

Section 1. Chemical Product and Company Identification

Trade name	Propylene (Chemical or Refinery Grade)	Code	319, 324, 3169, 4157
Supplier	Alon USA LP P.O. Box 1311 Big Spring, TX 79721	MSDS#	P51
		Validation Date	1/2/2001
Synonym	Propylene, Propene, Contained Propylene	Print Date	1/2/2001
MSDS Name	Propylene (Chemical or Refinery Grade)	Responsible for Preparation	Robert Campbell.
Chemical Family	Alkene	In Case of Emergency Chemtrec: (800) 424-9300 ALON: 1-800-343-7298 Technical Information ALON: 432-263-9427	
CAS Registry Number	115-07-1		
Threshold Limit Value	Simple asphyxiant.		
Manufacturer	Alon USA LP P.O. Box 1311 Big Spring, TX 79721		

Section 2. Composition and Information on Ingredients

Name	CAS #	% by Weight	Exposure Limits
1) Propylene 2) Propane	115-07-1	>92.5 <7.5	Simple asphyxiant. TWA: 1000 (ppm) from OSHA (PEL) TWA: 1000 (ppm) from ACGIH (TLV) TWA: 1000 (ppm) from NIOSH
3) Ethane	74-84-0	<0.5	Simple asphyxiant.

Section 3. Hazards Identification

Physical State and Appearance	Gas. (Liquid under pressure)
Emergency Overview	FLAMMABLE GAS. MAY CAUSE FLASH FIRE. CONTENTS UNDER PRESSURE. CONTAINS MATERIAL WHICH MAY CAUSE LUNGS, SKIN, EYES DAMAGE. Causes severe eye irritation. Causes severe skin irritation. POTENTIAL SUFFOCATION HAZARD. POTENTIAL SUFFOCATION GAS REDUCES OXYGEN AVAILABLE FOR BREATHING.
Routes of Entry	Eye contact. Inhalation. Skin contact.
Potential Acute Health Effects	
<i>Eyes</i>	Burns from direct contact with liquid.
<i>Skin</i>	Frostbite from direct contact with liquid.
<i>Inhalation</i>	Asphyxia from lack of oxygen. Reduced blood pressure & disordered heart rhythm. Mild intoxication. Vomiting.
<i>Ingestion</i>	Not available.
Potential Chronic Health Effects	CARCINOGENIC EFFECTS: Classified None by NTP, None by OSHA [Propylene (Chemical Grade)]. Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Propylene (Chemical Grade)]. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available.
Medical Conditions Aggravated by Overexposure	Not available.
Overexposure /Signs/Symptoms	Not available.
See Toxicological Information (Section 11)	

Section 4. First Aid Measures

Eye Contact	IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. COLD water may be used. Seek medical attention.
Skin Contact	In case of frostbite, flush with warm water. Remove affected clothing. Get medical attention. Do not use hot water.
Inhalation	Allow the victim to rest in a well-ventilated area. Seek immediate medical attention.
Ingestion	Since the product is a gas and that it is mostly probable that it will be inhaled more than ingested, please consider first to look at the preventive measures in case of inhalation.
Notes to Physician	Evaluate patients with severe or prolonged exposure for neurologic sequelae. May use rewarming and various topical treatments for frostbite.

Section 5. Fire Fighting Measures

Flammability of the Product	Flammable.
Auto-ignition Temperature	497°C (926.6°F)
Flash Points	CLOSED CUP: -107.78°C (-162°F). (Tagliabue.).
Flammable Limits	LOWER: 2.4% UPPER: 10.3%
Products of Combustion	These products are carbon oxides (CO, CO ₂).
Fire Hazards in Presence of Various Substances	Extremely flammable in presence of open flames and sparks.
Explosion Hazards in Presence of Various Substances	Explosive: in mixtures of air or oxygen.
Fire Fighting Media and Instructions	Flammable gas. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. DO NOT use water jet. Move containing vessels from fire area if without risk. Cool containing vessels with flooding quantities of water until well after fire is out. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion. DO NOT extinguish a leaking gas flame unless leak can be stopped. Extinguish secondary fire. Handle damaged cylinders with extreme care.
Protective Clothing (Fire)	Wear MSHA/NIOSH approved self-contained breathing apparatus or equivalent and full protective gear (Bunker gear).
Special Remarks on Fire Hazards	Flammable.
Special Remarks on Explosion Hazards	Propylene forms explosive mixtures with air. Container may explode in fire. Flashback along vapor trail may occur. May explode if ignited in an enclosed area.

Section 6. Accidental Release Measures

Small Spill and Leak	Try to stop the gaseous leak by taping the container with an appropriate material (tape, stretched plastic). Shut off all ignition sources: No flares, flames or smoking in hazard area. Use water spray to reduce vapors. Isolate area until gas is dispersed.
Large Spill and Leak	Flammable gas. Let evaporate. If possible, turn leaking container so that gas escapes rather than liquid. DO NOT direct water at spill or source. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas. Eliminate all sources of ignition. Isolate area until gas has dispersed.

Section 7. Handling and Storage

Handling	Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not breathe gas, fumes, vapor or spray. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Keep container tightly closed and in a well-ventilated place. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.
Storage	Compressed gases should be stored in a separate safety storage cabinet or room. Protect containers from physical damage and static discharge.

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Section 8. Exposure Controls/Personal Protection

Engineering Controls Ventilation is normally required when handling or using this product.

Personal Protection

Eyes Splash goggles.

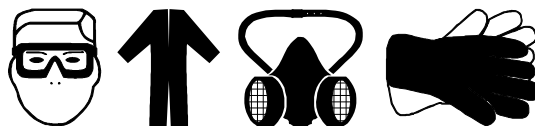
Body Full suit. Flame retardant clothing covering the entire body.

Respiratory

Use a MSHA/NIOSH approved respirator or equivalent at high concentrations.

Hands Chemical resistant thermal gloves if contact is possible (liquid).

Feet Not applicable.

Protective Clothing (Pictograms)**Personal Protection in Case of a Large Spill**

Splash goggles. Full suit. Boots. Chemical resistant thermal insulating gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product. Be sure to use a MSHA/NIOSH approved respirator or equivalent at high concentrations.

Product Name

- 1) Propylene
- 2) Propane
- 3) Ethane

Exposure Limits

Simple asphyxiant.
TWA: 1000 (ppm) from OSHA (PEL)
TWA: 1000 (ppm) from ACGIH (TLV)
TWA: 1000 (ppm) from NIOSH
Simple asphyxiant.

Consult local authorities for acceptable exposure limits.

Section 9. Physical and Chemical Properties

Physical State and Appearance Gas. (Liquid under pressure)

Odor Mild odor.

Molecular Weight Not applicable.

Taste Not available.

Molecular Formula CH₃-CH=CH₂

Color Colorless.

pH (1% Soln/Water) Not applicable.

Boiling/Condensation Point -48°C (-54.4°F)

Melting/Freezing Point -185°C (-301°F)

Critical Temperature 91.8°C (197.2°F)

Specific Gravity 0.52 (Water = 1)

Vapor Pressure 7808.3 mm of Hg (@ 21°C)

Vapor Density 1.48 (Air = 1)

Volatility 100% (v/v).

Odor Threshold 23 ppm

Evaporation Rate Very high.

VOC 100 (%)

Viscosity Not available.

LogK_{ow} The product is more soluble in oil; log(oil/water) = 1.8

Ionicity (in Water) Non-ionic.

Dispersion Properties Is not dispersed in cold water, hot water.

Solubility in Water Slightly soluble.

Physical Chemical Comments No additional remark.

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Section 10. Stability and Reactivity

Stability and Reactivity	Unstable @ high temperature/pressure.
Conditions of Instability	No additional remark.
Incompatibility with Various Substances	Extremely reactive or incompatible with oxidizing agents, nitrogen dioxide, dinitrogen tetroxide, nitrous oxide, trifluoromethyl hypofluorite (explodes on contact), and lithium nitrate + sulfur dioxide (excessive polymerization).
Hazardous Decomposition Products	Carbon monoxide & carbon dioxide.
Hazardous Polymerization	Should not occur @ normal temp. Avoid HF, H ₂ SO ₄ , H ₃ PO ₄ , lithium nitrate + sulfur dioxide, and static.

Section 11. Toxicological Information

Toxicity to Animals	WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute toxicity of the gas (LC50): 8600 ppm 4 hour(s) [Rat].
Chronic Effects on Humans	CARCINOGENIC EFFECTS: Classified None by NTP, None by OSHA [Propylene]. Classified A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC [Propylene]. The substance is toxic to lungs, skin, eyes.
Other Toxic Effects on Humans	Very hazardous in case of skin contact (irritant), of eye contact (irritant). Hazardous in case of inhalation. Non-permeator by skin.
Special Remarks on Toxicity to Animals	Chronic inhalation study with mice and rats using 4000 or 10000 ppm for 6 hr/day, 5 days/week for 103 weeks. Toxicity results: non-neoplastic toxic effects in the nasal cavity were epithelial hyperplasia, squamous metaplasia, and inflammatory lesions. Some chronic focal inflammation of the kidneys in mice.
Special Remarks on Chronic Effects on Humans	No additional remark.
Special Remarks on Other Toxic Effects on Humans	TLV's dependent on available oxygen


Section 12. Ecological Information

Ecotoxicity	Not harmful to aquatic life or waterfowl. It has no BOD, so it does not concentrate in the food chain.
BOD5 and COD	Not available.
Biodegradable/OECD	Biodegradation, hydrolysis, bioconcentration, and adsorption are not suspected of being important processes of propylene in soil or aquatic systems.
Mobility	Atmospheric propylene exists in the vapor phase. Vapor-phase propylene is degraded by ozone (half-life of 24 hr), nitrate radicals (half-life of 4 days), or photochemically produced hydroxyl radicals (est. half-life of 14.6 hr). Volatilization is suspected to be the major fate for polypropylene in soil and water. Volatilization half-lives from a model river and a model environmental pond are estimated to be 1.9 and 23 hr, respectively. Due to high vapor pressure, polypropylene gas may permeate through soil and sediment. Propylene may oxidize to 1,2-epoxide in soil and water.
Toxicity of the Products of Biodegradation	The products of degradation are more toxic than the product itself.
Special Remarks on the Products of Biodegradation	No additional remark.

Section 13. Disposal Considerations

Waste Information	May be disposed of via forced ventilation, with concentration of propylene maintained below the range of explosive mixture. Remove tank or cylinder to an open area. Leave to bleed off in the atmosphere.
Waste Stream	Not available.
Consult your local or regional authorities.	

Section 14. Transport Information

DOT Classification	DOT CLASS 2.1: Flammable gas.	
DOT Proper Shipping Name	Flammable gases n.o.s. (Propylene (Polymer Grade))	
UN Number	UN1077	
Packaging Group	Not available.	
USCG Proper Shipping Name	Propylene	
Marine Pollutant	Not available.	
Hazardous Substances Reportable Quantity	Not available.	
Special Provisions for Transport	No additional remark.	
TDG Classification	TDG CLASS 2.1: Flammable gas.	
ADR/RID Classification	ADR CLASS 2: Flammable gas.	
IMO/IMDG Classification	IMDG CLASS 2.1: Flammable gas.	
ICAO/IATA Classification	IATA CLASS 2.1: Flammable gas.	

Section 15. Regulatory Information

HCS Classification	HCS CLASS: Flammable gas. HCS CLASS: Irritating substance. HCS CLASS: Target organ effects.
U.S. Federal Regulations	TSCA inventory: Propylene 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: No products were found. SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Propylene (Chemical Grade) : fire, sudden release of pressure SARA 313 toxic chemical notification and release reporting: Propylene : 1% Clean water act (CWA) 307: No products were found. Clean water act (CWA) 311: No products were found. Clean air act (CAA) 112 accidental release prevention: No products were found. Clean air act (CAA) 112 regulated flammable substances: No products were found. Clean air act (CAA) 112 regulated toxic substances: No products were found.
International Regulations	
WHMIS (Canada)	WHMIS CLASS A: Compressed gas. WHMIS CLASS B-1: Flammable gas. CEPA DSL: Propylene Canadian NPRI: Propylene
EINECS	Not available.
DSCL (EEC)	R12- Extremely flammable. R38- Irritating to skin. R41- Risk of serious damage to eyes.
International Lists	No products were found.
State Regulations	Rhode Island RTK hazardous substances: Propane ; Pennsylvania RTK: Propylene Florida: Propylene Minnesota: Propylene Massachusetts RTK: Propylene New Jersey: Propylene New Jersey spill list: Ethane ;

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California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: No products were found.

Section 16. Other Information

Label requirements FLAMMABLE GAS. MAY CAUSE FLASH FIRE.
 CONTENTS UNDER PRESSURE.
 CONTAINS MATERIAL WHICH MAY CAUSE LUNGS, SKIN, EYES DAMAGE.
 Causes severe eye irritation.
 Causes severe skin irritation.
 POTENTIAL SUFFOCATION HAZARD.
 POTENTIAL SUFFOCATION GAS REDUCES OXYGEN AVAILABLE FOR BREATHING.

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

Health	*	1
Fire Hazard		4
Reactivity		1
Personal Protection		

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



References LOLI AND TOMES (Vol 37: HSDB, CHRIS, MEDITEXT, & HAZARDTEXT)

Other Special Considerations No additional remark.

Validated by Paul Bradley on 1/2/2001.

Verified by Don Riley.

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