

**MATERIAL SAFETY DATA SHEET**

PRODUCT NAME: LIQUEFIED PETROLEUM GAS WITH METHYL ACETYLENE-PROPADIENE

1. Product and Company Identification

BOC Gases,
Division of,
The BOC Group, Inc.
575 Mountain Avenue
Murray Hill, NJ 07974

BOC Gases
Division of,
BOC Canada Limited
5975 Falbourne Street, Unit 2
Mississauga, Ontario L5R 3W6

TELEPHONE NUMBER: (908) 464-8100

24-HOUR EMERGENCY TELEPHONE NUMBER:
CHEMTREC (800) 424-9300

TELEPHONE NUMBER: (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER:
(905) 501-0802

EMERGENCY RESPONSE PLAN NO: 2-0101

PRODUCT NAME: LIQUEFIED PETROLEUM GAS WITH METHYL ACETYLENE-PROPADIENE

CHEMICAL NAME: Liquefied Petroleum Gas with Methyl Acetylene-Propadiene

COMMON NAMES/SYNONYMS: LPG - MAPP(R) Mixture; MAPP(R) - LPG Mixture; Methyl Acetylene-Propadiene (MAPP(R)) Mixture With LPG

TDG (Canada) CLASSIFICATION: 2.1

WHMIS CLASSIFICATION: A, B1

PREPARED BY: Loss Control (908)464-8100/(905)501-1700

PREPARATION DATE: 6/1/95

REVIEW DATES: 07/16/04

2. Composition, Information on Ingredients**EXPOSURE LIMITS¹:**

| INGREDIENT | % VOLUME | PEL-OSHA ² | TLV-ACGIH ³ | LD ₅₀ or LC ₅₀ Route/Species |
|--|----------|-----------------------|-------------------------------|---|
| Liquefied Petroleum Gas FORMULA: Mixture CAS: 68476-85-7 RTECS #: SE7545000 | 56.0 | 1000 ppm TWA | 1000 ppm TWA | Not Available |
| Methyl Acetylene – Propadiene FORMULA: Mixture CAS: 59355-75-8 RTECS #: UK4920000 | 44.0 | 1000 ppm TWA | 1000 ppm TWA 1250 ppm STEL | Not Available |

¹ Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

² As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

³ As stated in the ACGIH 2004 Threshold Limit Values for Chemical Substances and Physical Agents.

OSHA Regulatory Status: This material is classified as hazardous under OSHA regulations.

3. Hazards Identification**EMERGENCY OVERVIEW**

Colorless highly flammable gas with unpleasant odor. Dangerous fire and explosion hazard. Avoid heat, sparks, and flames. Inhalation of high concentrations may cause central nervous system (CNS) depression and cardiac sensitization. Liquid product may cause frostbite or irritation. Contents under pressure. Use and store below 125 °F.

PRODUCT NAME: LIQUEFIED PETROLEUM GAS WITH METHYL ACETYLENE-PROPADIENE

ROUTE OF ENTRY:

| | | | | |
|---------------------|-----------------------|--------------------|-------------------|-----------------|
| Skin Contact Yes | Skin Absorption No | Eye Contact Yes | Inhalation Yes | Ingestion No |
|---------------------|-----------------------|--------------------|-------------------|-----------------|

HEALTH EFFECTS:

| | | |
|--------------------------------------|---------------------------|---------------------|
| Exposure Limits Yes | Irritant Yes | Sensitization No |
| Teratogen No | Reproductive Hazard No | Mutagen No |
| Synergistic Effects None Reported | | |

Carcinogenicity: -- NTP: No IARC: No OSHA: No

EYE EFFECTS: Contact with liquid may cause frostbite, irritation or blindness.

SKIN EFFECTS: Contact with liquid will cause frostbite or irritation.

INGESTION EFFECTS: Ingestion is unlikely. The effects of ingestion are unknown. Liquid may cause cryogenic burns. Consult a physician for treatment or contact the local poison control center.

INHALATION EFFECTS: Inhalation of high concentrations may cause central nervous system depression with dizziness, disorientation, incoordination, nausea, and narcosis. High concentrations may also cause cardiac sensitization resulting in irregular heartbeat and may make the individual more susceptible to cardiac effects of substances such as epinephrine and adrenaline.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Irritant properties may aggravate pre-existing eye and skin disorders.

POTENTIAL ENVIRONMENTAL EFFECTS: Ecotoxicity values were unavailable. Toxic effects are expected to be similar to those seen in humans and test animals.

4. First Aid Measures

EYES: Never introduce ointment or oil into the eyes without medical advice! In case of freezing caused by rapidly evaporating liquid, DO NOT WASH THE EYES WITH HOT OR EVEN TEPID WATER! Remove victim from the source of contamination. For contact with small amounts of liquid, open the eyelids wide to allow the liquid to evaporate. For contact with large amounts, rinse with a low pressure stream of cool water for 15 minutes. Refer the victim to an ophthalmologist for treatment and follow up. If the victim cannot tolerate light, protect the eyes with dark glasses. The use of bandages is not recommended as keeping the eyelids closed or exerting pressure on the eyelid may cause further damage.

SKIN: For dermal contact or frostbite: Remove contaminated clothing and flush affected areas with lukewarm water. DO NOT USE HOT WATER. A physician should see the patient promptly if contact with the product has resulted in frostbite.

INGESTION: Keep victim calm and warm. Notify physician and inform of nature of material, the state of the victim and any observed signs or symptoms.

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INHALATION: PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS AND AWARE OF FIRE AND EXPLOSION HAZARDS ASSOCIATED WITH LPG.

Conscious persons should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated area is most important. If breathing is difficult, administer oxygen. Unconscious persons should be moved to an uncontaminated area, given mouth-to-mouth resuscitation and supplemental oxygen. Further treatment should be symptomatic and supportive.

Note to Physician: Monitor cardiac rhythm and treat arrhythmias as necessary. DO NOT administer stimulants such as epinephrine or adrenaline.

5. Fire Fighting Measures

| | | |
|---|-----------------------|--|
| Conditions of Flammability: Flammable | | |
| Flash point: -144°F (-98°C) | Method: Closed Cup | Autoignition: Temperature: 850°F (54°C) |
| LEL(%): 3.0 | UEL(%): 11.0 | |
| Hazardous combustion products: Acetylides | | |
| Sensitivity to mechanical shock: No data | | |
| Sensitivity to static discharge: No data | | |

FIRE AND EXPLOSION HAZARDS:

Highly flammable gas mixture. This gas is heavier than air and may travel a considerable distance to an ignition source. May burn with an almost invisible flame in bright light. Cylinder may vent rapidly or rupture violently from pressure when involved in a fire situation.

EXTINGUISHING MEDIA:

Water fog, dry chemical, foam.

FIRE FIGHTING INSTRUCTIONS:

If possible, stop the flow of gas. Inerting the atmosphere to reduce oxygen levels may extinguish flame, allowing capping of leaking container. Do not attempt this unless specifically trained. Reduce the rate of flow and inject an inert gas, if possible, before completely stopping the flow to prevent flashback. Do not extinguish the fire until the supply is shut off as otherwise an explosive re-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Use non-sparking tools to close container valves.

Use water spray to cool surrounding containers. Be cautious of a Boiling Liquid Evaporating Vapor Explosion, BLEVE, if flame is impinging on surrounding containers. Direct 500 GPM water stream onto containers above liquid level with remote monitors. Limit the number of personnel in proximity of fire and evacuate surrounding areas in all directions.

Firefighters should wear respiratory protection (SCBA) and full turnout or Bunker gear. Continue to cool fire-exposed cylinders until well after flames are extinguished.

6. Accidental Release Measures

WARNING: Any leaks of MAPP present great danger of explosion or fire. Keep all sources of ignition well away from leak. Extinguish any existing ignition sources and evacuate all personnel from affected area. Use appropriate protective equipment (See Section 8). Provide maximum ventilation and ventilate enclosed areas to prevent build-up of flammable concentrations. All ventilation must be suitable for use in a potentially flammable atmosphere. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

7. Handling and Storage

Electrical Classification: Class I, Group Not Specified.

Earth bond and ground all lines and equipment associated with the fuel gas system. All equipment should be non-sparking and explosion proof.

Use only in well-ventilated areas. Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure regulator when connecting cylinder to lower pressure piping or systems. Do not heat cylinder by any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Do not insert any object (i.e.: screwdriver) into valve cap openings as this can damage the valve causing leakage.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders from being stored for excessive periods of time. Post "NO SMOKING OR OPEN FLAMES" signs in the storage or use area. There should be no sources of ignition in the storage or use area. This fuel gas should not be handled or used in metals that form acetylides, such as copper, silver, magnesium or their alloys.

For additional recommendations consult Compressed Gas Association Pamphlet P-1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

8. Exposure Controls, Personal Protection

ENGINEERING CONTROLS: Use enclosures and local exhaust ventilation as necessary to limit exposure at or below the acceptable exposure limits. Exhaust gas should be vented to a gas treatment system. If product is handled routinely where the potential for leaks exists, all electrical equipment must be rated for use in potentially flammable atmospheres. Consult the National Electrical Code for details.

EYE/FACE PROTECTION: For welding, safety glasses or goggles with filter lenses, shade #4 or darker. Safety goggles and full faceshield should be worn when contact with liquid may occur.

SKIN PROTECTION: Insulated gloves, apron, and other protective clothing as necessary to prevent exposure.

RESPIRATORY PROTECTION: For emergency release use a positive pressure NIOSH approved air-supplying respirator systems (SCBA or airline/escape bottle) using at a minimum Grade D air.

OTHER: Safety shoes, emergency eyewash station

9. Physical and Chemical Properties

| PARAMETER | VALUE | UNITS |
|-------------------------------------|---|-------|
| Physical state (gas, liquid, solid) | : Gas | |
| Vapor pressure at 70°F | : 97 | Psia |
| Vapor density (Air = 1) | : Not Available | |
| Evaporation point | : Not Available | |
| Boiling point | : -54 to -10 | °F |
| | : -48 to -23 | °C |
| Freezing point | : -184 | °F |
| | : -120 | °C |
| PH | : Not Available | |
| Specific gravity | : 0.571 (Liquid) | |
| Oil/water partition coefficient | : Not Available | |
| Solubility (H ₂ O) | : Slight | |
| Odor threshold | : Not Available | |
| Odor and appearance | : A colorless gas with a characteristic, unpleasant odor. | |

10. Stability and Reactivity

STABILITY: Stable

INCOMPATIBLE MATERIALS/CONDITIONS: Natural rubber, copper alloys above 65% copper, silver, mercury, halogens, acids, metallic sodium, potassium, potassium permanganate. Avoid heat, sparks, flames, and high temperatures. Product will start to decompose at 815 °F (435 °C).

HAZARDOUS DECOMPOSITION PRODUCTS: May produce acetylides when in contact with silver, magnesium, or copper alloys above 65% copper.

HAZARDOUS POLYMERIZATION: Will not occur.

11. Toxicological Information

INHALATION: High concentrations of aliphatic hydrocarbon gases may cause CNS depression. Recent information suggests that C1-C4 aliphatic (alkane) hydrocarbon gases can cause potentially fatal cardiac arrhythmias. Cardiac sensitization to adrenalin in dogs has been noted following inhalation. In dogs, the heart was more sensitive to epinephrine induced ventricular fibrillations following exposure to 15-90% propane for 10 minutes. Ventricular fibrillations have been reported in a 15-year old girl and a 14-year old boy following inhalation of n-butane (concentration not reported).

Limited animal data for MAPP gas by analogy to methyl acetylene indicate the potential for anesthetic effects and asphyxiation at high concentrations.

SKIN AND EYE: Contact with gas is not expected to cause irritation. Liquid may cause burns or frostbite.

OTHER: Not given.

12. Ecological Information

Product does not contain Class I or Class II ozone depleting substances. Not toxic. Will not bioconcentrate.

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13. Disposal Considerations

Do not attempt to dispose of residual or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

14. Transport Information

| PARAMETER | United States DOT | Canada TDG |
|------------------------|---|---|
| PROPER SHIPPING NAME: | Methyl Acetylene and Propadiene, mixtures, stabilized | Methyl Acetylene and Propadiene, mixtures |
| HAZARD CLASS: | 2.1 | 2.1 |
| IDENTIFICATION NUMBER: | UN 1060 | UN 1060 |
| SHIPPING LABEL: | FLAMMABLE GAS | FLAMMABLE GAS |

15. Regulatory Information

SARA TITLE III NOTIFICATIONS AND INFORMATION

SARA TITLE III - SECTION 313 SUPPLIER NOTIFICATION:

This product does not contain toxic chemicals subject to reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372.

SARA TITLE III - HAZARD CLASSES:

Sudden Release of Pressure Hazard
Acute Health Hazard
Fire Hazard

U.S. TSCA/Canadian DSL: All ingredients are listed on the U.S. Toxic Substances Control Act (TSCA) inventory or exempt from listing and on the Canadian Domestic Substance List (DSL).

California Proposition 65: This product does not contain ingredient(s) known to the State of California to cause cancer or reproductive toxicity.

Canadian Controlled Products Regulations (CPR): This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. Other Information

NFPA HAZARD CODES

Health: 1
Flammability: 4
Instability: 1

HMIS HAZARD CODES

Health: 1
Flammability: 4
Physical Hazard: 2

RATINGS SYSTEM

0 = No Hazard
1 = Slight Hazard
2 = Moderate Hazard
3 = Serious Hazard
4 = Severe Hazard

Note: Ratings were assigned in accordance with Compressed Gas Association (CGA) guidelines as published in CGA Pamphlet P-19-2004, *CGA Recommended Hazard Ratings for Compressed Gases, 2nd Edition*.

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| | |
|-------|---|
| ACGIH | American Conference of Governmental Industrial Hygienists |
| DOT | Department of Transportation |
| IARC | International Agency for Research on Cancer |
| NTP | National Toxicology Program |
| OSHA | Occupational Safety and Health Administration |
| PEL | Permissible Exposure Limit |
| SARA | Superfund Amendments and Reauthorization Act |
| STEL | Short Term Exposure Limit |
| TDG | Transportation of Dangerous Goods |
| TLV | Threshold Limit Value |
| WHMIS | Workplace Hazardous Materials Information System |

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

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