1. MATERIAL AND COMPANY IDENTIFICATION

Material Name	:	**Heptane**
Uses	:	Industrial Solvent.
Product Code	:	Q1352, Q9231
Company	:	**Shell Chemical LP** PO Box 2463 HOUSTON TX 77252-2463 USA
MSDS Request	:	1-800-240-6737
Customer Service	:	1-866-897-4355

Emergency Telephone Number

Chemtrec Domestic (24 hr)	:	1-800-424-9300
Chemtrec International (24 hr)	:	1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Solvent Naphtha (Petroleum), Light Aliphatic	64742-89-8	100.00 %

Contains n-Heptane, CAS # 142-82-5

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance and Odour	:	Colourless. Liquid. Paraffinic.
Health Hazards	:	Vapours may cause drowsiness and dizziness. Irritating to skin. Harmful: may cause lung damage if swallowed.
Safety Hazards	:	Extremely flammable. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.
Environmental Hazards	:	Toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

Health Hazards

Inhalation	:	Vapours expected to be slightly irritating. Vapours may cause drowsiness and dizziness.
Skin Contact	:	Irritating to skin. Repeated exposure may cause skin dryness or cracking.
Eye Contact	:	Vapours may be irritating to the eye.
Ingestion	:	Harmful: may cause lung damage if swallowed.
Other Information	:	Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s):

Auditory system.

Signs and Symptoms	:	Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing. Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.
Aggravated Medical Condition	:	Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Skin.
Environmental Hazards	:	Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.

4. FIRST AID MEASURES

Inhalation	:	Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
Skin Contact	:	Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
Eye Contact	:	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion	:	If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
Advice to Physician	:	Causes central nervous system depression. Dermatitis may result from prolonged or repeated exposure. Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal. Call a doctor or poison control center for guidance.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

Flash point	:	< -7 °C / 19 °F
Explosion / Flammability limits in air	:	1 - 7 %(V)
Auto ignition temperature	:	246 - 260 °C / 475 - 500 °F (ASTM E-659)
Specific Hazards	:	Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface water. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Extinguishing Media	:	Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not discharge extinguishing waters into the aquatic environment.
Unsuitable Extinguishing	:	Do not use water in a jet.

Media		
Protective Equipment for Firefighters	:	Wear full protective clothing and self-contained breathing apparatus.
Additional Advice	:	Keep adjacent containers cool by spraying with water.

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations.

Protective measures	:	Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
Clean Up Methods	:	For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
Additional Advice	:	See Chapter 13 for information on disposal. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapour may form an explosive mixture with air. U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Centre at (800) 424-8802. Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Centre at (800) 424-8802. This material is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Petroleum Exclusion. Therefore, releases to the environment may not be reportable under CERCLA.

7. HANDLING AND STORAGE

General Precautions : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.

Handling : Avoid contact with skin, eyes, and clothing. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 1 m/sec until fill pipe submerged to twice its diameter, then <= 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. The vapour is heavier than air, spreads along the ground and distant ignition is possible. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Handle and open container with care in a well-ventilated area. Ventilate workplace in such a way that the Occupational Exposure Limit (OEL) is not exceeded. Do not empty into drains. Avoid handling above its flashpoint otherwise the product will form flammable/explosive vapour-air mixtures

Storage : Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Storage Temperature: Ambient. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment.

Product Transfer : Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

Recommended Materials : For containers, or container linings use mild steel, stainless steel. For container paints, use epoxy paint, zinc silicate paint.

Unsuitable Materials : Avoid prolonged contact with natural, butyl or nitrile rubbers.

Container Advice : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

In the absence of occupational exposure standards for this product, it is recommended that the following are adopted.

Material	Source	Type	ppm	mg/m3	Notation
n-Heptane	OSHA Z1	PEL	500 ppm	2,000 mg/m3	
	OSHA Z1A	TWA	400 ppm	1,600 mg/m3	
	OSHA Z1A	STEL	500 ppm	2,000 mg/m3	

	ACGIH	TWA	400 ppm		
	ACGIH	STEL	500 ppm		
Stoddard Solvent	ACGIH	TWA	100 ppm		
	OSHA Z1	PEL	500 ppm	2,900 mg/m3	
	OSHA Z1A	TWA	100 ppm	525 mg/m3	

Additional Information : Shell has adopted as Interim Standards the OSHA Z1A values that were established in 1989 and later rescinded.
Wash hands before eating, drinking, smoking and using the toilet.

Exposure Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Eye washes and showers for emergency use.

Personal Protective Equipment : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Respiratory Protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point >65 °C (149 °F)] meeting EN141. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

Hand Protection : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS:2161) made from the following materials may provide suitable chemical protection:
Longer term protection: Nitrile rubber gloves Incidental contact/Splash protection: PVC or neoprene rubber gloves Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Eye Protection : Chemical splash goggles (chemical monogoggles).

Protective Clothing : Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Occupational Safety and Health Administration

(OSHA), USA: Sampling and Analytical Methods, http://www.osha-slc.gov/dts/sltc/methods/toc.html. Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances, http://www.hsl.gov.uk/search.htm. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods, http://www.cdc.gov/niosh/nmam/nmammenu.html.

Environmental Exposure Controls : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colourless. Liquid.
Odour	:	Paraffinic.
Boiling point	:	90 - 100 °C / 194 - 212 °F
Flash point	:	< -7 °C / 19 °F
Explosion / Flammability limits in air	:	1 - 7 %(V)
Auto-ignition temperature	:	246 - 260 °C / 475 - 500 °F (ASTM E-659)
Vapour pressure	:	6 - 7.7 kPa at 20 °C / 68 °F
Specific gravity	:	0.7 - 0.71 at 20 °C / 68 °F
Density	:	Typical 713 kg/m3 at 15 °C / 59 °F (ASTM D-4052)
Water solubility	:	2.6 mg/l at 25 °C / 77 °F Immiscible.

10. STABILITY AND REACTIVITY

Stability : Stable under normal conditions of use.
Conditions to Avoid : Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid : Strong oxidising agents.
Hazardous Decomposition Products : Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment : Information given is based on product testing, and/or similar products, and/or components.
Acute Oral Toxicity : Expected to be of low toxicity: LD50 >2000 mg/kg , Rat
Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Acute Dermal Toxicity : Expected to be of low toxicity: LD50 >2000 mg/kg , Rat
Acute Inhalation Toxicity : Expected to be of low toxicity: LC50>5000 ppm / 1 hours, Rat
High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
Skin Irritation : Irritating to skin.

Eye Irritation	:	Expected to be non-irritating to eyes.
Sensitisation	:	Not expected to be a skin sensitiser.
Repeated Dose Toxicity	:	Auditory system: prolonged and repeated exposures to high concentrations have resulted in hearing loss in rats. Solvent abuse and noise interaction in the work environment may cause hearing loss. (n-Heptane) Kidney: caused kidney effects in male rats which are not considered relevant to humans
Additional Information	:	Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.

12. ECOLOGICAL INFORMATION

Acute Toxicity

Fish	:	Expected to be toxic: 1 < LC/EC/IC50 <= 10 mg/l
Aquatic Invertebrates	:	Expected to be toxic: 1 < LC/EC/IC50 <= 10 mg/l
Algae	:	Expected to be toxic: 1 < LC/EC/IC50 <= 10 mg/l
Microorganisms	:	Expected to be toxic: 1 < LC/EC/IC50 <= 10 mg/l
Mobility	:	Floats on water. Adsorbs to soil and has low mobility.
Persistence/degradability	:	Readily biodegradable. Oxidises rapidly by photo-chemical reactions in air.
Bioaccumulation	:	Has the potential to bioaccumulate.
Other Adverse Effects	:	In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.

13. DISPOSAL CONSIDERATIONS

Material Disposal	:	Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses. Waste product should not be allowed to contaminate soil or water.
Container Disposal	:	Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recoverer or metal reclaimer.
Local Legislation	:	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

US Department of Transportation Classification (49CFR)

Identification number	UN 1206

Proper shipping name	Heptanes
Class / Division	3
Packing group	II
Contains	OIL
Emergency Response Guide No .	128
Additional Information	This material is an 'OIL' under 49 CFR Part 130 when transported in a container of 3500 gallon capacity or greater.

IMDG

Identification number	UN 1206
Proper shipping name	HEPTANES
Class / Division	3
Packing group	II
Marine pollutant:	Yes

IATA (Country variations may apply)

Identification number	UN 1206
Proper shipping name	Heptanes
Class / Division	3
Packing group	II

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

AICS	Listed.	
DSL	Listed.	
INV (CN)	Listed.	
TSCA	Listed.	
EINECS	Listed.	265-192-2
KECI (KR)	Listed.	KE-31661
PICCS (PH)	Listed.	

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA)

Heptane (64742-49-0)	Reportable quantity: 12,821 lbs
Cyclohexane (110-82-7)	Reportable quantity: 1,000 lbs
n-Hexane (110-54-3)	Reportable quantity: 5,000 lbs
Toluene (108-88-3)	Reportable quantity: 1,000 lbs

Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA. The components with RQs are given for information.

Clean Water Act (CWA) Section 311

Cyclohexane (110-82-7)	Reportable quantity: 1,000 lbs
Toluene (108-88-3)	Reportable quantity: 1,000 lbs

Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Centre at (800) 424-8802. The components with RQs are given for information.

SARA Hazard Categories (311/312)

Immediate (Acute) Health Hazard. Fire Hazard.

SARA Toxic Release Inventory (TRI) (313)

Cyclohexane (110-82-7)	7.80%
n-Hexane (110-54-3)	0.50%
Toluene (108-88-3)	0.005%

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)

Known to the State of California to cause birth defects or other reproductive harm.

Toluene (108-88-3) 0.005%	Developmental toxin.

New Jersey Right-To-Know Chemical List

n-Heptane (142-82-5) 40.00%	Listed.
Cyclohexane (110-82-7) 7.80%	Listed.
n-Hexane (110-54-3) 0.50%	Listed.
Octane (111-65-9) 0.10%	Listed.
Toluene (108-88-3) 0.005%	Listed.

Pennsylvania Right-To-Know Chemical List

n-Heptane (142-82-5) 40.00%	Listed.
Cyclohexane (110-82-7) 7.80%	Environmental hazard. Listed.
n-Hexane (110-54-3) 0.50%	Listed.
Octane (111-65-9) 0.10%	Listed.
Toluene (108-88-3) 0.005%	Environmental hazard. Listed.

16. OTHER INFORMATION

HMIS Rating (Health, Fire, Reactivity)	:	1, 3, 0
NFPA Rating (Health, Fire, Reactivity)	:	1, 3, 0
MSDS Version Number	:	13.1
MSDS Effective Date	:	12/16/2009
MSDS Revisions	:	A vertical bar (|) in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
Uses and Restrictions	:	Industrial Solvent.
MSDS Distribution	:	The information in this document should be made available to all who may handle the product
Disclaimer	:	The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.