Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name
- **Octane 75 ppm, Toluene 250 ppm, n-Heptane 250 ppm, n-Hexane 250 ppm, Benzene 1000 ppm and Helium 0.1% in Nitrogen balance**

Product Code
- 50104

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

Relevant identified use(s)
- Calibration of Monitoring and Research Equipment

1.3 Details of the supplier of the safety data sheet

Manufacturer
- Air Liquide

2700 Post Oak Blvd.
Houston, TX 77056
United States
www.us.airliquide.com
sds@airliquide.com

Telephone (Technical)
- 713-896-2896

Telephone (Technical)
- 800-819-1704

1.4 Emergency telephone number

Manufacturer
- 800-424-9300 - CHEMTREC

Manufacturer
- +1 703-527-3887 - Outside United States

Section 2: Hazards Identification

EU/EEC

According to Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]
According to EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

CLP
- Compressed Gas - H280
  Germ Cell Mutagenicity 1B - H340
  Carcinogenicity 1A - H350

DSD/DPD
- Carcinogenic Substances - Category 1
  Mutagenic Substances - Category 2
  R45, R46

2.2 Label Elements

CLP

DANGER

Hazard statements
- H280 - Contains gas under pressure; may explode if heated
H340 - May cause genetic defects.
H350 - May cause cancer.

Precautionary statements

Prevention
- P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P281 - Use personal protective equipment as required.

Response
- P308+P313 - IF exposed or concerned: Get medical advice/attention.

Storage/Disposal
- P403 - Store in a well-ventilated place.
P405 - Store locked up.
P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD

Risk phrases
- R45 - May cause cancer.
R46 - May cause heritable genetic damage.

Safety phrases
- S53 - Avoid exposure - obtain special instructions before use.

2.3 Other Hazards

CLP
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
According to European Directive 1999/45/EC this material is considered dangerous.

United States (US)

According to OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012
- Compressed Gas - H280
Germ Cell Mutagenicity 1B - H340
Carcinogenicity 1A - H350
Reproductive Toxicity 2 - H361
Simple Asphyxiant

2.2 Label elements

OSHA HCS 2012

DANGER

Hazard statements
- Contains gas under pressure; may explode if heated - H280
May cause genetic defects. - H340
May cause cancer. - H350
Suspected of damaging fertility or the unborn child. - H361
May displace oxygen and cause rapid suffocation.

Precautionary statements

Prevention
- Obtain special instructions before use. - P201
  Do not handle until all safety precautions have been read and understood. - P202
  Wear protective gloves/protective clothing/eye protection/face protection. - P280

Response
- IF exposed or concerned: Get medical advice/attention. - P308+P313

Storage/Disposal
- Store in a well-ventilated place. - P403
  Store locked up. - P405
  Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

2.3 Other hazards

OSHA HCS 2012
- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to WHMIS

2.1 Classification of the substance or mixture

WHMIS
- Compressed Gas - A
  Other Toxic Effects - D2A

2.2 Label elements

WHMIS

- Compressed Gas - A
  Other Toxic Effects - D2A

2.3 Other hazards

WHMIS
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces.
  In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances

- Material does not meet the criteria of a substance in accordance with Regulation (EC) No 1272/2008.

3.2 Mixtures

Composition				
Chemical Name	**Identifiers**	**%**	**LD50/LC50**	**Classifications According to Regulation/Directive**
Helium	**CAS:**7440-59-7 **EINECS:**231-168-5	0.1%	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Self Classified: Press. Gas - Comp., H280 **OSHA HCS 2012:** Press. Gas - Comp.; Simp. Asphyx.
	CAS:71-43-2 **EC**		Ingestion/Oral-Rat LD50 • 930 mg/kg	**EU DSD/DPD:** Annex VI, Table 3.2: F R11 Xi R36/38 Carc.Cat.1 R45 Muta.Cat.2 R46 T R48/23/24/25 Xn R65 **EU CLP:** Annex VI, Table 3.1: Flam. Liq. 2, H225; Carc. 1A, H350;

Benzene	**Number:**200-753-7 **EU Index:**601-020-00-8	1000ppm	Inhalation-Rat LC50 • 10000 ppm 7 Hour(s) Skin-Rabbit LD50 • >9400 µL/kg	Muta. 1B, H340; STOT RE 1, H372; Asp. Tox. 1, H304; Eye Irrit. 2, H319; Skin Irrit. 2, H315 **OSHA HCS 2012:** Flam. Liq. 2; Eye Irrit. 2A; Skin Irrit. 2, Muta. 1B; Carc. 1A; Asp. Tox. 1; STOT RE 1 (Blood and Bone marrow); Repr. 2; STOT SE 3: Narc.; Acute Tox. 4 (oral)
Toluene	**CAS:**108-88-3 **EC Number:**203-625-9 **EU Index:**601-021-00-3	250ppm	Ingestion/Oral-Rat LD50 • 636 mg/kg Inhalation-Rat LC50 • 49 g/m³ 4 Hour(s) Skin-Rabbit LD50 • 14100 µL/kg	**EU DSD/DPD:** Annex VI, Table 3.2: F R11 Xi R38 Xn R48/20-65 Repr.Cat.3;R63 R67 **EU CLP:** Annex VI, Table 3.1: Flam. Liq. 2, H225; Repr. 2, H361d; Asp. Tox. 1, H304; STOT RE 2 *, H373; Skin Irrit. 2, H315; STOT SE 3: Narc., H336 **OSHA HCS 2012:** Flam. Liq. 2; Repr. 2; Acute Tox. 4 (oral); STOT SE 3: Narc.; Asp. Tox. 1; Eye Irrit. 2B
n-Hexane	**CAS:**110-54-3 **EC Number:**203-777-6 **EU Index:**601-037-00-0	250ppm	Inhalation-Rat LC50 • 48000 ppm 4 Hour(s)	**EU DSD/DPD:** Annex VI, Table 3.2: F R11 Xi R38 N R51-53 Repr. Cat.3 R62 Xn R65-48/20 R67 **EU CLP:** Annex VI, Table 3.1: Flam. Liq. 2, H225; Repr. 2, H361f; Asp. Tox. 1, H304; STOT RE 2*, H373; Skin Irrit. 2, H315; STOT SE 3: Narc., H336; Aquatic Chronic 2, H411 **OSHA HCS 2012:** Flam. Liq. 2; Repr. 2; STOT RE 2 (CNS & Nervous System); Skin Irrit. 2; Eye Irrit. 2B; STOT SE 3: Narc. & Resp. Irrit.; Asp. Tox. 1
n-Heptane	**CAS:**142-82-5 **EC Number:**205-563-8 **EU Index:**601-008-00-2	250ppm	Inhalation-Rat LC50 • 103 g/m³ 4 Hour(s)	**EU DSD/DPD:** Annex VI, Table 3.2: F R11 Xi R38 N R50-53 Xn R65 R67 **EU CLP:** Annex VI, Table 3.1: Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3: Narc., H336; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 **OSHA HCS 2012:** Flam. Liq. 2; Skin Irrit. 2; Eye Irrit. 2; Asp. Tox. 1; STOT SE 3: Narc.
Octane	**CAS:**111-65-9 **EC Number:**203-892-1 **EU Index:**601-009-00-8	75ppm	Inhalation-Rat LC50 • 25260 ppm 4 Hour(s)	**EU DSD/DPD:** Annex VI, Table 3.2: F R11 Xi R38 N R50-53 Xn R65 R67 **EU CLP:** Annex VI, Table 3.1: Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3: Narc., H336; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 **OSHA HCS 2012:** Flam. Liq. 2; Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Resp. Irrit & Narc.; Asp. Tox. 1
Nitrogen	**CAS:**7727-37-9 **EINECS:**231-783-9	Balance	NDA	**EU DSD/DPD:** Not Classified **EU CLP:** Self Classified: Press. Gas - Comp., H280 **OSHA HCS 2012:** Press. Gas - Comp.; Simp. Asphyx.

See Section 16 for full text of H-statements and R-phrases.

Section 4 - First Aid Measures

4.1 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
- Although exposure is unlikely, in case of contact immediately flush skin with running water. If skin irritation develops get medical advice/attention.

Eye
- First aid is not expected to be necessary if material is used under ordinary conditions and as recommended. If irritation develops and persists, get medical attention.

Ingestion
- Ingestion is not considered a potential route of exposure.

4.2 Most important symptoms and effects, both acute and delayed

- Refer to Section 11 - Toxicological Information.

4.3 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. A potential health hazard associated with this gas is anoxia.

4.4 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 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media
- Use extinguishing agent suitable for type of surrounding fire.

Unsuitable Extinguishing Media
- No data available

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards
- Containers may explode when heated.
Ruptured cylinders may rocket.

Hazardous Combustion Products
- No data available

5.3 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.
Wear positive pressure self-contained breathing apparatus (SCBA).
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 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
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: Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions
- Ventilate the area before entry. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Emergency Procedures
- Keep unauthorized personnel away. Keep out of low areas. Stay upwind. Do not direct water at spill or source of leak. LARGE SPILL: Consider initial downwind evacuation for at least 500 meters (1/3 mile)

6.2 Environmental precautions

- Prevent spreading of vapors through sewers, ventilation systems and confined areas.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
Ventilate the area.
Isolate area until gas has dispersed.
Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.
If possible, turn leaking containers so that gas escapes rather than liquid.

6.4 Reference to other sections

- Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

- Use only with adequate ventilation. Ventilate closed spaces before entering. Wear appropriate personal protective equipment, avoid direct contact. 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. 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.

7.2 Conditions for safe storage, including any incompatibilities

Storage

- Store in a cool, dry, well-ventilated place. Protect cylinders against physical damage. Cylinders should be firmly secured to prevent falling or being knocked-over. Do not allow area where cylinders are stored to exceed 52C (125F).

7.3 Specific end use(s)

- Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines						
	Result	**ACGIH**	**Canada Ontario**	**Canada Quebec**	**China**	**China Highly Toxic Goods**
Octane (111-65-9)	STELs	Not established	Not established	375 ppm STEV; 1750 mg/m3 STEV	750 mg/m3 STEL	Not established
	TWAs	300 ppm TWA	300 ppm TWA (all isomers)	300 ppm TWAEV; 1400 mg/m3 TWAEV	500 mg/m3 TWA	Not established
Toluene (108-88-3)	STELs	Not established	Not established	Not established	100 mg/m3 STEL	Not established
	TWAs	20 ppm TWA	20 ppm TWA	50 ppm TWAEV; 188 mg/m3 TWAEV	50 mg/m3 TWA	Not established
n-Hexane (110-54-3)	STELs	Not established	Not established	Not established	180 mg/m3 STEL	Not established
	TWAs	50 ppm TWA	50 ppm TWA	50 ppm TWAEV; 176 mg/m3 TWAEV	100 mg/m3 TWA	Not established
n-Heptane (142-82-5)	STELs	500 ppm STEL (listed under Heptane, all isomers)	500 ppm STEL (listed under Heptane, all isomers)	500 ppm STEV; 2050 mg/m3 STEV	1000 mg/m3 STEL	Not established
	TWAs	400 ppm TWA (listed under Heptane, all isomers)	400 ppm TWA	400 ppm TWAEV; 1640 mg/m3 TWAEV	500 mg/m3 TWA	Not established
			2.5 ppm STEL			

Benzene (71-43-2)	STELs	2.5 ppm STEL	(applies to workplaces to which the designated substance regulation does not apply); 2.5 ppm STEL (designated substances regulation)	5 ppm STEV; 15.5 mg/m3 STEV	10 mg/m3 STEL	10 mg/m3 STEL
	TWAs	0.5 ppm TWA	0.5 ppm TWA (applies to workplaces to which the designated substances regulation does not apply); 0.5 ppm TWA (designated substances regulation)	1 ppm TWAEV; 3 mg/m3 TWAEV	6 mg/m3 TWA	6 mg/m3 TWA

Exposure Limits/Guidelines (Con't.)

	Result	Europe	France	Germany DFG	Germany TRGS	Ireland
Octane (111-65-9)	TWAs	Not established	300 ppm TWA [VME]; 1450 mg/m3 TWA [VME]	Not established	500 ppm TWA AGW (all isomers except trimethylpentane, exposure factor 2); 2400 mg/m3 TWA AGW (all isomers except trimethylpentane, exposure factor 2)	300 ppm TWA; 1450 mg/m3 TWA
	STELs	Not established	Not established	Not established	Not established	375 ppm STEL; 1800 mg/m3 STEL
	Ceilings	Not established	Not established	1000 ppm Peak (all isomers except Trimethylpentane isomers); 4800 mg/m3 Peak (all isomers except Trimethylpentane isomers)	Not established	Not established
	MAKs	Not established	Not established	500 ppm TWA MAK; 2400 mg/m3 TWA MAK (except trimethylpentane isomers)	Not established	Not established
	STELs	100 ppm STEL; 384 mg/m3 STEL	100 ppm STEL [VLCT] (restrictive limit); 384 mg/m3 STEL [VLCT] (restrictive limit)	Not established	Not established	100 ppm STEL; 384 mg/m3 STEL
			20 ppm TWA [VME]		50 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed,	

Toluene (108-88-3)	TWAs	50 ppm TWA; 192 mg/m3 TWA	(restrictive limit); 76.8 mg/m3 TWA [VME] (restrictive limit)	Not established	exposure factor 4); 190 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, exposure factor 4)	50 ppm TWA; 192 mg/m3 TWA
	Ceilings	Not established	Not established	200 ppm Peak; 760 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	50 ppm TWA MAK; 190 mg/m3 TWA MAK	Not established	Not established
n-Hexane (110-54-3)	TWAs	20 ppm TWA; 72 mg/m3 TWA	20 ppm TWA [VME] (restrictive limit); 72 mg/m3 TWA [VME] (restrictive limit)	Not established	50 ppm TWA AGW (exposure factor 8); 180 mg/m3 TWA AGW (exposure factor 8)	20 ppm TWA; 72 mg/m3 TWA
	Ceilings	Not established	Not established	400 ppm Peak; 1440 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	50 ppm TWA MAK; 180 mg/m3 TWA MAK	Not established	Not established
n-Heptane (142-82-5)	STELs	Not established	500 ppm STEL [VLCT] (restrictive limit); 2085 mg/m3 STEL [VLCT] (restrictive limit)	Not established	Not established	Not established
	TWAs	Not established	400 ppm TWA [VME] (restrictive limit); 1668 mg/m3 TWA [VME] (restrictive limit)	Not established	500 ppm TWA AGW (all isomers, exposure factor 1); 2100 mg/m3 TWA AGW (all isomers, exposure factor 1)	500 ppm TWA; 2085 mg/m3 TWA
	Ceilings	Not established	Not established	500 ppm Peak; 2100 mg/m3 Peak	Not established	Not established
	MAKs	Not established	Not established	500 ppm TWA MAK; 2100 mg/m3 TWA MAK	Not established	Not established
Benzene (71-43-2)	TWAs	Not established	1 ppm TWA [VME] (restrictive limit); 3.25 mg/m3 TWA [VME] (restrictive limit)	Not established	Not established	1 ppm TWA; 3 mg/m3 TWA

Exposure Limits/Guidelines (Con't.)

	Result	Israel	Italy	NIOSH	OSHA	OSHA Vacated
Octane (111-65-9)	TWAs	300 ppm TWA	Not established	75 ppm TWA; 350 mg/m3 TWA	500 ppm TWA; 2350 mg/m3 TWA	300 ppm TWA; 1450 mg/m3 TWA
	Ceilings	Not established	Not established	385 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)	Not established	Not established
	STELs	Not established	Not established	Not established	Not established	375 ppm STEL; 1800 mg/m3 STEL
Toluene (108-88-3)	TWAs	50 ppm TWA	50 ppm TWA; 192 mg/m3 TWA	100 ppm TWA; 375 mg/m3 TWA	200 ppm TWA	100 ppm TWA; 375 mg/m3 TWA
	Ceilings	Not established	Not established	Not established	300 ppm Ceiling	Not established

	STELs	Not established	Not established	150 ppm STEL; 560 mg/m3 STEL	Not established	150 ppm STEL; 560 mg/m3 STEL
n-Hexane (110-54-3)	TWAs	50 ppm TWA	20 ppm TWA; 72 mg/m3 TWA	50 ppm TWA; 180 mg/m3 TWA	500 ppm TWA; 1800 mg/m3 TWA	50 ppm TWA; 180 mg/m3 TWA
n-Heptane (142-82-5)	TWAs	400 ppm TWA (listed under Heptane, all isomers)	500 ppm TWA; 2085 mg/m3 TWA	85 ppm TWA; 350 mg/m3 TWA	500 ppm TWA; 2000 mg/m3 TWA	400 ppm TWA; 1600 mg/m3 TWA
	STELs	500 ppm STEL	Not established	Not established	Not established	500 ppm STEL; 2000 mg/m3 STEL
	Ceilings	Not established	Not established	440 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)	Not established	Not established
Benzene (71-43-2)	TWAs	0.5 ppm TWA	1 ppm TWA; 3.25 mg/m3 TWA	0.1 ppm TWA	10 ppm TWA (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028); 1 ppm TWA	10 ppm TWA (unless specified in 1910.1028)
	STELs	2.5 ppm STEL	Not established	1 ppm STEL	5 ppm STEL (see 29 CFR 1910.1028)	50 ppm STEL (unless specified in 1910.1028, 10 min)
	Ceilings	Not established	Not established	Not established	25 ppm Ceiling	25 ppm Ceiling (unless specified in 1910.1028)

Exposure Limits/Guidelines (Con't.)

	Result	Portugal	Spain	Sweden
Toluene (108-88-3)	TWAs	50 ppm TWA [VLE-MP]	50 ppm TWA [VLA-ED] (indicative limit value; manufacturing, commercialization, and use restrictions under REACH); 192 mg/m3 TWA [VLA-ED] (indicative limit value; manufacturing, commercialization, and use restrictions under REACH)	50 ppm LLV; 192 mg/m3 LLV
	STELs	Not established	100 ppm STEL [VLA-EC]; 384 mg/m3 STEL [VLA-EC]	100 ppm STV; 384 mg/m3 STV
	Biological Limit Values (BLV)	Not established	0.5 mg/L urine end of shift o-Cresol (2,F); 1.6 g/g Creatinine urine end of shift Hippuric acid (2,F,I); 0.05 mg/L blood start of last shift of workweek Toluene (5)	Not established
	TWAs	50 ppm TWA [VLE-MP]	20 ppm TWA [VLA-ED] (indicative limit value); 72 mg/m3 TWA [VLA-ED] (indicative limit value)	25 ppm LLV; 90 mg/m3 LLV
			0.2 mg/L Medium: urine	

n-Hexane (110-54-3)	Under Review	Not established	Time: end of workweek Parameter: 2,5-Hexanedione (without hydrolysis; means free 2,5-hexanedione, unconjugated. This substance is a metabolite of n-hexane and methyl-n-butyl ketone it means after four or five consecutive days of work with exposure, as soon as possible after the end of the last working day, as biological indicators are eliminated with half-lives greater than five hours; these indicators accumulate in the body during the work week, therefore the sampling time is critical in relation to previous exposures.)	Not established
	Biological Limit Values (BLV)	Not established	0.4 mg/L urine end of workweek 2,5-Hexanedione (without hydrolysis) (1,8)	Not established
	STELs	Not established	Not established	50 ppm STV; 180 mg/m3 STV
n-Heptane (142-82-5)	STELs	500 ppm STEL [VLE-CD	Not established	300 ppm STV; 1200 mg/m3 STV
	TWAs	400 ppm TWA [VLE-MP]	500 ppm TWA [VLA-ED] (indicative limit value); 2085 mg/m3 TWA [VLA-ED] (indicative limit value)	200 ppm LLV; 800 mg/m3 LLV
Benzene (71-43-2)	STELs	2.5 ppm STEL [VLE-CD	Not established	3 ppm STV; 9 mg/m3 STV
	TWAs	0.5 ppm TWA [VLE-MP]	1 ppm TWA [VLA-ED] (manufacturing, commercialization, and use restrictions under REACH; worker protection to exposure to carcinogens and mutagens in the workplace); 3.25 mg/m3 TWA [VLA-ED] (manufacturing, commercialization, and use restrictions under REACH; worker protection to carcinogens in the workplace)	0.5 ppm LLV; 1.5 mg/m3 LLV

	Biological Limit Values (BLV)	Not established	0.045 mg/g urine end of exposure or end of shift S-Phenylmercapturic acid (2); 2 mg/L urine end of exposure or end of shift trans,trans-Muconic acid (2); 5 µg/L blood end of exposure or end of shift Total benzene (2)	Not established

Exposure Control Notations

Portugal

•Toluene (108-88-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen) | **Skin:** (skin - potential for cutaneous exposure)

•n-Hexane (110-54-3): **Skin:** (skin - potential for cutaneous exposure)

•Benzene (71-43-2): **Carcinogens:** (A1 - Confirmed Human Carcinogen) | **Skin:** (skin - potential for cutaneous exposure)

•Helium (7440-59-7): **Simple Asphyxiants:** (Simple Asphyxiant)

•Nitrogen (7727-37-9): **Simple Asphyxiants:** (Simple Asphyxiant)

Italy

•Toluene (108-88-3): **Skin:** (skin - potential for cutaneous absorption)

•Benzene (71-43-2): **Carcinogens:** (Category 1 Carcinogen) | **Skin:** (skin - potential for cutaneous absorption)

France

•Toluene (108-88-3): **Reproductive Toxins:** (Reproductive Toxin category 3)

•n-Hexane (110-54-3): **Reproductive Toxins:** (Reproductive Toxin category 3)

•Benzene (71-43-2): **Carcinogens:** (Carcinogen category 1) | **Mutagens:** (Mutagen category 2)

Ireland

•Toluene (108-88-3): **Skin:** (Potential for cutaneous absorption)

•Benzene (71-43-2): **Carcinogens:** (Carc1A) | **Skin:** (Potential for cutaneous absorption)

•Helium (7440-59-7): **Simple Asphyxiants:** (Asphyxiant)

•Nitrogen (7727-37-9): **Simple Asphyxiants:** (Asphyxiant)

Spain

•Toluene (108-88-3): **Skin:** (skin - potential for cutaneous exposure)

•Benzene (71-43-2): **Carcinogens:** (Known human carcinogen) | **Mutagens:** (Suspected human mutagen) | **Skin:** (skin - potential for cutaneous exposure)

•Helium (7440-59-7): **Simple Asphyxiants:** (simple asphyxiant)

•Nitrogen (7727-37-9): **Simple Asphyxiants:** (simple asphyxiant)

Sweden

•Toluene (108-88-3): **Skin:** (Skin notation)

•Benzene (71-43-2): **Carcinogens:** (Carcinogen) | **Skin:** (Skin notation)

Germany TRGS

•Toluene (108-88-3): **Skin:** (skin notation)

Germany DFG

•Octane (111-65-9): **Pregnancy:** (classification not yet possible (all isomers except trimethylpentane isomers))

•Toluene (108-88-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to) | **Skin:** (skin notation)

•n-Heptane (142-82-5): **Pregnancy:** (classification not yet possible)

•n-Hexane (110-54-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)

•Benzene (71-43-2): **Carcinogens:** (Category 1 (causes cancer in man)) | **Skin:** (skin notation)

Exposure Limits Supplemental

Sweden

•Toluene (108-88-3): **Substances with Handling Restrictions:** (Permission required for handling in concentrations >=1% by weight)

8.2 Exposure controls

Engineering

- Good general ventilation should be used. Ventilation rates should be matched to

Measures/Controls

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.

Personal Protective Equipment

Respiratory

- Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 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

LLV = Limit Level Value is the exposure limit for 8-hour work day

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

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

STEV = Short Term Exposure Value

TWAEV = Time-Weighted Average Exposure Value

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

Section 9 - Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description			
Physical Form	Gas	Appearance/Description	Colorless gas with a faint sweet odor.
Color	Colorless	Odor	Faint sweet odor.
Odor Threshold	0.16 to 37 ppm (Toluene)		
General Properties			
Boiling Point	-195.8 C(-320.44 F) (Nitrogen)	Melting Point	-210 C(-346 F) (Nitrogen)
Decomposition Temperature	Data lacking	pH	Not relevant
Specific Gravity/Relative Density	0.906 Water=1 (Nitrogen)	Density	0.072 lb(s)/ft³ @ 0 C(32 F) (Nitrogen)
Water Solubility	Data lacking	Viscosity	Data lacking
Explosive Properties	Data lacking	Oxidizing Properties:	Data lacking
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Not relevant	UEL	Not relevant
LEL	Not relevant	Autoignition	Data lacking
Flammability (solid, gas)	Nonflammable Gas.		
Environmental			
Octanol/Water Partition coefficient	Data lacking		

9.2 Other Information

- No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

- No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

- Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

- Hazardous polymerization will not occur.

10.4 Conditions to avoid

- Excess heat.

10.5 Incompatible materials

- Nitrogen reacts with Li, Nd, and Ti at high temperatures.

10.6 Hazardous decomposition products

- The components of this product do not decompose, per se, but may react with other compounds in the heat of a fire.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Octane (75ppm)	111-65-9	**Acute Toxicity:** Inhalation-Rat LC50 • 118 g/m³ 4 Hour(s); Inhalation-Rat LC50 • 25260 ppm 4 Hour(s)
Toluene (250ppm)	108-88-3	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 636 mg/kg; Inhalation-Rat LC50 • 49 g/m³ 4 Hour(s); Skin-Rabbit LD50 • 14100 µL/kg; **Irritation:** Eye-Rabbit • 100 mg 30 Second(s)-Rinse • Mild irritation; Skin-Rabbit • 435 mg • Mild irritation; **Reproductive:** Inhalation-Rat TCLo • 1500 ppm (7-20D preg); *Reproductive Effects:Specific Developmental Abnormalities*:**Central nervous system**; *Reproductive Effects:Effects on Newborn*:**Growth statistics (e.g., reduced weight gain)**; *Reproductive Effects:Effects on Newborn*:**Biochemical and metabolic**
n-Heptane (250ppm)	142-82-5	**Acute Toxicity:** Inhalation-Rat LC50 • 103 g/m³ 4 Hour(s)
n-Hexane (250ppm)	110-54-3	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 25 g/kg; Inhalation-Rat LC50 • 48000 ppm 4 Hour(s); **Irritation:** Eye-Rabbit • 10 mg • Mild irritation; **Reproductive:** Inhalation-Rat TCLo • 5000 ppm (6-19D preg); *Reproductive Effects:Specific Developmental Abnormalities*:**Musculoskeletal system**; *Reproductive Effects:Specific Developmental Abnormalities*:**Urogenital system**
Benzene (1000ppm)	71-43-2	**Acute Toxicity:** Ingestion/Oral-Rat LD50 • 1800 mg/kg; Inhalation-Rat LC50 • 10000 ppm 7 Hour(s); **Irritation:** Eye-Rabbit • 2 mg 24 Hour(s) • Severe irritation; Skin-Rabbit • 15 mg 24 Hour(s)-Open • Mild irritation; **Mutagen:** Dominant lethal test • Ingestion/Oral-Mouse • 1 mg/kg; Sister chromatid exchange • Inhalation-Mouse • 10 ppm 6 Hour(s); **Reproductive:** Inhalation-Rat TCLo • 50 ppm 24 Hour(s)(7-14D preg); *Reproductive Effects:Effects on Embryo or Fetus*:**Extra embryonic structures**; *Reproductive Effects:Effects on Embryo or Fetus*:**Fetotoxicity (except death, e.g., stunted fetus)**; **Tumorigen / Carcinogen:** Ingestion/Oral-Rat • 52 g/kg 1 Year(s)-Intermittent; *Tumorigenic*:**Carcinogenic by RTECS criteria**; *Sense Organs and Special Senses:Ear*:**Other**; *Blood*:**Leukemia**

GHS Properties	Classification

Acute toxicity	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Aspiration Hazard	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Carcinogenicity	**EU/CLP** • Carcinogenicity 1A **OSHA HCS 2012** • Carcinogenicity 1A
Germ Cell Mutagenicity	**EU/CLP** • Germ Cell Mutagenicity 1B **OSHA HCS 2012** • Germ Cell Mutagenicity 1B
Skin corrosion/Irritation	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Skin sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
STOT-RE	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
STOT-SE	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Toxicity for Reproduction	**EU/CLP** • Data lacking **OSHA HCS 2012** • Toxic to Reproduction 2
Respiratory sensitization	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking
Serious eye damage/Irritation	**EU/CLP** • Data lacking **OSHA HCS 2012** • Data lacking

Potential Health Effects

Inhalation

Acute (Immediate)
- This material is a simple asphyxiant. May displace or reduce oxygen available for breathing especially in confined spaces. 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)
- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- Under normal conditions of use, no health effects are expected.

Eye

Acute (Immediate)
- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)
- Under normal conditions of use, no health effects are expected.

Ingestion

Acute (Immediate)
- Ingestion is not anticipated to be a likely route of exposure to this product.

Chronic (Delayed)
- Ingestion is not anticipated to be a likely route of exposure to this product.

Mutagenic Effects
- May cause mutagenic effects based on animal test data for Benzene.

Carcinogenic Effects
- Material level data is not available however this gas mixture contains an ingredient which may cause carcinogenic effects upon prolonged and repeated exposure.

Carcinogenic Effects				
	CAS	OSHA	IARC	NTP
Benzene	71-43-2	Specifically Regulated Carcinogen	Group 1-Carcinogenic	Known Human Carcinogen

Reproductive Effects

- Benzene exposure in animals has shown teratogenic and developmental effects. Exposure to Toluene has been shown to cause developmental effects. Inhalation of n-Hexane has caused reproductive effects in studies with animals.

Key to abbreviations

LC = Lethal Concentration
LD = Lethal Dose
TC = Toxic Concentration

Section 12 - Ecological Information

12.1 Toxicity

- Material data lacking.

12.2 Persistence and degradability

- Material data lacking.

12.3 Bioaccumulative potential

- Material data lacking.

12.4 Mobility in Soil

- Material data lacking.

12.5 Results of PBT and vPvB assessment

- PBT and vPvB assessment has not been conducted for this material.

12.6 Other adverse effects

- No studies have been found.

Section 13 - Disposal Considerations

13.1 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

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	UN1956	Compressed gases, n.o.s. (Nitrogen, Benzene, Helium)	2.2	NDA	NDA
TDG	UN1956	COMPRESSED GASES, N.O.S. (Nitrogen, Benzene, Helium)	2.2	NDA	NDA
IMO/IMDG	UN1956	COMPRESSED GASES, N.O.S. (Nitrogen, Benzene, Helium)	2.2	NDA	NDA

IATA/ICAO	UN1956	Compressed gases, n.o.s. (Nitrogen, Benzene, Helium)	2.2	NDA	NDA

14.6 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.

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

- Data lacking.

Section 15 - Regulatory Information

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

SARA Hazard Classifications

- Pressure(Sudden Release of), Acute, Chronic

State Right To Know				
Component	**CAS**	**MA**	**NJ**	**PA**
Benzene	71-43-2	Yes	Yes	Yes
Helium	7440-59-7	Yes	Yes	Yes
n-Heptane	142-82-5	Yes	Yes	Yes
n-Hexane	110-54-3	Yes	Yes	Yes
Nitrogen	7727-37-9	Yes	Yes	Yes
Octane	111-65-9	Yes	Yes	Yes
Toluene	108-88-3	Yes	Yes	Yes

Inventory						
Component	**CAS**	**Canada DSL**	**Canada NDSL**	**China**	**EU EINECS**	**EU ELNICS**
Benzene	71-43-2	Yes	No	Yes	Yes	No
Helium	7440-59-7	Yes	No	Yes	Yes	No
n-Heptane	142-82-5	Yes	No	Yes	Yes	No
n-Hexane	110-54-3	Yes	No	Yes	Yes	No
Nitrogen	7727-37-9	Yes	No	Yes	Yes	No
Octane	111-65-9	Yes	No	Yes	Yes	No
Toluene	108-88-3	Yes	No	Yes	Yes	No

Inventory (Con't.)		
Component	**CAS**	**TSCA**
Benzene	71-43-2	Yes
Helium	7440-59-7	Yes
n-Heptane	142-82-5	Yes
n-Hexane	110-54-3	Yes
Nitrogen	7727-37-9	Yes
Octane	111-65-9	Yes
Toluene	108-88-3	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

• Octane	111-65-9	B2, D2B
• n-Heptane	142-82-5	B2, D2B
• Toluene	108-88-3	B2, D2A, D2B
• Benzene	71-43-2	B2, D2A, D2B
• n-Hexane	110-54-3	B2, D2A, D2B
• Nitrogen	7727-37-9	A
• Helium	7440-59-7	A

Canada - WHMIS - Ingredient Disclosure List

• Octane	111-65-9	1 %
• n-Heptane	142-82-5	1 %
• Toluene	108-88-3	1 %
• Benzene	71-43-2	0.1 %
• n-Hexane	110-54-3	1 %
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Environment

Canada - CEPA - Priority Substances List

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Priority Substance List 1 (substance not considered toxic)
• Benzene	71-43-2	Priority Substance List 1 (substance considered toxic)
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

China - Dangerous Goods List

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	
• Benzene	71-43-2	
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	(compressed or refrigerated liquid)
• Helium	7440-59-7	(compressed or refrigerated liquid)

China - Export Control List - Part I Chemicals

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Europe

Other

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Classification

• Octane	111-65-9	F; R11 Xi; R38 N; R50-53 Xn; R65 R67
• n-Heptane	142-82-5	F; R11 Xi; R38 N; R50-53 Xn; R65 R67
• Toluene	108-88-3	F; R11 Xi; R38 Xn; R48/20-65 Repr.Cat.3; R63 R67
• Benzene	71-43-2	F; R11 Xi; R36/38 Carc.Cat.1; R45 Muta.Cat.2; R46 T; R48/23/24/25 Xn; R65
• n-Hexane	110-54-3	F; R11 Xi; R38 N; R51-53 Repr.Cat.3; R62 Xn; R65-48/20 R67

• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Concentration Limits

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	5%<=C: Xn; R:48/20
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Labelling

• Octane	111-65-9	F Xn N R:11-38-65-67-50/53 S:(2)-9-16-29-33-60-61-62
• n-Heptane	142-82-5	F Xn N R:11-38-65-67-50/53 S:(2)-9-16-29-33-60-61-62
• Toluene	108-88-3	F Xn R:11-38-48/20-63-65-67 S:(2)-36/37-46-62
• Benzene	71-43-2	F T R:45-46-11-36/38-48/23/24/25-65 S:53-45
• n-Hexane	110-54-3	F Xn N R:11-38-48/20-62-65-67-51/53 S:(2)-9-16-29-33-36/37-61-62
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Notes - Substances and Preparations

• Octane	111-65-9	C
• n-Heptane	142-82-5	C
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	E
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

EU - CLP (1272/2008) - Annex VI - Table 3.2 - Safety Phrases

• Octane	111-65-9	S:(2)-9-16-29-33-60-61-62
• n-Heptane	142-82-5	S:(2)-9-16-29-33-60-61-62
• Toluene	108-88-3	S:(2)-36/37-46-62
• Benzene	71-43-2	S:53-45
• n-Hexane	110-54-3	S:(2)-9-16-29-33-36/37-61-62
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Germany

Environment

Germany - TA Luft - Types and Classes

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	carcinogenic Substance: 5.2.7.1.1, Class III
• n-Hexane	110-54-3	Not Listed

• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	ID Number 1351, not considered hazardous to water
• Helium	7440-59-7	Not Listed

Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes

• Octane	111-65-9	ID Number 479, hazard class 2 - hazard to waters
• n-Heptane	142-82-5	ID Number 120, hazard class 2 - hazard to waters
• Toluene	108-88-3	ID Number 194, hazard class 2 - hazard to waters
• Benzene	71-43-2	ID Number 29, hazard class 3 - severe hazard to waters
• n-Hexane	110-54-3	ID Number 124, hazard class 2 - hazard to waters
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Germany - Water Classification (VwVwS) - Annex 3

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	ID Number 120, hazard class 2 - hazard to waters
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Other

Germany - Specifically Regulated Chemicals in TRGS

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Portugal

Other

Portugal - Prohibited Substances

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed

• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United Kingdom

Environment

United Kingdom - Pollution Inventory - Schedule 1 - Thresholds for Releases to Air

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	1000 kg
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Other

United Kingdom - Workplace Exposure Limits (WELs) - Substances in Review

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United Kingdom - List of Dangerous Substances in Water

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United States

Labor

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	5 ppm STEL (See 29 CFR 1910.1028, 15 min); 0.5 ppm Action Level; 1 ppm TWA

• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

Environment

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	
• Benzene	71-43-2	(including Benzene from gasoline)
• n-Hexane	110-54-3	
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	1000 lb final RQ; 454 kg final RQ
• Benzene	71-43-2	10 lb final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule); 4.54 kg final RQ (received an adjusted RQ of 10 lbs based on potential carcinogenicity in an August 14, 1989 final rule)
• n-Hexane	110-54-3	5000 lb final RQ; 2270 kg final RQ
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed

• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	1.0 % de minimis concentration
• Benzene	71-43-2	0.1 % de minimis concentration
• n-Hexane	110-54-3	1.0 % de minimis concentration
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Basis for Listing - Appendix VII

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Included in waste streams: F005, F024, F025, F039, K015, K036, K037, K149, K151
• Benzene	71-43-2	Included in waste streams: F005, F024, F025, F037, F038, F039, K085, K104, K105, K141, K142, K143, K144, K145, K147, K151, K159, K169, K171, K172
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Constituents for Detection Monitoring

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	
• Benzene	71-43-2	
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - D Series Wastes - Max Conc of Contaminants for the Tox Characteristic

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed

• Benzene	71-43-2	0.5 mg/L regulatory level
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Hazardous Constituents - Appendix VIII to 40 CFR 261

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	waste number U220
• Benzene	71-43-2	waste number U019
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - List for Hazardous Constituents

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	
• Benzene	71-43-2	
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	0.080 mg/L (wastewater); 10 mg/kg (nonwastewater)
• Benzene	71-43-2	0.14 mg/L (wastewater); 10 mg/kg (nonwastewater)
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - TSD Facilities Ground Water Monitoring

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	
• Benzene	71-43-2	
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - RCRA (Resource Conservation & Recovery Act) - U Series Wastes - Acutely Toxic Wastes & Other Hazardous Characteristics

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	waste number U220
• Benzene	71-43-2	waste number U019 (Ignitable waste, Toxic waste)
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	carcinogen, initial date 2/27/87
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	developmental toxicity, initial date 1/1/91
• Benzene	71-43-2	developmental toxicity, initial date 12/26/97
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	7000 µg/day MADL (level represents absorbed dose)
• Benzene	71-43-2	24 µg/day MADL (oral); 49 µg/day MADL (inhalation)
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	6.4 µg/day NSRL (oral); 13 µg/day NSRL (inhalation)
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	female reproductive toxicity, initial date 8/7/09
• Benzene	71-43-2	Not Listed
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

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

• Octane	111-65-9	Not Listed

• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	male reproductive toxicity, initial date 12/26/97
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	
• Benzene	71-43-2	
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances

• Octane	111-65-9	Not Listed
• n-Heptane	142-82-5	Not Listed
• Toluene	108-88-3	Not Listed
• Benzene	71-43-2	
• n-Hexane	110-54-3	Not Listed
• Nitrogen	7727-37-9	Not Listed
• Helium	7440-59-7	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

15.3 Other Information

- WARNING: This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H225 - Highly flammable liquid and vapour
  H304 - May be fatal if swallowed and enters airways
  H315 - Causes skin irritation
  H319 - Causes serious eye irritation
  H336 - May cause drowsiness or dizziness
  H372 - Causes damage to organs through prolonged or repeated exposure.
  H361d - Suspected of damaging the unborn child.
  H373 - May cause damage to organs through prolonged or repeated exposure.
  H400 - Very toxic to aquatic life
  H410 - Very toxic to aquatic life with long lasting effects
  H411 - Toxic to aquatic life with long lasting effects

  R11 - Highly flammable.
  R36/38 - Irritating to eyes and skin.
  R38 - Irritating to skin.
  R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
  R48/23/24/25 - Toxic: danger of serious damage to health by prolonged exposure

through inhalation, in contact with skin and if swallowed.
R50 - Very toxic to aquatic organisms.
R51 - Toxic to aquatic organisms.
R53 - May cause long-term adverse effects in the aquatic environment.
R62 - Possible risk of impaired fertility.
R63 - Possible risk of harm to the unborn child.
R65 - Harmful: may cause lung damage if swallowed.
R67 - Vapours may cause drowsiness and dizziness.

Last Revision Date

- 09/September/2014

Preparation Date

- 09/September/2014

Disclaimer/Statement of Liability

- To the best of Air Liquide's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.

Key to abbreviations

NDA = No Data Available