Material Safety Data Sheet

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

Product Name	:	**Hexane Extraction**
Product Uses	:	Industrial solvent, Seed, and oil extraction.
Manufacturer/Supplier	:	Vigor Sphere Pte Ltd No 24, Sin Ming Lane #06-96 Midview City, Singapore 573970
Telephone	:	+65-64768895
Emergency Telephone Number	:	+65-64768895

2. HAZARDS IDENTIFICATION

GHS Classification

: Flammable liquid: Category 2.
: Skin irritation: Category 2.
: Aspiration hazard : Category 1
: Reproductive toxicity : Category 2 (fertility)
: Specific target organ toxicity - single exposure : Category 3 (Central nervous system / inhalation)
: Chronic hazards to the aquatic environment, Category 2

GHS label elements

Symbol(s)

Signal words : Danger

GHS Hazard Statements

Physical Hazards	:	H225 Highly flammable liquid and vapor.
Health Hazards	:	H304 May be fatal if swallowed and enters airways. H315 Causes skin irritation. H336 May cause drowsiness or dizziness. H361 Suspected to damaging fertility or the unborn child.
Environmental Hazards	:	H411 Toxic to aquatic life with long lasting effects.

Material Safety Data Sheet

GHS Precautionary statements

Prevention	:	P202 Do not handle until all safety precautions have been read and understood. P210 Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P260 Do not breathe dust/ fume/ gas/ mist/ vapor/spray. P264 Wash hands thoroughly after handling. P271 Use only outdoors or in a well-ventilated area. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response	:	P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor. P331 Do NOT induce vomiting. P302 + P352 IF ON SKIN: Wash with plenty of soap and water. P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower. P332 + P313 If skin irritation occurs, get medical advice/ attention. P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P370+P378 In case of fire: Use appropriate media for extinction.
Storage	:	P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P405 Store locked up. P235 Keep cool.
Disposal	:	P501 Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity : Naphtha (petroleum), hydrotreated light
CAS No : 64742-49-0
EINECS No. : 265-151-9

Classification of components according to GHS

Chemical Name	CAS	Conc.
n-Hexane	110-54-3	30-50 %
Hexanes (other isomers)	-	30-50 %
C6 Naphthenes	-	10-25 %

4. FIRST AID MEASURES

General Information : Keep victim calm. Obtain medical treatment immediately.

Inhalation : DO NOT DELAY. 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 : Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

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: Give nothing by mouth. Do not induce vomiting.

Notes to physician

Most important symptoms /effects, acute & delayed : Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
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. The onset of respiratory symptoms may be delayed for several hours after exposure. Breathing of high vapor concentrations may cause central nervous system (CNS) depression resulting in dizziness, lightheadedness, headache, nausea, and loss of coordination. Continued inhalation may result in unconsciousness and death. Auditory system effects may include temporary hearing loss and/or ringing in the ears.
Immediate medical attention, special treatment	Potential for chemical pneumonitis. Potential for cardiac sensitization, particularly in abuse situations. Hypoxia or negative inotropes may enhance these effects.

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 vapor 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 Fire fighters	:	Wear full protective clothing and self-contained breathing apparatus.
Other Advice	:	Keep adjacent containers cool by spraying with water

6. ACCIDENTAL RELEASE MEASURES

Observe all relevant local and international regulations. Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal.

Personal Precautions	:	Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas.
Protective Equipment and Emergency Procedures	:	Shut off leaks, if possible, without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and firefighting 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 vapor 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 (all equipment. Ventilate contaminated area thoroughly.
Methods and material for containment and clean up	:	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. 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.
Additional Advice	:	The vapor is heavier than air, spreads along the ground and distant ignition is possible. Vapor may form an explosive mixture with air.

7. HANDLING AND STORAGE

General Precautions	:	Avoid breathing vapors 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.
Precautions for safe Handling	:	Avoid inhaling vapor and/or mists. Avoid contact with skin, eyes, and clothing. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding 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. Handling Temperature: Ambient.
Conditions for safe Storage	:	Bulk storage tanks should be diked. Vapors from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapor treatment system. Must be stored in a dike, well ventilated area, away from sunlight, ignition sources and other sources of heat. 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. The vapor is heavier than air. Beware of accumulation in pits and confined spaces. Storage Temperature: Ambient.
Product Transfer	:	Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding 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. 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.
Unsuitable Materials	:	Natural, butyl, neoprene, or nitrile rubbers.

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
n-Hexane	ACGIH	TWA SKIN_DES	50 ppm		Can be absorbed through the skin
Hexane (Mixture of isomers)	ACGIH	TWA	500	1760	

Appropriate Engineering 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. Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/ limits. Local exhaust ventilation is recommended. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.
Individual protection Measures	:	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 vapors [boiling point >65 °C (149 °F)] meeting EN371. Where respiratory protective equipment is required, use a full-face mask. 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 made from the following materials may provide suitable chemical protection: Long term protection: Viton. Incidental contact/Splash protection: Nitrile rubber. Suitability and durability of a glove is dependent on usage, e.g., frequency and duration of contact, chemical resistance of glove material, glove thickness and dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. 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 goggles).
Body protection	**:**	Chemical resistant gloves/gauntlets, boots, and apron. Where risk of splashing or in spillage clean up, use chemical resistant one-piece overall with integral hood.
Thermal hazards	**:**	Not applicable
Environmental Exposure Controls	**:**	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapor.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Colorless Liquid.
Odor	:	Paraffinic sweet.
Boiling point	:	64-70 °C
Freezing point	:	<-60 °C
Flash point	:	< -18 °C (ASTM D56)
Explosion / Flammability limits in air	:	1.2 – 8.3 %(V)
Auto-ignition temperature	:	280 °C
Vapor pressure	:	Typical 18 kPa at 20 °C / 68 °F
Density	:	Typical 677 kg/m3 at 15 °C

Water solubility	:	Negligible
Solubility in other solvents	:	Hydrocarbon solvent (s) Miscible
n-octanol/water partition coefficient (log Pow)	:	4
Decomposition temperature	:	Note: Stable under normal conditions of use.
Vapor density (air=1)	:	2.8
Evaporation rate (nBuAc=1)	:	8 (ASTM D 3539, nBuAc=1)

10. STABILITY AND REACTIVITY

Chemical stability	**:**	Stable under normal conditions of use.
Conditions to Avoid	**:**	Avoid heat, sparks, open flames, and other ignition sources. Prevent vapor accumulation.
Incompatible materials	**:**	Strong oxidizing 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.
Possibility of hazardous Reactions	**:**	Data not available.
Sensitivity to Static Discharge	**:**	Yes

11. TOXICOLOGICAL INFORMATION

Information on Toxicological effects

Basis for Assessment	**:**	Information given is based on product testing, and/or similar products, and/or components.
Likely routes of exposure	:	Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.
Acute Toxicity		
Acute Oral Toxicity	:	Low toxicity : LD50 >5000 mg/kg , Rat
Acute Dermal Toxicity	:	Low toxicity : LD50 >3350 mg/kg , Rabbit
Acute Inhalation Toxicity	:	Low toxicity : LC50 > 20mg/L, 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 corrosion/irritation	:	Causes mild skin irritation.
Serious eye damage/irritation	:	Not irritating to eye. Vapors may be irritating to the eye.
Respiratory Irritation	:	Data not available
Respiratory or skin Sensitization	:	Not a skin sensitizer.
Aspiration hazard	:	Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Germ cell mutagenicity	:	Not mutagenic.
Carcinogenicity	:	Not expected to be carcinogenic. Tumors produced in animals are not considered relevant to humans.
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.
Specific target organ toxicity - single exposure	:	May cause drowsiness or dizziness.
Specific target organ toxicity - repeated exposure	:	Central nervous system: repeated exposure affects the nervous system. Peripheral nervous system, causes peripheral neuropathy which can be potentiated by organic hydrocarbons.
Additional Information	:	Cardiovascular system: chronic abuse of similar materials has been associated with irregular heart rhythms and cardiac arrest.

12. ECOLOGICAL INFORMATION

Basis for Assessment	**:**	Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products.
Acute Toxicity		
Fish	:	Data not available
Aquatic Invertebrates	**:**	LC50 >1 - <= 10 mg/l.
Algae	**:**	LC50 >10 - <= 100mg/l.
Microorganisms	**:**	Data not available
Mobility	**:**	Floats on water. Adsorbs to soil and has low mobility.

Persistence/degradability	**:**	Expected to be readily biodegradable.
Bioaccumulative potential	**:**	Has the potential to bioaccumulation.

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 un-cleaned drums. Send to drum recoverer or metal reclaimer.
Local Legislation		Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

Land (as per ADR classification)	**: Regulated**
Class	: 3
Packing group	: II
UN No.	: 1208
Proper shipping name	: HEXANES

IMDG

Identification number	: UN 1208
Proper shipping name	: HEXANES
Class / Division	: 3
Packing group	: II

IATA (Country variations may apply)

UN No.	: 1208
Proper shipping name	: Hexanes
Class / Division	: 3

Packing group	: II
Special Precaution	Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

15. REGULATORY INFORMATION

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

Chemical Inventory Status

AICS	: Listed.
DSL	: Listed.
IECSC	: Listed.
ENCS	: Listed.
TSCA	: Listed.
EINECS	: Listed.
KECI (KR)	: Listed.
PICCS (PH)	: Listed.

16. OTHER INFORMATION

Uses and Restrictions	:	Raw material for use in the chemical industry. Use only in industrial 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.