

## Safety Data Sheet

### Section 1: Identification

#### Product identifier

##### Product Name

- **Liquified Natural Gas**

##### Synonyms

- LNG; Methane, Refrigerated Liquid (cryogenic liquid); Natural Gas, Refrigerated Liquid (cryogenic liquid, with high methane content); RLM (Refrigerated Liquid Methane)

##### SDS Number/Grade

- LNG 2008-01

##### Product Description

- At or below -116 F, this product is clear, colorless, odorless and "cryogenic" (SUPER-cold). Pure LNG has little or no odor. If odorized, LNG has a garlic/rotten-egg/skunk smell.

#### Relevant identified uses of the substance or mixture and uses advised against

##### Recommended use

- Residential, commercial and industrial heating, industrial feedstock, power generation and vehicle transportation

#### Details of the supplier of the safety data sheet

##### Manufacturer

- NW Natural  
220 NW 2nd Ave.  
Portland, OR 97209  
United States  
www.nwnatural.com

Telephone (General) • 800-422-4012

#### Emergency telephone number

##### Manufacturer

- 800-882-3377

### Section 2: Hazard Identification

#### United States (US)

According to OSHA 29 CFR 1910.1200 HCS

#### Classification of the substance or mixture

##### OSHA HCS 2012

- Flammable Gases 1 - H220  
Refrigerated Liquefied Gas - H281  
Simple Asphyxiant  
Hazards Not Otherwise Classified - Health Hazard - Frostbite

#### Label elements

##### OSHA HCS 2012

**DANGER**



- Hazard statements** • Extremely flammable gas - H220  
Contains refrigerated gas; may cause cryogenic burns or injury - H281  
May displace oxygen and cause rapid suffocation.

## Precautionary statements

**Prevention** • Keep away from heat, sparks, open flames and/or hot surfaces. - P210  
Wear cold insulating gloves, face shield and/or eye protection. - P282

**Response** • Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377  
Eliminate all ignition sources if safe to do so. - P381  
Thaw frosted parts with lukewarm water. Do not rub affected area. - P336  
Get immediate medical advice/attention. - P315

**Storage/Disposal** • Protect from sunlight. Store in a well-ventilated place. - P410+P403

## Other hazards

### OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

## Section 3 - Composition/Information on Ingredients

### Substances

- Material does not meet the criteria of a substance.

### Mixtures

Composition				
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive
Methane	CAS:74-82-8	92.7%	NDA	OSHA HCS 2012: Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx.
Ethane	CAS:74-84-0	5.9%	NDA	OSHA HCS 2012: Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx.
Propane	CAS:74-98-6	0.9%	NDA	OSHA HCS 2012: Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx.
Nitrogen	CAS:7727-37-9	0.3%	NDA	OSHA HCS 2012: Press. Gas - Comp.; Simp. Asphyx.
Butane	CAS:106-97-8	0.1%	Inhalation-Rat LC50 • 658 g/m <sup>3</sup> 4 Hour(s)	OSHA HCS 2012: Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx.
Pentane	CAS:109-66-0	< 0.1%	Inhalation-Rat LC50 • 364 g/m <sup>3</sup> 4 Hour(s)	OSHA HCS 2012: Exposure limit(s)
Isobutane	CAS:75-28-5	< 0.1%	Inhalation-Rat LC50 • 658000 mg/m <sup>3</sup> 4 Hour(s)	OSHA HCS 2012: Flam. Gas 1;Press. Gas - Comp; Simp. Asphyx.
Hexane	CAS:110-54-3	< 0.1%	Ingestion/Oral-Rat LD50 • 25 g/kg Inhalation-Rat LC50 • 48000 ppm 4 Hour(s)	OSHA HCS 2012: Exposure limit(s)
Carbon dioxide	CAS:124-38-9	< 0.1%	Inhalation-Rat LC50 • 470000 ppm 30 Minute(s)	OSHA HCS 2012: Exposure limit(s)
2-Methylbutane (In Liquid form)	CAS:78-78-4	< 0.1%	Inhalation-Rat LC50 • 280000 mg/m <sup>3</sup> 4 Hour(s)	OSHA HCS 2012: Exposure limit(s)
2-Propanethiol, 2-methyl-	CAS:75-66-1	< 30ppm	Ingestion/Oral-Rat LD50 • 4729 mg/kg Inhalation-Rat LC50 • 22200 ppm 4 Hour(s)	OSHA HCS 2012: Exposure limit(s)
Hydrogen sulfide	CAS:7783-06-4	< 5ppm	Inhalation-Rat LC50 • 700 mg/m <sup>3</sup> 4 Hour(s)	OSHA HCS 2012: Exposure limit(s)

Methyl ethyl sulfide	CAS:624-89-5	< 3ppm	NDA	OSHA HCS 2012: Exposure limit(s)
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All percentages provided are approximate.

## Section 4: First-Aid Measures

### Description of first aid measures

#### Inhalation

- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.

#### Skin

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) 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.

#### 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 upper and lower eyelids. If irritation, pain, swelling, lacrimation or photophobia persist, get medical attention as soon as possible.

#### Ingestion

- If frostbite has occurred, seek medical attention immediately; do NOT rub the affected area(s) or flush them with water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting.

### Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

### Indication of any immediate medical attention and special treatment needed

#### Notes to Physician

- All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

### Other information

- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO GASES WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

## Section 5: Fire-Fighting Measures

### Extinguishing media

- Suitable Extinguishing Media** • Dry Chemical, (Potassium Bicarbonate based \*Purple K\* most effective, Carbon Dioxide, High Expansion Foam, Halon.

- Unsuitable Extinguishing Media** • Introducing water stream into Liquified Natural Gas will rapidly accelerate vaporization to flammable state. A water fog may be used to direct or shield gas vapor.

### Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards** • EXTREMELY FLAMMABLE  
Will form explosive mixtures with air.  
Vapors may travel to source of ignition and flash back.  
Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.  
Containers may explode when heated.  
Ruptured cylinders may rocket.

- Hazardous Combustion** • No data available

## Products

### Advice for firefighters

- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.  
Always wear thermal protective clothing when handling refrigerated/cryogenic liquids. Wear cryogenic gauntlet gloves and non-absorbent outer garments (Tri-Blend, e.g.) to repel spilled liquid.  
Also wear anti-fog chemical goggles AND a face shield.  
Wear leather pull-on type boots with no laces. Cover boot tops with outer (non-absorbent) pants.  
Wear positive pressure self-contained breathing apparatus (SCBA).  
**DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED**  
Move containers from fire area if you can do it without risk.  
**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.  
**FIRE INVOLVING TANKS:** ALWAYS stay away from tanks engulfed in fire.  
**FIRE INVOLVING TANKS:** Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.  
**FIRE INVOLVING TANKS:** Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.  
**FIRE INVOLVING TANKS:** Cool containers with flooding quantities of water until well after fire is out.  
**FIRE INVOLVING TANKS:** Do not direct water at source of leak or safety devices; icing may occur.  
**FIRE INVOLVING TANKS:** For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

## Section 6 - Accidental Release Measures

### Personal precautions, protective equipment and emergency procedures

#### Personal Precautions

- Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not touch or walk through spilled material. Ventilate the area before entry.

#### Emergency Procedures

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions. Stop leak if you can do it without risk. Keep unauthorized personnel away. Keep out of low areas. Stay upwind. **LARGE SPILL:** Consider initial downwind evacuation for at least 800 meters (1/2 mile)

### Environmental precautions

- Prevent entry into waterways, sewers, basements or confined areas.

### Methods and material for containment and cleaning up

#### Containment/Clean-up Measures

- All equipment used when handling the product must be grounded.  
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; do not put water directly on leak, spill area or inside container.  
Do not direct water at spill or source of leak.  
Isolate area until gas has dispersed.

## Section 7 - Handling and Storage

### Precautions for safe handling

#### Handling

- Keep away from heat and ignition sources – No Smoking. Take precautionary measures against static charges. All equipment used when handling the product must be grounded. Use only non-sparking tools. Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue,

especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Use explosion-proof - electrical, ventilating and/or lighting equipment. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container. SPECIAL NOTE: LNG is so cold that many common materials exposed to it become brittle enough to shatter on impact. DO NOT place any of the following materials in direct contact with LNG or its vapors: living tissue (including human skin and flesh), glass, rubber, carbon steel, or plastic.

## Conditions for safe storage, including any incompatibilities

### Storage

- Cylinders should be stored in dry, well-ventilated areas away from sources of heat, ignition and direct sunlight. Do not allow area where cylinders are stored to exceed 52C (125F). Cylinders must be protected from the environment, and preferably kept at room temperature approximately 21C (70F). Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over. Store locked up.

## Section 8 - Exposure Controls/Personal Protection

### Control parameters

Exposure Limits/Guidelines				
	Result	ACGIH	NIOSH	OSHA
Pentane (109-66-0)	TWAs	600 ppm TWA (listed under Pentane, all isomers)	120 ppm TWA; 350 mg/m <sup>3</sup> TWA	1000 ppm TWA; 2950 mg/m <sup>3</sup> TWA
	Ceilings	Not established	610 ppm Ceiling (15 min); 1800 mg/m <sup>3</sup> Ceiling (15 min)	Not established
Carbon dioxide (124-38-9)	TWAs	5000 ppm TWA	5000 ppm TWA; 9000 mg/m <sup>3</sup> TWA	5000 ppm TWA; 9000 mg/m <sup>3</sup> TWA
	STELs	30000 ppm STEL	30000 ppm STEL; 54000 mg/m <sup>3</sup> STEL	Not established
Hexane (110-54-3)	TWAs	50 ppm TWA	50 ppm TWA; 180 mg/m <sup>3</sup> TWA	500 ppm TWA; 1800 mg/m <sup>3</sup> TWA
Isobutane (75-28-5)	STELs	1000 ppm STEL	Not established	Not established
	TWAs	Not established	800 ppm TWA; 1900 mg/m <sup>3</sup> TWA	Not established
Butane (106-97-8)	STELs	1000 ppm STEL	Not established	Not established
	TWAs	Not established	800 ppm TWA; 1900 mg/m <sup>3</sup> TWA	Not established
2-Methylbutane (In Liquid form) (78-78-4)	TWAs	600 ppm TWA (listed under Pentane, all isomers)	Not established	Not established
Propane (74-98-6)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	1000 ppm TWA; 1800 mg/m <sup>3</sup> TWA	1000 ppm TWA; 1800 mg/m <sup>3</sup> TWA
Hydrogen sulfide (7783-06-4)	Ceilings	Not established	10 ppm Ceiling (10 min); 15 mg/m <sup>3</sup> Ceiling (10 min)	20 ppm Ceiling
	STELs	5 ppm STEL	Not established	Not established
	TWAs	1 ppm TWA	Not established	Not established
Ethane (74-84-0)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	Not established	Not established

Methane (74-82-8)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	Not established	Not established
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## Exposure controls

### Engineering Measures/Controls

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Use explosion-proof - electrical, ventilating and/or lighting equipment.

### Personal Protective Equipment

#### Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134. Use a NIOSH/MSHA approved respirator if exposure limits are exceeded or symptoms are experienced.

#### Eye/Face

- Wear safety glasses.

#### Skin/Body

- Wear leather gloves when handling cylinders.

### Environmental Exposure Controls

- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

#### Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

STEL = Short Term Exposure Limits are based on 15-minute exposures

NIOSH = National Institute of Occupational Safety and Health

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

OSHA = Occupational Safety and Health Administration

## Section 9 - Physical and Chemical Properties

### Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	At or below -116 F, this product is clear, colorless, odorless, and "cryogenic" (SUPER-cold). Pure LNG has no odor. If odorized, LNG has a garlic/rotten-egg/skunk smell.
Color	Colorless	Odor	Odorless, or, if odorized, has a garlic/rotten-egg/skunk smell.
Odor Threshold	No data available		
General Properties			
Boiling Point	-161.5 C(-258.7 F) at 14.73 psig	Melting Point	No data available
Decomposition Temperature	No data available	pH	No data available
Specific Gravity/Relative Density	0.42 to 0.46 Water=1 Liquid specific gravity (varies slightly with temperature and composition)	Density	0.044 lb(s)/ft <sup>3</sup>
Water Solubility	Slightly Soluble 0.1 to 1 % LNG vaporizes when in contact with water. That cools the water enough to freeze it. As the LNG re-gasifies, some natural gas bubbles may be trapped in the ice that forms	Viscosity	No data available
Volatility			

Vapor Pressure	Product is a gas at standard conditions	Vapor Density	No data available
Evaporation Rate	> 1 Ether = 1		
<b>Flammability</b>			
Flash Point	-306 F(-187.7778 C) As a liquid, this product does not have a flash point but the vapors do.	UEL	No data available
LEL	No data available	Autoignition	No data available
Flammability (solid, gas)	Flammable gas.		
<b>Environmental</b>			
Octanol/Water Partition coefficient	No data available		

## Section 10: Stability and Reactivity

### Reactivity

- No dangerous reaction known under conditions of normal use.

### Chemical stability

- Stable under normal temperatures and pressures.

### Possibility of hazardous reactions

- Hazardous polymerization will not occur.

### Conditions to avoid

- Keep away from heat, sparks, and flame.

### Incompatible materials

- Strong oxidizers.

### Hazardous decomposition products

- Oxides of carbon (CO, CO<sub>2</sub>), "soot"

## Section 11 - Toxicological Information

### Information on toxicological effects

Components		
Methane (92.7%)	74-82-8	<b>Acute Toxicity:</b> Inhalation-Mouse LC50 • 326 g/m <sup>3</sup> 2 Hour(s)
Isobutane (< 0.1%)	75-28-5	<b>Acute Toxicity:</b> Inhalation-Rat LC50 • 57 pph 15 Minute(s); <i>Behavioral:Tremor; Behavioral:Convulsions or effect on seizure threshold; Lungs, Thorax, or Respiration:Respiratory depression</i>
Butane (0.1%)	106-97-8	<b>Acute Toxicity:</b> Inhalation-Rat LC50 • 658 g/m <sup>3</sup> 4 Hour(s)
2-Methylbutane (In Liquid form) (< 0.1%)	78-78-4	<b>Acute Toxicity:</b> Inhalation-Rat LC50 • 280000 mg/m <sup>3</sup> 4 Hour(s)
Pentane (< 0.1%)	109-66-0	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • >2000 mg/kg; Inhalation-Rat LC50 • 364 g/m <sup>3</sup> 4 Hour(s)
Hexane (< 0.1%)	110-54-3	<b>Acute Toxicity:</b> Ingestion/Oral-Rat LD50 • 25 g/kg; Inhalation-Rat LC50 • 48000 ppm 4 Hour(s); <b>Irritation:</b> Eye-Rabbit • 10 mg • Mild irritation; <b>Reproductive:</b> Inhalation-Rat TClO • 5000 ppm (6-19D preg); <i>Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system; Reproductive Effects:Specific Developmental Abnormalities:Urogenital system;</i>

		<b>Tumorigen / Carcinogen:</b> Inhalation-Rat TClO • 1000 ppm 4 Hour(s) 59 Week(s)-Intermittent; <i>Tumorigenic: Carcinogenic by RTECS criteria; Reproductive Effects: Tumorigenic Effects: Testicular tumors</i>
Carbon dioxide (< 0.1%)	124-38-9	<b>Reproductive:</b> Inhalation-Rat TClO • 6 pph 24 Hour(s)(10D preg); <i>Reproductive Effects: Specific Developmental Abnormalities: Musculoskeletal system; Reproductive Effects: Specific Developmental Abnormalities: Cardiovascular (circulatory) system; Reproductive Effects: Specific Developmental Abnormalities: Respiratory system</i>

GHS Properties	Classification
Acute toxicity	OSHA HCS 2012 • No data available
Aspiration Hazard	OSHA HCS 2012 • No data available
Carcinogenicity	OSHA HCS 2012 • No data available
Germ Cell Mutagenicity	OSHA HCS 2012 • No data available
Skin corrosion/Irritation	OSHA HCS 2012 • No data available
Skin sensitization	OSHA HCS 2012 • No data available
STOT-RE	OSHA HCS 2012 • No data available
STOT-SE	OSHA HCS 2012 • No data available
Toxicity for Reproduction	OSHA HCS 2012 • No data available
Respiratory sensitization	OSHA HCS 2012 • No data available
Serious eye damage/Irritation	OSHA HCS 2012 • No data available

**Route(s) of entry/exposure** • Inhalation, Skin, Eye, Ingestion

## Potential Health Effects

### Inhalation

#### Acute (Immediate)

- If this material is released in a small, poorly ventilated area (i.e. an enclosed or confined space), an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The following effects associated with decreased levels of oxygen: increase in breathing and pulse rate, emotional upset, abnormal fatigue, nausea, vomiting, collapse, loss of consciousness, convulsive movements, respiratory collapse and death.

#### Chronic (Delayed)

- No data available

### Skin

#### Acute (Immediate)

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

#### Chronic (Delayed)

- No data available

### Eye

#### Acute (Immediate)

- Contact with gas or liquefied gas will cause burns, severe injury and/or frostbite.

#### Chronic (Delayed)

- No data available

### Ingestion

#### Acute (Immediate)

- Ingestion is not anticipated to be a likely route of exposure to this product.

#### Chronic (Delayed)

- No data available

#### Key to abbreviations

LD = Lethal Dose

MLD = Mild

TC = Toxic Concentration



## Section 12 - Ecological Information

### Toxicity

- Material data lacking.

### Persistence and degradability

- Material data lacking.

### Bioaccumulative potential

- Material data lacking.

### Mobility in Soil

- Material data lacking.

### Other adverse effects

- No studies have been found.

## Section 13 - Disposal Considerations

### Waste treatment methods

#### Product waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

#### Packaging waste

- Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

## Section 14 - Transport Information

	UN number	UN proper shipping name	Transport hazard class(es)	Packing group	Environmental hazards
DOT	UN1972	Methane, refrigerated liquid	2.1	NDA	NDA

#### Special precautions for user

- Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

- Not relevant.

## Section 15 - Regulatory Information

### Safety, health and environmental regulations/legislation specific for the substance or mixture

**SARA Hazard Classifications** ● Acute, Fire, Pressure(Sudden Release of)

Inventory		
Component	CAS	TSCA
2-Methylbutane (In Liquid form)	78-78-4	Yes
2-Propanethiol, 2-methyl-	75-66-1	Yes

Butane	106-97-8	Yes
Carbon dioxide	124-38-9	Yes
Ethane	74-84-0	Yes
Hexane	110-54-3	Yes
Hydrogen sulfide	7783-06-4	Yes
Isobutane	75-28-5	Yes
Methane	74-82-8	Yes
Methyl ethyl sulfide	624-89-5	Yes
Nitrogen	7727-37-9	Yes
Pentane	109-66-0	Yes
Propane	74-98-6	Yes

## United States

### Labor

#### U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals

• Hydrogen sulfide	7783-06-4	1500 lb TQ
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

#### U.S. - OSHA - Specifically Regulated Chemicals

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

### Environment

#### U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed

• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

#### U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities

• Hydrogen sulfide	7783-06-4	100 lb final RQ; 45.4 kg final RQ
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	5000 lb final RQ; 2270 kg final RQ
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

#### U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

#### U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs

• Hydrogen sulfide	7783-06-4	100 lb EPCRA RQ
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed

• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

**U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs**

• Hydrogen sulfide	7783-06-4	500 lb TPQ
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

**U.S. - CERCLA/SARA - Section 313 - Emission Reporting**

• Hydrogen sulfide	7783-06-4	1.0 % de minimis concentration
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	1.0 % de minimis concentration
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

**U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing**

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

**United States - California****Environment****U.S. - California - Proposition 65 - Carcinogens List**

• Hydrogen sulfide	7783-06-4	Not Listed
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• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

#### U.S. - California - Proposition 65 - Developmental Toxicity

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

#### U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

#### U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed

• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

**U.S. - California - Proposition 65 - Reproductive Toxicity - Female**

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

**U.S. - California - Proposition 65 - Reproductive Toxicity - Male**

• Hydrogen sulfide	7783-06-4	Not Listed
• Pentane	109-66-0	Not Listed
• Ethane	74-84-0	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Carbon dioxide	124-38-9	Not Listed
• Propane	74-98-6	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Methane	74-82-8	Not Listed
• 2-Propanethiol, 2-methyl-	75-66-1	Not Listed
• Methyl ethyl sulfide	624-89-5	Not Listed

**Section 16 - Other Information**

<b>Last Revision Date</b>	• 17/June/2014
<b>Preparation Date</b>	• 16/May/2006
<b>Disclaimer/Statement of Liability</b>	• The data contained in this SDS are believed to be accurate, but are not so warranted whether or not they originated at NW Natural. Recipients of this SDS are advised to confirm ahead of time that the data are current and suitable to their needs.

**Key to abbreviations**

NDA = No Data Available