SAFETY DATA SHEET

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Radiator Power

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION

Product name: Radiator Power
Product type: Antifreeze and Coolant

2. PRODUCT / INGREDIENTS

Mixture of monoethylene glycol and inhibitor packages.

3. HAZARD IDENTIFICATION

EC Classification Harmful

Emergency Overview

Appearance and Odour : Green liquid,Ether like odour.

Health Hazards

Causes severe eye irritation. May be harmful if swallowed. Do not induce vomiting. May cause aspiration pneumonitis. May cause CNS depression. High-pressure injection under the skin may cause serious damage.

Inhalation

In applications where vapors (caused by high temperature) or mists (caused by mixing or spraying) are created, breathing may cause a mild burning sensation in the nose, throat and lungs.

Eye Irritation

Severely irritating to the eyes causing pain, redness, swelling and blurred vision.

Skin Contact

May cause slight irritation of the skin. If irritation occurs, a temporary burning sensation and minor redness and/or swelling may result. Release of the material during high-pressure applications may result in injection under the skin causing possible extensive tissue damage which is difficult to heal. Other adverse effects not expected from brief skin contact. Ingestion: This material may be harmful or fatal if swallowed. Ingestion may result in vomiting; aspiration (breathing) of vomitus into lungs must be avoided as even small quantities may result in aspiration pneumonitis. Contains ethylene glycol and/or diethylene glycol which are toxic when swallowed. A lethal dose for an adult is 1 ml per kilogram or about 4 ounces (1/2 cup). Severe kidney damage can occur as a result of ingestion. May cause Central Nervous System (CNS) depression.

This material and/or components may cause the following effects: Developmental Toxicity, Reproductive Toxicity

Primary Target Organs

The following organs and/or organ systems may be damaged by overexposure to this material and/or its components. Gastrointestinal System, Kidney, Liver, Reproductive System.

Signs and Symptoms

Irritation as noted above. Aspiration pneumonitis may be evidenced by coughing, labored breathing and cyanosis (bluish skin); in severe cases death may occur. Early to moderate CNS depression may be evidenced by giddiness, headache, dizziness and nausea. In extreme cases, unconsciousness and death may occur. Kidney damage may be indicated by changes in urine output or appearance, pain upon urination or in the lower back or general edema (swelling from fluid retention). Liver damage may be indicated by loss of appetite, jaundice (yellowish skin and eye color), fatigue and sometimes pain and swelling in the upper right abdomen.

Aggravated Medical Conditions

Pre-existing eye, skin, respiratory, liver and kidney disorders and may be aggravated by exposure to this product.

4. FIRST AID

Inhalation

Move victim to fresh air and provide oxygen if breathing is difficult. Get medical attention.

Skin Contact

Flush exposed area with water and follow by washing with soap if available. If material is injected under the skin, transport to the nearest medical facility for additional treatment. 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 30 minutes, by the clock, while holding eyelids open. Transport to nearest medical facility for additional treatment.

Ingestion

DO NOT take internally. Do NOT induce vomiting. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into lungs. Get medical attention.

Medical Information

Ethylene Glycol (EG) and Diethylene Glycol (DEG) intoxication may initially produce behavioral changes, drowsiness, vomiting, diarrhea, thirst, and convulsions. EG and DEG are nephrotoxic. End stages of poisoning may include renal damage or failure with acidosis. Supportive measures, supplemented with hemodialysis if indicated, may limit the progression and severity of toxic effects. For DIETHLYENE GLYCOL POISONING, the role of intravenous ethanol in the treatment is unclear but it may be of benefit in the view of structural and toxicological similarities to ethylene glycol. Contact a poison control center for further treatment information.

5. FIRE FIGHTING MEASURES

Flash Point (Cleveland Open Cup) 172°C

Extinguishing Media

Foam and dry chemical powder. Carbon dioxide, sand or earth should be used for small fires only. ***Water in a jet must not be used***.

Fire and Explosion hazards

Material will not burn unless preheated. Combustion is likely to give rise to airborne solids and liquid particulate and gases, including carbon monoxide, oxides of sulphur, and unidentified organic and inorganic compounds

Special protective equipment

Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Protective Measures

May burn although not readily ignitable. Wear appropriate personal protective equipment when cleaning up spills.

Spill Management

Shut off source of leak if safe to do so. Dike and contain spill.

FOR LARGE SPILLS

Remove with vacuum truck or pump to storage/salvage vessels.

FOR SMALL SPILLS

Soak up residue with an absorbent such as clay, sand or other suitable material. Place in non-leaking container and seal tightly for proper disposal.

7. HANDLING AND STORAGE

Precautionary Measures

Avoid heat, open flames, including pilot lights, and strong oxidizing agents. Use explosion-proof ventilation to prevent vapor accumulation. Ground all handling equipment to prevent sparking. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

Container Warnings

Keep containers closed when not in use. 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

EXPOSURE CONTROLS

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits.

PERSONAL PROTECTION

Personal protective equipment (PPE) selections vary based on potential exposure conditions such as handling practices, concentration and ventilation. Information on the selection of eye, skin and respiratory protection for use with this material is provided below.

Eye Protection

Chemical Goggles and Face Shield, or Safety glasses with side shields

Skin Protection

Use protective clothing which is chemically resistant to this material. Selection of protective clothing depends on potential exposure conditions and may include gloves, boots, suits and other items. The selection(s) should take into account such factors as job task, type of exposure and durability requirements.

Published literature, test data and/or glove and clothing manufacturers indicate the best protection is provided by: Neoprene, or Nitrile Rubber

Respiratory Protection

If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, an approved respirator must be worn.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odour		Pale yellow liquid Ether-like odor
Substance Chemical Family		Glycol Ether Blend
Boiling Point ,	ºC	284
Freezing Point,	ºC	47
Flash Point, COC,	ºC	172
Upper/Lower Flamability or Explosion limits		3 – 5% (V)
Auti-Ignition Temperature		>200 ºC
Density @ 15°C	kg/l	1.039
Vapor Pressure ,	mm/Hg	0.1
Water Solubility		Completely soluble

10. STABILITY/REACTIVITY

Stability: Stable
Conditions to avoid: Extremes of temperature and direct sunlight
Materials to avoid: Strong oxidising agents
Hazardous Decomposition Products Hazardous decomposition products: Hazardous decomposition products are not expected to form during normal storage

11. TOXICOLOGICAL INFORMATION

Basis for Assessment : Information given is based on data on the components and the toxicology of similar products.
Acute Oral Toxicity : Classified as harmful by the European Commission. There is a marked difference in acute oral toxicity between rodents and man, man being more susceptible than rodents. The estimated fatal dose for man is 100 millilitres (1/2 cup). This material has also been shown to be toxic and potentially lethal by ingestion to cats and dogs. Ingestion may cause drowsiness and dizziness.
Acute Dermal Toxicity : Expected to be of low toxicity: LD50 >2000 mg/kg , Rabbit
Skin Irritation : May cause moderate skin irritation (but insufficient to classify).
Eye Irritation : Moderately irritating to eyes (but insufficient to classify).
Respiratory Irritation : Inhalation of vapours or mists may cause irritation.
Sensitisation : Not expected to be a skin sensitiser.

Repeated Dose Toxicity : Kidney: can cause kidney damage.
Mutagenicity : Not considered a mutagenic hazard.
Carcinogenicity : Components are not known to be associated with carcinogenic effects.

Reproductive and Developmental Toxicity: Causes foetotoxicity in animals; considered to be secondary to maternal toxicity.

12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

Acute Toxicity : Expected to be practically non toxic: LC/EC/IC50 > 100 mg/l (to aquatic organisms)
Mobility : Dissolves in water. If product enters soil, it will be highly mobile and may contaminate groundwater.
Persistence/degradability : Readily biodegradable.
Bioaccumulation : Not expected to bioaccumulate significantly.
Other Adverse Effects : Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

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.

Container Disposal : Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

SABS 0228 Class	Not regulated
IMDG Class	Not regulated
IATA-DGR Class	Not regulated

South African Transport Legislation *:* See SABS 0228, 0229, 0230, 0231, 0232-1, 0232-3, 1398, 1518.

Not dangerous for conveyance under UN, IMO, ADR/RID and IATA/ICAO codes.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.
EC Classification : Harmful.
EC Symbols : Xn Harmful.
EC Risk Phrases : R22 Harmful if swallowed.
EC Safety Phrases : S2 Keep out of the reach of children.
S13 Keep away from food, drink and animal feeding stuffs.
S46 If swallowed, seek medical advice immediately and show this container or label.
EINECS : All components listed or polymer exempt.
TSCA : All components listed.
Classification triggering components : Contains ethanediol. Contains bittering agent
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16. OTHER INFORMATION

MSDS Version Number : 2

MSDS Effective Date : 1 November 2011

Disclaimer
All information and instructions in this MSDS are based on the current state of scientific and technical knowledge at the date indicated on the present MSDS and are presented in good faith and believed to be correct. This information applies to ***the product as such***. It is the responsibility of persons in receipt of this MSDS to ensure that the information contained herein, even when supplied to third parties, is passed onto and is properly read and understood by all people who may use, handle, dispose or in any way come in contact with the product. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by use of this material. 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 responsibility of the user to comply with applicable National, International and local laws and regulations.