

MATERIAL SAFETY DATA SHEET

Opt-Max Refonix HFC S 100

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

Identification of substance/preparation

Product name:	: Opt-Max Refonix HFC S 100
Generic Chemical Name:	: Synthetic Refrigerator Oil
MSDS Reference No:	: MSDS_PDS_Refonix_HFC_(S)_100_R1
Supplier:	: Premier Six Pte Ltd
Telephone No:	: +65 67024395
Preparation/Revision Date	: 9 December 2014

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Composition

Chemical Name	CAS	Approx. Wt%
Synthetic Refrigerator Oil	Mixture	60% - 100%

Hazardous Components

No component is present at sufficient concentration to require a hazardous classification.
Occupational exposure limits, if available, are listed in Section 8.

3. HAZARDS IDENTIFICATION

Health Hazard

Mild mechanical irritant to skin, eyes and upper respiratory system may result from exposure.

Safety Hazard

Not classified as flammable under normal conditions of use but material is combustible.

Environmental Hazard

Not considered as hazardous for the environment.

Opt-Max Global Pte Ltd

E-Mail: Sales@Opt-Max.com • Website: <http://www.Opt-Max.com>

Address: 73 Ubi Road 1 #09-49 Oxley Bizhum , Tel: 65 6285 7833

4. FIRST-AID MEASURES

Eyes

Wash eye thoroughly with copious quantities of water, ensuring eyelids are held open. Obtain medical advice if any pain or redness develops or persists.

Skin

Wash skin thoroughly with soap and water as soon as reasonably practicable. Remove heavily contaminated clothing and wash underlying skin. If material is injected under the skin, transport to the nearest medical facility for additional treatment. Seek immediate medical assistance if redness, swelling and/or pain occur.

Ingestion

If contamination of the mouth occurs, wash out thoroughly with water.

Except as a deliberate act, the ingestion of large amounts of product is unlikely. If it should occur, do not induce vomiting; obtain medical advice.

Inhalation

If inhalation of mists, fumes or vapour causes irritation to the nose or throat, or coughing, remove to fresh air. If symptoms persist obtain medical advice.

Medical Advice

Treatment should in general be symptomatic and directed to relieving any effects.

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flashpoint: >220°C (ASTM D92)

Fire Fighting

Use foam, dry chemical or carbon dioxide (CO₂) or water fog. DO NOT USE water jets.

Fires in confined spaces should be dealt with by trained personnel wearing approved breathing apparatus. Water may be used to cool nearby heat exposed areas/objects/packages. Avoid spraying directly into storage containers because of the danger of boil-over.

Hazardous Combustion Products

Toxic fumes such as smoke, dust, carbon monoxide, carbon dioxide and sulfur dioxide may be evolved on burning or exposure to heat.

See Stability and Reactivity, Section 10 of this Safety Data Sheet.

6. ACCIDENTAL RELEASE MEASURES

Land Spill

For small land spill, contain and recover spilled material using sand or other suitable inert absorbent material. It is advised that stocks of suitable absorbent material should be held in quantities sufficient to deal with any spillage which may be reasonably anticipated. Spilled material may make surfaces slippery.

If liquid is too viscous for pumping, scrape up with shovels or pails in suitable containers for recycle or disposal. In the case of large spills, contact the appropriate authorities.

Water Spill

Protect environmentally sensitive areas and water supplies. Protect drains from potential spills to minimize contamination. Do not wash product into drainage system.

In the case of spillage on water, prevent the spread of product by the use of suitable barrier equipment. Remove from surface by skimming or with suitable absorbents.

In the case of spillage at sea approved dispersants may be used where authorized by the appropriate government/regulatory authorities.

7. HANDLING AND STORAGE

General Handling Precautions

Avoid contact with eyes. If splashing is likely to occur wear a full face mask or chemical goggles as appropriate.

Avoid skin contact.

Good working practices, high standards of personal hygiene and plant cleanliness must be maintained at all times.

Wash hands thoroughly after contact.

Use disposable cloths and discard when soiled. Do not put soiled cloths into pockets.

Fire Prevention

Product contaminated rags, paper or material used to absorb spillages, represent a fire hazard, and should not be allowed to accumulate. Dispose of safely immediately after use.

Container Warnings

Container is not designed to contain pressure. Do not pressurize, cut, heat, braze, drill, grind or weld containers. Do not reuse empty containers without commercial cleaning or reconditioning as product residue (solid, liquid and/or vapor) retained in the empty container can be hazardous.

Static Hazards

Electrostatic charge may accumulate and lead to hazardous condition when handling. It is advisable to use proper grounding procedures to reduce this hazard. Refer to OSHA standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77,'Recommended Practice on Static Electricity', and/or American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lighting, and Stray Currents' for more information.

Storage Conditions

Store in cool-well ventilated place away from incompatible materials. Do not handle or store near an open flame or heat or expose to direct sunlight.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits

Ensure good ventilation.

Avoid, as far as reasonably practicable, inhalation of vapor, mists or fumes generated during use.

If vapor, mists or fumes are generated, their concentration in the workplace air should be controlled to the lowest reasonably practicable level.

Comply with current local occupational exposure limit. Where not established, it is recommended that mineral oil mists are kept below 5mg/m³.

Personal Protection

Protective Clothing

Wear face mask or goggles in circumstances where eye contact can accidentally occur.

If skin contact is likely, wear impervious protective clothing and/or gloves.

Protective clothing should be regularly dry cleaned. Change heavily contaminated clothing as soon as reasonably practicable; dry clean, launder and preferably starch before re-use. Wash any contaminated underlying skin with soap and water.

Respiratory Protection

Respiratory protection is unnecessary, provided the concentration of vapor, mists or fumes is adequately controlled. The use of respiratory equipment must be strictly in accordance with the manufacturers' instructions and any statutory requirements governing its selection and use.

Hygienic Measures

Act in accordance with good industrial hygiene and safety practice. Wash hand with soap and water before eating, drinking, smoking or using toilet. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color	Amber
Physical State	Liquid
Odor	Mild
Flash point (open cup), °C	>220
Viscosity at 100°C (mm ² /s)	13.1 – 16.5
Specific Gravity @ 15°C, kg/L	0.9022-0.9146
Solubility in water	Non Soluble

10. STABILITY AND REACTIVITY

Products of this type are stable and unlikely to react in a hazardous manner under normal conditions (Temperature, Pressure and etc.) of use, storage and handling. This material is combustible. Avoid extreme heat and high energy sources of ignition.

Incompatibility

Avoid contact with water. Avoid strong oxidizing agent.

Hazardous Decomposition Products

No expected material to decompose at ambient temperatures

Hazardous Polymerization

Hazardous polymerization will not occur.

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11. TOXICOLOGICAL INFORMATION

Information given is based on data evaluation of components and toxicology for similar products or materials.

Eyes Irritation

Unlikely to cause more than transient stinging or redness if accidental eye contact occurs. High temperature exposure to vapors may cause light irritation. Direct contact with high concentration vapors may cause redness, tearing and blurred vision.

Skin Irritation

Unlikely to cause harm to the skin on brief or occasional contact but prolonged or repeated exposure may lead to dermatitis.

Skin Sensitization

Studies indicate no evidence of skin sensitization.

Ingestion

May cause nausea and eventually vomiting and diarrhea.

Inhalation

May cause irritation to eyes, nose and throat due to exposure to vapor, mists or fumes. May be harmful by inhalation if exposure to vapor, mists or fumes resulting from thermal decomposition products occurs.

Additional Toxicological Information

Product is not known (none expected) to associated with mutagenic and carcinogenic effects. All used oil should be handled with caution and avoid skin contact. Used oil may be contaminated with harmful impurities that have accumulated during use. The concentration of such impurities in used oil will depend on the application and they may pose risks to health and environment if not properly handled and disposed.

12. ECOLOGICAL INFORMATION

Mobility

Spillages may penetrate the soil causing ground water contamination.

Bioaccumulative potential

There is no evidence to suggest bioaccumulation will occur.

Aquatic toxicity

Spills may form a film on water surfaces causing physical damage to organisms. Oxygen transfer could also be impaired.

13. DISPOSAL CONSIDERATIONS

Dispose of via an authorized person/ licensed waste disposal contractor in accordance with local regulations. The user of material has the responsibility to determine at the time of disposal, whether the material meets the criteria of hazardous waste.

14. TRANSPORT INFORMATION

Not classified as hazardous for land, sea and air transport (ADR, RID, IATA, and IMDG).

15. REGULATORY INFORMATION

Classified according to European directives on classification of hazardous substances and preparations, not classified as hazardous. No statutory label required. All components of this material are listed on the EPA/TSCA Inventory of Chemical Substances.

16. OTHER INFORMATION

The above information contain in this data sheet is based on the data of which we are aware and considered to be accurate as of the date specified. However, no warranty or representation, express or implied is made as to the accuracy or completeness of the data and information contained in this data sheet.

Health and safety precautions and environmental advice noted in this data sheet may not be accurate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as a permission, recommendation or authorization given or implied to practice any patented invention without a valid license. The manufacturer shall not be responsible for any damage or injury resulting from abnormal use of the material, from any failure to adhere to recommendations, or from any hazards inherent in the nature of the material.