

Material Safety Data Sheet:

Engol ANTIFREEZE

1. Product and Company Identification

Product Name : Engol Antifreeze 50% / 80%
Product Use: Radiator Coolant and Antifreeze
Supplier: Engol Group (Pty) Ltd
4 Silicon Road,
Pinetown,
4147
Health Emergency Telephone: 10111
Contact Information: info@engolgroup.com
Engol Website : http://www.engolgroup.com

2. Hazards Identification

Emergency response data: Fluorescent Pink/Yellow Liquid. DOT ERG No. - 171

Potential Health Effects

Inhalation toxicity: Excessive inhalation of vapours or mists for prolonged periods of time may also result in toxic effects.

Skin irritation: Practically non-irritating.

Eye irritation: Irritant

Ingestion: Ingestion of ethylene glycol may result in nausea, abdominal cramps vomiting, convulsions, Oedema of the lung, cardiopulmonary effects (metabolic acidosis), pneumonia and kidney failure, which could result in death. The single lethal dose for humans is about 100ml.

Potential environmental effects: Toxic to fish, wildlife and aquatic organisms. Do not discharge into streams ponds, lakes and ground water supply.

See section 11 for further health effects/toxicological data.

3. Composition / information on ingredients

| Chemical Name | CAS-No. | Weight% | Symbol Codes | R-Phrase No. |
|-------------------------|------------|---------|--------------|--------------|
| Ethylene Glycol | 107-21-1 | | Xn | R22 |
| Sodium 2-ethylhexanoate | 19766-89-3 | | Xn | R63 |

See section 8 for further exposure limits (if applicable)

4. First Aid Measures

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| Inhalation: | Remove from further exposure. If respiratory irritation, nausea, dizziness or unconsciousness occurs, seek medical assistance immediately. |
| Skin Contact: | Remove contaminated clothing. Dry wipe exposed skin and cleanse with hand cleaner, soap and water. Launder contaminated clothing before reuse. |
| Eye Contact: | Flush eyes with copious amounts of water for at least 15 minutes. Seek medical attention. |
| Ingestion: | Seek immediate medical assistance. If medical assistance is delayed, contact a Regional Poison Centre or emergency medical professional regarding the use of activated carbon or the induction of vomiting. |

5. Fire-Fighting Measures

Clear fire area of all non-emergency personnel.

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| Extinguishing Media: | Foam, water fog, dry chemical powder and carbon dioxide. |
| Special firefighting procedure: | Water or foam may cause frothing. Use water to keep fire exposed containers cool. Water spray may be used to flush spills away from exposure. Prevent runoff from fire control or dilution from entering streams, municipal sewers, or drinking water supply. |
| Special protective equipment: | Self-contained breathing apparatus. |
| Unusual fire and explosive: Hazard | None. |
| Products of decomposition: | Fumes, carbon dioxide and smoke. |
| Flash Point: | > 100°C (ASTM D92) |
| Upper Explosion Limit (UEL): | 15.3% (V) |
| Lower Explosion Limit (LEL): | 3.2% (V) |
| NFPA Hazard ID: | Health: 0 ; Flammability: 1 ; Reactivity: 0 |
| Advice for firefighters: | Proper protective equipment including chemical resistant gloves are to be worn; chemical Resistant suit is indicated if excessive contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant standards. |

6. Accident Release Measures

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| Personal precautions: | See Section 8. |
| Procedure if material is released: or spilled | Report spills/releases as required to appropriate authorities. |

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| Methods for cleaning up: | Absorb on fire retardant treated saw dust, diatomaceous earth, etc. Shovel up with spark resistant utensils for later disposal. Dispose at an approved facility in accordance with laws and regulations. |
| Environmental precautions: | Prevent spill from entering municipal sewers, water sources or low lying areas. Advise the Relevant authorities if contaminations have occurred. |
| Additional advice: | Local authorities should be advised if significant spillages cannot be contained. |

7. Handling & Storage

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| Safe handling: | Avoid prolonged repeated skin contact. Avoid ingestion. Avoid inhaling of vapours mists. |
| Storage information: | Do not store in unlabelled containers. Do not store near combustible materials or strong oxidising agents. |

8. Exposure Control / Personal Protection

Occupational Exposure Limits (OELs)

| Components | CAS-No | Source | TWA | Value | Notion | |
|-----------------|----------|-----------|------|-----------------------|--------|---------|
| Ethylene Glycol | 107-21-1 | ACGIH TLV | STEL | 100mg/m ³ | 40ppm | Ceiling |
| | | | LTEL | 51mg/mg ³ | 20ppm | |
| | | OSHA PEL | STEL | 127mg/mg ³ | 50ppm | Ceiling |
| | | | LTEL | 63mg/mg ³ | 25ppm | |

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| 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:

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| Engineering controls: | Use in a well-ventilated area. |
| Respiratory protection: | Approved respiratory equipment must be used when mist concentrations exceed the recommended exposure limits and inhaling of mists and vapours is likely. |
| Eye protection: | If splash with liquid is possible, chemical type goggles should be worn. |
| Skin and body protection: | No special equipment required. However, if frequent splashing or liquid contact is likely to occur, wear oil impervious gloves and clothing. Good personal hygiene practices should always be followed. |

9. Physical and Chemical Properties

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| Appearance: | Liquid |
| Colour: | Fluorescent Yellow/Pink |
| Odour: | Characteristic |
| Water solubility: | Miscible |
| Melting point/range: | -30°C |
| Boiling point/range: | > 165°C |
| Flash point: | > 100°C |
| Upper Explosion Limit (UEL): | 15.3 % (V) |
| Lower Explosion Limit (LEL): | 3.2 % (V) |
| Density: | 1.068 g/cm ³ @ 20°C (ASTM D4052) |
| Autoignition temperature: | > 200°C |
| Pour Point: | -18°C |

10. Stability & Reactivity

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| Reactivity: | The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph. |
| Chemical stability: | No hazardous reaction is expected when handled and stored according to provisions. |
| Possibility of hazardous reactions: | Reacts with strong oxidising agents. |
| Stability: | Stable. |
| Conditions to avoid: | Extremes of temperature and direct sunlight. |
| Materials to avoid: | Strong oxidising agents. |
| Hazardous decomposition products: | Fumes, smoke, carbon monoxide, sulphur oxides, aldehydes and other decomposition products, in the case of incomplete combustion. |

11. Toxicological Information

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| Acute oral toxicity: | (Rats): Toxic (LD50: less than 250 mg/kg). Based on testing of similar products and/or components. |
| Acute dermal toxicity testing: | (Rabbits): Practically non-toxic (LD50: greater than 2000 mg/kg). Based on a single dose at 2000 mg/kg. |
| Acute inhalation toxicity: | (Rats): Toxic (LD50: greater than 2 but less than 5mg/l or less). Based on testing products and/or components. |
| Skin Irritation: | (Rabbits): Practically non-irritating. |
| Eye irritation: | (Rabbits): Irritant. (Draize score: greater than 15 but less than 35). Based on testing of similar products and/or components. |
| Sensitization: | Not expected to be sensitizing based on tests of this product, components, or similar products. |
| Repeated dose toxicity: | Small quantities of ethylene glycol ingested, inhaled or absorbed through the skin repeatedly over a prolonged period of time may result in systemic toxic effects. Rats fed 1-2 percent ethylene glycol for 2 years suffered severe kidney and liver damage and bladder stones. Inhalation studies for 2 years at 100 ppm with 7 species of animals did not result in any adverse effects other than respiratory irritation. |
| Toxicity to reproduction: | Ethylene glycol, when administered orally to pregnant rats at 2250 mg/kg/day caused some malformations of the offspring. The NOEL was 1250 mg/kg/day. No developmental or teratological effects were observed in rabbits administered 2000 mg/kg/day orally. Aerosols of 2500 mg/m ³ during organogenesis resulted in teratogenic effects in mice but not rats. |

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| Mutagenicity: | Ames test: Negative. Mouse Lymphoma (L5178y/TK +/-) Assay: Positive. |
| Carcinogenicity: | No carcinogenic where observed in animals when they were injected with the solvent or fed at 1% in the diet for 2 years. Carcinogenic effects are not known to occur in humans exposed to ethylene glycol. |
| Additional Information: | Orally, ethylene glycol is more toxic to human than animal test data indicates. The probable lethal dose for an adult is ± 100ml. Smaller doses can cause serious kidney injury. |

12. Ecological Information

Ecotoxicity Effects

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| Toxicity to Fish: | (Leuciscus idus) LC/EC50: > 100 mg/l at 96 hours. |
| Toxicity to aquatic organisms: | (Daphnia magna) LC/EC50: > 100 mg/l at 48 hours. |

Persistence/degradability:

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| Bioaccumulation: | Does not bio-accumulate. |
| Biodegradability: | Readily biodegradable. |
| Physio-Chemical removability: | Soluble in water. |

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| Additional information: | AOX: This product contains no organically bound halogen. |
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13. Disposal Considerations

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| Waste Disposal: | 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. |
| Contaminated Packaging: | Empty containers retain residue (liquid and/or vapour) and can be dangerous. Do not Pressurize, cut, weld, braze, solder etc. or expose such containers to heat, flames, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. |

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| Other regulation: | 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). |
| Flash point: | > 100°C (ASTM D-92) |

14. Transportation Information

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| Note: | This product is not regulated by the following: CFR and IATA. |
| ADR: | |
| UN Number: | 3082 |
| Class: | 9 |
| Packging Group: | III |
| Labelling Number: | 9 |
| IMDG | |
| UN Number: | 3082 |
| Class: | 9 |
| Packing Group: | III |
| Labelling Number: | 9 |

15. Regulatory Information

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

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| 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 not defined dangerous by the European Union Dangerous Substances/Preparations Directives. EU labelling is not required. |
| S - Phrases: | S2, S24, S46. Keep out of the reach of children. Avoid skin contact. If ingested, seek immediate medical advice and present this container or label. |
| SARA U.S. Superfund : Amendments and Reauthorization ACT SARA Title III | This product contains no "EXTREMELY HAZARDOUS SUBSTANCES". |
| SARA (31/312) Reportable Hazard: Categories | Chronic Acute |

The following product ingredients are cited on the list below:

| Chemical Name | CAS-No. | Concentration % | List Citations |
|-------------------------|------------|-----------------|------------------------------------|
| Ethylene Glycol | 107-21-1 | | 10, 18, 19, 20, 21, 23, 24, 25, 26 |
| Sodium 2-ethylhexanoate | 19766-89-3 | | Not Listed |

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 |

16. Other Information

MSDS Version Number: 1.0
MSDS Effective Date: 01.05.2017

Health studies have shown that hydrocarbons pose potential human health risks which may vary from person to person. The information provided on this MSDS reflects the intended use of the product. This product should not be used for any other application except for the intended use.

INJECTION INJURY WARNING: If product is injected into or under the skin, or into and 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.

Technical Data Sheet:

Engol RTU Antifreeze / Coolant 50%

Application:

Engol RTU Antifreeze/ Coolant is recommended in all water cooled internal combustion engines to protect against corrosion and frost damage. This Product is pre-diluted to 50/50 of concentrate Engol Antifreeze and deionised water to ensure user efficiency. The Low Silicate additive technology ensures efficient and long lasting protection of the engine and cooling system for up to 2 years.

Description:

A superior quality, ethylene glycol based, antifreeze and cooling system conditioner. Pre-diluted product is ready to use and requires no mixing for top up or initial fill.

Benefits:

- Excellent pitting protection for wet sleeve cylinder liners.
- Reduced hard water scale.
- Improved water pump seal life due to low dissolved solids level.
- Remarkable heat transfer capabilities.

Typical Physical Characteristics:

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|------------------------------|------------------|
| Engol RTU Antifreeze/Coolant | |
| Density @ 20°C | 1.068 |
| Colour | Fluorescent Pink |
| Freezing point min. °C | -35 |
| pH | 8.15 |

*The values of the specifications shown in this table are typical values given as an indicator only.

Pack Sizes:

- 1 Litre, 5 Litre and 20 Litre Plastic Bottles
- 208 Litre Steel Drums
- 1000 Litre IBC

Health and Safety Information:

For recommendations on safe handling and use of this product, please refer to the Material Safety Data sheet available on www.engolgroup.com