

Safety Data Sheet



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

1.1 Product identifier

Product Name • Toluene (10.8%), n-Heptane (9.7%), 2-Methylbutane (9.7%), n-Pentane (7.6%), 2,4-Dimethylpentane (5.4%), n-Hexane (5.4%), 2-Methylpentane (5.4%), n-Octane (5.4%), n-Butane (4.5%), n-Propylbenzene (4.3%), n-Butylbenzene (3.2%), n-Decane (3.2%), n-Dodecane (3.2%), n-Pentadecane (2.2%), n-Tetradecane (2.2%), n-Tridecane (2.2%), 2-Methylpropane (1.5%), n-Propane (1.5%), p-Xylene (Balance)

Product Code • 90081

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

Relevant identified use(s) • Calibration standard

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**
- Flammable Gases 1 - H220
 - Liquefied Gas - H280
 - Skin Irritation 2 - H315
 - Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
 - Reproductive Toxicity 2 - H361fd
 - Specific Target Organ Toxicity Repeated Exposure 2 - H373
 - Hazardous to the aquatic environment Chronic 2 - H411
- DSD/DPD**
- Extremely Flammable (F+)

Substances Toxic To Reproduction - Category 3
 Harmful (Xn)
 Irritant (Xi)
 Dangerous to the Environment (N)
 R12, R38, R48/20, R62, R63, R67, R51, R53

2.2 Label Elements

CLP

DANGER



- Hazard statements**
- H220 - Extremely flammable gas
 - H280 - Contains gas under pressure; may explode if heated
 - H315 - Causes skin irritation
 - H336 - May cause drowsiness or dizziness
 - H361fd - Suspected of damaging fertility. Suspected of damaging the unborn child.
 - H373 - May cause damage to organs through prolonged or repeated exposure.
 - H411 - Toxic to aquatic life with long lasting effects

Precautionary statements

- Prevention**
- P202 - Do not handle until all safety precautions have been read and understood.
 - P201 - Obtain special instructions before use.
 - P210 - Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking.
 - P260 - Do not breathe gas.
 - P264 - Wash thoroughly after handling.
 - P271 - Use only outdoors or in a well-ventilated area.
 - P273 - Avoid release to the environment.
 - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
 - P281 - Use personal protective equipment as required.

- Response**
- P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
 - P381 - Eliminate all ignition sources if safe to do so.
 - P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 - P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
 - P302+P352 - IF ON SKIN: Wash with plenty of soap and water.
 - P362 - Take off contaminated clothing and wash before reuse.
 - P332+P313 - If skin irritation occurs: Get medical advice/attention.
 - P308+P313 - IF exposed or concerned: Get medical advice/attention.
 - P321 - Specific treatment, see supplemental first aid information.
 - P391 - Collect spillage.

- Storage/Disposal**
- P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
 - 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**
- R12 - Extremely flammable.
 - R38 - Irritating to skin.
 - R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
 - R62 - Possible risk of impaired fertility.
 - R63 - Possible risk of harm to the unborn child.
 - R67 - Vapours may cause drowsiness and dizziness.
 - R51 - Toxic to aquatic organisms.
 - R53 - May cause long-term adverse effects in the aquatic environment.

- Safety phrases**
- S9 - Keep container in a well ventilated place
 - S16 - Keep away from sources of ignition - No Smoking.

S37 - Wear suitable gloves.

S57 - Use appropriate containment to avoid environmental contamination.

2.3 Other Hazards

CLP

- According to Regulation (EC) No. 1272/2008 (CLP) this material is considered hazardous.

DSD/DPD

- According to European Directive 1999/45/EC this preparation 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

- Flammable Gases 1 - H220
Liquefied Gas - H280
Skin Irritation 2 - H315
Eye Irritation 2A - H319
Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
Reproductive Toxicity 2 - H361

2.2 Label elements

OSHA HCS 2012

DANGER



- Hazard statements**
- Extremely flammable gas - H220
Contains gas under pressure; may explode if heated - H280
Causes skin irritation - H315
Causes serious eye irritation - H319
May cause respiratory irritation and drowsiness or dizziness - H335+H336
Suspected of damaging fertility or the unborn child. - H361
May cause damage to organs through prolonged or repeated exposure. - H373

Precautionary statements

- Prevention**
- Obtain special instructions before use. - P201
Do not handle until all safety precautions have been read and understood. - P202
Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210
Do not breathe gas. - P260
Wash thoroughly after handling. - P264
Use only outdoors or in a well-ventilated area. - P271
Wear protective gloves/protective clothing/eye protection/face protection. - P280
- Response**
- Leaking gas fire: Do not extinguish, unless leak can be stopped safely. - P377
Eliminate all ignition sources if safe to do so. - P381
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
Call a POISON CENTER or doctor/physician if you feel unwell. - P312
IF ON SKIN: Wash with plenty of soap and water. - P302+P352
Specific treatment, see supplemental first aid information. - P321
If skin irritation occurs: Get medical advice/attention. - P332+P313
Take off contaminated clothing and wash before reuse. - P362
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
If eye irritation persists: Get medical advice/attention. - P337+P313
IF exposed or concerned: Get medical advice/attention. - P308+P313
Get medical advice/attention if you feel unwell. - P314
- Storage/Disposal**
- Store in a well-ventilated place. Keep container tightly closed. - P403+P233
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
- Flammable Gases - B1
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

2.2 Label elements

WHMIS



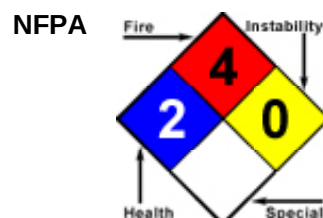
- Compressed Gas - A
- Flammable Gases - B1
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

2.3 Other hazards

WHMIS

- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

2.4 Other information



See Section 12 for Ecological Information.

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	Comments
Decane	CAS:124-18-5 EINECS:204-	3.2%	Inhalation-Rat LC50 • 72300 mg/m ³ 2 Hour	EU DSD/DPD: Self Classified - R10 Xn; R65 R67 EU CLP: Self Classified - Flam. Liq. 3 H226; Asp. Tox. 1 H304; STOT SE 3:Narc. H336	NDA

	686-4		(s)	OSHA HCS 2012: Flam. Liq. 3 H226; Asp. Tox. 1 H304, STOT SE 3:Narc.	
Dodecane	CAS: 112-40-3 EINECS: 203-967-9	3.2%	Inhalation-Rat LC50 • >142 ppm 8 Hour(s)	EU DSD/DPD: Self Classified - Xi; R38 EU CLP: Self Classified - Skin Irrit. 2 H315 OSHA HCS 2012: Flam. Liq. 4; Skin Irrit. 2	NDA
Heptane	CAS: 142-82-5 EC Number: 205-563-8	9.7%	Inhalation-Rat LC50 • 103 g/m ³ 4 Hour(s)	EU DSD/DPD: Annex I - F; R11 Xi; R38 N; R50-53 Xn; R65 R67 EU CLP: Annex VI - Flam. Liq. 2 H225; Asp. Tox. 1 H304; Skin Irrit. 2 H315; STOT SE 3 H336; Aquatic Acute 1 H400; Aquatic Chronic 1 H410 OSHA HCS 2012: Flam. Liq. 2, Asp. Tox. 1; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.	NDA
Hexane	CAS: 110-54-3 EC Number: 203-777-6	5.4%	Ingestion/Oral-Rat LD50 • 25 g/kg Inhalation-Rat LC50 • 48000 ppm 4 Hour(s)	EU DSD/DPD: Annex I - F; R11 Repr. Cat. 3; R62 Xn; R65-48/20 Xi; R38 R67 N; R51-53 EU CLP: Annex VI - Flam. Liq. 2 H225; Repr. 2 H361f; Asp. Tox. 1 H304; STOT RE 2 H373; Skin Irrit. 2 H315; STOT SE 3 H336; Aquatic Chronic 2 H411 OSHA HCS 2012: Flam. Liq. 2, Asp. Tox. 1; Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.; Repr. 2; STOT RE 2 (CNS & PNS)	NDA
Octane	CAS: 111-65-9 EC Number: 203-892-1	5.4%	Inhalation-Rat LC50 • 25260 ppm 4 Hour(s)	EU DSD/DPD: Annex I - F; R11 Xi; R38 N; R50-53 Xn; R65 R67 EU CLP: Annex VI - Flam. Liq. 2 H225; Asp. Tox. 1 H304; Skin Irrit. 2 H315; STOT SE 3 H336; Aquatic Acute 1 H400; Aquatic Chronic 1 H410 OSHA HCS 2012: Flam. Liq. 2, Asp. Tox. 1; Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.	NDA
Pentane	CAS: 109-66-0 EC Number: 203-692-4	7.6%	Inhalation-Rat LC50 • 364 g/m ³ 4 Hour(s) Ingestion/Oral-Rat LD50 • >2000 mg/kg	EU DSD/DPD: Annex I - F+; R12 Xn; R65 R66 R67 N; R51-53 EU CLP: Annex VI - Flam. Liq. 2 H225; Asp. Tox. 1 H304; STOT SE 3 H336; Aquatic Chronic 2 H411; EUH066 OSHA HCS 2012: Flam. Liq. 2, Asp. Tox. 1; Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.	NDA
Tetradecane	CAS: 629-59-4 EINECS: 211-096-0	2.2%	NDA	EU DSD/DPD: Self Classified - Xn; R65 Xi; 38 EU CLP: Self Classified - Asp. Tox. 1 H304; Skin Irrit. 2 H315 OSHA HCS 2012: Asp. Tox. 1 H304; Skin Irrit. 2 H315	NDA
Tridecane	CAS: 629-50-5 EINECS: 211-093-4	2.2%	Inhalation-Rat LC50 • >41 ppm 8 Hour(s)	EU DSD/DPD: Self Classified - Xn; R65 Xi; R38 EU CLP: Self Classified - Asp. Tox 1 H304; Skin Irrit. 2 H315 OSHA HCS 2012: Flam. Liq 4; Asp. Tox 1; Skin Irrit. 2	NDA
Pentadecane	CAS: 629-62-9 EINECS: 211-098-1	2.2%	NDA	EU DSD/DPD: Self Classified - Xn; R65 EU CLP: Self Classified - Asp. Tox. 1 H304 OSHA HCS 2012: Asp. Tox. 1	NDA
Toluene	CAS: 108-88-3 EC Number: 203-625-9	10.8%	Ingestion/Oral-Rat LD50 • 636 mg/kg Inhalation-Rat LC50 • 49 g/m ³ 4 Hour(s) Skin-Rabbit LD50 • 14100 µL/kg	EU DSD/DPD: Annex I - F; R11 Repr. Cat. 3; R63 Xn; R48/20-65 Xi; R38 R67 EU CLP: Annex VI - Flam. Liq. 2, H225; Repr. 2, H361d; Asp. Tox. 1, H304; STOT RE 2 *, H373; Skin Irrit. 2, H315; STOT SE 3, H336 OSHA HCS 2012: Flam. Liq. 2; Repr. 2; Acute Tox 4 (Oral); STOT SE 3: Narc.; Asp. Tox 1	NDA

2-Methylbutane (In Liquid form)	CAS: 78-78-4 EC Number: 201-142-8	9.7%	Inhalation-Rat LC50 • 280000 mg/m ³ 4 Hour (s)	EU DSD/DPD: Annex I - F+; R12 N; R51-53 Xn; R65 R66 R67 EU CLP: Annex VI - Flam. Liq. 1, H224; Asp. Tox. 1, H304; STOT SE 3, H336; Aquatic Chronic 2, H411; EUH066 OSHA HCS 2012: Flam. Liq. 1; Eye Irrit. 2A, Skin Irrit. 2, STOT SE 3: Resp. Irrit. & Narc.; Asp. Tox. 1	NDA
2,4-Dimethylpentane	CAS: 108-08-7 EINECS: 203-548-0	5.4%	NDA	EU DSD/DPD: Annex I - F; R11 Xn; R65 Xi; R38 R67 N; R50-53 EU CLP: Annex VI - Flam. Liq. 2 H225; Asp. Tox. 1 H304; Skin Irrit. 2 H315; STOT SE 3 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.	NDA
2-Methylpentane	CAS: 107-83-5 EC Number: 203-523-4	5.4%	NDA	EU DSD/DPD: Annex I - F; R11 Xn; R65 Xi; R38 R67 N; R51-53 EU CLP: Annex VI - Flam. Liq. 2, H225; Asp. Tox. 1, H304; Skin Irrit. 2, H315; STOT SE 3, H336; Aquatic Chronic 2, H411 OSHA HCS 2012: Flam. Liq. 2; Eye Irrit 2A	NDA
Butane	CAS: 106-97-8 EC Number: 203-448-7	4.5%	Inhalation-Rat LC50 • 658 g/m ³ 4 Hour(s)	EU DSD/DPD: Annex I - F+; R12 EU CLP: Annex VI - Flam. Gas 1 ;Press. Gas OSHA HCS 2012: Flam. Gas 1; Press. Gas	NDA
Benzene, propyl-	CAS: 103-65-1 EC Number: 203-132-9	4.3%	Ingestion/Oral-Rat LD50 • 6040 mg/kg Inhalation-Rat LC50 • 65000 ppm 2 Hour(s)	EU DSD/DPD: Annex I - R10; Xn R65; Xi R37; N; R51-53 EU CLP: Annex VI - Flam. Liq. 3 H226; Asp. Tox. 1 H304; STOT SE 3- Resp. Irrit. H355, Aquatic Chronic 2, H411 OSHA HCS 2012: Flam. Liq. 3; Eye Irrit. 2A; Skin Irrit. 2; STOT SE 3: - Resp. Irrit. & Narc.; Asp. Tox. 1	NDA
Benzene, butyl-	CAS: 104-51-8 EINECS: 203-209-7	3.2%	NDA	EU DSD/DPD: Self Classified - N; R50-53 EU CLP: Self Classified - Aquatic Acute 1, H400; Aquatic Chronic 1, H410 (M=1) OSHA HCS 2012: Flam. Liq. 4	NDA
Isobutane	CAS: 75-28-5 EC Number: 200-857-2	1.5%	Inhalation-Rat LC50 • 57 pph 15 Minute(s)	EU DSD/DPD: Annex I - F+; R12 EU CLP: Annex VI - Flam. Gas 1 H220;Press. Gas, H280 OSHA HCS 2012: Flam. Gas 1; Press Gas	NDA
Propane	CAS: 74-98-6 EC Number: 200-827-9	1.5%	NDA	EU DSD/DPD: Annex I - F+; R12 EU CLP: Annex VI - Flam. Gas 1 H220;Press. Gas, H280 OSHA HCS 2012: Flam. Gas 1; Press. Gas - Comp.; Simp. Asphyx.	NDA
p-Xylene	CAS: 106-42-3 EC Number: 203-396-5	12.6%	Inhalation-Rat LC50 • 4550 ppm 4 Hour(s) Ingestion/Oral-Rat LD50 • 3910 mg/kg	EU DSD/DPD: Annex I - R10; Xn R20/21; Xi R38 EU CLP: Annex VI - Flam Liq 3, H226; Acute Tox 4, H332; Acute Tox 4, H312; Skin Irrit 2, H315 OSHA HCS 2012: Flam. Liq. 3; STOT SE 3: Narc. & Resp. Irrit.; Eye Irrit. 2A; Skin Irrit. 2; STOT RE 2 - Liver; Repr. 2, Acute Tox. 4 (Inh)	Balance

See Section 16 for full text of H-statements and R-phrases. See Section 11 for Toxicological Information.

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

- IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. If skin irritation occurs: Get medical advice/attention.

Eye

- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion

- As this product is a gas, refer to the inhalation section.

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.

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 • SMALL FIRES: Dry chemical or CO₂.
LARGE FIRES: Water spray or fog.

Unsuitable Extinguishing Media • No data available

5.2 Special hazards arising from the substance or mixture

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

Hazardous Combustion Products • Carbon dioxide and carbon monoxide.

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).
DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED
Move containers from fire area if you can do it without risk.
FIRE: If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.
FIRE INVOLVING TANKS: ALWAYS stay away from tanks engulfed in fire.
FIRE INVOLVING TANKS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
FIRE INVOLVING TANKS: Withdraw immediately in case of rising sound from venting

safety devices or discoloration of tank.

FIRE INVOLVING TANKS: Cool containers with flooding quantities of water until well after fire is out.

FIRE INVOLVING TANKS: Do not direct water at source of leak or safety devices; icing may occur.

FIRE INVOLVING TANKS: For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

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

Emergency Procedures

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

6.2 Environmental precautions

- Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- All equipment used when handling the product must be grounded. Stop leak if you can do it without risk. If possible, turn leaking containers so that gas escapes rather than liquid. Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container. Do not direct water at spill or source of leak. Isolate area until gas has dispersed.

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

- Keep away from heat and ignition sources – No Smoking. Take precautionary measures against static charges. All equipment used when handling the product must be grounded. Use only non-sparking tools. Use only with adequate ventilation. Ventilate closed spaces before entering. Be aware of any signs of dizziness or fatigue, especially if work is done in a poorly ventilated area; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to olfactory fatigue or oxygen deficiency. Cylinders should be firmly secured to prevent falling or being knocked-over. Use explosion-proof - electrical, ventilating and/or lighting equipment. Do not attempt to repair, adjust, or in any other way modify cylinders. If there is a malfunction or another type of operational problem, contact nearest distributor immediately. Empty containers retain product residue and can be hazardous. Do not cut, weld, puncture or incinerate container. Use suitable hand truck to move cylinders.

7.2 Conditions for safe storage, including any incompatibilities

Storage

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

Incompatible Materials or

- Keep away from oxidizing agents.

Ignition Sources

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	Europe
Propane (74-98-6)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	1000 ppm TWA	1000 ppm TWAEV; 1800 mg/m3 TWAEV	Not established	Not established
Isobutane (75-28-5)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	800 ppm TWA (listed under Aliphatic hydrocarbon gases)	Not established	Not established	Not established
Butane (106-97-8)	TWAs	1000 ppm TWA (listed under Aliphatic hydrocarbon gases: Alkane C1-4)	800 ppm TWA (listed under Aliphatic hydrocarbon gases)	800 ppm TWAEV; 1900 mg/m3 TWAEV	Not established	Not established
Hexane (110-54-3)	TWAs	50 ppm TWA	50 ppm TWA	50 ppm TWAEV; 176 mg/m3 TWAEV	100 mg/m3 TWA	20 ppm TWA; 72 mg/m3 TWA
	STELs	Not established	Not established	Not established	180 mg/m3 STEL	Not established
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
2,4-Dimethylpentane (108-08-7)	STELs	500 ppm STEL (listed under Heptane, all isomers)	500 ppm STEL (listed under Heptane, all isomers)	Not established	Not established	Not established
	TWAs	400 ppm TWA (listed under Heptane, all isomers)	400 ppm TWA (listed under Heptane, all isomers)	Not established	Not established	Not established
Pentane (109-66-0)	TWAs	600 ppm TWA (listed under Pentane, all isomers)	600 ppm TWA; 1770 mg/m3 TWA	120 ppm TWAEV; 350 mg/m3 TWAEV	500 mg/m3 TWA	1000 ppm TWA; 3000 mg/m3 TWA
	STELs	Not established	750 ppm STEL; 2210 mg/m3 STEL	Not established	1000 mg/m3 STEL	Not established
2-Methylbutane (In Liquid form) (78-78-4)	TWAs	600 ppm TWA (listed under Pentane, all isomers)	600 ppm TWA (listed under Pentane, all isomers); 1770 mg/m3 TWA (listed under Pentane, all isomers)	Not established	500 mg/m3 TWA	1000 ppm TWA; 3000 mg/m3 TWA
	STELs	Not established	750 ppm STEL (listed under Pentane, all isomers); 2210 mg/m3 STEL (listed under Pentane, all isomers)	Not established	1000 mg/m3 STEL	Not established

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
Toluene (108-88-3)	STELs	Not established	Not established	Not established	100 mg/m3 STEL	100 ppm STEL; 384 mg/m3 STEL
	TWAs	20 ppm TWA	20 ppm TWA	50 ppm TWAEV; 188 mg/m3 TWAEV	50 mg/m3 TWA	50 ppm TWA; 192 mg/m3 TWA
p-Xylene (106-42-3)	STELs	150 ppm STEL	150 ppm STEL	150 ppm STEV; 651 mg/m3 STEV	100 mg/m3 STEL	Not established
	TWAs	100 ppm TWA	100 ppm TWA	100 ppm TWAEV; 434 mg/m3 TWAEV	50 mg/m3 TWA	Not established

Exposure Limits/Guidelines (Con't.)

	Result	France	Germany DFG	Germany TRGS	Ireland	Israel
Propane (74-98-6)	TWAs	Not established	Not established	1000 ppm TWA AGW (exposure factor 4); 1800 mg/m3 TWA AGW (exposure factor 4)	1000 ppm TWA	1000 ppm TWA (gas)
	Ceilings	Not established	4000 ppm Peak; 7200 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	1000 ppm TWA MAK; 1800 mg/m3 TWA MAK	Not established	Not established	Not established
Isobutane (75-28-5)	TWAs	Not established	Not established	1000 ppm TWA AGW (exposure factor 4); 2400 mg/m3 TWA AGW (exposure factor 4)	Not established	1000 ppm TWA (gas)
	Ceilings	Not established	4000 ppm Peak (listed under Butane); 9600 mg/m3 Peak (listed under Butane)	Not established	Not established	Not established
	MAKs	Not established	1000 ppm TWA MAK; 2400 mg/m3 TWA MAK	Not established	Not established	Not established
Butane (106-97-8)	TWAs	800 ppm TWA [VME]; 1900 mg/m3 TWA [VME]	Not established	1000 ppm TWA AGW (exposure factor 4); 2400 mg/m3 TWA AGW (exposure factor 4)	1000 ppm TWA	1000 ppm TWA (gas)
	Ceilings	Not established	4000 ppm Peak (listed under Butane); 9600 mg/m3 Peak (listed under Butane)	Not established	Not established	Not established
	MAKs	Not established	1000 ppm TWA MAK; 2400 mg/m3 TWA MAK	Not established	Not established	Not established

Hexane (110-54-3)	TWAs	20 ppm TWA [VME] (restrictive limit); 72 mg/m ³ TWA [VME] (restrictive limit)	Not established	50 ppm TWA AGW (exposure factor 8); 180 mg/m ³ TWA AGW (exposure factor 8)	20 ppm TWA; 72 mg/m ³ TWA	50 ppm TWA
	Ceilings	Not established	400 ppm Peak; 1440 mg/m ³ Peak	Not established	Not established	Not established
	MAKs	Not established	50 ppm TWA MAK; 180 mg/m ³ TWA MAK	Not established	Not established	Not established
Octane (111-65-9)	TWAs	300 ppm TWA [VME]; 1450 mg/m ³ TWA [VME]	Not established	500 ppm TWA AGW (all isomers except trimethylpentane, exposure factor 2); 2400 mg/m ³ TWA AGW (all isomers except trimethylpentane, exposure factor 2)	300 ppm TWA; 1450 mg/m ³ TWA	300 ppm TWA
	STELs	Not established	Not established	Not established	375 ppm STEL; 1800 mg/m ³ STEL	Not established
	Ceilings	Not established	1000 ppm Peak (all isomers except Trimethylpentane isomers); 4800 mg/m ³ Peak (all isomers except Trimethylpentane isomers)	Not established	Not established	Not established
	MAKs	Not established	500 ppm TWA MAK; 2400 mg/m ³ TWA MAK (except trimethylpentane isomers)	Not established	Not established	Not established
2,4- Dimethylpentane (108-08-7)	STELs	Not established	Not established	Not established	Not established	500 ppm STEL (listed under Heptane, all isomers)
	TWAs	Not established	Not established	Not established	Not established	400 ppm TWA (listed under Heptane, all isomers)
2-Methylpentane (107-83-5)	TWAs	Not established	Not established	500 ppm TWA AGW (exposure factor 2); 1800 mg/m ³ TWA AGW (exposure factor 2)	Not established	Not established
	Ceilings	Not established	1000 ppm Peak (except n-Hexane, listed under Hexane); 3600 mg/m ³ Peak (except n-Hexane, listed under Hexane)	Not established	Not established	Not established
	MAKs	Not established	500 ppm TWA MAK; 1800 mg/m ³ TWA MAK	Not established	Not established	Not established
				1000 ppm TWA AGW (The risk of damage to the embryo or fetus)		

Pentane (109-66-0)	TWAs	1000 ppm TWA [VME] (restrictive limit); 3000 mg/m3 TWA [VME] (restrictive limit)	Not established	can be excluded when AGW and BGW values are observed, exposure factor 2); 3000 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 2)	1000 ppm TWA; 3000 mg/m3 TWA	600 ppm TWA
	STELs	Not established	Not established	Not established	750 ppm STEL; 2250 mg/m3 STEL	Not established
	Ceilings	Not established	2000 ppm Peak (listed under Pentane); 6000 mg/m3 Peak (listed under Pentane)	Not established	Not established	Not established
	MAKs	Not established	1000 ppm TWA MAK; 3000 mg/m3 TWA MAK	Not established	Not established	Not established
2-Methylbutane (In Liquid form) (78-78-4)	TWAs	1000 ppm TWA [VME] (indicative limit); 3000 mg/m3 TWA [VME] (indicative limit)	Not established	1000 ppm TWA AGW (exposure factor 2); 3000 mg/m3 TWA AGW (exposure factor 2)	1000 ppm TWA; 3000 mg/m3 TWA	600 ppm TWA (listed under Pentane, all isomers)
	STELs	Not established	Not established	Not established	750 ppm STEL; 2250 mg/m3 STEL	Not established
	Ceilings	Not established	2000 ppm Peak (listed under Pentane); 6000 mg/m3 Peak (listed under Pentane)	Not established	Not established	Not established
	MAKs	Not established	1000 ppm TWA MAK; 3000 mg/m3 TWA MAK	Not established	Not established	Not established
Heptane (142-82-5)	STELs	500 ppm STEL [VLCT] (restrictive limit); 2085 mg/m3 STEL [VLCT] (restrictive limit)	Not established	Not established	Not established	500 ppm STEL
	TWAs	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	400 ppm TWA
	Ceilings	Not established	500 ppm Peak; 2100 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	500 ppm TWA MAK; 2100 mg/m3 TWA MAK	Not established	Not established	Not established
	STELs	100 ppm STEL [VLCT] (restrictive limit); 384 mg/m3 STEL [VLCT] (restrictive limit)	Not established	Not established	100 ppm STEL; 384 mg/m3 STEL	75 ppm STEL

Toluene (108-88-3)	TWAs	50 ppm TWA [VME] (restrictive limit); 192 mg/m3 TWA [VME] (restrictive limit)	Not established	50 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed, 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	50 ppm TWA
	Ceilings	Not established	200 ppm Peak; 760 mg/m3 Peak	Not established	Not established	Not established
	MAKs	Not established	50 ppm TWA MAK; 190 mg/m3 TWA MAK	Not established	Not established	Not established
p-Xylene (106-42-3)	STELs	100 ppm STEL [VLCT] (restrictive limit); 442 mg/m3 STEL [VLCT] (restrictive limit)	Not established	Not established	100 ppm STEL; 442 mg/m3 STEL	150 ppm STEL
	TWAs	50 ppm TWA [VME] (restrictive limit); 221 mg/m3 TWA [VME] (restrictive limit)	Not established	Not established	50 ppm TWA; 221 mg/m3 TWA	100 ppm TWA
Exposure Limits/Guidelines (Con't.)						
	Result	Italy	NIOSH	OSHA	Portugal	Spain
Propane (74-98-6)	TWAs	Not established	1000 ppm TWA; 1800 mg/m3 TWA	1000 ppm TWA; 1800 mg/m3 TWA	1000 ppm TWA [VLE-MP]	1000 ppm TWA [VLA- ED]
Isobutane (75-28-5)	TWAs	Not established	800 ppm TWA; 1900 mg/m3 TWA	Not established	Not established	Not established
Butane (106-97-8)	TWAs	Not established	800 ppm TWA; 1900 mg/m3 TWA	Not established	Not established	1000 ppm TWA [VLA- ED]
Hexane (110-54-3)	TWAs	20 ppm TWA; 72 mg/m3 TWA	50 ppm TWA; 180 mg/m3 TWA	500 ppm TWA; 1800 mg/m3 TWA	50 ppm TWA [VLE- MP]	20 ppm TWA [VLA- ED] (indicative limit value); 72 mg/m3 TWA [VLA-ED] (indicative limit value)
	Biological Limit Values (BLV)	Not established	Not established	Not established	Not established	0.4 mg/L urine end of workweek 2,5- Hexanedione (without hydrolysis) (1,8)
Octane (111-65-9)	TWAs	Not established	75 ppm TWA; 350 mg/m3 TWA	500 ppm TWA; 2350 mg/m3 TWA	300 ppm TWA [VLE- MP]	300 ppm TWA [VLA- ED]; 1420 mg/m3 TWA [VLA-ED]
	Ceilings	Not established	385 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)	Not established	Not established	Not established
2,4- Dimethylpentane	STELs	Not established	Not established	Not established	500 ppm STEL [VLE- CD]	Not established

(108-08-7)	TWAs	Not established	Not established	Not established	400 ppm TWA [VLE-MP]	Not established
Pentane (109-66-0)	TWAs	667 ppm TWA; 2000 mg/m3 TWA	120 ppm TWA; 350 mg/m3 TWA	1000 ppm TWA; 2950 mg/m3 TWA	600 ppm TWA [VLE-MP]	1000 ppm TWA [VLA-ED] (indicative limit value); 3000 mg/m3 TWA [VLA-ED] (indicative limit value)
	Ceilings	Not established	610 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)	Not established	Not established	Not established
2-Methylbutane (In Liquid form) (78-78-4)	TWAs	667 ppm TWA; 2000 mg/m3 TWA	Not established	Not established	600 ppm TWA [VLE-MP] (as Pentane, all isomers)	1000 ppm TWA [VLA-ED] (indicative limit value); 3000 mg/m3 TWA [VLA-ED] (indicative limit value)
Heptane (142-82-5)	STELs	Not established	Not established	Not established	500 ppm STEL [VLE-CD]	Not established
	TWAs	500 ppm TWA; 2085 mg/m3 TWA	85 ppm TWA; 350 mg/m3 TWA	500 ppm TWA; 2000 mg/m3 TWA	400 ppm TWA [VLE-MP]	500 ppm TWA [VLA-ED] (indicative limit value); 2085 mg/m3 TWA [VLA-ED] (indicative limit value)
	Ceilings	Not established	440 ppm Ceiling (15 min); 1800 mg/m3 Ceiling (15 min)	Not established	Not established	Not established
Toluene (108-88-3)	TWAs	50 ppm TWA; 192 mg/m3 TWA	100 ppm TWA; 375 mg/m3 TWA	200 ppm TWA	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)
	STELs	Not established	150 ppm STEL; 560 mg/m3 STEL	Not established	Not established	100 ppm STEL [VLA-EC]; 384 mg/m3 STEL [VLA-EC]
	Biological Limit Values (BLV)	Not established	Not established	Not established	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)
	Ceilings	Not established	Not established	300 ppm Ceiling	Not established	Not established
	STELs	100 ppm STEL; 442 mg/m3 STEL	150 ppm STEL; 655 mg/m3 STEL	Not established	150 ppm STEL [VLE-CD]	100 ppm STEL [VLA-EC]; 442 mg/m3 STEL [VLA-EC]

p-Xylene (106-42-3)	TWAs	50 ppm TWA; 221 mg/m3 TWA	100 ppm TWA; 435 mg/m3 TWA	Not established	100 ppm TWA [VLE-MP]	50 ppm TWA [VLA-ED] (indicative limit value); 221 mg/m3 TWA [VLA-ED] (indicative limit value)
Exposure Limits/Guidelines (Con't.)						
			Result	Sweden		
Hexane (110-54-3)			STELs	50 ppm STV; 180 mg/m3 STV		
			TWAs	25 ppm LLV; 90 mg/m3 LLV		
2-Methylpentane (107-83-5)			STELs	300 ppm STV; 1100 mg/m3 STV		
			TWAs	200 ppm LLV; 700 mg/m3 LLV		
Pentane (109-66-0)			STELs	750 ppm STV; 2000 mg/m3 STV		
			TWAs	600 ppm LLV; 1800 mg/m3 LLV		
2-Methylbutane (In Liquid form) (78-78-4)			STELs	750 ppm STV; 2000 mg/m3 STV		
			TWAs	600 ppm LLV; 1800 mg/m3 LLV		
Heptane (142-82-5)			STELs	300 ppm STV; 1200 mg/m3 STV		
			TWAs	200 ppm LLV; 800 mg/m3 LLV		
Toluene (108-88-3)			STELs	100 ppm STV; 400 mg/m3 STV		
			TWAs	50 ppm LLV; 200 mg/m3 LLV		
p-Xylene (106-42-3)			STELs	100 ppm STV; 450 mg/m3 STV		
			TWAs	50 ppm LLV; 200 mg/m3 LLV		

Exposure Control Notations

Portugal

- Hexane (110-54-3): **Skin:** (skin - potential for cutaneous exposure)
- Toluene (108-88-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen) | **Skin:** (skin - potential for cutaneous exposure)
- p-Xylene (106-42-3): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

Italy

- Toluene (108-88-3): **Skin:** (skin - potential for cutaneous absorption)
- Butane (106-97-8): **Carcinogens:** (Category 1 Carcinogen (containing >= 0.1% Butadiene)) | **Mutagens:** (Category 2 Mutagen (containing >= 0.1% Butadiene))
- Isobutane (75-28-5): **Carcinogens:** (Category 1 Carcinogen (containing >= 0.1% Butadiene)) | **Mutagens:** (Category 2 Mutagen (containing >= 0.1% Butadiene))
- p-Xylene (106-42-3): **Skin:** (skin - potential for cutaneous absorption)

France

- Hexane (110-54-3): **Reproductive Toxins:** (Reproductive Toxin category 3)
- Toluene (108-88-3): **Reproductive Toxins:** (Reproductive Toxin category 3)

Ireland

- Toluene (108-88-3): **Skin:** (Potential for cutaneous absorption)
 - Propane (74-98-6): **Simple Asphyxiants:** (Asphyxiant)
 - p-Xylene (106-42-3): **Skin:** (Potential for cutaneous absorption)
- Spain**
- Toluene (108-88-3): **Skin:** (skin - potential for cutaneous exposure)
 - p-Xylene (106-42-3): **Skin:** (skin - potential for cutaneous exposure)

Sweden

- Toluene (108-88-3): **Skin:** (Skin notation)
- p-Xylene (106-42-3): **Skin:** (Skin notation)

Germany TRGS

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

Germany DFG

- Heptane (142-82-5): **Pregnancy:** (classification not yet possible)
- Hexane (110-54-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- Octane (111-65-9): **Pregnancy:** (classification not yet possible (all isomers except trimethylpentane isomers))
- Pentane (109-66-0): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- Toluene (108-88-3): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to) | **Skin:** (skin notation)
- 2-Methylbutane (In Liquid form) (78-78-4): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to)
- 2-Methylpentane (107-83-5): **Pregnancy:** (classification not yet possible)
- Butane (106-97-8): **Pregnancy:** (classification not yet possible)
- Isobutane (75-28-5): **Pregnancy:** (classification not yet possible)
- Propane (74-98-6): **Pregnancy:** (classification not yet possible)

Exposure Limits Supplemental

Israel

- Hexane (110-54-3): **Action Levels:** (25 ppm AL) | **Biological Markers of Occupational Exposure:** (0.4 mg/L Medium: urine Time: end of shift at end of workweek Parameter: 2,5-Hexanedione without hydrolysis) | **Substances Requiring Environmental - Occu:** (Present)
- Toluene (108-88-3): **Biological Markers of Occupational Exposure:** (1.6 g/g Creatinine Medium: urine Parameter: Hippuric acid)
- p-Xylene (106-42-3): **Biological Markers of Occupational Exposure:** (1.5 g/g Creatinine Medium: urine Time: end of shift Parameter: Methylhippuric acids)

8.2 Exposure controls

Engineering Measures/Controls

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

Personal Protective Equipment

Respiratory

- In case of insufficient ventilation, wear suitable respiratory equipment. 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

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

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

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

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 compressed gas with no odor.
Color	Colorless	Odor	Odorless
Odor Threshold	Data lacking		
General Properties			
Boiling Point	Data lacking	Melting Point	Data lacking
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	Data lacking	Water Solubility	Data lacking
Viscosity	Data lacking	Explosive Properties	Not relevant.
Oxidizing Properties:	Not relevant.		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	Autoignition	Data lacking
Flammability (solid, gas)	Flammable 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. Incompatible materials.

10.5 Incompatible materials

- Oxidizers

10.6 Hazardous decomposition products

- Carbon dioxide. Carbon monoxide.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

Components		
Decane (3.2%)	124-18-5	Acute Toxicity: Inhalation-Rat LC50 • >1369 ppm 8 Hour(s); Inhalation-Rat LC50 • 72300 mg/m ³ 2 Hour(s)
Dodecane (3.2%)	112-40-3	Acute Toxicity: Inhalation-Rat LC50 • >142 ppm 8 Hour(s); Irritation: Skin-Rabbit • .05 mL 24 Hour(s) • Moderate irritation; Tumorigen / Carcinogen: Skin-Mouse TDLo • 11 g/kg 22 Week(s)-Intermittent; <i>Tumorigenic:Equivocal tumorigenic agent by RTECS criteria; Skin and Appendages:Other:Tumors; Tumorigenic:Tumors at site of application</i>
Heptane (9.7%)	142-82-5	Acute Toxicity: Inhalation-Rat LC50 • 103 g/m ³ 4 Hour(s)
Hexane (5.4%)	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); <i>Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system; Reproductive Effects:Specific Developmental Abnormalities:Urogenital system</i>
Octane (5.4%)	111-65-9	Acute Toxicity: Inhalation-Rat LC50 • 25260 ppm 4 Hour(s)
Pentane (7.6%)	109-66-0	Acute Toxicity: Ingestion/Oral-Rat LD50 • >2000 mg/kg; Inhalation-Rat LC50 • 364 g/m ³ 4 Hour(s)
Tetradecane (2.2%)	629-59-4	Irritation: Skin-Rabbit • .05 mL 24 Hour(s) • Moderate irritation; Tumorigen / Carcinogen: Skin-Mouse TDLo • 9600 mg/kg 20 Week(s)-Intermittent; <i>Tumorigenic:Equivocal tumorigenic agent by RTECS criteria; Skin and Appendages:Other:Tumors; Tumorigenic:Tumors at site of application</i>
Tridecane (2.2%)	629-50-5	Irritation: Skin-Rabbit • .05 mL 24 Hour(s) • Severe irritation
Toluene (10.8%)	108-88-3	Acute Toxicity: Ingestion/Oral-Rat LD50 • 636 mg/kg; Skin-Rabbit LD50 • 14100 µL/kg; Multi-dose Toxicity: Ingestion/Oral-Rat TDLo • 42380 mg/kg 49 Day(s)-Intermittent; <i>Sense Organs and Special Senses:Ear:Changes in cochlear structure or function; Nutritional and Gross Metabolic:Gross Metabolite Changes:Weight loss or decreased weight gain;</i> Reproductive: Inhalation-Rat TCLo • 1500 ppm (7-20D preg); <i>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</i>
2-Methylbutane (In Liquid form) (9.7%)	78-78-4	Acute Toxicity: Inhalation-Rat LC50 • 280000 mg/m ³ 4 Hour(s)
2-Methylpentane (5.4%)	107-83-5	Multi-dose Toxicity: Ingestion/Oral-Rat TDLo • 10 g/kg 4 Week(s)-Intermittent; <i>Kidney, Ureter, and Bladder:Changes in tubules (including acute renal failure, acute tubular necrosis); Related to Chronic Data:Death in the Other Multiple Dose data type field</i>
Butane (4.5%)	106-97-8	Acute Toxicity: Inhalation-Rat LC50 • 658 g/m ³ 4 Hour(s)
Benzene, propyl- (4.3%)	103-65-1	Acute Toxicity: Ingestion/Oral-Rat LD50 • 6040 mg/kg; <i>Behavioral:Somnolence (general depressed activity)</i>
Isobutane (1.5%)	75-28-5	Acute Toxicity: Inhalation-Rat LC50 • 658000 mg/m ³ 4 Hour(s)
p-Xylene (12.6%)	106-42-3	Acute Toxicity: Ingestion/Oral-Rat LD50 • 3910 mg/kg; Inhalation-Rat LC50 • 4550 ppm 4 Hour(s); <i>Lungs, Thorax, or Respiration:Chronic pulmonary edema; Liver:Other changes; Blood:Changes in cell count (unspecified)</i>

GHS Properties	Classification
Acute toxicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met

Aspiration Hazard	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Carcinogenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Germ Cell Mutagenicity	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Skin corrosion/Irritation	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2
Skin sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
STOT-RE	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2 OSHA HCS 2012 • Classification criteria not met
STOT-SE	EU/CLP • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects OSHA HCS 2012 • Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects; Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation
Toxicity for Reproduction	EU/CLP • Toxic to Reproduction 2 OSHA HCS 2012 • Toxic to Reproduction 2
Respiratory sensitization	EU/CLP • Classification criteria not met OSHA HCS 2012 • Classification criteria not met
Serious eye damage/Irritation	EU/CLP • Classification criteria not met OSHA HCS 2012 • Eye Irritation 2A

Target Organs

- Central Nervous System (CNS), Peripheral Nervous System (PNS)

Route(s) of entry/exposure

- Inhalation, Skin, Eye, Ingestion

Potential Health Effects

Inhalation

Acute (Immediate)

- May cause respiratory irritation. May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death. 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)

- Repeated and prolonged inhalation of n-Hexane can cause damage to the peripheral and central nervous systems.

Skin

Acute (Immediate)

- May cause irritation.

Chronic (Delayed)

- No data available

Eye

Acute (Immediate)

- May cause irritation.

Chronic (Delayed)

- No data available

Ingestion

Acute (Immediate)

- Under normal conditions of use, no health effects are expected.

Chronic (Delayed)

- No data available

Carcinogenic Effects

- The components of this gas mixture are not found on the following lists: FEDERAL OSHA Z LIST, NTP and IARC; therefore, they are not considered to be, nor suspected

to be, cancer-causing agents by these agencies.

Reproductive Effects

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

Key to abbreviations

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

MOD = Moderate
SEV = Severe

Section 12 - Ecological Information

12.1 Toxicity

Component	CAS	Data	Comments
Hexane (5.4%)	110-54-3	Fish: 96 Hour(s) LC50 Fish 2.1-2.98 mg/L	

- 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

- According to Annex VI to Regulation (EC) No 1272/2008 Table 3.1 and Table 3.2 the 2-Methylbutane, Heptane, Pentane, 2,4-Dimethylpentane, 2-Methylpentane, Hexane and Octane.

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	UN3161	Liquefied gas, flammable, n.o.s. (contains hydrocarbon mixture)	2.1	NDA	NDA
TDG	UN3161	LIQUEFIED GAS, FLAMMABLE, N.O.S. (contains hydrocarbon mixture)	2.1	NDA	Potential Marine Pollutant
IMO/IMDG	UN3161	LIQUEFIED GAS, FLAMMABLE, N.O.S. (contains hydrocarbon mixture)	2.1	NDA	NDA

IATA/ICAO	UN3161	Liquefied gas, flammable, n.o.s. (contains hydrocarbon mixture)	2.1	NDA	NDA
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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

- Not relevant.

Section 15 - Regulatory Information

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

SARA Hazard Classifications • Acute, Chronic, Fire, Pressure(Sudden Release of)

State Right To Know				
Component	CAS	MA	NJ	PA
2,4-Dimethylpentane	108-08-7	Yes	Yes	Yes
2-Methylbutane (In Liquid form)	78-78-4	Yes	Yes	Yes
2-Methylpentane	107-83-5	Yes	Yes	Yes
Benzene, butyl-	104-51-8	No	Yes	Yes
Benzene, propyl-	103-65-1	Yes	Yes	Yes
Butane	106-97-8	Yes	Yes	Yes
Decane	124-18-5	No	Yes	Yes
Dodecane	112-40-3	No	No	No
Heptane	142-82-5	Yes	Yes	Yes
Hexane	110-54-3	Yes	Yes	Yes
Isobutane	75-28-5	Yes	Yes	Yes
Octane	111-65-9	Yes	Yes	Yes
Pentadecane	629-62-9	No	No	No
Pentane	109-66-0	Yes	Yes	Yes
Propane	74-98-6	Yes	Yes	Yes
p-Xylene	106-42-3	Yes	Yes	Yes
Tetradecane	629-59-4	No	No	No
Toluene	108-88-3	Yes	Yes	Yes
Tridecane	629-50-5	No	No	No

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
2,4-Dimethylpentane	108-08-7	No	Yes	Yes	Yes	No
2-Methylbutane (In Liquid form)	78-78-4	Yes	No	Yes	Yes	No

2-Methylpentane	107-83-5	Yes	No	Yes	Yes	No
Benzene, butyl-	104-51-8	Yes	No	Yes	Yes	No
Benzene, propyl-	103-65-1	Yes	No	Yes	Yes	No
Butane	106-97-8	Yes	No	Yes	Yes	No
Decane	124-18-5	Yes	No	Yes	Yes	No
Dodecane	112-40-3	Yes	No	Yes	Yes	No
Heptane	142-82-5	Yes	No	Yes	Yes	No
Hexane	110-54-3	Yes	No	Yes	Yes	No
Isobutane	75-28-5	Yes	No	Yes	Yes	No
Octane	111-65-9	Yes	No	Yes	Yes	No
Pentadecane	629-62-9	No	Yes	Yes	Yes	No
Pentane	109-66-0	Yes	No	Yes	Yes	No
Propane	74-98-6	Yes	No	Yes	Yes	No
p-Xylene	106-42-3	Yes	No	Yes	Yes	No
Tetradecane	629-59-4	Yes	No	Yes	Yes	No
Toluene	108-88-3	Yes	No	Yes	Yes	No
Tridecane	629-50-5	No	Yes	Yes	Yes	No

Inventory (Con't.)				
Component	CAS	Japan ENCS	Korea KECL	TSCA
2,4-Dimethylpentane	108-08-7	Yes	Yes	Yes
2-Methylbutane (In Liquid form)	78-78-4	Yes	Yes	Yes
2-Methylpentane	107-83-5	Yes	Yes	Yes
Benzene, butyl-	104-51-8	Yes	No	Yes
Benzene, propyl-	103-65-1	Yes	Yes	Yes
Butane	106-97-8	Yes	Yes	Yes
Decane	124-18-5	Yes	Yes	Yes
Dodecane	112-40-3	Yes	Yes	Yes
Heptane	142-82-5	Yes	Yes	Yes
Hexane	110-54-3	Yes	Yes	Yes
Isobutane	75-28-5	Yes	Yes	Yes
Octane	111-65-9	Yes	Yes	Yes
Pentadecane	629-62-9	Yes	Yes	Yes
Pentane	109-66-0	Yes	Yes	Yes
Propane	74-98-6	Yes	Yes	Yes
p-Xylene	106-42-3	Yes	Yes	Yes
Tetradecane	629-59-4	Yes	Yes	Yes
Toluene	108-88-3	Yes	Yes	Yes
Tridecane	629-50-5	Yes	Yes	Yes

Canada

Labor

Canada - WHMIS - Classifications of Substances

- p-Xylene

106-42-3

B2, D2A, D2B

• Benzene, propyl-	103-65-1	B2
• Pentane	109-66-0	B2
• Decane	124-18-5	B3, D2B
• Tetradecane	629-59-4	Uncontrolled product according to WHMIS classification criteria
• Octane	111-65-9	B2, D2B
• Dodecane	112-40-3	B3
• 2-Methylbutane (In Liquid form)	78-78-4	B2
• Isobutane	75-28-5	A, B1 (listed under Methyl-2 propane)
• Heptane	142-82-5	B2, D2B
• Propane	74-98-6	A, B1
• Toluene	108-88-3	B2, D2A, D2B
• Butane	106-97-8	A, B1
• Hexane	110-54-3	B2, D2A, D2B
• 2-Methylpentane	107-83-5	B2
• Tridecane	629-50-5	B3
• Benzene, butyl-	104-51-8	B3
• Pentadecane	629-62-9	Uncontrolled product according to WHMIS classification criteria
• 2,4-Dimethylpentane	108-08-7	B2

Canada - WHMIS - Ingredient Disclosure List

• p-Xylene	106-42-3	0.1 %
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	1 %
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	1 %
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	1 %
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	1 %
• Butane	106-97-8	1 %
• Hexane	110-54-3	1 %
• 2-Methylpentane	107-83-5	1 %
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Environment

Canada - CEPA - Priority Substances List

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed

• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Priority Substance List 1 (substance not considered toxic)
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

China

Environment

China - Ozone Depleting Substances - First Schedule

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

China - Ozone Depleting Substances - Second Schedule

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed

• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

China - Ozone Depleting Substances - Third Schedule

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Other

China - Annex I & II - Controlled Chemicals Lists

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

China - Dangerous Goods List

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	UN2364 PG = III
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	UN2247 PG = III

• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	UN1262 PG = II
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	UN1969
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	UN1978
• Toluene	108-88-3	UN1294 PG = II
• Butane	106-97-8	UN1011
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

China - Export Control List - Part I Chemicals

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Europe

Other

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

• p-Xylene	106-42-3	R10 Xn; R20/21 Xi; R38
• Benzene, propyl-	103-65-1	R10 Xi; R37 N; R51-53 Xn; R65
• Pentane	109-66-0	F+; R12 N; R51-53 Xn; R65 R66 R67
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	F; R11 Xi; R38 N; R50-53 Xn; R65 R67
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	F+; R12 N; R51-53 Xn; R65 R66 R67
• Isobutane	75-28-5	F+; R12

• Heptane	142-82-5	F; R11 Xi; R38 N; R50-53 Xn; R65 R67
• Propane	74-98-6	F+; R12
• Toluene	108-88-3	F; R11 Xi; R38 Xn; R48/20-65 Repr.Cat.3; R63 R67
• Butane	106-97-8	F+; R12
• Hexane	110-54-3	F; R11 Xi; R38 N; R51-53 Repr.Cat.3; R62 Xn; R65-48/20 R67
• 2-Methylpentane	107-83-5	F; R11 Xi; R38 N; R51-53 Xn; R65 R67
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	F; R11 Xi; R38 N; R50-53 Xn; R65 R67

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

• p-Xylene	106-42-3	12.5%≤C: Xn; R20/21
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	5%≤C: Xn; R48/20
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Xn R:10-20/21-38 S:(2)-25
• Benzene, propyl-	103-65-1	Xn N R:10-37-51/53-65 S:(2)-24-37-61-62
• Pentane	109-66-0	F+ Xn N R:12-51/53-65-66-67 S:(2)-9-16-29-33-61-62
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	F Xn N R:11-38-65-67-50/53 S:(2)-9-16-29-33-60-61-62
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	F+ Xn N R:12-51/53-65-66-67 S:(2)-9-16-29-33-61-62
• Isobutane	75-28-5	F+ R:12 S:(2)-9-16
• Heptane	142-82-5	F Xn N R:11-38-65-67-50/53 S:(2)-9-16-29-33-60-61-62
• Propane	74-98-6	F+ R:12 S:(2)-9-16

• Toluene	108-88-3	F Xn R:11-38-48/20-63-65-67 S:(2)-36/37-46-62
• Butane	106-97-8	F+ R:12 S:(2)-9-16
• 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
• 2-Methylpentane	107-83-5	F Xn N R:11-38-65-67-51/53 S:(2)-9-16-29-33-61-62
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	F Xn N R:11-38-65-67-50/53 S:(2)-9-16-29-33-60-61-62

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

• p-Xylene	106-42-3	C
• Benzene, propyl-	103-65-1	C
• Pentane	109-66-0	C
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	C
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	C
• Isobutane	75-28-5	C
• Heptane	142-82-5	C
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	C
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	C
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	C

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

• p-Xylene	106-42-3	S:(2)-25
• Benzene, propyl-	103-65-1	S:(2)-24-37-61-62
• Pentane	109-66-0	S:(2)-9-16-29-33-61-62
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	S:(2)-9-16-29-33-60-61-62
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	S:(2)-9-16-29-33-61-62
• Isobutane	75-28-5	S:(2)-9-16
• Heptane	142-82-5	S:(2)-9-16-29-33-60-61-62
• Propane	74-98-6	S:(2)-9-16
• Toluene	108-88-3	S:(2)-36/37-46-62
• Butane	106-97-8	S:(2)-9-16
• Hexane	110-54-3	S:(2)-9-16-29-33-36/37-61-62
• 2-Methylpentane	107-83-5	S:(2)-9-16-29-33-61-62
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed

• 2,4-Dimethylpentane

108-08-7

S:(2)-9-16-29-33-60-61-62

Germany

Environment

Germany - TA Luft - Types and Classes

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Germany - Water Classification (VwVwS) - Annex 1

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	ID Number 562, not considered hazardous to water (ratio 1,3-butadiene <0.1%)
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	ID Number 560, not considered hazardous to water
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	ID Number 561, not considered hazardous to water (1,3-Butadiene <0.1%)
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	ID Number 206, hazard class 2 - hazard to waters
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• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	ID Number 452, hazard class 2 - hazard to waters
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	ID Number 479, hazard class 2 - hazard to waters
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	ID Number 648, hazard class 2 - hazard to waters
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	ID Number 120, hazard class 2 - hazard to waters
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	ID Number 194, hazard class 2 - hazard to waters
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	ID Number 124, hazard class 2 - hazard to waters
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	ID Number 120, hazard class 2 - hazard to waters
Germany - Water Classification (VwVwS) - Annex 3		
• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	ID Number 4736, hazard class 2 - hazard to waters
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	ID Number 7914, hazard class 1 - low hazard to waters
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	ID Number 7913, hazard class 1 - low hazard to waters
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	ID Number 120, hazard class 2 - hazard to waters
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	ID Number 120, hazard class 2 - hazard to waters

Other

Germany - Specifically Regulated Chemicals in TRGS

• p-Xylene	106-42-3	Not Listed
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• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Mexico

Other

Mexico - Hazard Classifications

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Hazard Class = 3 PG = III UN2364
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Hazard Class = 3 PG = III UN2247
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Hazard Class = 3 PG = II UN1262
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Hazard Class = 2.1 UN1969
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Hazard Class = 2.1 UN1978
• Toluene	108-88-3	Hazard Class = 3 PG = II UN1294
• Butane	106-97-8	Hazard Class = 2.1 UN1011
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Mexico - Regulated Substances

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	UN2364
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	UN2247
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	UN1262
• Dodecane	112-40-3	Not Listed

• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	UN1969
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	UN1978
• Toluene	108-88-3	UN1294
• Butane	106-97-8	UN1011
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Portugal

Other

Portugal - Prohibited Substances

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

United Kingdom

Environment

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	100 kg
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	100 kg
• Butane	106-97-8	Not Listed

• Hexane	110-54-3	10 kg
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

United Kingdom - Substances Contained in Dangerous Substances or Preparations

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Other

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

United Kingdom - The Red List - Dangerous Substances in Water

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed

• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

United States

Labor

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

U.S. - OSHA - Specifically Regulated Chemicals

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed

• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

Environment

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

• p-Xylene	106-42-3	
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	100 lb final RQ; 45.4 kg final RQ
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	1000 lb final RQ; 454 kg final RQ
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	5000 lb final RQ; 2270 kg final RQ
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed

• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	1.0 % de minimis concentration
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	1.0 % de minimis concentration
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	1.0 % de minimis concentration
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Included in waste streams: F005, F024, F025, F039, K015, K036, K037, K149, K151
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed

• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	waste number U220
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	0.080 mg/L (wastewater); 10 mg/kg (nonwastewater)
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	waste number U220
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

United States - California

Environment

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed

• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	developmental toxicity, initial date 1/1/91
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	7000 µg/day MADL (level represents absorbed dose)
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed

• 2,4-Dimethylpentane	108-08-7	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	female reproductive toxicity, initial date 8/7/09
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

United States - Pennsylvania

Labor

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

• p-Xylene	106-42-3	
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed

• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

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

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Not Listed
• Decane	124-18-5	Not Listed
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Not Listed
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Not Listed
• Propane	74-98-6	Not Listed
• Toluene	108-88-3	Not Listed
• Butane	106-97-8	Not Listed
• Hexane	110-54-3	Not Listed
• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

United States - Rhode Island

Labor

U.S. - Rhode Island - Hazardous Substance List

• p-Xylene	106-42-3	Not Listed
• Benzene, propyl-	103-65-1	Not Listed
• Pentane	109-66-0	Toxic; Flammable
• Decane	124-18-5	Flammable
• Tetradecane	629-59-4	Not Listed
• Octane	111-65-9	Toxic; Flammable
• Dodecane	112-40-3	Not Listed
• 2-Methylbutane (In Liquid form)	78-78-4	Not Listed
• Isobutane	75-28-5	Not Listed
• Heptane	142-82-5	Toxic; Flammable
• Propane	74-98-6	Toxic; Flammable
• Toluene	108-88-3	Toxic (skin); Flammable (skin)
• Butane	106-97-8	Toxic; Flammable
• Hexane	110-54-3	Toxic; Flammable

• 2-Methylpentane	107-83-5	Not Listed
• Tridecane	629-50-5	Not Listed
• Benzene, butyl-	104-51-8	Not Listed
• Pentadecane	629-62-9	Not Listed
• 2,4-Dimethylpentane	108-08-7	Not Listed

15.2 Chemical Safety Assessment

- No Chemical Safety Assessment has been carried out.

Section 16 - Other Information

Relevant Phrases (code & full text)

- H224 - Extremely flammable liquid and vapour
- H225 - Highly flammable liquid and vapour
- H226 - Flammable liquid and vapour
- H304 - May be fatal if swallowed and enters airways
- H312 - Harmful in contact with skin
- H332 - Harmful if inhaled
- H335 - May cause respiratory irritation
- H361f - Suspected of damaging fertility.
- H400 - Very toxic to aquatic life
- H410 - Very toxic to aquatic life with long lasting effects
- EUH066 - Repeated exposure may cause skin dryness or cracking.
- R10 - Flammable.
- R11 - Highly flammable.
- R36/37/38 - Irritating to eyes, respiratory system and skin.
- R48/20 - Harmful: danger of serious damage to health by prolonged exposure through inhalation.
- R50 - Very toxic to aquatic organisms.
- R65 - Harmful: may cause lung damage if swallowed.
- R66 - Repeated exposure may cause skin dryness or cracking.

Last Revision Date

Preparation Date

Disclaimer/Statement of Liability

- 09/September/2014
- 12/July/2012
- 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