



**MATERIAL SAFETY DATA SHEET (MSDS)
PROPANE HD-5**

IDENTITY (As Used on Label and List) Propane or Liquefied Petroleum Gas (DOT ID No: UN 1075)		(Hazard Rating: Health-1/Fire-4/Reactivity-0) DOT Hazard Classification: Flammable Gas		
Section I – Chemical Product and Company Identification				
Manufacturer's Name MARKWEST		Emergency Phone Number Markwest (800) 730-8388 / CHEMTREC (800) 424-9300		
Address (Number, Street, City, State and ZIP code) 1515 Arapahoe Street		Telephone Number for Information: (800) 730-8388		
Tower 1, Suite 1600		Date Prepared June 21, 2011		
Denver, Colorado 80202-2126		Signature of Preparer (optional) N/A		
Section II – Hazardous Ingredients/Identity Information				
Hazardous Components (Specify Chemical Identity, Common Name (s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Propane (74-98-6)	1000 ppm	N/A		90-95
Propylene (115-07-01)	N/A	NA		0-5
Isobutane/subutane (75-28-5)	800 ppm	N/A		0-2.5
Section III – Physical/Chemical Characteristics				
Boiling Point -45° F		Specific Gravity (H ₂ O = 1 @ 39.2°F): 0.52		
Vapor Pressure (mm Hg): 190 to 205 (psia at 100°F)		Melting Point: N/A		
Vapor Density (AIR = 1 at 60-90 °F): 1.5		Evaporation Rate (Butyl Acetate = 1): N/A		
Solubility in Water: Moderate				
Appearance and Odor: Colorless gas (liquid under pressure): propane sold for use as fuel contains mercaptan odorant.				
Section IV – Fire and Explosion Hazard Data				
Flash Point (Method Used): GT - 160° F (est.)	Flammable Limits Normal Atmospheric	LEL ~2.1%	UEL ~9.5%	

Extinguishing Media: Dry chemical, carbon dioxide, halogenated extinguishing agent			
Special Fire Fighting Procedures: Gas fires should not be extinguished unless the gas flow can be stopped immediately. Shut off gas source and allow the fire to burn itself out. If the source cannot be shut off immediately, all equipment and surfaces exposed to the fire should be cooled with water to prevent overheating, flashbacks, or explosions. Control fire until gas supply can be shut off. Firemen must use proper protective equipment including respiratory apparatus to protect against hazardous combustion products/oxygen deficiencies.			
Unusual Fire and Explosion Hazards: This gas releases flammable vapors at well below ambient temperatures and readily forms flammable mixtures with air. Exposed to an ignition source, it will burn in the open or be explosive in confined spaces. Its vapors are heavier than air and may travel long distances to a point of ignition, and then flash back. Alkane/Chlorine gas mixtures have produced explosions.			
Section V – Reactivity Data			
Stability:	Unstable		Conditions to Avoid: Heat, sparks, and open flame
	Stable	X	
Incompatibility (Materials to Avoid): Strong acids, alkalies, and oxidizers such as chlorine (gas or liquid) and oxygen.			
Hazardous Decomposition or Byproducts: Combustion may produce carbon monoxide and other harmful substances.			
Hazardous Polymerization	May Occur		Conditions to Avoid: None
	Will Not Occur	X	
Section VI – Health Hazard Data			
Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
Inhalation: Exposure may produce rapid breathing, headache, dizziness, visual disturbance, muscular weakness, tremors, narcosis, unconsciousness, and death, depending on concentration and time of exposure.			
Skin: This material is not expected to be absorbed through the skin. Non-irritating; but solid and liquid forms of this material and pressurized gas can cause freeze burns.			
Swallowing: Solid and liquid forms of this material and the pressurized gas can cause freeze burns.			
Eyes: This gas is non-irritating; but direct contact with liquefied/pressurized gas or frost particles may produce severe and possibly permanent eye damage from freeze burns.			
Health Hazards (Acute or Chronic): Asphyxiation and freeze burns. .			
Carcinogenicity:	N/A	NTP?	N/A
		IARC Monographs?	N/A
		OSHA Registered	N/A
Signs and Symptoms of Exposure: Inhalation may produce mild intoxication, drowsiness, or loss of coordination.			
Medical Conditions Generally Aggravated by Exposure: High concentrations produce intoxication followed by loss of consciousness, asphyxiation, and death. Caution is recommended for personnel with pre-existing central nervous system disorders. Personnel with pre-existing chronic respiratory diseases should refrain from breathing this material			

Emergency and First Aid Procedures:

Eyes: Vapors are not expected to present an eye irritation hazard. If contacted by liquid/solid, immediately flush the eye(s) gently with warm water for at least 15 minutes. Seek medical attention if pain or redness persists.

Skin: Frozen tissues should be flooded or soaked with warm water (105°-115°F). Do not use hot water! Cryogenic burns, which result in blistering or deeper tissue freezing, should be promptly seen by a physician.

Swallowed: Induce vomiting with warm water (quart) only if patient is conscious. Immediately obtain medical attention.

Inhaled: Immediately move personnel to area of fresh air. For respiratory distress, give air oxygen, or administer CPR (cardiopulmonary resuscitation). If necessary, obtain medical attention if breathing difficulties continue.

Section VII – Precautions for Safe Handling and Use

Steps to be taken in Case Material is Released or Spilled:

Eliminate and prevent source of ignition. Evacuate all non-essential personnel to an area upwind. (At least ½ mile in all directions if tanks or tank cars are involved in fire.) Stop source of release with non-sparking tools before putting out any fire. Ventilate enclosed areas to prevent formation of flammable or oxygen-deficient atmospheres. Water spray may be used to reduce vapors. Closed systems form white frost at the point of leak. Liquid spills will vaporize forming cold dense vapor cloud even with proper respiratory equipment.

Waste Disposal Method:

Releases are expected to cause only localized, non-persistent environmental damage. Waste mixtures containing these gases should not be allowed to enter drains or sewers where there is danger of their vapors becoming ignited. When it becomes necessary to dispose of these gases, it is preferable to do so as a vapor. Unused product may be used as an auxiliary fuel or disposed by burning in a properly designed flare or incinerator. Venting of gas to the atmosphere should be avoided. Defective, empty, or partially used portable containers should be returned to the supplier with appropriate tags.

Precautions to Be Taken in Handling and Storing:

Do not attempt to clean since residue is difficult to remove. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. For work on tanks refer to Occupational Safety and Health Administration regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

Other Precautions:

“Empty” containers retain residue (liquid and/or vapor) and can be dangerous. **DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH.**

Section VIII – Control Measures

Respiratory Protection (Specify Type):

For excessive gas concentrations, use only NIOSH/MSHA approved, self-contained breathing apparatus. Respirator use should comply with OSHA 29 CFR 1910.134 or equivalent.

Ventilation:	Local Exhaust Essential in work areas to prevent accumulation of explosive mixtures.	Special
	Mechanical (General) Essential in work areas to prevent accumulation of explosive mixtures.	Other If mechanical ventilation is used, electrical equipment must meet N.E.C. requirements.

Protective Gloves Insulated impervious plastic or neoprene-coated canvas gloves.	Eye Protection Chemical-type goggles and face shield when handling liquefied gases. Safety glasses and/or face shields are recommended when handling high-pressure cylinders and piping systems and whenever vapors are discharged
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Other Protective Clothing or Equipment:

Protective gear (apron) to protect skin areas.

Work/Hygienic Practices

Emergency eye wash fountains and safety showers should be available in the vicinity of any potential exposure. Personnel should not enter areas where the atmosphere is below 19.5 vol.% oxygen without special procedures/equipment.

N/A – Not Applicable

N/D – Not Determined

~ -- Approximately

* -- Based on LP (Gas)