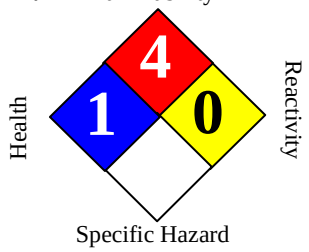
Safety Data Sheet
LPG

NFPA:



TESORO

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	LPG			
Synonyms	:	Liquefied Petroleum Gases; Stabilizer Bottoms; SNG Enrichment LPG, 888100004454			
SDS Number	:	888100004454	**Version**	:	2.5
Product Use Description	:	Fuel, Refinery intermediate Stream			
Company	:	For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259			
Tesoro Call Center	:	(877) 783-7676	**Chemtrec (Emergency Contact)**	:	(800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classifications : Flammable Gas – Category 1
Gases Under Pressure – Liquefied Gas
Carcinogenicity – Category 1B
Mutagenicity – Category 1B
Specific Target Organ Toxicity (Single Exposure) – Category 3

Pictograms

Signal Word : DANGER

Hazard Statements

Extremely flammable gas
Contains gas under pressure; may explode if heated.
May cause cancer by inhalation if 1,3-butadiene is a component.
May casue genetic defects by inhalation if 1,3-butadiene is a component.
May cause drowsiness or dizziness.
High concentration may sensitize heart to adrenaline.

Precautionary Statements

Prevention : Keep away from heat/sparks/open flame/hot surfaces. No smoking.
Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
Wear protective clothing such as gloves, goggles, and face shield if needed to prevent skin and eye contact. Avoid breathing gas.

Response	Leaking gas fire: Do not extinguish, unless leak can be stopped safely. Eliminate all ignition sources if safe to do so. If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed or concerned: Get medical advice or attention.
Storege	Store in secure or locked up location in well ventilated place. Protect from sunlight.
Disposal	Dispose of contents/container in accordance with local. Regional and national regulations.
Supplemental Hazard Information	Exposure to concentrations above 100% of the LEL such as 5% or 50,000 ppm may sensitize heart and cause irregular heartbeat. High concentrations may exclude oxygen and cause dizziness and suffocation. Contact with liquid or cold vapor may cause frostbite or freeze burn. Exposure to concentrations above 10% of the LEL may cause a general central nervous system (CNS) depression typical of anesthetic gases or intoxicants. Aliphatic hydrocarbon gases may build up in confined spaces and may cause dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in narcosis, unconsciousness, and possibly lead to death.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Propane	74-98-6	60 - 90%
Butane	106-97-8	10 - 30%
Propene; Propylene	115-07-1	1 - 5%
Isobutane	75-28-5	1 - 5%
1,3-Butadiene	106-99-0	0 to 0.2%

SECTION 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. Give oxygen. Seek medical attention immediately.

Skin contact : For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). In case of massive exposure, remove contaminated clothing while showering with warm water. Obtain medical attention.

Eye contact : Immediately flush eyes thoroughly with warm water for at least 15 minutes. Remove contact lenses. Rinse with water. Take victim immediately to hospital. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. If eye irritation persists, seek medical attention.

Ingestion : Ingestion is considered unlikely. If swallowed, obtain medical attention.

Notes to physician : Symptoms: Dizziness, Headache, Nausea, Frostbite, Vomiting, Discomfort
Hazards: This material may be a cardiac sensitizer; avoid the use of epinephrine.
Treatment: Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Water spray, Dry chemical, Foam, Carbon dioxide (CO2), Fire should not be extinguished unless flow of gas can be immediately stopped.
Specific hazards during fire fighting	:	Flammable Gas. Vapors are heavier than air and may travel long distances to a point of ignition and flash back.
Special protective equipment for fire-fighters	:	Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.
Further information	:	Allow the fire to burn under controlled conditions. Fire should not be extinguished unless flow of gas can be immediately stopped. Stop leak if you can do it without risk. Evacuate area. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply. Use water to cool equipment, surfaces and containers exposed to fire and excessive heat. For large fire the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. Emergency eye wash capability should be available in the vicinity of any potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Consider disposal of contaminated clothing rather than laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.
Environmental precautions	:	Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	:	Land Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning. Allow liquid to evaporate from the surface. All equipment used when handling the product must be grounded. Do not direct water at spill or source of leak. Do not touch or walk through spilled material. If possible, turn leaking containers so that gas escapes rather than liquid. Isolate area until gas has dispersed. Prevent spreading of vapors through sewers, ventilation systems and confined areas. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Water Spill: Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Allow liquid to evaporate from the surface.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling	:	Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification.
	:	Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage

tanks or other containers. Precautions to prevent static-initated fire or explosion during transfer, storage or handling, include but are not limited to these examples:

(1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators.

(2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such gasoline or naphtha).

(3) Storage tank level floats must be effectively bonded.

For more information on precautions to prevent static-initated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).

Conditions for safe storage, including incompatibilities : Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

: Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids and copper.

: Keep in a dry place. Keep away from heat. No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA Z1	Propane	74-98-6	PEL	1,000 ppm 1,800 mg/m3
	1,3-Butadiene	106-99-0	TWA	1 ppm
		106-99-0	STEL	5 ppm
ACGIH	Propane	74-98-6	TWA	1,000 ppm
	Butane	106-97-8	TWA	1,000 ppm
	Isobutane	75-28-5	TWA	1,000 ppm
	1,3-Butadiene	106-99-0	TWA	2 ppm

Protective measures : Avoid contact with skin. When using do not smoke. Keep out of reach of children. Keep away from heat and flame.

Engineering measures : Use only intrinsically safe electrical equipment approved for use in classified areas.

Eye protection : Goggles and face shield as needed to prevent eye and face contact.

Hand protection	:	Neoprene gloves Any specific glove information provided is based on published literature and glove manufacturer data. Work conditions can greatly effect glove durability; inspect and replace worn or damaged gloves. If product is hot, thermally protective gloves are recommended. If contact with forearms is likely, wear gauntlet style gloves.
Skin and body protection	:	Where contact with liquid may occur, wear apron and faceshield.
Respiratory protection	:	NIOSH/MSHA approved positive-pressure self-contained breathing apparatus (SCBA) or Type C positive-pressure supplied air with escape bottle must be used for gas concentrations above occupational exposure limits, for potential of uncontrolled release, if exposure levels are not known, or in an oxygen-deficient atmosphere. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection.
Work / Hygiene practices	:	Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colorless gas. Cold vapor cloud may be white but the lack of visible gas cloud does not indicate absence of gas. A colorless liquid when pressurized.
Odor		Faint, gasoline-like odor.
Odor threshold		Reported thresholds range from 2500 to 5000 ppm.
pH		Not applicable
Melting point/freezing point		-187 °C (-305 °F)
Initial boiling point & range		-0.5 °C (31.1 °F) at 1,013.25 hPa
Flash point		< -60 °C (< -76 °F) Method: ASTM D 92
Evaporation rate		High
Flammability (solid, gas)		Gas
Lower flammability limit		1.8 % (V)
Upper flammability limit		8.5 % (V)
Vapor pressure		2,399.8 hPa at 20 °C (68 °F)
Vapor density		2.007 at 21.1 °C (70.0 °F) (Air = 1.0)
Relative density		0.56 at 15 °C
Solubility (H20)		Negligible
Partition coefficient (Octanol/H2O)		No data available

Auto ignition temperature	287 °C (549 °F)
Decomposition temperature	Heating may cause a fire or explosion. Material does not decompose at ambient temperatures. Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke) are possible hazardous decomposition products.
Viscosity	No data available
Conductivity	Hydrocarbon liquids without static dissipater additive may have conductivity below 1 picoSiemens per meter (pS/m). The highest electro-static ignition risks are associated with "ultra-low conductivities" below 5 pS/m. See Section 7 for sources of information on defining safe loading and handling procedures for low conductivity products. Note that conductivity can be reduced by environmental factors such as a decrease in temperature.

SECTION 10. STABILITY AND REACTIVITY

Reactivity		Vapors may form explosive mixture with air. Hazardous polymerization does not occur.
Chemical stability		Stable under normal conditions.
Hazardous reactions	:	Can react with strong acids, strong oxidizers, and copper. Explosion hazard when exposed to nickel carbonyl/oxygen mixture
Conditions to avoid	:	Keep away from flame, sparks, excessive temperatures and open flame.
Incompatible materials	:	Can react with strong acids, strong oxidizers, and copper.
Hazardous decomposition products		Carbon monoxide, carbon dioxide and non-combustedhydrocarbons (smoke) are possible hazardous decomposition products.

SECTION 11. TOXICOLOGICAL INFORMATION

Inhalation	:	May cause central nervous system disorder (e.g. narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Simple asphyxiant: Acts by displacing oxygen in the lungs thereby diminishing the supply of oxygen available to the blood and tissues. Symptoms include shortness of breath, rapid heart rate, incoordination, lethargy, headaches, nausea, vomiting, and disorientation. Continued lack of oxygen may result in convulsions, loss of consciousness and death. Since exercise increases the tissue need for oxygen, symptoms will occur more quickly during exertion in an oxygen-deficient environment. Oxygen in enclosed spaces should be maintained at 21 percent by volume. Exposure to high concentrations my cause cardiac sensitization.
Ingestion	:	Considered unlikely.
Skin and eye contact	:	Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due evaporative cooling.
Further information	:	Chronic Effects And/Or Target Organ Data: May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion and blurred vision) and/or damage. Exposure to rapidly expanding gas or vaporizing liquid may cause frostbite (cold burn). Simple asphyxiant: Acts by displacing oxygen in the lungs thereby diminishing the supply of oxygen available to the blood and tissues. Symptoms include shortness of breath, rapid heart rate,

incoordination, lethargy, headaches, nausea, vomiting, and disorientation. Continued lack of oxygen may result in convulsions, loss of consciousness and death. Since exercise increases the tissue need for oxygen, symptoms will occur more quickly during exertion in an oxygen-deficient environment. Oxygen in enclosed spaces should be maintained at normal atmospheric percentage (about 21 percent by volume).

Component:	:	
Propene; Propylene	115-07-1	Acute inhalation toxicity: LC50 rat Dose: 658 mg/l Exposure time: 4 h Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation
Butane	106-97-8	Acute inhalation toxicity: LC50 rat Dose: 658 mg/L 4h
Propane	74-98-6	Skin irritation: Classification: Irritating to skin. Result: Skin irritation Eye irritation: Classification: Irritating to eyes. Result: Mild eye irritation

Carcinogenicity:

NTP	This product may contain a material identified by NTP as a known or anticipated carcinogen: 1,3-Butadiene (CAS-No.: 106-99-0).
IARC	This product may contain a material identified by IARC as a possible, probable, or confirmed human carcinogen: 1,3-Butadiene (CAS-No.: 106-99-0) .
OSHA	This product may contain more than 0.1% of a material identified by OSHA as a carcinogen: 1,3-Butadiene (CAS-No.: 106-99-0).
CA Prop 65	WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm: 1,3-Butadiene (CAS-No.: 106-99-0).

SECTION 12. ECOLOGICAL INFORMATION

Bioaccumulation	:	Inherently biodegradable. Accumulation in terrestrial organisms is unlikely.
Toxicity to fish	:	Not expected to be harmful to aquatic organisms.
Additional ecological information	:	Liquid release is only expected to cause localized, non-persistent environmental damage, such as freezing. Biodegradation of this product may occur in soil and water. Volatilization is expected to be the most important removal process in soil and water. This product is expected to exist entirely in the vapor phase in ambient air.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal	:	Dispose of container and unused contents in accordance with federal, state and local requirements.

SECTION 14. TRANSPORT INFORMATION

CFR

Proper shipping name	: PETROLEUM GASES, LIQUEFIED
UN-No.	: 1075
Class	: 2.1
Packing group	:

TDG

Proper shipping name	: PETROLEUM GASES, LIQUEFIED
UN-No.	: UN1075
Class	: 2.1
Packing group	:

IATA Cargo Transport

UN UN-No.	: UN1075
Description of the goods	: PETROLEUM GASES, LIQUEFIED
Class	: 2.1
ICAO-Labels	: 2.1
Packing instruction (cargo aircraft)	: 200

IATA Passenger Transport

UN-No.	: UN1075
Class	: 2.1
	Not permitted for transport

IMDG-Code

UN-No.	: UN 1075
Description of the goods	: PETROLEUM GASES, LIQUEFIED
Class	: 2.1
IMDG-Labels	: 2.1
EmS Number	: F-D S-U
Marine pollutant	: No

SECTION 15. REGULATORY INFORMATION

TSCA Status : On TSCA Inventory

DSL Status : All components of this product are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

PENN RTK US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Components	CAS-No.
Propane	74-98-6
Butane	106-97-8
Propene; Propylene	115-07-1
Isobutane	75-28-5

MASS RTK US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Components	CAS-No.
Propane	74-98-6
Butane	106-97-8
Propene; Propylene	115-07-1
Isobutane	75-28-5

NJ RTK US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Components	CAS-No.
Propane	74-98-6
Butane	106-97-8
Propene; Propylene	115-07-1
Isobutane	75-28-5

SARA III US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

Components	CAS-No.
Propene; Propylene	115-07-1

California Prop. 65 : This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)
The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply**.**

SECTION 16. OTHER INFORMATION

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Revision Date : 11/29/2012

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