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CAMEO Chemicals

Chemical Datasheet

PROPANE

Chemical Identifiers

CAS Number	UN/NA Number	DOT Hazard Label	CHRIS Code
74-98-6	1978	Flammable Gas	PRP

NFPA 704

Diamond	Hazard	Value	Description
4 2 0	Health	2	Can cause temporary incapacitation or residual injury.
	Flammability	4	Burns readily. Rapidly or completely vaporizes at atmospheric pressure and normal ambient temperature.
	Instability	0	Normally stable, even under fire conditions.
	Special		

(NFPA, 2010)

General Description

A colorless gas with a faint petroleum-like odor. It is shipped as a liquefied gas under its vapor pressure. For transportation it may be stenched. Contact with the unconfined liquid can cause frostbite by evaporative cooling. Easily ignited. The vapors are heavier than air and a flame can flash back to the source of leak very easily. The leak may be either a liquid or vapor leak. The vapors can asphyxiate by the displacement of air. Under prolonged exposure to fire or heat the containers may rupture violently and rocket.

Hazards

Reactivity Alerts

Highly Flammable

Air & Water Reactions

Highly flammable.

Fire Hazard

Behavior in Fire: Containers may explode. Vapor is heavier than air and may travel a long distance to a source of ignition and flash back. (USCG, 1999)

Health Hazard

Vaporizing liquid may cause frostbite. Concentrations in air greater than 10% cause dizziness in a few minutes. 1% concentrations give the same effect in 10 min. High concentrations cause asphyxiation. (USCG, 1999)

Reactivity Profile

PROPANE is incompatible with strong oxidizing agents.

Belongs to the Following Reactive Group(s)

- Hydrocarbons, Aliphatic Saturated

Potentially Incompatible Absorbents

No information available.

Response Recommendations

Isolation and Evacuation

Excerpt from GUIDE 115 [Gases - Flammable (Including Refrigerated Liquids)]:

As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.

LARGE SPILL: Consider initial downwind evacuation for at least 800 meters (1/2 mile).

FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions. (ERG, 2012)

Firefighting

Excerpt from GUIDE 115 [Gases - Flammable (Including Refrigerated Liquids)]:

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED. CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Hydrogen, refrigerated liquid (UN1966) burn with an invisible flame. Hydrogen and Methane mixture, compressed (UN2034) may burn with an invisible flame.

SMALL FIRE: Dry chemical or CO2.

LARGE FIRE: Water spray or fog. Move containers from fire area if you can do it without risk.

FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2012)

Non-Fire Response

Excerpt from GUIDE 115 [Gases - Flammable (Including Refrigerated Liquids)]:

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. Do not touch or walk through spilled material. Stop leak if you

can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material. Do not direct water at spill or source of leak. Prevent spreading of vapors through sewers, ventilation systems and confined areas. Isolate area until gas has dispersed. CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning. (ERG, 2012)

Protective Clothing

Skin: Wear appropriate personal protective clothing to prevent skin from becoming frozen from contact with the liquid or from contact with vessels containing the liquid.

Eyes: Wear appropriate eye protection to prevent eye contact with the liquid that could result in burns or tissue damage from frostbite.

Wash skin: No recommendation is made specifying the need for washing the substance from the skin (either immediately or at the end of the work shift).

Remove: Work clothing that becomes wet should be immediately removed due to its flammability hazard(i.e. for liquids with flash point < 100°F)

Change: No recommendation is made specifying the need for the worker to change clothing after the work shift.

Provide: Quick drench facilities and/or eyewash fountains should be provided within the immediate work area for emergency use where there is any possibility of exposure to liquids that are extremely cold or rapidly evaporating. (NIOSH, 2003)

DuPont Tychem® Suit Fabrics

Normalized Breakthrough Times (in Minutes)

Chemical	CAS Number	State	QC	SL	TF	TP	C3	BR	LV	RC	TK	RF
Propane	74-98-6	Vapor										>480

> indicates greater than.
A blank cell indicates the fabric has not been tested. The fabric may or may not offer barrier.

Special Warnings from DuPont

1. Serged and bound seams are degraded by some hazardous liquid chemicals, such as strong acids, and should not be worn when these chemicals are present.

2. CAUTION: This information is based upon technical data that DuPont believes to be reliable. It is subject to revision as additional knowledge and experience are gained. DuPont makes no guarantee of results and assumes no obligation or liability...

(DuPont, 2015)

First Aid

Eye: If eye tissue is frozen, seek medical attention immediately; if tissue is not frozen, immediately and thoroughly flush the eyes with large amounts of water for at least 15 minutes, occasionally lifting the lower and upper eyelids. If irritation, pain, swelling, lacrimation, or photophobia persist, get medical attention as soon as possible.

Skin: If frostbite has occurred, seek medical attention immediately; do NOT rub the affected areas or flush them with water. In order to prevent further tissue damage, do NOT attempt to remove frozen clothing from frostbitten areas. If frostbite has NOT occurred, immediately and thoroughly wash contaminated skin with soap and water.

Breathing: If a person breathes large amounts of this chemical, move the exposed person to fresh air at once. If breathing has stopped, perform mouth-to-mouth resuscitation. Keep the affected person warm and at rest. Get medical attention as soon as possible. (NIOSH, 2003)

Physical Properties

Chemical Formula: C3H8

Flash Point: -156 ° F (gas) (USCG, 1999)

Lower Explosive Limit (LEL): 2.1 % (USCG, 1999)

Upper Explosive Limit (UEL): 9.5 % (USCG, 1999)

Autoignition Temperature: 842 ° F (USCG, 1999)

Melting Point: -305.9 ° F (USCG, 1999)

Vapor Pressure: 9823 mm Hg (USCG, 1999)

Vapor Density (Relative to Air): 1.5 (USCG, 1999)

Specific Gravity: 0.59 at -58.0 ° F (USCG, 1999)

Boiling Point: -43.8 ° F at 760.0 mm Hg (USCG, 1999)

Molecular Weight: 44.09 (USCG, 1999)

Water Solubility: 0.01 % (NIOSH, 2003)

IDLH: 2100 ppm (as Propane). Based on 10% of lower explosive limit. (NIOSH, 2003)

AEGLs (Acute Exposure Guideline Levels)

Final AEGLs for Propane (74-98-6)

Exposure Period	AEGL-1	AEGL-2	AEGL-3
10 minutes	10000 ppm	17000 ppm	33000 ppm
30 minutes	6900 ppm	17000 ppm	33000 ppm
60 minutes	5500 ppm	17000 ppm	33000 ppm
4 hours	5500 ppm	17000 ppm	33000 ppm
8 hours	5500 ppm	17000 ppm	33000 ppm

Lower Explosive Limit (LEL) = 23000 ppm

indicates value is 10-49% of LEL. Safety consideration against explosions must be taken into account.

indicates value is 50-99% of LEL. Extreme safety consideration against explosions must be taken into account.

indicates value is 100% or more of LEL. Extreme safety consideration against explosions must be taken into account.

(NAC/NRC, 2015)

ERPGs (Emergency Response Planning Guidelines)

No ERPG information available.

PACs (Protective Action Criteria)

Chemical	PAC-1	PAC-2	PAC-3	
Propane (74-98-6)	5500 ppm	17000 ppm	33000 ppm	LEL = 23000 ppm

Chemical	PAC-1	PAC-2	PAC-3	

indicates value is 10-49% of LEL.
indicates value is 50-99% of LEL.
indicates value is 100% or more of LEL.
(SCAPA, 2015)

Regulatory Information

EPA Consolidated List of Lists

Regulatory Name	CAS Number/ 313 Category Code	EPCRA 302 EHS TPQ	EPCRA 304 EHS RQ	CERCLA RQ	EPCRA 313 TRI	RCRA Code	CAA 112 (r) RMP TQ
Propane	74-98-6						10000 pounds

(EPA List of Lists, 2015)

DHS Chemical Facility Anti-Terrorism Standards (CFATS)

		RELEASE			THEFT			SABOTAGE		
Chemical of Interest	CAS Number	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue	Min Conc	STQ	Security Issue
Propane	74-98-6	1.00 %	60000 pounds	flammable						

(DHS, 2007)

Alternate Chemical Names

- BOTTLED GAS
- DIMETHYL METHANE
- DIMETHYLMETHANE
- HC 290
- LIQUEFIED PETROLEUM GAS
- LPG
- N-PROPANE
- PROPANE
- PROPANE MIXTURE
- PROPYL HYDRIDE
- R 290