

MATERIAL SAFETY DATA SHEET

Manufacture's Name **Address** **Telephone Number**
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Product Name: **BUTADIENE**
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SECTION I. PRODUCT IDENTIFICATION

Product Name: **BUTADIENE**
Common Names/Synonyms: Butadiene Product; Butadienes, Inhibited
Chemical Formula: C₄H₆

SECTION II. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

<u>Component</u>	<u>CAS No.</u>	<u>Percent</u>	<u>Exposure Limits</u>
1,3 Butadiene	106-99-0	68-86	TLV (ACGIH): 10PPM OSHA pel 8 HR. twa: 1 PPM
Isobutylene	115-11-7	5-10	
N-Butene	106-97-8	5-10	TLV (ACGIH): 800ppm
1-Butene	106-98-7	5-10	
t-2-Butene	624-64-6	1-2	
c-2-Butene	590-18-1	1-2	
Vinyl Acetylene	689-97-4	1-3	

SECTION III. CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (at760 mm Hg): 24 °F (-4°C)

Melting Point: -164.1 °F

Evaporation Rate (Butyl Acetate = 1): Not applicable - gas

Vapor Density (Air = 1) : 1.9

Molecular Weight: 54.1 grams/mole

Appearance and Odor: a noncorrosive, colorless, flammable gas with a mild aromatic odor.

Specific Gravity (water =1): .62 (20°/4°)

The above information is for pure 1,3 – Butadiene.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: -105°F (Liquid)
(Method)

Auto Ignition Temperature: 788°F

Flammable Limits In Air: LFL: 2.0% UFL: 12%

National Fire Protection Association Hazard Identification Code

Health: 2 Flammability: 4 Reactivity: 2

Fire Extinguishing Media: Butadiene is a flammable gas. Try to stop the flow of the gas and use a water spray to cool fire-exposed containers.

Special Fire Fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

Unusual Fire Or Explosion Hazards: When mixed with air, butadiene forms potentially explosive peroxides. Direct fire-fighting procedures toward stopping the flow of gas and removing uninvolved containers of butadiene from the fire area. Warning: Heat and/or insufficient concentration of inhibitor can cause butadiene to polymerize violently with the rupture of the container. Butadiene vapor is heavier than air and can travel a considerable distance to a low-lying source of ignition and flash back.

SECTION V. HEALTH HAZARDS

Acute Health Effects: May cause irritation to the eyes, nose, and throat. Symptoms include rapid respiration, diminished mental alertness, fatigue, muscular incoordination and loss of consciousness. Can act as an asphyxiant by displacing breathable air.

Chronic Health Effects: Material is a suspected carcinogen. Exposure may cause leukemia, non-Hodgkins lymphoma, and anemia.

Medical Conditions Aggravated By Exposure: None reported.

Primary Routes of Entry: Inhalation

Inhalation: Inhalation of high concentrations can cause unconsciousness and death. Human systemic effects by inhalation: cough, hallucinations, distorted perceptions, changes in the visual field and other unspecified eye effects.

Eyes/Skin: The vapors are irritating to eyes and mucous membranes. If spilled on skin or clothing, it can cause burns or frost bite (due to rapid vaporization).

Ingestion: Unlikely route of exposure

Carcinogenicity Status: According to Sax, material is an experimental carcinogen and teratogen, Butadiene is regulated by OSHA Standard 1910.1051.

SECTION VI. FIRST AID PROCEDURES

Inhalation: Remove the exposed person to fresh air; If breathing has stopped, give artificial respiration if breathing is difficult, give oxygen. Caution: Would-be rescuers must be concerned about their own safety if atmospheric oxygen has been displaced by butadiene gas; wear an SCBA, if necessary.

Eyes: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes.

Skin: Wash the affected area with soap and water. Treat for frostbite damage by flushing affected areas with lukewarm water if contact with liquid butadiene has occurred.

Ingestion: Unlikely route of exposure

Secure prompt medical assistance for further treatment, observation, and support after first aid.

SECTION VII. PERSONAL PROTECTION

Respirator: Wear a NIOSH-approved respirator in accordance with table 1 in the 1,3 Butadiene standard 1910.1051. Follow OSHA respirator regulations (29 CFR 1910.134).

Consult OSHA standard 1910.1051 for engineering control requirements.

Skin: Wear impervious gloves, boots, aprons, gauntlets, etc., as required by the specific work environment to prevent skin contact.

Eyes: Wear protective eyeglasses or chemical safety goggles, per OSHA eye and face protection regulations (29 CFR 1910.133). Where splashing is possible, wear a full face shield.

Ventilation: Install and operate both general and local exhaust systems with maximum explosions-proof ventilation powerful enough to maintain airborne levels of butadiene below the OSHA Pel standard.

Contaminated Equipment: Launder contaminated clothing before wearing. Remove this material from shoes and equipment.

Other: Make eyewash stations, safety/quick-drench showers, and washing facilities available in work areas. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them

Work Hygienic Practices: Practice good personal hygiene; always wash thoroughly after using this material. Keep it off your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area.

SECTION VIII. REACTIVITY DATA

Hazardous Decomposition or By-Products: Burning produces carbon dioxide and/or carbon monoxide when heated to decomposition it emits acrid smoke and fumes.

Stability: Inhibited Butadiene is stable in closed, pressurized, airtight containers at room temperature under normal storage and handling conditions and when the concentration of inhibitor remains at effective levels; otherwise, hazardous polymerization can occur.

Incompatible Materials: Dangerous reactions may occur between butadiene and air, phenol, chlorine dioxide, and crotonaldehyde. When heated to just above its melting point under pressure, butadiene may undergo a violent thermal decomposition. Avoid combining it with ozone, nitrogen dioxide, copper and its alloys, and strong oxidizing agents such as chlorine, permanganate, or dichromate salts.

Incompatible Conditions: Prevent contact with air, heat, sparks, open flame, or any possible free radical polymerization initiators such as hydroquinone.

Hazardous Polymerization: If not stable, hazardous polymerization can occur.

Comments: Butadiene is self-reactive; the added inhibitor minimized self-polymerization reactions. Determine the overall quality of the butadiene, including the extent of peroxide formation and/or by-products of self-reaction, before use. Do not use if highly contaminated.

SECTION IX. SPILL, LEAK AND DISPOSAL PROCEDURES

Spill and Leak: Notify safety personnel, eliminate sources of ignition, provide adequate ventilation, limit access to necessary personnel only, and remove leaking containers to a safe place, if feasible. Those involved in cleanup need protection against inhalation of butadiene gas. Try to stop the flow of gas.

Waste Management: Due to processing, reformulation, etc., it is the responsibility of the user to determine the status of waste material. Dispose of according to federal, state and local regulations.

SECTION X. ADDITIONAL PRECAUTIONS

Storage: Store butadiene in pressurized containers in a cool, dry area away from incompatible chemicals. Outside, isolated, or detached storage is recommended. Avoid moisture or air contamination of storage facilities by installing engineering systems and monitoring equipment.

Special Handling/Storage: Preplan for routine use and emergency response. Protect containers from physical damage. Electrically ground and bond all containers used in shipping and transferring operations to prevent static sparks. Carefully follow your supplier's recommendations concerning shelf life, rotation of inventory, and monitoring the inhibitor levels in the butadiene product.

SECTION XI. TRANSPORTATION DATA

Department of Transportation: (49 CFR 172.101-2)

Proper Shipping Name: Butadienes, Stabilized

Placards Hazard Class: 2.1 (flammable)

Labels: Flammable Gas

UN/NA ID. No.: UN1010

Reportable Quantities: One (1) pound

SECTION XII. OTHER REGULATORY DATA

This Material Is Regulated Under:

Occupational Safety and Health Administration: 29 CFR 1910.1051 and Air Contaminant (29 CFR 1910.1000 Subpart Z)

OSHA 29 CFR 1910.119 Process Safety Management: Listed. This material is flammable per 1910.1200.

TSCA: Material is listed in TSCA inventory.

40 CFR Part 68 (RMP): Listed

Superfund Amendments Reauthorization Act: The threshold planning quantity for material is 10,000 lbs.

SECTION XIII. USERS RESPONSIBILITY

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of the user's precautions may be necessary. All health and safety information contained in this bulletin should be provided to employees and/or customers. Westlake Petrochemicals Corporation must relay on the user to use this information to develop appropriate work practice guideline and employee instructional programs specific to the user's operation.

SECTION XIV. DISCLAIMER OF RESPONSIBILITY

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ISSUED: BY WESTLAKE PETROCHEMICALS CORPORATION ON March 8, 1999.