



**Westlake CA&O
Corporation**

P.O. Box 527
Calvert City, KY 42029-0527

MATERIAL SAFETY DATA SHEET

ISSUED: 08/28/98

MIXED C₄ HYDROCARBONS

REVISED: 01/01/09

SECTION I - PRODUCT IDENTIFICATION

Westlake CA&O
2468 Industrial Parkway
P O Box 527
Calvert City, KY 42029

Telephone No.: (270) 395-4151
Transportation Emergency No.:
CHEMTREC: (800) 424-9300
Medical Emergency No.:
POISON CENTER: (216) 379-8562

Chemical Family: Hydrocarbon Mixture

Chemical Name/Synonyms: Mixture of C₄ hydrocarbons

Trade Mark: None

Formula: Mixture

C.A.S. Registry No.: Not Applicable

TSCA Inventory Status: All ingredients are listed on the USEPA's TSCA inventory

Canadian Domestic Substances List Status: All ingredients have been nominated or
are eligible for inclusion

Workplace Hazardous Materials Information System (WHMIS) Classification: B1 and 2, D2B

Product Use: Chemical reclamation

SARA 313 Information: This product contains a toxic chemical or chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

SECTION II - HAZARDOUS INGREDIENTS

Hazard Summary Statement: CAUTION! Inhalation of the material can cause narcosis and nausea. Vapors may cause irritation of the eyes and mucus membranes. Contact with liquid may cause freezing burns. WARNING! FLAMMABLE GAS OR LIQUID.

<u>Material</u>	<u>C.A.S. Number</u>	<u>Amount in Product</u>	<u>ACGIH TLV-TWA</u>	<u>OSHA PEL-TWA</u>
N-Butane ^{2,4,5,6}	106-97-8	< 5%	800 ppm	N.E.
1-Butene ^{2,4}	106-98-9	< 25%	N.E.	N.E.
2-trans-Butene ^{2,4}	624-64-6	< 5%	N.E.	N.E.
2-cis-Butene ^{2,4}	590-18-1	< 5%	N.E.	N.E.

<u>Material</u>	<u>C.A.S. Number</u>	<u>Amount in Product</u>	<u>ACGIH TLV-TWA</u>	<u>OSHA PEL-TWA</u> 1 ppm/5 ppm Short-Term Exposure Limit (STEL)
1,3-Butadiene ^{1,2,3,4,5,6}	106-99-0	60-65%	2 ppm	
1,2-Butadiene	590-19-2	< 2%	N.E.	N.E.
Iso-Butylene ^{2,4,6}	115-11-7	< 15%	N.E.	N.E.
Isobutane ^{2,4,6}	75-28-5	< 5%	N.E.	N.E.
Mono Vinyl Acetylene	689-97-4	< 3%	N.E.	N.E.

N.A. - Not Applicable

N.E. - Not Established

1,3-Butadiene is listed as a suspected human carcinogen by the American Conference of Government Industrial Hygienists (ACGIH), an anticipated human carcinogen by the National Toxicology Program (NTP) and a possible human carcinogen by the International Agency for Research on Cancer (IARC).

Legislative Footnotes

¹ Ingredient listed on SARA Section 313 List of Toxic Chemicals.

² Ingredient listed on the *Pennsylvania Hazardous Substances List*.

³ Ingredient listed on the California listing of *Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*.

⁴ Ingredient listed on the *Massachusetts Substance List*.

⁵ *Workplace Hazardous Materials Information System* ingredient found on the Ingredient Disclosure List - Canada.

⁶ Ingredient listed on the *New Jersey Right to Know Hazardous Substance List*.

Notes:

TLV-TWA - Threshold Limit Value - Time Weighted Average guideline for concentration of the chemical substance in the ambient workplace air. American Conference of Governmental Industrial Hygienists (ACGIH).

OSHA PEL - OSHA Permissible Exposure Limit, 8-hour TWA. 29 CFR 1910.1000, Transitional Limits column, Table Z-1-A, Table Z-2 and Table Z-3.

SECTION III - PHYSICAL DATA

Appearance: Clear gas or liquid
Odor: Similar to Butane
Percent Volatiles: 100%
Solubility in Water: Insoluble
Physical State: Liquid or gas
Vapor Density: 1.9 (vapor) @ 15.6°C (60°F)

Specific Gravity: 0.62 (liquid)
Boiling Point: -4.4°C (24°F)
Vapor Pressure: 36 psia @ 21°C (70°F)
60 psia @ 37.8°C (100°F)
90 psia @ 54.4°C (130°F)

SECTION IV - FIRE & EXPLOSION HAZARD DATA

Flash Point: -76°C (-105°F)

Lower Explosive Limit (LEL): 2.0%

Upper Explosive Limit (UEL): 12.0%

Self-Ignition Temperature: 420°C (788°F)

Notes:

Flash Point - The lowest initial temperature of air passing around the specimen at which sufficient combustible gas is evolved to be ignited by a small external pilot flame.

Self-Ignition Temperature - The lowest initial temperature of air passing around the specimen at which, in absence of an ignition source, ignition occurs of itself, as indicated by an explosion, flame or sustained glow.

Extinguishing Media: Use ABC dry powder to extinguish flame to permit immediate access to valves to shut off supply. Stop flow of gas if safe to do so and let fire burn itself out. (It may be dangerous to extinguish the flame and allow gas to continue to flow as an explosive mixture can be formed which can be ignited by hot metal surfaces.) Use water spray to protect firefighters, to keep surrounding exposed surfaces cool and to prevent ignition of other combustible materials.

Special Fire fighting Procedures: Wear positive pressure self-contained breathing apparatus (SCBA). Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustion gases from any source. In enclosed or poorly ventilated areas, wear SCBA during cleanup immediately after a fire as well as during the attack phase of fire fighting operations.

Unusual Fire and Explosion Hazards: Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by flame, sparks, heaters or other ignition sources at distant locations. Vapors can form flammable mixtures in air. At elevated temperatures, such as fire conditions, polymerization may take place. If polymerization takes place in a container, there is a possibility of violent rupture of the container. Liquid floats and boils on water. A flammable, visible vapor cloud is produced.

SECTION V - REACTIVITY

Stability: Stable

Hazardous Polymerization: Exothermic vinyl polymerization of butadiene may occur above 149°C (300°F).

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, and small amounts of aromatic and aliphatic hydrocarbons.

Incompatibility (Materials to Avoid): Reacts with strong oxidizing agents such as hydrogen peroxide, permanganates and perchlorates. Contact can result in intense heat, boiling, flame development, explosion or toxic gas generation depending upon the amount and specific materials involved. (If uninhibited, product may combine with oxygen to form peroxides, i.e., butadiene peroxide, which can be detonated by shock or heat.)

SECTION VI - HEALTH HAZARD DATA

Threshold Limit Value: None established.

Permissible Exposure Limit: None established.

Primary Routes of Exposure: Inhalation, skin and eye contact.

Effects of Overexposure: Contact with liquid may cause freezing burns. Vapors may cause irritation of the eyes and mucous membranes. Inhalation may cause narcosis and nausea.

Hazardous ingredient specific medical data (if ingredient found in "pure" form):

N-Butane causes drowsiness and is an asphyxiant.

1-Butene (no known health effects could be identified).

Isobutene (no known health effects could be identified).

2-trans-Butene (no known health effects could be identified).

2-cis-Butene (no known health effects could be identified).

1,3-Butadiene is an irritant of the eyes and respiratory tract in high vapor concentrations and may cause headaches, dizziness, anesthesia and other central nervous system effects. It is an asphyxiant if allowed to accumulate in confined spaces to concentrations that reduce oxygen below safe breathing levels. The effects of 1,3-butadiene are quite variable in animal studies and are species dependent. For example, in rats, chronic effects to the chemical are limited to an increased severity of preexisting kidney disease common to these aging animals while in the mouse, numerous effects were observed, including chronic changes in the liver, forestomach, testis, uterus, ovaries, blood and nose. However, the only chronic effect associated with significant exposure was heart disease. With regard to carcinogenicity, 1,3-butadiene is a weak carcinogen in rats and a potent carcinogen in mice. Although various

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types of lymphopietic cancers have been observed in workers with significant exposures to 1,3-butadiene, the strength of the association with exposure to the chemical is questionable. ACGIH lists 1,3-butadiene as a suspected human carcinogen, NTP as an anticipated human carcinogen and IARC as a possible human carcinogen.

Emergency and First Aid Procedures:

Inhalation: Remove affected individual to fresh air. If breathing has ceased, administer artificial respiration. If breathing is difficult, administer oxygen. Call a physician.

Eye Contact: Immediately flush eyes with lukewarm water for at least 15 minutes while lifting upper and lower eyelids. Continue to flush the eyes if there is any indication of residual chemical. Seek medical attention immediately.

Skin Contact: In the event of freezing burns upon contact with liquid, warm frostbite area gently with luke-warm water. Contact a physician.

Ingestion: DO NOT INDUCE VOMITING! Immediately contact a physician.

SECTION VII - SPILL & LEAK PROCEDURE

Steps to be taken in case material is released or spilled: Issue warning: EXTREME FIRE AND EXPLOSION HAZARD; do not touch spilled liquid. Isolate hazard. Eliminate all ignition sources. Shut off leak if safe to do so. Wear NIOSH/MSHA-approved self contained breathing apparatus. Persons without suitable respiratory protection must leave the spill area. Do not flush into public sewer or water system. Ventilate enclosed area utilizing explosion-proof fans to increase ventilation and to keep gas concentrations below explosive mixture limit. Close off all drains. Wet down area with water and allow liquid to dissipate. Notify Coast Guard and pollution authorities if spill will enter navigable waters.

Waste disposal method: HAZARDOUS WASTE (Flash point less than 60°C (140°F).) EPA Hazardous Waste Number: D001 (Flammable Liquid). Dispose of in a licensed hazardous waste disposal facility in accordance with all applicable Federal, State and Local health and pollution laws and regulations. (See 40 CFR 261.)

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: General explosion proof exhaust ventilation should always be provided to draw fumes and vapors away from workers to prevent routine inhalation. Ventilation should be adequate to maintain the ambient workplace atmosphere below the limits listed in Section II.

Respiratory Protection: Wear a NIOSH/MSHA-approved, organic, cartridge, airline or self-contained respirator whenever exposures exceed the limits listed in Section II. Use in accordance with the manufacturer's use limitations and OSHA Standard 1910.134 (29 CFR).

Eye Protection: Chemical goggles with full faceshield.

Protective Equipment: Wear impervious gloves, boots or shoes, coveralls or other protective clothing as appropriate to prevent contact with liquid. Check with glove/clothing manufacturers to determine materials resistant to the chemicals shown in Section II.

Do not smoke or consume food or beverages in the work area. Wash thoroughly after handling the product.

SECTION IX - SPECIAL PRECAUTIONS

Material Handling: Do not breathe vapors. Avoid skin, eye and clothing contact. Use under well-ventilated conditions. Utilize good personal hygiene practices, e.g., thoroughly washing after handling the product. Keep product away from heat, sparks and open flames.

Storage: Keep container closed when not in use. Store away from oxidizing materials. Do not cut, puncture or weld on or near the container. All wiring and electrical equipment in work, storage and handling areas should be Class I, Group B. Store and handle in accordance with OSHA regulation 1910.110 (CFR Title 29), "Storage and Handling of Liquefied Petroleum Gas."

SECTION X - HAZARD CODES

NFPA (1997)
(National Fire Protection Association)

Health: 2
Flammability: 4
Reactivity: 2
Special:

HMIS
(Hazardous Materials Identification System)

Health: 3
Flammability: 4
Reactivity: 2
Personal Protection: X*

Key:

0 = Insignificant
1 = Slight
2 = Moderate
3 = High
4 = Extreme

*See MSDS for specific protection

USER'S RESPONSIBILITY

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of the user's operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained within this bulletin should be provided to the user's employees or customers. Westlake CA&O Corporation must rely upon the user to utilize this information to develop appropriate work practice guidelines and employee instructional programs for his or her operation.

DISCLAIMER OF LIABILITY

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding the accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user.

SHIPPING INFORMATION

IDENTIFICATION - DOMESTIC TRANSPORTATION

Proper Shipping Name (172.101(c)): Butadienes and Hydrocarbon Mixture, Stabilized
Hazard Class 172.101(d): 2.1
Haz. Substance 171.8: 1,3-Butadiene
Inhalation Hazard 172.2a(b): N/A
Package Code 172.101(f): N/A

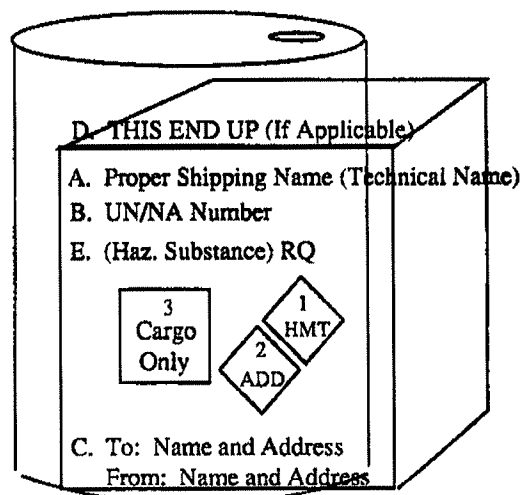
UN/NA# 172.101(e): UN 1010
Reportable Quantity: 10 Lb
Placarded: FLAMMABLE GAS

PACKAGING (Part 173)

- ◆ Packaging Section (172.101(i)) - Col. 8(A): 173.306, Col. 8(B): 173.304, Col. 8(C): 173.314, 173.315
- ◆ General Packaging Section - General 173.24 Hazard Class: FLAMMABLE GAS

MARKING

- A. Proper Shipping Name (172.301(a)) (Technical Name) (172.301(b))
B. UN/NA Number (172.301(a))
C. Name & Address (172.301(d))
D. THIS END UP (172.312(a))
E. Hazardous Substance RQ (Name) (172.324)
ORM Designation (172.316(a))
Inhalation Hazard (172.313(a))



DOMESTIC LABELING

1. HMT Labels 172.400:
2. Additional Subsidiary Hazard 172.402(a)

IATA 2005 EDITION

Proper Shipping Name (Col. B): Butadienes and Hydrocarbon Mixture, Stabilized

Class/Division (Col. C): 2.1
UN/ID# (Col. A): UN 1010
U.S. Haz. Substance (US 1): RQ (1,3-Butadiene)
Carrier Special Provisions (Col. K): A1

Subsidiary Risk (Col. D): N/A

PACKAGING

- ◆ Max. Qty. Per Pkg. (Cols. H/J) - Passenger: Forbidden
 - ◆ Packaging Instructions (Cols. G/I) - Passenger: Forbidden
- Cargo: 150 Kg
Cargo: 200