classified locations. An industry-standard 4-20 mA analog output signal. Can be connected to any existing PLC, DCS, or EMS system.

**Specifications:**

**Mechanical**

Enclosure	Explosion-Proof UL Listed Class 1 Div. 1 or 2 Groups B, C & D
Dimensions	4.5"x5"x4"
Weight	4 lbs.
Mounting	Conduit-mounted
Conduit Entry	One (3/4" cable grip)

**Environmental**

Operating Temperature	-4°F - 120°F (-20°C - 50°C)
Temperature Compensation	Full Temperature Range
Operating Humidity	10% - 90% RH Non-condensing

**Electrical**

Operating Voltage	12-24VDC
Cable Requirements	3 Conductor 18 AWG Suggested
Current Consumption	50mA full scale
Output Signal	Linear 4-20mA, RS-485 (optional)

**System**

Sensor Ranges Isobutylene	0-20ppm, 0-200ppm, 0-2000ppm
Sensor Type	Photo-ionization
Keypad	9-Button Infrared Remote Control
Modes	2 (Normal & Calibration)
Display	Two-Line, 8-Character Alphanumeric LCD
Status LEDs	3 LEDs, 4 Status
Alarms	2 User-Defined



**Conspec's new Smart Head Gas Monitoring System** monitors, records, remembers, warns and advises if it needs replacement.

**Conspec's Smart Head Single Channel Monitor and Smart Head Multi-Channel Controller** are smarter than your average monitors, because they are digital yet simpler and more reliable.

**Specifications:**

**Mechanical**

Enclosure	NEMA 4x
Dimensions	7.5"x5"x3"
Weight	3 ½ lbs.
Mounting	Plate-mounted, 6 holes for suspension, grooves for slot mounting
Conduit Entry	One (3/4" cable grip)

**Environmental**

Operating Temperature	-4°F - 120°F (-20°C - 50°C)
Temperature Compensation	Full Temperature Range
Operating Humidity	10% - 90% RH Non-condensing

**Electrical**

Operating Voltage	12-24VDC
Cable Requirements	4 Conductor 18 AWG Suggested
Current Consumption	50mA full-scale
Output Signal	RS-485; 4 Open Collector Digital Output, Linear 4-20mA (Single Channel only); HART (Optional).

**System**

Sensor Ranges Isobutylene	0 - 20ppm, 0 - 200ppm, 0 - 2000ppm
Sensor Type	Photo-ionization
Keypad	4-Button Keypad or Infrared Remote Control
Modes	2 (Normal & Calibration)
Display	3.5" LCD Display
Status LEDs	4 LEDs, 4 Status
Alarms	3 User-Defined