

Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name : **Hexane (extraction grade)**
Recommended Uses : For industrial use only.
Seed and oil extraction

Other names : Hexane extraction grade HEXANES
Product Code : Q1252, Q1255

Supplier
Auschem (NSW) Pty Ltd
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2. HAZARDS IDENTIFICATION

HAZARDOUS SUBSTANCE. DANGEROUS GOODS.
Classified as hazardous according to the criteria of NOHSC, and as Dangerous Goods according to the Australian Dangerous Goods Code.

Symbol(s) : F Highly flammable.
Xn Harmful.
N Dangerous for the environment.

R-phrase(s) : R11 Highly 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.
R65 Harmful: may cause lung damage if swallowed. R67 Vapours may cause drowsiness and dizziness. R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S-phrase(s) : S9 Keep container in a well-ventilated place.
S16 Keep away from sources of ignition - No smoking.
S23 Do not breathe vapour.
S24/25 Avoid contact with skin and eyes.
Adequate explosion-proof ventilation to control airborne concentrations.

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	S61 Avoid release to the environment. Refer to special instructions/Safety data sheets.
	S62 If swallowed, do not induce vomiting; seek medical advice immediately and show this container or label.
	S 2 Keep out of the reach of children.
Health Hazards	: Vapours may cause drowsiness and dizziness. Slightly irritating to respiratory system. Irritating to skin. Repeated exposure may cause skin dryness or cracking. Vapours may be irritating to the eye. Harmful: may cause lung damage if swallowed. Possibility of organ or organ system damage from prolonged exposure; see Chapter 11 for details. Target organ(s): Central nervous system (CNS). Peripheral nervous system. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Causes serious nerve damage by prolonged exposure resulting in sensory loss. Possible risk of impaired fertility.
Signs and Symptoms	: Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Skin irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blisters. Peripheral nerve damage may be evidenced by impairment of motor function (incoordination, unsteady walk, or muscle weakness in the extremities, and/or loss of sensation in the arms and legs). If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever. 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. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.
Safety Hazards	: Highly flammable. In use, may form flammable/explosive vapour-air mixture. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.
Environmental Hazards	: Expected to be toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
SUSDP Schedule	: 5

3. COMPOSITION/INFORMATION ON INGREDIENTS

CAS No.	: 64742-49-0
INDEX No.	: 649-328-00-1
EINECS No.	: 265-151-9

Hazardous Components

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Chemical Name	CAS	EINECS	Symbol(s)	R-phrases	Conc.
n-Hexane	110-54-3	203-777-6	F, Xn, N	R11; R38; R48/20; R62; R65; R67; R51/53	10.00 - 30.00 %W

Additional Information : Refer to chapter 16 for full text of EC R-phrases.

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. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
- 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. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (37° C), shortness of breath, chest congestion or continued coughing or wheezing.
- Advice to Physician** : Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal. Call a doctor or poison control center for guidance. Potential for cardiac sensitisation, particularly in abuse situations. Hypoxia or negative inotropes may enhance these effects. Consider: oxygen therapy. Causes central nervous system depression. Dermatitis may result from prolonged or repeated exposure.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- 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 Media** : Do not use water in a jet.
- Protective Equipment for Firefighters** : Wear full protective clothing and self-contained breathing apparatus.
- Additional Advice** : Keep adjacent containers cool by spraying with water.
- Hazchem Code** : 3[Y]E - For fire fighting, use foam (alcohol resistant foam may be required). Risk of explosion. Breathing apparatus, firefighting gear and chemically impervious protective gloves

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should be worn. Prevent spillage from entering drains or watercourses. Evacuation of people from the neighbourhood of an incident should be considered.

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.

7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For 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. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1

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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. 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.

- Storage** : Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat. Bulk storage tanks should be diked (bunded). 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. Storage Temperature: Ambient.
- Product Transfer** : Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. 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. If positive displacement pumps are used, these must be fitted with a non-integral pressure relief valve.
- 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
RCP Technical Hexane	HSPA OELs	TWA (8 h)		300 mg/m3	
n-Hexane	AU OEL	TWA	20 ppm	72 mg/m3	

- Additional Information** : Wash hands before eating, drinking, smoking and using the toilet. Skin notation means that significant exposure can also occur by absorption of liquid through the skin and of vapour through the eyes or mucous membranes.

Biological Exposure Index (BEI) - See reference for full details

Material	Determinant	Sampling time	BEI	Reference
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n-Hexane	2,5-Hexanedion in urine	End of shift at end of workweek	0.4 mg/l	ACGIH (2003)
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- 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 EN371. 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** : 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** : Chemical resistant gloves/gauntlets, boots, and apron. Skin protection not ordinarily required beyond standard issue work clothes.
- 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. 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> 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>

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Colourless Liquid.

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Odour	: Paraffinic Sweet
pH	: Not applicable.
Boiling point	: Typical 63 - 79 °C / 145 - 174 °F
Melting / freezing point	: -95 °C / -139 °F
Pour point	: Typical -95 °C / -139 °F
Flash point	: -27 °C / -17 °F(IP 170)
Explosion / Flammability limits in air	: 1.1 - 7.4 %(V)
Auto-ignition temperature	: 375 °C / 707 °F(ASTM E-659)
Vapour pressure	: Typical 8,000 Pa at 0 °C / 32 °FTypical 19,000 Pa at 20 °C / 68 °FTypical 58,500 Pa at 50 °C / 122 °F
Specific gravity	: Data not available.
Density	: Typical 670 - 675 kg/m ³ at 15 °C / 59 °F(ASTM D-4052)
Water solubility	: 9.5 mg/l
Solubility in other solvents	: Hydrocarbon solvent(s) Miscible.
n-octanol/water partition coefficient (log Pow)	: 4
Kinematic viscosity	: Typical 0.45 mm ² /s at 25 °C / 77 °F
Vapour density (air=1)	: 2.8
Electrical conductivity	: Typical 0.04 pS/m at 20 °C / 68 °F(ASTM D-4308)
Coefficient of expansion	: Typical 0.0009 / °C
Dielectric constant	: Typical 1.9 at 20 °C / 68 °F
Heat of vapourisation	: Typical 335 J/g
Refractive index	: Typical 1.379 at 20 °C / 68 °F(ASTM D-1218)
Reaction with water	: Not applicable.
Specific heat	: Typical 2.2 kJ/kg °C
Saturated Vapour concentration (in air)	: 670 g/m ³ at 20 °C / 68 °F(estimated value(s))
Thermal conductivity	: Typical 0.12 W/m °C
Volatile organic carbon content	: 84 % (EC/1999/13)
Evaporation rate (nBuAc=1)	: 1.4 (DIN 53170, di-ethyl ether=1) 8 (ASTM D 3539, nBuAc=1)
Surface tension	: Typical 18.5 mN/m at 20 °C / 68 °F(ASTM D-971)
Molecular weight	: 86 g/mol

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	: Low toxicity: LD50 >2000 mg/kg , Rat Aspiration into the lungs when swallowed or vomited may

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Acute Dermal Toxicity	: cause chemical pneumonitis which can be fatal.
Acute Inhalation Toxicity	: Low toxicity: LD50 >2000 mg/kg , Rabbit : Low toxicity: LC50 >20 mg/l / 4 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. Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.
Eye Irritation	: Essentially non-irritating to eyes. : Vapours may be irritating to the eye. Insufficient to classify.
Respiratory Irritation	: Inhalation of vapours or mists may cause irritation to the respiratory system. Insufficient to classify.
Sensitisation	: Not expected to be a sensitiser.
Repeated Dose Toxicity	: Central nervous system: repeated exposure affects the nervous system. : Peripheral nervous system: causes peripheral neuropathy which can be potentiated by ketones. (n-Hexane) : Kidney: caused kidney effects in male rats which are not considered relevant to humans
Mutagenicity	: Not expected to be mutagenic.
Carcinogenicity	: Tumours produced in animals are not considered relevant to humans. (Solvent Naphtha (Petroleum), Light Aliphatic)
Reproductive and Developmental Toxicity	: Causes foetotoxicity in animals at doses which are maternally toxic. : Affects reproductive system in animals at doses which produce other toxic effects. (n-Hexane)
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.

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
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Container Disposal	:	soil or water. 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**ADG**

UN number	1208
Proper shipping name	HEXANES
Class	3
Packing group	II
Hazchem Code	3[Y]E

IMDG

Identification number	UN 1208
Proper shipping name	HEXANES
Class / Division	3
Packing group	II
Marine pollutant:	No

IATA (Country variations may apply)

UN No.	:	1208
Proper shipping name	:	Hexanes
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.

SUSDP Schedule	:	5
DSL	:	Listed.
INV (CN)	:	Listed.
TSCA	:	Listed.
EINECS	:	Listed. 265-151-9
KECI (KR)	:	Listed. KE-25623
PICCS (PH)	:	Listed.
Other Information	:	94/69/EC (21st ATP). The benzene content of this product is less than 0.1%. Nota P applies. Classification and labelling as carcinogen (R45) is not required.

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16. OTHER INFORMATION

R-phrases(s)

R11	Highly flammable.
R38	Irritating to skin.
R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R62	Possible risk of impaired fertility.
R65	Harmful: may cause lung damage if swallowed.
R67	Vapours may cause drowsiness and dizziness.

MSDS Version Number	:	3.1
MSDS Effective Date	:	09.05.2008
MSDS Revisions	:	A vertical bar () in the left margin indicates an amendment from the previous version.
MSDS Regulation	:	
Uses and Restrictions	:	For industrial use only. Use as a solvent only in industrial manufacturing processes.
MSDS Distribution	:	The information in this document should be made available to all who may handle the product
Disclaimer	:	This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.