# Product Safety Summary

## BUTENES

**This Product Safety Summary document is to provide product safety and end use information on this product. It is not intended to provide emergency response, medical or treatment information, or to provide a discussion of all safety and health information. This document is not intended to replace the Material Safety Data Sheet.**

### 1. Chemical Identity

BUTENES are an olefin stream, generally manufactured as part of the catalytic cracking or steam cracking processes. BUTENES may contain Butane and Isobutylene and trace amounts of 1,3 Butadiene.

CAS No. 25167-67-3 BUTENES

**Abbreviation**: None

**Other Names**: Butylene, n-Butene

### 2. Product Uses

BUTENES are primarily used as feedstocks to manufacture other industrial chemicals, including isobutylene, sec-butyl alcohol, butadiene, butene-1, and gasoline blending components. In addition, BUTENES may be blended directly into gasoline or marketed as a component of Liquefied Petroleum Gas (LPG, along with Propane and Butane).

### 3. Physical / Chemical Properties

BUTENES are highly flammable. They are handled in industrial facilities where safe conditions regarding ignition sources and ventilation are adequately controlled.

The flash point for BUTENES is <-4ºF /<-20ºC.

### 4. Health Information

BUTENES are generally believed to have low acute toxicity at the levels found in the workplace. Exposure to high levels of BUTENES can lead to dizziness. Vapor or aerosol concentrations above the exposure limit of 800 ppm in the air can cause eye irritation in humans. Should skin or eye contact occur to BUTENES in their liquid state, tissue freezing, severe cold burn, and/or frostbite may result. BUTENES contain trace amounts of 1,3 Butadiene, which has been determined to cause cancer by the US EPA and by the International Agency for the Research on Cancer.

### 5. Additional Hazard Information

BUTENES may contain trace amounts of 1,3 Butadiene. The following health hazard information is applicable to 1,3-Butadiene: 1,3-Butadiene is a multi-site carcinogen in rodents. Epidemiology studies indicate an association between exposure to 1,3-butadiene and leukemia in humans. Mutations have been observed in in-vitro and in-vivo rodent assays. Although several older studies had conflicting results, a newer screening study in rats, conducted according to modern laboratory standards, showed no adverse reproductive or developmental effects after 1,3 Butadiene exposure.

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### 6. Environmental Information

In the environment, BUTENES go into the air, with little water contamination expected. Once in the air, BUTENES rapidly degrade. Because of BUTENES tendency to move from water to air, chronic aquatic toxicity is not expected.

### 8. Exposure Potential

Based on the uses for BUTENES, the public could be exposed through:

- **Workplace exposure** – This refers to potential exposure to BUTENES in a manufacturing facility or industrial workplace. Generally, exposure to BUTENES of personnel in manufacturing facilities is relatively low because the process, storage and handling operations are closed, with little potential for releases to the air. The American Conference of Government Industrial Hygienists (ACGIH) recommends limiting occupational exposure to no more than 250 parts per million (ppm) per an 8-hour work day. BUTENES may contain Butane and trace amounts of 1,3 Butadiene, which have their own workplace exposure limits established (Butane = 1000 ppm set by ACGIH, 1,3 Butadiene = 1 ppm, established by the US Occupational Safety and Health Administration or 2 ppm recommended by ACGIH). Since BUTENES are used in a closed process, exposures are unlikely to approach these levels.
- **Consumer use of products containing BUTENES** –Exposure to consumers would be expected to be low, far below the recommended occupational exposure levels described above. The exposure to BUTENES from gasoline use is expected to be limited due to control measures which limit exposures to motor fuels.
- **Environmental releases** – Chemical manufacturers are committed to operating in an environmentally responsible manner everywhere we do business. Our efforts are guided by in-depth scientific understanding of the environmental impact of our operations, as well as by the social and economic needs of the communities in which we operate. Industrial spills or releases are rare; however a spill may pose a significant flammability issue. Our operational improvement targets and plans are based on driving incidents with real environmental impact to zero and delivering superior environmental performance.

### 9. Manufacture of Product

- **Capacity** – SRI Consulting (http://www.sriconsulting.com/CEH/Public/Reports/440.0000/) indicates that in 2004, the worldwide consumption of BUTENES was over 44 million metric tons.
- **Process** – BUTENES are manufactured as part of catalytic cracking processes or steam cracking processes found in chemical plants or petroleum refineries. Cracking processes allow the conversion of crude oil fractions into more useful products.

### 10. Risk Management

When using BUTENES, avoid breathing the material. Use non-sparking tools and explosion-proof equipment. Make sure that there is adequate ventilation. Always use thermally protective, chemical resistant gloves to protect your hands and skin and always wear eye protection such as chemical goggles and a face shield. Do not eat, drink, or smoke where BUTENES are handled, processed, or stored. If liquid BUTENES contact the skin or eyes, watch for frostbite and seek medical attention. If BUTENES get into your eyes, rinse eyes thoroughly for at least 15 minutes with tap water. If irritation occurs, get medical assistance.

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BUTENES are a volatile organic compound (VOC) and may contain 1,3 Butadiene, a hazardous air pollutant. Considerable measures are taken to prevent its release to the atmosphere. Processes and equipment for manufacture, transfer and storage are continuous and enclosed.

### 11. Federal/Science Agency Findings (For CAS No. searches, enter **25167-67-3**)

Organization for Economic Cooperation and Development (OECD) - ChemPortal web-based search tool

- http://webnet3.oecd.org/echemportal/

European Chemical Substances Information System (ESIS)

- http://ecb.jrc.it/esis/

Organization for Economic Cooperation and Development (OECD) Integrated HPV Database

- http://cs3-hq.oecd.org/scripts/hpv/

U.S. Environmental Protection Agency - High Production Volume Information System (HPVIS)

- http://www.epa.gov/hpv/

New Jersey Hazardous Substance Fact Sheet

- http://nj.gov/health/eoh/rtkweb/documents/fs/0286.pdf

### 12. Regulatory Information

Regulations may exist that govern the manufacture, sale, transportation, use and/or disposal of BUTENES. These regulations may vary by city, state, country or geographic region. Additional helpful information may be found by consulting the relevant Material Safety Data Sheet.

### 13. Conclusion Statements

- BUTENES are a widely used industrial chemical feedstock used to make other industrial chemicals. BUTENES may also be sold as LPG and/or blended into gasoline.
- BUTENES are low in acute toxicity at typical exposures, however may cause frostbite if exposure to refrigerated liquid occurs. BUTENES contain trace amounts of 1,3-Butadiene, which has been determined to be a carcinogen by regulatory authorities.
- BUTENES are not expected to cause adverse environmental effects at levels typically found in the workplace or environment.
- BUTENES are extremely flammable; use only with good ventilation and avoid all ignition sources.