Material Safety Data Sheet

MAPP GAS (Petroleum Gas, MAPD)

Section 1. Chemical product and company identification

Product name : MAPP GAS (Petroleum Gas, MAPD)

Supplier : AIRGAS INC., on behalf of its subsidiaries
259 North Radnor-Chester Road
Suite 100
Radnor, PA 19087-5283
1-610-687-5253

Product use : Synthetic/Analytical chemistry.

Synonym : MAP,MAPP,Methyacetylene-Propadiene, Mixture of Methylacetylene and Propadiene

MSDS # : 002015

Date of Preparation/ Revision : **8/20/2014.**

In case of emergency : 1-866-734-3438

Section 2. Hazards identification

Physical state : Gas.

Emergency overview : DANGER!

FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.
CONTENTS UNDER PRESSURE.

Keep away from heat, sparks and flame. Do not puncture or incinerate container. Contains material that can cause target organ damage. Use only with adequate ventilation. Keep container closed.

Contact with rapidly expanding gases can cause frostbite.

Target organs : Contains material which causes damage to the following organs: upper respiratory tract, skin, eyes.
Contains material which may cause damage to the following organs: the nervous system, central nervous system (CNS).

Routes of entry : Inhalation

Potential acute health effects

Eyes : Liquid or cold gas may cause frostbites.

Skin : Liquid or cold gas may cause frostbites.

Inhalation : Acts as a simple asphyxiant.

Ingestion : Ingestion is not a normal route of exposure for gases

Potential chronic health effects

Carcinogenicity : See ACGIH Carcinogen classification.

Target organs : Contains material which causes damage to the following organs: upper respiratory tract, skin, eyes.
Contains material which may cause damage to the following organs: the nervous system, central nervous system (CNS).

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

Section 3. Composition, Information on Ingredients

Name	CAS number	% Volume	Exposure limits
Propylene	115-07-1	40 - 50	**ACGIH TLV (United States, 1/2005).** TWA: 500 ppm 8 hours. Form: All forms **ACGIH TLV (United States, 3/2012).** TWA: 500 ppm 8 hours.
Methyl Acetylene	74-99-7	27 - 33	**ACGIH TLV (United States, 3/2012).** TWA: 1640 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **NIOSH REL (United States, 1/2013).** TWA: 1650 mg/m³ 10 hours. TWA: 1000 ppm 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 1650 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1650 mg/m³ 8 hours. TWA: 1000 ppm 8 hours.
1,2-Propadiene (Allene)	463-49-0	13 - 15	
Isobutane	75-28-5	2 - 5	**NIOSH REL (United States, 4/2013).** TWA: 1900 mg/m³ 10 hours. TWA: 800 ppm 10 hours. **ACGIH TLV (United States, 6/2013).** STEL: 1000 ppm 15 minutes.
N-Butane	106-97-8	2 - 5	**ACGIH TLV (United States, 3/2012).** TWA: 1000 ppm 8 hours. **NIOSH REL (United States, 1/2013).** TWA: 1900 mg/m³ 10 hours. TWA: 800 ppm 10 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1900 mg/m³ 8 hours. TWA: 800 ppm 8 hours.
Propane	74-98-6	1 - 5	**ACGIH TLV (United States, 3/2012).** TWA: 1000 ppm 8 hours. **NIOSH REL (United States, 1/2013).** TWA: 1800 mg/m³ 10 hours. TWA: 1000 ppm 10 hours. **OSHA PEL (United States, 6/2010).** TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours. **OSHA PEL 1989 (United States, 3/1989).** TWA: 1800 mg/m³ 8 hours. TWA: 1000 ppm 8 hours.

Section 4. First aid measures

No action shall be taken involving any personal risk or without suitable training.If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Eye contact : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. DO NOT remove contact lenses, if worn. Obtain medical attention without delay, preferably from an ophthalmologist.

Skin contact : Immediately warm frostbite area with warm water (not to exceed 40.5 C, 105F). Remove contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention.

Frostbite : Try to warm up the frozen tissues and seek medical attention.

Inhalation : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Ingestion : As this product is a gas, refer to the inhalation section.

Section 5. Fire-fighting measures

Flammability of the product : Flammable.

Auto-ignition temperature : Lowest known value: 286.85°C (548.3°F) (Butane).

Flash point : Lowest known value: Closed cup: -108.15°C (-162.7°F). (propylene)

Flammable limits : Lower: 2% Upper: 13%

Products of combustion : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

Fire-fighting media and instructions : In case of fire, use water spray (fog), foam or dry chemical.

In case of fire, allow gas to burn if flow cannot be shut off immediately. Apply water from a safe distance to cool container and protect surrounding area. If involved in fire, shut off flow immediately if it can be done without risk.

Contains gas under pressure. Extremely flammable. In a fire or if heated, a pressure increase will occur and the container may burst or explode. Gas may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back, causing fire or explosion.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions : Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment (section 8). Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Methods for cleaning up : Immediately contact emergency personnel. Stop leak if without risk. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Handling : Use only with adequate ventilation. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. High pressure gas. Do not puncture or incinerate container. Use equipment rated for cylinder pressure. Close valve after each use and when empty. Keep container closed. Keep away from heat, sparks and flame. To avoid fire, eliminate ignition sources. Protect cylinders from physical damage; do not drag, roll, slide, or drop. Use a suitable hand truck for cylinder movement.

Storage : Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Segregate from oxidizing materials. Cylinders should be stored upright, with valve protection cap in place, and firmly secured to prevent falling or being knocked over. Cylinder temperatures should not exceed 52 °C (125 °F).

Section 8. Exposure controls/personal protection

Engineering controls : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Personal protection

Eyes : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. Monogoggles.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Neoprene and Nitrile (NBR).

Respiratory : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

The applicable standards are (US) 29 CFR 1910.134 and (Canada) Z94.4-93

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Personal protection in case of a large spill : Self-contained breathing apparatus (SCBA) should be used to avoid inhalation of the product.

Product name

propene

ACGIH TLV (United States, 1/2005).
TWA: 500 ppm 8 hours. Form: All forms
ACGIH TLV (United States, 3/2012).
TWA: 500 ppm 8 hours.

propyne

ACGIH TLV (United States, 3/2012).
TWA: 1640 mg/m³ 8 hours.
TWA: 1000 ppm 8 hours.
NIOSH REL (United States, 1/2013).
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TWA: 1650 mg/m³ 8 hours.
TWA: 1000 ppm 8 hours.
OSHA PEL 1989 (United States, 3/1989).
TWA: 1650 mg/m³ 8 hours.
TWA: 1000 ppm 8 hours.

allene

Isobutane

NIOSH REL (United States, 4/2013).
TWA: 1900 mg/m³ 10 hours.
TWA: 800 ppm 10 hours.
ACGIH TLV (United States, 6/2013).
STEL: 1000 ppm 15 minutes.

Butane

ACGIH TLV (United States, 3/2012).
TWA: 1000 ppm 8 hours.
NIOSH REL (United States, 1/2013).
TWA: 1900 mg/m³ 10 hours.
TWA: 800 ppm 10 hours.
OSHA PEL 1989 (United States, 3/1989).
TWA: 1900 mg/m³ 8 hours.
TWA: 800 ppm 8 hours.

propane

ACGIH TLV (United States, 3/2012).
TWA: 1000 ppm 8 hours.
NIOSH REL (United States, 1/2013).
TWA: 1800 mg/m³ 10 hours.
TWA: 1000 ppm 10 hours.
OSHA PEL (United States, 6/2010).
TWA: 1800 mg/m³ 8 hours.
TWA: 1000 ppm 8 hours.
OSHA PEL 1989 (United States, 3/1989).
TWA: 1800 mg/m³ 8 hours.
TWA: 1000 ppm 8 hours.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and chemical properties

Molecular weight : 42 g/mol

Melting/freezing point : -102.7°C (-152.9°F) This is based on data for the following ingredient: propyne. Weighted average: -151.39°C (-240.5°F)

Critical temperature : Lowest known value: 91.85°C (197.3°F) (propene).

Vapor density : Highest known value: 2.1 (Air = 1) (Butane). Weighted average: 1.52 (Air = 1)

Gas Density (lb/ft ^{3}) : Weighted average: 0.11

Section 10. Stability and reactivity

Stability and reactivity : The product is stable.
Conditions to avoid: Stable as mixed; however, contains unstable materials (methylacetylene and propadiene). Weathering off (evaporation of light components) may allow concentration of the methylacetylene and propadiene to reach concentrations which would make mixture unstable on heating. Avoid heating of mixture or venting of lights that could cause lighter materials to weather off(evaporate).

Incompatibility with various substances : Extremely reactive or incompatible with oxidizing agents.
Reactive with metals.
|Additionally, avoid contact with acetylide-forming metals (copper,silver and mercury). Copper alloys (such as brass) containing sixty six percent (66%) or more of copper should not be exposed to MAPD.

Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Hazardous polymerization : May Occur.

Conditions to Avoid: Elevated tempertures and pressures. Polymerization catalysts, such as metal alkyls, can cause uncontrolled polymerization. Contamination with oxygen can cause propadiene to form hazardous peroxides.

INHIBITORS/STABILIZERS

An ihibitor is added to the MAPD mixture to prevent potential unstable peroxide formation. Butanes (iso and/or normal) are also added to the MAPD mixture to prevent potential concentration of the methylacetylene and propadiene from reaching concentration levels that would render the mixture unstable in case of weathering off (evaporation of light components).

Section 11. Toxicological information

Toxicity data

Product/ingredient name	Result	Species	Dose	Exposure
Isobutane	LC50 Inhalation Vapor	Rat	658000 mg/m³	4 hours
	LC50 Inhalation Gas.	Rat	57 pph	15 minutes
	LC50 Inhalation Gas.	Rat	570000 ppm	15 minutes
Butane	LC50 Inhalation Vapor	Rat	658000 mg/m³	4 hours
propane	LC50 Inhalation Gas.	Rat	>800000 ppm	15 minutes

Chronic effects on humans : **CARCINOGENIC EFFECTS**: Classified A4 (Not classifiable for humans or animals.) by ACGIH [Petroleum Gas, Liquefied (MAPD, MAPP GAS)].

Specific effects

Carcinogenic effects : See ACGIH Carcinogen classification.

Mutagenic effects : No known significant effects or critical hazards.

Reproduction toxicity : No known significant effects or critical hazards.

Section 12. Ecological information

Aquatic ecotoxicity

Not available.

Products of degradation : Products of degradation: carbon oxides (CO, CO_2) and water.

Environmental fate : Not available.

Environmental hazards : No known significant effects or critical hazards.

Toxicity to the environment : Not available.

Section 13. Disposal considerations

Product removed from the cylinder must be disposed of in accordance with appropriate Federal, State, local regulation.Return cylinders with residual product to Airgas, Inc.Do not dispose of locally.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN1060	Methyl Acetylene and Propadiene mixtures, stabilized	2.1	Not applicable (gas).		-
TDG Classification	UN1060	Methyl Acetylene and Propadiene mixtures, stabilized	2.1	Not applicable (gas).		**Explosive Limit and Limited Quantity Index** 0.125 **ERAP Index** 3000 **Passenger Carrying Road or Rail Index** Forbidden
Mexico Classification	UN1060	Methyl Acetylene and Propadiene mixtures, stabilized	2.1	Not applicable (gas).		-

"Refer to CFR 49 (or authority having jurisdiction) to determine the information required for shipment of the product."

Section 15. Regulatory information

United States

U.S. Federal regulations : **United States inventory (TSCA 8b):** All components are listed or exempted.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: propylene; Isobutane; Butane; allene; Propyne; Propane
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: propylene: Fire hazard, Sudden release of pressure; Isobutane: Fire hazard, Sudden release of pressure; Butane: Fire hazard, Sudden release of pressure; allene: Fire hazard, Sudden release of pressure; Propyne: Fire hazard, reactive; Propane: Fire hazard, Sudden release of pressure

Clean Air Act (CAA) 112 regulated flammable substances: propene; propyne; allene; Isobutane; Butane; propane

SARA 313

		Product name	CAS number	Concentration
Form R - Reporting requirements	:	Propylene	115-07-1	40 - 50
Supplier notification	:	Propylene	115-07-1	40 - 50

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations :

Connecticut Carcinogen Reporting: None of the components are listed.
Connecticut Hazardous Material Survey: None of the components are listed.
Florida substances: None of the components are listed.
Illinois Chemical Safety Act: None of the components are listed.
Illinois Toxic Substances Disclosure to Employee Act: None of the components are listed.
Louisiana Reporting: None of the components are listed.
Louisiana Spill: None of the components are listed.
Massachusetts Spill: None of the components are listed.
Massachusetts Substances: The following components are listed: PROPYLENE (PROPENE); PROPYNE; ISOBUTANE; BUTANE; PROPANE
Michigan Critical Material: None of the components are listed.
Minnesota Hazardous Substances: None of the components are listed.
New Jersey Hazardous Substances: The following components are listed: PROPYLENE; 1-PROPENE; METHYL ACETYLENE; 1-PROPYNE; PROPADIENE; 1, 2-PROPADIENE; Isobutane; PROPANE, 2-METHYL-; BUTANE; PROPANE
New Jersey Spill: None of the components are listed.
New Jersey Toxic Catastrophe Prevention Act: None of the components are listed.
New York Acutely Hazardous Substances: None of the components are listed.
New York Toxic Chemical Release Reporting: None of the components are listed.
Pennsylvania RTK Hazardous Substances: The following components are listed: 1-PROPENE; 1-PROPYNE; PROPANE, 2-METHYL-; BUTANE; PROPANE
Rhode Island Hazardous Substances: None of the components are listed.

Canada

WHMIS (Canada) : Class B1: Flammable Gases
Class A: Compressed Gas

CEPA DSL: Propylene; Isobutane; Butane; propadiene; Methyl Acetylene; Propane
CPR Compliance: This product has been classified with a hazard criteria of the CPR, and the MSDS contains all the information required for CPR.

Section 16. Other information

United States

Label requirements : FLAMMABLE GAS.
MAY CAUSE FLASH FIRE.
CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE.
CONTENTS UNDER PRESSURE.

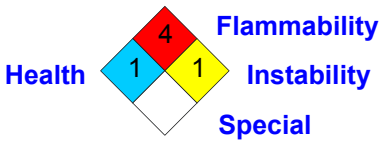
Canada

Label requirements : Class B1: Flammable Gases
Class A: Compressed Gas

Hazardous Material Information System (U.S.A.) :

Health	*	1
Flammability		4
Physical hazards		1

National Fire Protection Association (U.S.A.) :



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