

MATERIAL SAFETY DATA SHEET

Revision Date : 01.08.2006

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : HEXANE
Synonyms : Hexane
Product use : Solvent
UN number : 1208
MSDS Internet website : www. hitechchemicals.co.za

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS-No.	Weight%	Symbol Codes	R-Phrase Numbers
Hexane (other isomers)		60.00 - 70.00	F	R11
n-Hexane	110-54-3	30.00 - 40.00	Xn, F	R11, R48/20
Cyclohexane	110-82-7	< 5.00	F	R11
Benzene	71-43-2	< 0.10	F, T	R11, R45, R48/23/24/25

See Section 15 for European Label Information.

See Section 8 for Exposure Limits (if applicable).

3. HAZARDS IDENTIFICATION

Emergency response data : Colourless Liquid. EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapour at temperatures below ambient which readily form flammable mixtures. Vapours settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion. DOT ERG No. : 128

Potential health effects

Inhalation : High vapour/aerosol concentrations are irritating to the respiratory tract, and may cause headaches, dizziness, anaesthesia, drowsiness, unconsciousness, and peripheral nervous system disorder, including death.

Skin : Prolonged repeated contact may cause possible skin irritation and dermatitis.

Eye : Irritant.

Ingestion : Practically non-toxic, but when swallowed can cause lung damage.

See Section 11 for further health effects/toxicological data.

4. FIRST AID MEASURES

Inhalation : Remove from further exposure. If respiratory irritation, dizziness, nausea, or unconsciousness occurs, seek immediate medical assistance.

HEXANE

If breathing has stopped, assist ventilation with mechanical device or use mouth-to-mouth resuscitation with a mouthpiece.

Skin contact	:	Remove contaminated clothing. Dry wipe exposed skin and cleanse with hand cleaner, soap and water. Launder contaminated clothing before reuse. (See Section 16 - Injection Injury)
Eye contact	:	Flush thoroughly with water for at least 15 minutes. Get medical assistance.
Ingestion	:	Seek immediate medical attention. Do not induce vomiting.
Note to doctors	:	Persons with neurological disease should avoid exposure to hexane. Material if aspirated into the lungs may cause chemical pneumonitis. Treat appropriately.

5. FIRE-FIGHTING MEASURES

Extinguishing media	:	Carbon dioxide, foam, dry chemical and water fog.
Special fire fighting procedure	:	Evacuate area. For large spills, fire fighting foam in sufficient quantities should be applied to blanket the flammable product surface. Water spray should only be used to keep fire-exposed containers cool, flush spills away from exposures, disperse vapours and protect personnel attempting to stop leak. Prevent runoff from fire control or dilution from entering streams, municipal sewers, or drinking water supply.
Special protective equipment for firefighters	:	For fires in enclosed areas, fire fighters must use Self-Contained Breathing Apparatus.
Unusual fire and explosive hazards	:	EXTREMELY FLAMMABLE, HIGH HAZARD. Liquid can release considerable vapour at temperatures below ambient which readily form flammable mixtures. Vapours settle to ground level and may reach, via drains and other underground passages, ignition sources remote from the point of escape. Product can accumulate a static charge which may cause a fire or explosion.
Products of decomposition	:	Fumes, smoke and carbon monoxide.
Flash Point	:	< -18 °C (ASTM D-56)
Upper Explosion Limit	:	7.4 %(V)
Lower Explosion Limit	:	1.2 %(V)
NFPA Hazard Id	:	Health: 1; Flammability: 3; Reactivity: 0

6. ACCIDENTAL RELEASE MEASURES

Procedure if material is released or spilled	:	Report spills/releases as required to appropriate authorities.
Methods for cleaning up	:	SMALL SPILLS: Eliminate all ignition sources. Remove leaking containers to detached area. Absorb on fire-retardant treated sawdust, diatomaceous earth, etc. Shovel up with spark-resistant utensils for later disposal at an approved facility, in accordance with current laws and regulations. LARGE SPILLS: Self-contained breathing apparatus must be worn during cleanup. Eliminate all sources of ignition. Shut off source, seal the leak taking normal safety precautions. Contain material and pump back to holding tank for later disposal. Transfer equipment should be explosion-proof.
Personal precautions	:	See Section 8.
Environmental precautions	:	Prevent spill from entering municipal sewers, water sources or low lying areas. Advise the relevant authorities if contaminations have occurred.

7. HANDLING AND STORAGE

Safe handling advice	:	Harmful in contact with or if absorbed through the skin. Avoid inhalation of vapours or mists. Use in well ventilated area away from all ignition sources. This liquid is volatile and gives off invisible vapours. Either the liquid or vapour may settle in low areas or travel some distance along the
----------------------	---	---

HEXANE

ground or surface to ignition sources where they may ignite or explode.

- Storage information : This product is a static accumulator, therefore, all storage containers should be grounded and bonded. Drums should also be equipped with self-closing valves, pressure vacuum bungs and flame arresters. Outside or detached storage area, with an automatic sprinkling system, is preferred.
- Storage and handling procedures : Electrical equipment and fittings must comply with local fire prevention regulations for this class of product. Refer to national or local regulations covering safety at petroleum handling and storage areas for this product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational Exposure Limits (OELs)

Components	CAS-No.	Source	TWA	Value		Notations
Hexane (other isomers)		ACGIH TLV	LTEL STEL	1,760 mg/m ³ 3,500 mg/m ³	500 ppm 1,000 ppm	
n-Hexane	110-54-3	ACGIH			50 ppm	
Cyclohexane	110-82-7	ACGIH TLV	LTEL	340 mg/m ³	100 ppm	
Benzene	71-43-2	ACGIH(TLV) OSHA(PEL)	LTEL STEL LTEL STEL	1.6 mg/m ³ 8 mg/m ³ 2 mg/m ³ 16 mg/m ³	0.5 ppm 2.5 ppm 1 ppm 5 ppm	Skin; A1; BEI

LTEL: Long Term Exposure Limits - Time Weight Average (TWA) over 8 hours.

STEL: Short Term Exposure Limits - Time Weight Average (TWA) over 15 Minutes

Note: Limits Shown for guidance only. Follow applicable regulations.

Personal Protection Equipment (PPE)

- Engineering controls : Use in well ventilated area. Explosive-proof ventilation equipment with local exhaust is desirable.
- Respiratory protection : Approved respiratory equipment must be used when mist concentrations exceed the recommended exposure limits.
- Eye protection : Chemical type goggles with a face shield must be worn.
- Skin and body protection : Impervious gloves must be worn. If body contact is likely, appropriate personal protective equipment must be worn. Good personal hygiene practices should always be followed.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Liquid.
- Colour : Colourless
- Odour : Hydrocarbon
- Solubility : Negligible
- Boiling point/range : > 66 °C
- Flash Point : < -18 °C (ASTM D-56)
- Vapour pressure : 138 hPa
- Density : 0.6600 g/cm³ @ 20 °C (ASTM D-4052)

10. STABILITY AND REACTIVITY

- Stability : Stable.

HEXANE

Conditions to avoid	:	Heat, sparks, flame and build up of static electricity.
Materials to avoid	:	Strong oxidizers.
Hazardous decomposition products	:	Fumes, smoke and carbon monoxide.

11. TOXICOLOGICAL INFORMATION

Acute oral toxicity	:	(Rats): Practically non-toxic (LD50: Greater than 2000 mg/kg). Based on testing of similar products and/or components.
Acute inhalation toxicity	:	(Rats): Toxic (LC50: 0.5 or greater, but 2 mg/l or less). Based on testing products and/or components.
Acute dermal toxicity	:	(Rabbits): Toxic (LD50: 50 or greater, but 400 mg/kg or less). Based on testing of similar products and/or the components.
Skin irritation	:	(Rabbits): Irritant. (Primary Irritation Index: greater than 3 but less than 6). Based on testing of similar products and/or the components.
Eye irritation	:	(Rabbits): Irritant. (Draize score: greater than 15 but less than 35). Based on testing of similar products and/or the components.
Repeated dose toxicity	:	This product contains n-Hexane. Overexposure may cause progressive and potentially irreversible damage to the peripheral nervous system, particularly in the limbs. Simultaneous exposure to the vapours Methyl Ethyl Ketone (MEK) or Methyl Isobutyl Ketone (MIBK) with n-Hexane, intensifies the associated neuropathy. There is no reported human evidence that these effects occur when exposure is maintained below established OSHA and ACGIH limits.
Toxicity to reproduction	:	A two-generation reproduction study has been conducted on commercial hexane. In this study, male and female rats were exposed to commercial hexane vapour at concentrations of 0, 900, 3000, or 9000 ppm. No treatment-related adverse effects on reproductive performance were observed. However, at 9000 ppm, reductions in body weight and body weight gain were observed in both generations of offspring.
Mutagenicity	:	Ames test: Negative. Mouse Lymphoma (L5178Y/TK+/-) Assay: Negative.
Genetic (in vivo)	:	Cytogenetic studies (Inhalation): Causes chromosome breakage at concentrations 100 - 600 ppm.
Neurological effects	:	Acute exposures to hexanes produces eye, skin and respiratory irritation. Larger doses causes: CNS depression, dizziness, numbness of extremities and difficulty in walking. Prolonged exposure to levels of n-Hexane (<500 ppm) may show no acute symptoms but cause damage to the nervous system (peripheral neuropathy), affecting the muscles of the limbs. Paralysis may result.
Other toxicological information	:	Male rats exposed for 13 weeks to isomers of n-Hexane showed degeneration of the kidney tubules. This effect is not considered relevant to humans.

12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability	:	Not established.
Physico-chemical removability	:	Not established.

HEXANE

Bioaccumulation : Not established.

Ecotoxicity effects

Further information on ecology

Remarks : Not established.

13. DISPOSAL CONSIDERATIONS

Waste disposal : The product should be disposed of by supervised incineration in compliance with any applicable laws and regulations.

Contaminated packaging : Empty containers retain residue (liquid and/or vapour) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to refill or clean container since residue is difficult to remove. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Other regulations : Disposal of unused product may be subject to RCRA regulations (40 CFR 261). Disposal of the used product may also be regulated due to ignitability, corrosivity, reactivity, or toxicity as determined by the Toxicity Characteristic Leaching Procedure (TCLP). The reportable quantity of n-hexane is 0.5kg. If this quantity is released within a 24-hour period, it is required to notify the National Response Centre immediately. [40 CFR 302.6]

Flash Point : < -18 °C (ASTM D-56)

14. TRANSPORT INFORMATION

ADR

Proper shipping name : HEXANES
UN number : 1208
Class : 3
Letter : F
Packing group : II
Labelling number : 3

CFR

Proper shipping name : HEXANES
UN number : 1208
Class : 3
Letter : F
Packing group : II
Labelling number : 3

IATA_C

Proper shipping name : HEXANES
UN number : 1208
Class : 3
Letter : F
Packing group : II
Labelling number : 3

IMDG

Proper shipping name : HEXANES
UN number : 1208
Class : 3
Letter : F
Packing group : II
Labelling number : 3

Static Accumulator (50) : Yes

HEXANE

pico Siemens or less)

15. REGULATORY INFORMATION

US OSHA Hazard Communication Standard	:	Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined to be hazardous.
Governmental Inventory Status	:	All components comply with TSCA, EINECS/ELINCS, AICS, METI, DSL, KECI, ENCS, PICCS and IECSC.
EU Labelling	:	Product is dangerous as defined by the European Union Dangerous Substances/Preparations Directives.
Symbols	:	F, Xn Highly flammable, Harmful
R-Phrase(s)	:	R11, R48/20 Highly flammable., Harmful: danger of serious damage to health by prolonged exposure through inhalation.
S-phrase(s)	:	S9, S16, S24/25, S29, S51 Keep container in a well-ventilated place., Keep away from sources of ignition - No smoking., Avoid contact with skin and eyes., Do not empty into drains., Use only in well ventilated areas.
Note	:	Contains n-Hexane.

SARA

U.S. Superfund Amendments and Reauthorization Act SARA Title III	:	This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".
SARA (311/312) Reportable Hazard Categories	:	Fire Chronic Acute
SARA (313) Toxic Release Chemicals:	:	n-Hexane (110-54-3) - Conc > 5%

The following product ingredients are cited on the lists below

Chemical name	CAS-No.	Concentration [%]	List Citations
Hexane (other isomers)		60.00 - 70.00	
n-Hexane	110-54-3	30.00 - 40.00	1, 10, 18, 19, 20, 21, 23, 25, 26
Cyclohexane	110-82-7	< 5.00	1, 10, 11, 15, 18, 19, 20, 21, 23, 24, 25, 26
Benzene	71-43-2	< 0.10	1, 2, 4, 6, 9, 10, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26

Regulatory List Searched

1 = ACGIH ALL	6 = IARC 1	11 = TSCA 4	17 = CA P65	22 = MI 293
2 = ACGIH A1	7 = IARC 2A	12 = TSCA 5a2	18 = CA RTK	23 = MN RTK
3 = ACGIH A2	8 = IARC 2B	13 = TSCA 5e	19 = FL RTK	24 = NJ RTK
4 = NTP CARC	9 = OSHA CARC	14 = TSCA 6	20 = IL RTK	25 = PA RTK
5 = NTP SUS	10 = OSHA Z	15 = TSCA 12b	21 = LA RTK	26 = RI RTK

Code Key: CARC = Carcinogen; SUS = Suspected Carcinogen

16. OTHER INFORMATION

Note: Our products do not contain PCBs.

Health studies have shown that many hydrocarbons pose potential human health risks which may vary from person to person. Information provided on this MSDS reflects intended use. This product should not be used

HEXANE

for any other applications. In any case, the following advice should be considered:

INJECTION INJURY WARNING: If product is injected into or under the skin, or into any part of the body, regardless of the appearance of the wound or its size, the individual should be evaluated immediately by a doctor as a surgical emergency. Even though initial symptoms from high pressure injection may be minimal or absent, early surgical treatment within the first few hours may significantly reduce the ultimate extent of injury.

Precautionary Label Text:

Contains n-Hexane.

WARNING!

HIGHLY FLAMMABLE LIQUID AND VAPOUR. RESPIRATORY IRRITATION, HEADACHE, DIZZINESS, NAUSEA, LOSS OF CONSCIOUSNESS, AND IN CASES OF EXTREME EXPOSURE, POSSIBLY DEATH. LOW VISCOSITY MATERIAL-IF SWALLOWED, MAY BE ASPIRATED AND CAN CAUSE SERIOUS OR FATAL LUNG DAMAGE.

HARMFUL OR FATAL IF SWALLOWED. FLAMMABLE VAPOUR HARMFUL. MAY CAUSE SKIN IRRITATION ON PROLONGED, REPEATED CONTACT.

SAFETY: Keep away from heat and flame. Avoid prolonged or repeated overexposure by skin contact or inhalation. Use with adequate ventilation. Keep container closed. Keep out of reach of children.

FIRST AID: Wash skin with soap and water. Flush eyes with water. If overcome by fumes or vapour, remove to fresh air. If ingested do not induce vomiting. If symptoms persist seek medical attention. Read and understand the MSDS before using this product.

This warning is given to comply with California Health and Safety Code 25249.6 and does not constitute an admission or a waiver of rights. This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. Chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm are created by the combustion of this product. Refer to product Material Safety Data Sheet for further safety and health information.

Disclaimer

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and we expressly disclaim all warranties of every kind and nature, including warranties of merchantability and fitness for a particular purpose in respect to the use or suitability of the product. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users.
