

MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT IDENTIFICATION

PRODUCT NAME: Propylene
CHEMICAL NAME: Propylene, Alkene, Unsaturated Aliphatic Hydrocarbon, Liquefied Petroleum Gas (LPG), LP - Gas
FORMULA: C₃H₆
SYNONYMS: Propene, APACHI® Gas, Methyl Ethylene
MANUFACTURER: Air Products and Chemicals, Inc.
7201 Hamilton Boulevard
Allentown, PA 18195 -1501
PRODUCT INFORMATION: (800) 752-1597
MSDS NUMBER: 1083
REVIEW DATE: July 1999
REVISION: 7
REVISION DATE: July 1999

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

Propylene is packaged as pure material (>99%).

CAS NUMBER: 115-07-1

EXPOSURE LIMITS:

OSHA: None established

ACGIH: Simple asphyxiant

NIOSH: None established

ACGIH recommends 1000 ppm TWA for LPG (Liquefied Petroleum Gas).

SECTION 3. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW

Propylene is a flammable, colorless liquefied compressed gas packaged in cylinders under its own vapor pressure of 152.2 psia at 70 °F. It poses an immediate fire and explosion hazard when mixed with air at concentrations exceeding 1.9%. High concentrations that can cause rapid suffocation are above the lower flammable limit and must not be entered. Propylene is heavier than air and may collect in low areas or travel along the ground where there may be an ignition source present. It is generally odorless at concentrations below 2.0%. Direct contact with liquid can cause frostbite.

EMERGENCY TELEPHONE NUMBERS

(800) 523-9374

Continental U.S., Canada and Puerto Rico

(610) 481-7711

Other locations

ACUTE POTENTIAL HEALTH EFFECTS:

ROUTES OF EXPOSURE:

EYE CONTACT: Contact with liquid (or rapidly expanding gas) may cause irritation and frostbite.

INGESTION: Ingestion is not a likely route of exposure for Propylene.

INHALATION: Propylene is a Central Nervous System (CNS) depressant and a mild anesthetic. It can also displace the amount of oxygen in the air necessary to support life. Exposure to oxygen deficient atmospheres (less than 19.5%) may produce dizziness, nausea, vomiting, loss of

consciousness, and death. At very low oxygen concentrations (less than 12%) unconsciousness and death may rapidly occur without warning. It should be noted that before suffocation could occur, the lower flammable limit for Propylene in air will be exceeded; causing both an oxygen deficient and an explosive atmosphere.

SKIN CONTACT: Contact with liquid (or rapidly expanding gas) can cause irritation and frostbite.

POTENTIAL HEALTH EFFECTS OF REPEATED EXPOSURE:

ROUTE OF ENTRY: Skin contact

SYMPTOMS: Repeated or prolonged contact may cause dermatitis.

TARGET ORGANS: Skin

MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: May aggravate dermatitis.

CARCINOGENICITY: Propylene is not listed as a carcinogen or potential carcinogen by NTP, IARC, or OSHA Subpart Z.

SECTION 4. FIRST AID MEASURES

EYE CONTACT: If liquid propylene comes in contact with eyes, flush eyes with plenty of lukewarm water for several minutes. Seek medical attention immediately.

INGESTION: Ingestion is not a likely route of exposure for Propylene.

INHALATION: Remove person to fresh air. If not breathing, administer artificial respiration. If breathing is difficult, administer oxygen. Obtain prompt medical attention.

SKIN CONTACT: If liquid Propylene comes in contact with skin, remove contaminated clothing and flush with plenty of lukewarm water for several minutes. Seek medical attention immediately.

NOTES TO PHYSICIAN: Treatment of overexposure should be directed at the control of symptoms and the clinical condition.

SECTION 5. FIRE FIGHTING MEASURES

FLASH POINT:

Not applicable

AUTO IGNITION:

851°F (455°C)

FLAMMABLE RANGE:

1.9% - 11.1%

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide, or water.

SPECIAL FIRE FIGHTING INSTRUCTIONS: Evacuate all personnel from area. If possible, without risk, shut off source of Propylene, then fight fire according to types of materials burning. Extinguish fire only if gas flow can be stopped. This will avoid possible accumulation and re-ignition of a flammable gas mixture. Keep adjacent cylinders cool by spraying with large amounts of water until the fire burns itself out. Self-contained breathing apparatus (SCBA) may be required.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Most cylinders are designed to vent contents when exposed to elevated temperatures. Pressure in a cylinder can build up due to heat and it may rupture if pressure relief devices should fail to function. Propylene vapors are heavier than air and may travel to a source of ignition and flashback.

HAZARDOUS COMBUSTION PRODUCTS Carbon monoxide

SECTION 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Evacuate immediate area. Eliminate any possible sources of ignition, and provide maximum explosion-proof ventilation. Use a flammable gas meter (explosimeter) calibrated for Propylene to monitor concentration. Never enter an area where the Propylene concentration is greater than 0.38% (which is 20% of the lower flammable limit). An immediate fire and explosion hazard exists when atmospheric Propylene concentration exceeds 1.9%. Use appropriate protective equipment (SCBA and fire resistant suit). Shut off source of leak if possible. Isolate any leaking cylinder. If leak is from container, pressure relief device or its valve, contact your supplier. If the leak is in the user's system, close the cylinder valve, safely vent the pressure, and purge with an inert gas before attempting repairs.

SECTION 7. HANDLING AND STORAGE

STORAGE: Store cylinders in a well-ventilated, secure area, protected from the weather. Cylinders should be stored upright with valve outlet seals and valve protection caps in place. There should be no sources of ignition. All electrical equipment should be explosion-proof in the storage areas. Storage areas must meet National Electrical Codes for class 1 hazardous areas. Flammable storage areas must be separated from oxygen and other oxidizers by a minimum distance of 20 ft. or by a barrier of non-combustible material at least 5 ft. high having a fire resistance rating of at least 1½ hour. Post "No Smoking or Open Flames" signs in the storage or use areas. Do not allow storage temperature to exceed 125 °F (52 °C). Storage should be away from heavily traveled areas and emergency exits. Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time.

HANDLING: Do not drag, roll, slide or drop cylinder. Use a suitable hand truck designed for cylinder movement. Never attempt to lift a cylinder by its cap. Secure cylinders at all times while in use. Use a pressure-reducing regulator or separate control valve to safely discharge gas from cylinder. Use a check valve to prevent reverse flow into cylinder. Never apply flame or localized heat directly to any part of the cylinder. Do not allow any part of the cylinder to exceed 125 °F (52 °C). Once cylinder has been connected to properly purged and inerted process, open cylinder valves slowly and carefully. If user experiences any difficulty operating cylinder valve, discontinue use and contact supplier. Never insert an object (e.g., wrench, screwdriver, etc.) into valve cap openings. Doing so may damage valve causing a leak to occur. Use an adjustable strap wrench to remove over-tight or rusted caps. All piped systems and associated equipment must be grounded. Electrical equipment should be non-sparking or explosion-proof.

SPECIAL PRECAUTIONS: Always store and handle compressed gas cylinders in accordance with Compressed Gas Association, Inc. (telephone 703-412-0900) pamphlet CGA-1, *Safe Handling of Compressed Gases in Containers*. Local regulations may require specific equipment for storage or use.

SECTION 8. EXPOSURE CONTROL / PERSONAL PROTECTION

ENGINEERING CONTROLS:

VENTILATION: Provide adequate natural or explosion-proof ventilation to prevent accumulation of gas concentrations above 0.38% Propylene (20% of LEL).

RESPIRATORY PROTECTION:

Emergency Use: Do not enter areas where Propylene concentration is greater than 0.38% (20% of LEL). Exposure to concentrations below 0.38% do not require respiratory protection.

EYE PROTECTION: Safety glasses for handling cylinders. Chemical goggles with full face shield for connecting or disconnecting cylinders.

SKIN PROTECTION: Leather gloves for handling cylinders. Leather, rubber or neoprene gloves during use of product. Fire resistant suit and gloves in emergency situations.

OTHER PROTECTIVE EQUIPMENT: Safety shoes are recommended when handling cylinders.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE, ODOR AND STATE: At room temperature and atmospheric pressure, Propylene is a colorless, flammable gas with a sweet odor at concentrations above 2%. It is shipped as a liquefied gas under its own vapor pressure.

MOLECULAR WEIGHT: 42.08

BOILING POINT (1 atm): -53.8 °F (-47.7 °C)

SPECIFIC GRAVITY (also called vapor density) (Air=1): 1.453

FREEZING POINT/MELTING POINT: -301.4 °F (-185.2 °C)

VAPORPRESSURE (At70 °F(21.1 °C)):152.2psia
GASDENSITY (At70 °F(21.1 °C)and1atm) :0.110lb/ft³
SOLUBILITYINWATER(vol./vol.): 6.5/100
LIQUIDDENSITY (At70 °F(21.1 °C),Sat.) :31.92lb/ft³

SECTION10.STABILITYANDREACTIVITY

CHEMICALSTABILITY: Stable

CONDITIONSTOAVOID: Cylindersshouldnotbeexposedtotemperaturesinexcessof125 °F(52 °C).

INCOMPATIBILITY(MaterialstoAvoid): Oxygen,HalogensandOxidizers

REACTIVITY:

A)HAZARDOUSDECOMPOSITIONPRODUCTS: None

B)HAZARDOUSPOLYMERIZATION: Mayoccurathightemperaturesorinthepresenceofa catalyst.

SECTION11.TOXICOLOGICALINFORMATION

LC₅₀(Inhalation): Notapplicable.Simpleasphyxiant.

LD₅₀(Oral): Notapplicable

LD₅₀(Dermal): Notapplicable

SKINCORROSIVITY: Propyleneisnotcorrosivetotheskine.

ADDITIONALNOTES: PropyleneisaCNSdepressantandactsasasimpleasphyxiantandmild anesthetic.Propylenewasfoundtobeacardiacsensitizerinthedog.Ratsandmiceexposedto10,000 ppmofpropylene,6hours/day,5days/weekfor103weeksexhibitednocarcinogeniceffects.Rats exposedatthisleveldidexhibitmicroscopicchangesofthenasalepithelium.Propylenewasnot mutagenicinbacterial(AmessalmonellaandE.coli)assays.

SECTION12.ECOLOGICAL INFORMATION

AQUATICTOXICITY: Notdetermined

MOBILITY: Notdetermined

PERSISTENCEANDBIODEGRADABILITY: Notdetermined

POTENTIALTOBIOACCUMULATE: Notdetermined

REMARKS: PropylenedoesnotcontainanyClassIorClassIIozonedepletingchemicals.

SECTION13.DISPOSALCONSIDERATIONS

UNUSEDPRODUCT/EMPTYCYLINDER: Returncylinderandunusedproducttosupplier.Donot attempttodisposeofunusedproduct.

DISPOSAL: Residualproductinthesystemmaybeburnedifasuitableburningunit(flairincinerator)is availableonsite.Thisshallbedoneinaccordancewithfederal,state,andlocalregulations.Wastes containingthismaterialmaybeclassifiedbyEPAashazardouswastebycharacteristic(i.e.,Ignitability, Corrosively,Toxicity,Reactivity).Wastestreamsmustbecharacterizedbytheusertomeetfederal,state, andlocalrequirements.

SECTION14.TRANSPORTINFORMATION

DOTSHIPPINGNAME: Propylene

HAZARDCLASS: 2.1

IDENTIFICATIONNUMBER: UN1077

SHIPPINGLABEL(s): Flam mablegas

PLACARD(Whenrequired): Flammablegas

SPECIALSHIPPINGINFORMATION: Cylindersshouldbetransportedinasecureuprightpositionina well-ventilatedtruck.Nevertransportinpassengercompartmentofavehicle.Ensurecylindervalveis properlyclosed, valveoutletcaphasbeenreinstalled,andvalveprotectioncapissecuredbeforeshipping cylinder.

CAUTION: Compressed gas cylinders shall not be refilled except by qualified producers of compressed gases. Shipment of a compressed gas cylinder which has not been filled by the owner or with the owner's written consent is a violation of Federal law (49CFR 173.301).

NORTH AMERICAN EMERGENCY RESPONSE GUIDE BOOK NUMBER (NAERG#): 115

SECTION 15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

EPA - ENVIRONMENTAL PROTECTION AGENCY

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
(40CFR Parts 117 and 302)

Reportable Quantity (RQ): None

SARA TITLE III: Superfund Amendment and Reauthorization Act

SECTION 302/304: Emergency Planning and Notification (40CFR Part 355)

Extremely Hazardous Substances: Propylene is not listed.

Threshold Planning Quantity (TPQ): None

Reportable Quantity (RQ): None

SECTION 311/312: Hazardous Chemical Reporting (40CFR Part 370)

IMMEDIATE HEALTH: Yes PRESSURE: Yes

DELAYED HEALTH: No REACTIVITY: No

FIRE: Yes

SECTION 313: Toxic Chemical Release Reporting (40CFR Part 372)

Propylene does not require reporting under Section 313.

CLEAN AIR ACT:

SECTION 112(r): Risk Management Programs for Chemical Accidental Release
(40CFR PART 68)

Propylene is listed as a regulated substance.

Threshold Planning Quantity (TPQ): 10,000 lbs

TSCA: Toxic Substance Control Act

Propylene is listed on the TSCA inventory.

OSHA - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION:

29CFR Part 1910.119: Process Safety Management of Highly Hazardous Chemicals

Propylene is not listed in Appendix A as a highly hazardous chemical. However, any process that involves a flammable gas on site in one location, in quantities of 10,000 pounds (4,553 kg) or greater is covered under this regulation unless it is used as fuel.

STATE REGULATIONS:

CALIFORNIA:

Proposition 65: This product is not a listed substance which the State of California requires warning under this statute.

SECTION 16. OTHER INFORMATION

NFPA RATINGS:

HEALTH: =1

FLAMMABILITY: =4

REACTIVITY: =0

SPECIAL:

HMIS RATINGS:

HEALTH: =0

FLAMMABILITY: =4

REACTIVITY: =0