

# DEMETHANIZED MIX (Y-GRADE)



## Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Version: 1.1 Revision Date: 01/25/2016

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

### Product Identifier

**Product Form:** Mixture

**Product Name:** Demethanized Mix (Y-Grade)

### Intended Use of the Product

**Use of the Substance/Mixture:** Feedstock for fractionation/ distillation

### Name, Address, and Telephone of the Responsible Party

#### **Company**

Williams, Inc.  
One Williams Center  
Tulsa, OK 74172, US  
T 800-945-5426  
[ehs@williams.com](mailto:ehs@williams.com)

### Emergency Telephone Number

**Emergency number** Chemtrec - 800-424-9300

## SECTION 2: HAZARDS IDENTIFICATION

### Classification of the Substance or Mixture

#### **Classification (GHS-US)**

Simple Asphy  
Flam. Gas 1 H220  
Compressed gas H280  
Simple Asphy  
Flam. Gas 1 H220  
Liquefied gas H280

### Label Elements

#### **GHS-US Labeling**

**Hazard Pictograms (GHS-US)** :



GHS02



GHS04



GHS08

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<b>Signal Word (GHS-US)</b>	: Danger
<b>Hazard Statements (GHS-US)</b>	: H220 - Extremely flammable gas H280 - Contains gas under pressure; may explode if heated H340 - May cause genetic defects H350 - May cause cancer H361 - Suspected of damaging fertility or the unborn child May displace oxygen and cause rapid suffocation
<b>Precautionary Statements (GHS-US)</b>	: P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P210 - Keep away from heat, sparks, open flames, hot surfaces. - No smoking. P273 - Avoid release to the environment. P280 - Wear eye protection, protective gloves, protective clothing, face protection, respiratory protection. P308+P313 - If exposed or concerned: Get medical advice/attention. P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely. P381 - Eliminate all ignition sources if safe to do so. P391 - Collect spillage. P403 - Store in a well-ventilated place. P405 - Store locked up. P410+P403 - Protect from sunlight. Store in a well-ventilated place. P501 - Dispose of contents/container to local, regional, national, territorial, provincial, and international regulations.

### Other Hazards

#### **Other Hazards Not Contributing to the Classification:**

Hazardous to the aquatic environment- Acute Hazard Category 2.

Hazardous to the aquatic environment- Long-term Hazard Category 2.

H401 - Toxic to aquatic life

H411- Toxic to aquatic life with long lasting effects.

Exposure may aggravate those with pre existing eye, skin, or respiratory conditions. Contact with the product may cause cold burns or frostbite.



**Unknown Acute Toxicity (GHS-US)** Not available

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### Mixture

NAME	PRODUCT IDENTIFIER	% (W/W)	CLASSIFICATION (GHS-US)
Propane	(CAS No) 74-98-6	<70	Simple Asphy Flam. Gas 1, H220 Liquefied gas, H280
Ethane	(CAS No) 74-84-0	<65	Simple Asphy Flam. Gas 1, H220 Liquefied gas, H280

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Butane	(CAS No) 106-97-8	<35	Simple Asphy Flam. Gas 1, H220 Liquefied gas, H280
Isobutane	(CAS No) 75-28-5	<15	Simple Asphy Flam. Gas 1, H220 Liquefied gas, H280
Isopentane	(CAS No) 78-78-4	<10	Flam. Liq. 1, H224 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
Pentane	(CAS No) 109-66-0	<10	Flam. Liq. 1, H224 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
2-Methylhexane	(CAS No) 31394-54-4	<1.5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Hexane	(CAS No) 110-54-3	<3.5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Repr. 2, H361 STOT SE 3, H336 STOT RE 2, H373 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
2-Methylpentane	(CAS No) 107-83-5	<3	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
3-Methylpentane <i>syn: Diethylmethylethane</i>	(CAS No) 96-14-0	<1.5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
Methanethiol <i>syn: Methyl mercaptan</i>	(CAS No) 74-93-1	<1	Flam. Gas 1, H220 Liquefied gas, H280 Acute Tox. 3 (Inhalation:gas), H331 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

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2-Propanethiol <i>syn: Isopropyl mercaptan</i>	(CAS No) 75-33-2	<1	Flam. Liq. 2, H225 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
n-Heptane	(CAS No) 142-82-5	<2.5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Cyclohexane	(CAS No) 110-82-7	<2	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
3-Methylhexane	(CAS No) 589-34-4	<1.5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Methylcyclopentane	(CAS No) 96-37-7	<2	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H335 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
Benzene	(CAS No) 71-43-2	<1	Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 Muta. 1B, H340 Carc. 1A, H350 STOT RE 1, H372 Asp. Tox. 1, H304
Methylcyclohexane	(CAS No) 108-87-2	<4.5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
Cyclopentane	(CAS No) 287-92-3	<1	Flam. Liq. 2, H225 Asp. Tox. 1, H304 Aquatic Chronic 3, H412

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Neohexane <i>syn: 2,2-Dimethylbutane</i>	(CAS No) 75-83-2	<0.5	Flam. Liq. 2, H225 Skin Irrit. 2, H315 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411
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Full text of H-phrases: see section 16

## SECTION 4: FIRST AID MEASURES

### Description of First Aid Measures

**General:** Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). If frostbite or freezing occurs, immediately flush with plenty of lukewarm water to GENTLY warm the affected area. Do not use hot water. Do not rub affected area. Get immediate medical attention.

**Inhalation:** When symptoms occur: go into open air and ventilate suspected area. Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER/doctor/physician if you feel unwell

**Skin Contact:** Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical attention if irritation persists. Thaw frosted parts with lukewarm water. Do not rub affected area.

**Eye Contact:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation persists

**Ingestion:** Rinse mouth. Do NOT induce vomiting. Get immediate medical attention.

### Most Important Symptoms and Effects Both Acute and Delayed

**General:** May cause frostbite on contact with the liquid. May cause cancer. May cause genetic defects. Suspected of damaging fertility. Suspected of damaging the unborn child.

**Inhalation:** May cause drowsiness or dizziness. Vapors are heavier than air and may cause asphyxia by reduction of the oxygen content

**Skin Contact:** Contact with the liquid may cause cold burns/frostbite

**Eye Contact:** 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

**Ingestion:** Ingestion is not considered a potential route of exposure. Non-irritating; but solid and liquid forms of this material and pressurized gas may cause freeze burns.

**Chronic Symptoms:** Not available

### Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention.

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## SECTION 5: FIREFIGHTING MEASURES

### NFPA 704 Hazard Class

Health: 1 Flammability: 4 Instability: 0



0 (Minimal)  
1 (Slight)  
2 (Moderate)  
3 (Serious)  
4 (Severe)

### Extinguishing Media

**Suitable Extinguishing Media:** Foam, dry chemical, carbon dioxide, water spray, fog

**Unsuitable Extinguishing Media:** Do not use a heavy water stream. Use of heavy stream of water may spread fire.

### Special Hazards Arising From the Substance or Mixture

**Fire Hazard:** Extremely flammable gas

**Explosion Hazard:** May form flammable/explosive vapor-air mixture. Heating may cause an explosion. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

**Reactivity:** Reacts with (strong) oxidizers: (increased) risk of fire. Stable at ambient temperature and under normal conditions of use

### Advice for Firefighters

**Precautionary Measures Fire:** Exercise caution when fighting any chemical fire

**Firefighting Instructions:** Leaking gas fire: Do not extinguish, unless leak can be stopped safely. In case of leaking gas fire, eliminate all ignition sources if safe to do so. Use water spray or fog for cooling exposed containers. In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

**Protection During Firefighting:** Do not enter fire area without proper protective equipment, including respiratory protection.

**Hazardous Combustion Products:** Carbon oxides (CO, CO<sub>2</sub>). Hydrocarbons. Contains Sulfur, may release small amounts of hydrogen sulfide. Hydrogen sulfide is a highly flammable, explosive gas under certain conditions, is a toxic gas, and may be fatal. Gas can accumulate in the headspace of closed containers, use caution when opening sealed containers. Heating the product or containers can cause thermal decomposition of the product and release hydrogen sulfide. Upon thermal decomposition releases sulfur dioxide (SO<sub>2</sub>) a toxic and irritating gas.

**Other information:** Do not allow run-off from fire fighting to enter drains or water courses

### Reference to Other Sections

Refer to section 9 for flammability properties.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

### Personal Precautions, Protective Equipment and Emergency Procedures

**General Measures:** Use special care to avoid static electric charges. Eliminate every possible source of ignition. Keep away from heat/sparks/open flames/hot surfaces - No smoking. Avoid breathing (gas, vapor, mist, spray). Use only outdoors or in a well-ventilated area. Ruptured cylinders may rocket. Do not allow product to spread into the environment.

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#### **For Non-Emergency Personnel**

**Protective Equipment:** Use appropriate personal protection equipment (PPE).

**Emergency Procedures:** Evacuate unnecessary personnel.

#### **For Emergency Personnel**

**Protective Equipment:** Equip cleanup crew with proper protection.

**Emergency Procedures:** Ventilate area.

#### **Environmental Precautions**

Prevent entry to sewers and public waters. Avoid release to the environment.

#### **Methods and Material for Containment and Cleaning Up**

**For Containment:** Notify authorities if liquid enters sewers or public waters. Use only non-sparking tools.

**Methods for Cleaning Up:** Clear up spills immediately and dispose of waste safely. Isolate area until gas has dispersed. Use water spray to disperse vapors. For water based spills contact appropriate authorities and abide by local regulations for hydrocarbon spills into waterways. Use only non-sparking tools. Contact competent authorities after a spill.

#### **Reference to Other Sections**

See heading 8, Exposure Controls and Personal Protection.

## SECTION 7: HANDLING AND STORAGE

#### **Precautions for Safe Handling**

**Additional Hazards When Processed:** Handle empty containers with care because residual vapors are flammable. Extremely flammable gas. Do not pressurize, cut, or weld containers. Do not puncture or incinerate container. Liquid gas can cause frost-type burns.

**Hygiene Measures:** Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work. Do not eat, drink or smoke when using this product.

#### **Conditions for Safe Storage, Including Any Incompatibilities**

**Technical Measures:** Proper grounding procedures to avoid static electricity should be followed. Comply with applicable regulations.

**Storage Conditions:** Store in a dry, cool and well-ventilated place. Keep container closed when not in use. Keep in fireproof place. Store in a well-ventilated place. Keep container tightly closed. Keep/Store away from extremely high or low temperatures, ignition sources, direct sunlight, incompatible materials. Store in original container.

**Incompatible Materials:** Strong acids, strong bases, strong oxidizers, halogenated compounds, alkalis.

**Specific End Use(s)** Industrial use.

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**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION****Control Parameters**

Chemical Name	ACGIH	OSHA	NIOSH
Propane (74-98-6)	Minimal oxygen content required	PEL (TWA): 1000 ppm PEL (TWA):1800 mg/m <sup>3</sup>	REL (TWA): 1000 ppm REL (TWA):1800 mg/m <sup>3</sup> IDLH: 2100 ppm (10% LEL)
Butane (106-97-8)	STEL: 1000 ppm	--	REL (TWA): 800 ppm REL (TWA):1900 mg/m <sup>3</sup>
Isobutane (75-28-5)	STEL: 1000 ppm	--	REL (TWA): 800 ppm REL (TWA):1900 mg/m <sup>3</sup>
Ethane (74-84-0)	Minimal oxygen content - asphyxia	1926.55 - Simple asphyxiant	--
Isopentane (78-78-4)	TWA: 1000 ppm	--	--
Pentane (109-66-0)	TWA: 1000 ppm	PEL (TWA): 1000 ppm PEL (TWA): 2950 mg/m <sup>3</sup>	REL (TWA): 120 ppm REL (TWA):350 mg/m <sup>3</sup> REL (Ceiling): 120 ppm REL (Ceiling):350 mg/m <sup>3</sup> IDLH: 1500 ppm (10% LEL)
Hexane (110-54-3)	TWA: 50 ppm Skin - potential significant contribution to overall exposure by the cutaneous route	PEL (TWA): 500 ppm PEL (TWA): 1800 mg/m <sup>3</sup>	REL (TWA): 50 ppm REL (TWA): 180 mg/m <sup>3</sup> IDLH: 1500 ppm (10% LEL)
2-Methylpentane (107-83-5)	TWA: 1000 ppm	TWA: 1000 ppm TWA: 2950 mg/m <sup>3</sup>	--
Methanethiol (74-93-1) – <i>syn: Methyl mercaptan</i>	TWA: 0.5 ppm	PEL (Ceiling): 20 mg/m <sup>3</sup> PEL (Ceiling): 10 ppm	REL (Ceiling): 1 mg/m <sup>3</sup> REL (Ceiling): 0.5 ppm IDLH: 150 ppm
n-Heptane (42-82-51)	TWA: 400 ppm STEL: 500 ppm	PEL (TWA): 500 ppm PEL (TWA):2000 mg/m <sup>3</sup>	REL (TWA): 350 mg/m <sup>3</sup> REL (TWA): 85 ppm REL (Ceiling): 1800 mg/m <sup>3</sup> REL (Ceiling): 440 ppm IDLH: 750 ppm
Cyclohexane (110-82-7)	TWA: 100 ppm	PEL (TWA): 300 ppm PEL (TWA): 1050 mg/m <sup>3</sup>	REL (TWA): 300 ppm REL (TWA): 1050 mg/m <sup>3</sup> IDLH: 1300 ppm (10% LEL)
3-Methylhexane (589-34-4)	TWA: 400 ppm STEL: 500 ppm	--	--
Benzene (71-43-2)	TWA: 0.5 ppm STEL: 2.5 ppm	PEL (TWA): 1 ppm PEL (STEL): 5 ppm (1910.1028) PEL (Ceiling): 25 ppm	REL (TWA): 0.1 ppm REL (STEL): 1 ppm IDLH: 500 ppm



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Methylcyclohexane (108-87-2)	TWA: 500 ppm	PEL (TWA): 500 ppm PEL (TWA): 2000 mg/m <sup>3</sup>	REL (TWA): 500 ppm REL (TWA): 1600 mg/m <sup>3</sup> IDLH: 1200 ppm (10% LEL)
Cyclopentane	TWA: 600 ppm	--	REL (TWA): 600 ppm REL (TWA): 1720 mg/m <sup>3</sup>

**Note: State province, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.**

### Exposure Controls

**Appropriate Engineering Controls:** Gas detectors should be used when flammable gases/vapours may be released. Ensure adequate ventilation, especially in confined areas. Proper grounding procedures to avoid static electricity should be followed. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use explosion-proof equipment. Ensure all national/local regulations are observed.

**Personal Protective Equipment:** Protective goggles. Protective clothing. Respiratory protection of the dependent type. Insulated gloves.



**Materials for Protective Clothing:** Chemically resistant materials and fabrics. Wear fire/flammable resistant/retardant clothing.

**Hand Protection:** Wear chemically resistant protective gloves. Insulated gloves

**Eye Protection:** Chemical goggles or safety glasses.

**Skin and Body Protection:** Wear appropriate protective clothing.

**Respiratory Protection:** Use a NIOSH-approved self-contained breathing apparatus whenever exposure may exceed established Occupational Exposure Limits.

**Thermal Hazard Protection:** Wear suitable protective clothing.

**Other Information:** When using, do not eat, drink or smoke.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

### Information on Basic Physical and Chemical Properties

<b>Physical State</b>	: Gas (may contain up to 10% liquids due to heavier hydrocarbons)
<b>Appearance</b>	: Colorless gas or liquefied gas (gas and liquid mix)
<b>Odor</b>	: Odorless. May have skunk-like smell depending on mix.
<b>Odor Threshold</b>	: Not available
<b>pH</b>	: Not available
<b>Relative Evaporation Rate (butylacetate=1)</b>	: > 1, rapid

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<b>Melting Point</b>	: Not available
<b>Freezing Point</b>	: -132.2 to -162.2°C (-206 to 260°F)
<b>Boiling Point</b>	: -153.9°C (-245°F), initial
<b>Flash Point</b>	: <-51.1°C (<-60°F)
<b>Auto-ignition Temperature</b>	: 215.6°C (420°F)
<b>Decomposition Temperature</b>	: Not available
<b>Flammability (solid, gas)</b>	: Extremely flammable gas
<b>Lower Flammable Limit</b>	: 1.8 %
<b>Upper Flammable Limit</b>	: 9.2 %
<b>Vapor Pressure</b>	: 138.7 psia @ 37.8°C (100°F)
<b>Relative Vapor Density at 20 °C</b>	: 1.754 (air = 1)
<b>Relative Density</b>	: 0.544
<b>Specific Gravity</b>	: 0.533 – 0.5447
<b>Solubility</b>	: Not available
<b>Log Pow</b>	: Not available
<b>Log Kow</b>	: Not available
<b>Viscosity, Kinematic</b>	: 0.2014 Centistokes
<b>Viscosity, Dynamic</b>	: 0.09949 Centipoise
<b>Explosion Data – Sensitivity to Mechanical Impact</b>	: No
<b>Explosion Data – Sensitivity to Static Discharge</b>	: Yes, may ignite on static discharge.

## SECTION 10: STABILITY AND REACTIVITY

**Reactivity:** Reacts with (strong) oxidizers: (increased) risk of fire. Stable at ambient temperature and under normal conditions of use.

**Chemical Stability:** Extremely flammable gas.

**Possibility of Hazardous Reactions:** Hazardous polymerization will not occur.

**Conditions to Avoid:** Direct sunlight. Extremely high or low temperatures. Open flame. Overheating. Heat. Sparks. Incompatible materials. Avoid ignition sources.

**Incompatible Materials:** Strong acids, strong bases, strong oxidizers, halogenated compounds. May react violently with alkalis.

**Hazardous Decomposition Products:** Carbon oxides (CO, CO<sub>2</sub>), hydrocarbons. Contains Sulfur, may release small amounts of hydrogen sulfide. Hydrogen sulfide is a highly flammable, explosive gas under certain conditions, is a toxic gas, and may be fatal. Gas can accumulate in the headspace of closed containers; use caution when opening sealed containers. Heating the product or containers can cause thermal decomposition of the product and release hydrogen sulfide. Upon thermal decomposition releases sulfur dioxide (SO<sub>2</sub>) a toxic and irritating gas.

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## SECTION 11: TOXICOLOGICAL INFORMATION

### Information on Toxicological Effects - Product

**Acute Toxicity:** Not classified

**LD50 and LC50 Data:** Not available

**Skin Corrosion/Irritation:** Not classified

**Serious Eye Damage/Irritation:** Not classified

**Respiratory or Skin Sensitization:** Not classified

**Germ Cell Mutagenicity:** May cause genetic defects.

**Teratogenicity:** Not available

**Carcinogenicity:** May cause cancer.

**Specific Target Organ Toxicity (Repeated Exposure):** Not classified

**Reproductive Toxicity:** Suspected of damaging fertility or the unborn child.

**Specific Target Organ Toxicity (Single Exposure):** Not classified

**Aspiration Hazard:** Not classified

**Symptoms/Injuries after Inhalation:** May cause drowsiness or dizziness. Vapors are heavier than air and may cause asphyxia by reduction of the oxygen content.

**Symptoms/Injuries after Skin Contact:** Contact with the liquid may cause cold burns/frostbite.

**Symptoms/Injuries after Eye Contact:** 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.

**Symptoms/Injuries after Ingestion:** Ingestion is not considered a potential route of exposure. Non-irritating; but solid and liquid forms of this material and pressurized gas may cause freeze burns.

### Information on Toxicological Effects - Ingredient(s)

#### LD50 and LC50 Data

<b>Butane (106-97-8)</b>	
LC50 Inhalation Rat (mg/l)	658 mg/l (Exposure time: 4 h)

<b>Isobutane (75-28-5)</b>	
LC50 Inhalation Rat (mg/l)	658 mg/l (Exposure time: 4 h)

<b>Pentane (109-66-0)</b>	
LD50 Oral Rat	> 2000 mg/kg
LD50 Dermal Rabbit	3000 mg/kg
LC50 Inhalation Rat (mg/l)	364 g/m <sup>3</sup> (Exposure time: 4 h)

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<b>Propane (74-98-6)</b>	
LC50 Inhalation Rat (mg/l)	658 mg/l (Exposure time: 4 h)
<b>Isopentane (78-78-4)</b>	
LC50 Inhalation Rat (mg/l)	280000 mg/m <sup>3</sup> (Exposure time: 4 h)
<b>Benzene (71-43-2)</b>	
LD50 Oral Rat	1800 mg/kg
LC50 Inhalation Rat (ppm)	13050 - 14380 ppm (Exposure time: 4 h)
IARC Group	1
National Toxicity Program (NTP) Status	1, 2
<b>Hexane (110-54-3)</b>	
LD50 Oral Rat	25 g/kg
LD50 Dermal Rabbit	3000 mg/kg
LC50 Inhalation Rat (ppm)	48000 ppm (Exposure time: 4 h)
<b>Ethane (74-84-0)</b>	
LC50 Inhalation Rat (mg/l)	658 mg/l (Exposure time: 4 h)
<b>n-Heptane (142-82-5)</b>	
LD50 Dermal Rabbit	3000 mg/kg
LC50 Inhalation Rat (mg/l)	103 g/m <sup>3</sup> (Exposure time: 4 h)
<b>Methanethiol (74-93-1)</b>	
LD50 Oral Rat	109.6 mg/kg
LD50 Dermal Rat	84.8 mg/kg
LC50 Inhalation Rat (ppm)	675 ppm/4h

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<b>Cyclohexane (110-82-7)</b>	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rabbit	> 2000 mg/kg
LC50 Inhalation Rat (mg/l)	13.9 mg/l (Exposure time: 4 h)

<b>Methylcyclohexane (108-87-2)</b>	
LD50 Oral Rat	> 3200 mg/kg

## SECTION 12: ECOLOGICAL INFORMATION

### **GHS Classification:**

No classified hazards

### **Toxicity:**

**Ecology - General:** Toxic to aquatic life with long lasting effects.

<b>Pentane (109-66-0)</b>	
LC50 Fish 1	9.87 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss)
EC50 Daphnia 1	9.74 mg/l (Exposure time: 48 h - Species: Daphnia magna)
LC 50 Fish 2	11.59 mg/l (Exposure time: 96 h - Species: Pimephales promelas)

<b>Isopentane (78-78-4)</b>	
EC50 Daphnia 1	2.3 mg/l (Exposure time: 48 h - Species: Daphnia magna)

<b>Benzene (71-43-2)</b>	
LC50 Fish 1	10.7 - 14.7 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	8.76 - 15.6 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 Other Aquatic Organisms 1	29 mg/l (Exposure time: 72 h - Species: Pseudokirchneriella subcapitata)
LC 50 Fish 2	5.3 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [flow-through])
EC50 Daphnia 2	10 mg/l (Exposure time: 48 h - Species: Daphnia magna)

<b>Hexane (110-54-3)</b>	
LC50 Fish 1	2.1 - 2.98 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	> 1000 mg/l (Exposure time: 24 h - Species: Daphnia magna)

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<b>n-Heptane (142-82-5)</b>	
LC50 Fish 1	375.0 mg/l (Exposure time: 96 h - Species: Cichlid fish)
EC50 Daphnia 1	> 10 mg/l (Exposure time: 24 h - Species: Daphnia magna)

<b>Cyclopentane (287-92-3)</b>	
EC50 Daphnia 1	10.5 mg/l (Exposure time: 48 h - Species: Daphnia magna)

<b>Cyclohexane (110-82-7)</b>	
LC50 Fish 1	3.96 - 5.18 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 Daphnia 1	> 400 mg/l (Exposure time: 24 h - Species: Daphnia magna)
EC50 Other Aquatic Organisms 1	> 500 mg/l (Exposure time: 72 h - Species: Desmodesmus subspicatus)
LC 50 Fish 2	23.03 - 42.07 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])

### **Persistence and Degradability**

<b>Demethanized Mix (Y-Grade)</b>	
Persistence and Degradability	May cause long-term adverse effects in the environment.

### **Bioaccumulative Potential**

<b>Demethanized Mix (Y-Grade)</b>	
Bioaccumulative Potential	Not established.

<b>Butane (106-97-8)</b>	
Log Pow	2.89

<b>Isobutane (75-28-5)</b>	
BCF fish 1	1.57 - 1.97
Log Pow	2.88 (at 20 °C)

<b>Pentane (109-66-0)</b>	
Log Pow	3.39

<b>Propane (74-98-6)</b>	
Log Pow	2.3

<b>Isopentane (78-78-4)</b>	
Log Pow	3.2 - 3.3

<b>Benzene (71-43-2)</b>	
BCF fish 1	3.5 - 4.4
Log Pow	1.83

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<b>Ethane (74-84-0)</b>	
Log Pow	<= 2.8
<b>n-Heptane (142-82-5)</b>	
Log Pow	4.66
<b>Cyclopentane (287-92-3)</b>	
Log Pow	2.05
<b>Neohexane (75-83-2)</b>	
Log Pow	3.8
<b>Cyclohexane (110-82-7)</b>	
Log Pow	3.44

**Mobility in Soil** Not available

#### **Other Adverse Effects**

**Other adverse effects:** Can cause frost damage to vegetation.

**Other Information:** Avoid release to the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS

**Waste Disposal Recommendations:** Dispose of waste material in accordance with all local, regional, national, provincial, territorial and international regulations.

**Additional Information:** Handle empty containers with care because residual vapors are flammable. Empty gas cylinders should be returned to the vendor for recycling or refilling.

## SECTION 14: TRANSPORT INFORMATION

#### **UN Number**

**UN-No.(DOT):** 1075

**DOT NA no.:** UN1075

#### **UN Proper Shipping Name**

**DOT Proper Shipping Name** : UN1075 Petroleum gases, liquefied, 2.1

**Hazard Labels (DOT)** : 2.1 - Flammable gases



**DOT Special Provisions (49 CFR 172.102)** : T50 - When portable tank instruction T50 is referenced in Column (7) of the 172.101 Table, the applicable liquefied compressed gases are

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authorized to be transported in portable tanks in accordance with the requirements of 173.313 of this subchapter.

- DOT Packaging Exceptions (49 CFR 173.xxx)** : 306  
**DOT Packaging Non Bulk (49 CFR 173.xxx)** : 304  
**DOT Packaging Bulk (49 CFR 173.xxx)** : 314;315

### Additional Information

- Emergency Response Guide (ERG) Number** : 115

### Transport by sea

- DOT Vessel Stowage Location** : E - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.
- DOT Vessel Stowage Other** : 40 - Stow "clear of living quarters"

### Air transport

- DOT Quantity Limitations Passenger Aircraft/Rail (49 CFR 173.27)** : Forbidden  
**DOT Quantity Limitations Cargo Aircraft Only (49 CFR 175.75)** : 150 kg

## SECTION 15: REGULATORY INFORMATION

### US Federal Regulations

<b>Demethanized Mix (Y-Grade)</b>	
<b>SARA Section 311/312 Hazard Classes</b>	Fire hazard Immediate (acute) health hazard Sudden release of pressure hazard Delayed (chronic) health hazard
<b>Listed on the United States TSCA (Toxic Substances Control Act) inventory</b>	
Butane (106-97-8)	
Isobutane (75-28-5)	
Isopentane (78-78-4)	
Propane (74-98-6)	
2-Methylpentane (107-83-5)	
Ethane (74-84-0)	
Cyclopentane (287-92-3)	
Isoheptane (31394-54-4)	
3-Methylhexane (589-34-4)	
2-Propanethiol (75-33-2)	
Neohexane (75-83-2)	
3-Methylpentane (96-14-0)	
Methylcyclopentane (96-37-7)	
Methylcyclohexane (108-87-2)	




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<b>Pentane (109-66-0)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>EPA TSCA Regulatory Flag</b>	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.
<b>Benzene (71-43-2)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on SARA Section 313 (Specific toxic chemical listings)	
<b>RQ (Reportable Quantity, Section 304 of EPA's List of Lists):</b>	10 lb
<b>SARA Section 313 - Emission Reporting</b>	0.1 %
<b>Hexane (110-54-3)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on SARA Section 313 (Specific toxic chemical listings)	
<b>SARA Section 313 - Emission Reporting</b>	1.0 %
<b>n-Heptane (142-82-5)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
<b>EPA TSCA Regulatory Flag</b>	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.
<b>Methanethiol (74-93-1)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on SARA Section 302 (Specific toxic chemical listings)	
<b>SARA Section 302 Threshold Planning Quantity (TPQ)</b>	500
<b>Cyclohexane (110-82-7)</b>	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Listed on SARA Section 313 (Specific toxic chemical listings)	
<b>EPA TSCA Regulatory Flag</b>	T - T - indicates a substance that is the subject of a Section 4 test rule under TSCA.
<b>SARA Section 313 - Emission Reporting</b>	1.0 %

### Canadian Regulations

<b>Demethanized Mix (Y-Grade)</b>	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects
	

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<b>Butane (106-97-8)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Isobutane (75-28-5)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Pentane (109-66-0)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid
<b>Propane (74-98-6)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>Isopentane (78-78-4)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class B Division 2 - Flammable Liquid
<b>2-Methylpentane (107-83-5)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Benzene (71-43-2)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects

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<b>Hexane (110-54-3)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision A - Very toxic material causing other toxic effects Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Ethane (74-84-0)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas
<b>n-Heptane (142-82-5)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Methanethiol (74-93-1)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class A - Compressed Gas Class B Division 1 - Flammable Gas Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects
<b>Cyclopentane (287-92-3)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid
<b>Isoheptane (31394-54-4)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>3-Methylhexane (589-34-4)</b>	
Listed on Non-Domestic Substances List (NDSL)	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>2-Propanethiol (75-33-2)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class B Division 2 - Flammable Liquid

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<b>Neohexane (75-83-2)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>3-Methylpentane (96-14-0)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Methylcyclopentane (96-37-7)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory.	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Cyclohexane (110-82-7)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid Class D Division 2 Subdivision B - Toxic material causing other toxic effects
<b>Methylcyclohexane (108-87-2)</b>	
Listed on the Canadian DSL (Domestic Substances List) inventory. Listed on the Canadian Ingredient Disclosure List	
WHMIS Classification	Class B Division 2 - Flammable Liquid

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all of the information required by CPR.

## SECTION 16: OTHER INFORMATION

<b>Revision date</b>	: 01/25/2016
<b>Other Information</b>	: This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

### GHS Full Text Phrases:

Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 2	Hazardous to the aquatic environment - Acute Hazard Category 2
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Asp. Tox. 1	Aspiration hazard Category 1

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Carc. 1A	Carcinogenicity Category 1A
Eye Irrit. 2A	Serious eye damage/eye irritation Category 2A
Flam. Gas 1	Flammable gases Category 1
Flam. Liq. 1	Flammable liquids Category 1
Flam. Liq. 2	Flammable liquids Category 2
Liquefied gas	Gases under pressure Liquefied gas
Muta. 1B	Germ cell mutagenicity Category 1B
Repr. 2	Reproductive toxicity Category 2
Simple Asphy	Simple Asphyxiant
Skin Irrit. 2	Skin corrosion/irritation Category 2
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H220	Extremely flammable gas
H224	Extremely flammable liquid and vapor
H225	Highly flammable liquid and vapor
H280	Contains gas under pressure; may explode if heated
H302	Harmful if swallowed
H304	May be fatal if swallowed and enters airways
H315	Causes skin irritation
H319	Causes serious eye irritation
H331	Toxic if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H340	May cause genetic defects
H350	May cause cancer
H361	Suspected of damaging fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

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#### Guide to Abbreviations:

ACGIH = American Conference of Governmental Industrial Hygienists; CASRN = Chemical Abstracts Service Registry Number; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; GHS = Globally Harmonized System; IARC = International Agency for Research on Cancer; INSHT = National Institute for Health and Safety at Work; IOPC = International Oil Pollution Compensation; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

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